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# INCOME DISTRIBUTION IN BRAZIL: LONGER TERM TRENDS AND CHANGES IN INEQUALITY SINCE THE MID-1970s

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# Income Distribution in Brazil: Longer Term Trends and Changes in Inequality Since the Mid-1970s

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Abstract: The paper analyzes changes in the Brazilian size distribution of income over the long term (1960-90) and yearly changes since the mid-1970s. Throughout the analysis the authors tried to identify the most relevant variables that might explain how macroeconomic policies and performance contributed to the observed record. They found evidence of an almost continuous deterioration of the income distribution in the three decades. Changes over the 1980s seem to have been on the same order of magnitude than changes in the 1970s. Nothing compares to changes observed in the 1960s, though. The long term trend does not seem to be affected by changes in economic performance in the three decades analyzed. Short term trends, however, seem to be associated with economic performance: there is evidence of a negative relationship between changes in inequality and economic growth as measured by variations in per capita GDP since the mid-1970s. Thus, there seems to be no conflict in the short run between the objectives of growth and equity. The persistence of high inflation in the second half of the 1980s blurs the relationship: there is evidence of a positive association between inequality and inflation over the decade. A decomposition exercise highlights the importance of education in explaining inequality. The variable "position in occupation" (a proxy for capital deepening or for the structure of the labor market), however, is even more important than education in accounting for changes in inequality since the late 1970s. The results of a dynamic decomposition show that the income effect is more relevant than the allocation effect in the period analyzed. The evidence against an explanation à la Kuznets for the observed deterioration of the income profile since 1977 is reinforced by the analysis at sectoral level.

# INCOME DISTRIBUTION IN BRAZIL: LONGER TERM TRENDS AND CHANGES IN INEQUALITY SINCE THE MID-1970s[1]

Regis Bonelli[2]
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## 1. INTRODUCTION.

The relationship between income inequality, economic growth and economic policy is admittedly a very complex one, as witnessed by the substantial amount of both theoretical and empirical work that has been devoted by economists and other social scientists to clarifying the issues at stake and identifying the most relevant economic variables behind changes in income inequality.

Brazil represents, in this respect, a useful case study as it provides evidence of very pronounced changes over a short time period. Before the early 1970s, however, lack of adequate quantitative data prevented the profession from fully meeting the challenges posed by the explanation of one of the more extreme profiles of income concentration in the contemporary world.

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When the issue is looked at in historical perspective one observes surges of interest corresponding to points of time when new data become available, particularly Census data. More recently research on the distribution of income in Brazil has been enhanced by the use of new computing methods, more efficient equipment and readily available data from the household surveys conducted by IBGE. This last source of information has facilitated systematic analyses of changes in the size distribution of income on an annual basis which emphasize the role played by a few crucial variables in explaining inequality[4]. Besides being preoccupied with the explanation of changes in inequality, many of these studies also share a concern with linking the observed changes with economic policy and performance[5].

The present paper is a modest contribution in the same direction. The objective here is to analyze changes in the income profile since the late 1970s, to identify relevant variables and actors and to explain - or, at least, infer on - how macroeconomic policies and performance contributed to the observed record. The remaining of the text is organized as follows. Section 2 presents, as a background, a brief descriptive survey of long term trends in inequality. Section 3 summarizes a few of the more interesting

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[4]Longitudinal analyses have not been pursued so far. See, however, Barros, Sedlacek and Varandas [1990]. On social mobility and income distribution in Brazil see Pastore [1986] and Barros, Reis and Ramos [1992].

[5]A very partial list would include: Bonelli and Sedlacek [1989], Ramos [1990] and Barros et allii [1992].

theories or ideas put forward to explain the observed results. Section 4 presents the record since the mid-1970s and explores possible links between inequality and economic policies and performance. Section 5 contains the results of decomposition exercises devised to identify characteristics of the labor force that have influenced the observed pattern of income inequality through time. The final section closes the paper with a few concluding remarks.

## 2. LONG TERM TRENDS

Reasonably well-founded empirical research on income inequality in Brazil began only in the late 1960s[6], stimulated by the availability of data on individual incomes from the 1960 Demographic Census.

The comparison of the 1960 and 1970 Census results broadened the debate by allowing the analysis to take into account all incomes - i.e., not only wages - of a much larger sample of individuals. Eventual measurement differences that may have occurred at the time soon gave way to a much broader consensus on

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[6]Fishlow AER study [1972] is the obvious first reference here. Previous pioneering studies based on the structure of earnings in the manufacturing sector had been motivated by the distributive effects of the so-called "corrective inflation" of 1964-65 upon wages given the wage legislation passed in the mid-1960s. The substitution of the original wage formula in 1968 was not sufficient to counter the fact that wages near the legal minimum lost purchasing power relatively to higher wages during the decade as a whole.

one essential fact: Brazil had experienced from 1960 to 1970 what could by any standards be considered an astonishing increase in income inequality.

The fact that all studies which dealt with the measurement of income inequality from 1960 to 1970 reached this same overall conclusion[7] made it possible to shift the focus to the causes and interpretation of the phenomena behind the figures. In particular, a heated debate on the factors related to the observed deterioration took place soon after the 1970 Census results became available.

The so-called Brazilian debate on the size distribution of income was an exchange of ideas[8] in the mid-1970s disputing the explanation of why all indices of income concentration increased between 1960 and 1970. The Gini coefficient, for instance, which had already reached very high levels in 1960, according to international comparisons (a value of nearly 0.50) increased full 7 points over the decade to 0.57 in 1970.

When the 1980 Census results became available researchers soon found out that, considering end-point data, the distribution of income had become more concentrated between 1970 and 1980 as well. Changes between 1970 and 1980 were, however, much less pronounced than during the previous decade. Partial evidence from

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[7]For instance, Hoffman and Duarte [1972], Hoffman [1973], Langoni [1973] and Fishlow [1973].

[8]An analytical survey of the controversy can be found in Bacha and Taylor [1978]. Many contributions are found in the volume edited by Tolipan and Tinelli [1975].

the IBGE-PNAD surveys allowed for some qualifications to this pattern within the 1970s, though. The thrust of the evidence, however, was inescapable: when considered from its extremes, the 1970s witnessed another increase in income inequality levels.

As the 1991 Census results are not yet available, it is not possible to compare the 1980s as a whole to the two previous decades based on the same kind of information. The annual PNAD surveys, however, can provide data on inequality during the 1980s. A summary of the evidence over periods of approximately the same length combining Census and PNAD results since 1960 is shown below.

Table 1: Selected Indicators of Income Distribution of the Economically Active Population (with non-zero incomes)

| Deciles | 1960* %Y | 1970* %Y | 1980* %Y | 1979** %Y | 1990** %Y |
|---|---|---|---|---|---|
| Low 20% | 3.9 | 3.2 | 3.0 | 2.9 | 2.3 |
| Next 20% | 7.4 | 6.8 | 5.8 | 6.6 | 4.9 |
| Next 20% | 13.6 | 11.2 | 9.0 | 10.1 | 9.1 |
| Next 20% | 20.3 | 17.2 | 16.1 | 17.6 | 17.6 |
| Upper20% | 54.8 | 61.6 | 66.1 | 62.8 | 66.1 |
| Top 10% | 39.7 | 47.8 | 51.0 | 46.8 | 49.7 |
| Top 5% | 27.7 | 34.9 | 34.9 | 33.8 | 35.8 |
| Top 1% | 12.1 | 14.6 | 18.2 | 13.8 | 14.6 |
| Gini | 0.499 | 0.568 | 0.590 | 0.580 | 0.615 |
| Theil-T | 0.470 | 0.644 | | | |
| R1/40 *** | 1.048 | 1.460 | 2.068 | 1.453 | 2.012 |

* Demographic Census (1960 and 1970 from Langoni [1973] tables 3.5 and 3.6). ** IBGE Household Surveys (PNAD). Note that these are not directly comparable with Census results. *** R1/40 is the ratio of the income share of the top 1% to that of the lowest 40% of the population.

Despite methodological differences in the definition of incomes among demographic censuses and between censuses and yearly

household surveys, the overall evidence on the evolution of the income distribution in Brazil in the time span under analysis points unequivocally to a worsening of inequality[9]. Combining evidence from Census and PNAD data leads to the conclusion that the worsening in the 1980s seems to have been as important as in the 1970s[10].

What is puzzling from this evidence is the fact that inequality increased almost independently from macroeconomic conditions and economic policies. As it is well known, both the 1960s and the 1970s can be characterized, as a whole, as years of growth and high employment. Compared to them, the dismal experience of the 1980s stands in sharp contrast. Changes in inequality, however, have been of approximately the same magnitude in the 1970s and in the 1980s - at least as far as end-point data are concerned.

The influence of the minimum wage in explaining the pattern of inequality over time has also been disputed in the

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[9]It should be stressed that the increase in inequality between 1970 and 1980 reflected in a Gini coefficient that goes from 0.57 to 0.59 almost disappears when members of the EAP with zero incomes are included. In fact, since the proportion of this group relative to the total decreased between 1970 and 1980, the Gini coefficient in this case increases only slightly from 0.607 to 0.612 (Denslow Jr. and Tyler [1983], Table 4, p.15). A comparable change between 1960 and 1970 is from 0.557 to 0.607 according to Langoni [1973].

[10]The household distribution of income also deteriorated in the 1980s: the Gini coefficient rose from 0.588 in 1979 to 0.603 in 1990. The trend within the 1980s is the same whether we use the individual or the household distribution. See Hoffmann [1992], Table 2.

literature[11]. The importance of the minimum wage in the debate is that it can be seen either as a determinant of the wage structure (the so-called "efeito farol") or as a crucial instrument in protecting lower income earners. In this respect, one would expect that the acceleration of inflation in the 1980s, particularly in its last half, would result in lower levels of income for those near the minimum and for unprotected earnings than for higher income social groups. The evidence to be presented below is not incompatible with such a view.

Finally, it is worth pointing out that the observed long term deterioration in the income distribution took place in an environment of educational expansion. The question that naturally comes to mind is how to reconcile this long term evidence regarding inequality change with the substantive schooling upgrade of the labor force. The explanation offered, for instance, by Langoni [1973] for the 1960s - that economic and technological development shifted the demand for skilled labor upwards - does not seem to apply to the 1980s when the country barely grew at all.

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[11]For the debate on the importance of minimum legal wages in influencing the structure of wages see Macedo [1980] and [1981], Souza and Baltar [1979] and [1980], Wells and Drobny [1982], Velloso [1988] and Reis [1989].

## 3. ALTERNATIVE EXPLANATIONS OF CHANGES IN THE SIZE DISTRIBUTION OF INCOME

There are, on theoretical grounds, two main groups of explanations that have been used to analyze the size distribution of income[12]. On the one hand one finds the set of ideas that relates individual incomes to characteristics which reflect individual "abilities" of agents following rational choices. The theory of human capital with its emphasis on the role of educational variables in explaining inequality is the most widely accepted one in this group. Based on individual preferences and returns associated with different educational levels attained, agents allocate their time to education so as to maximize the present value of their well being over the life cycle. Therefore, in a society characterized by equal opportunities of access to education and perfect information, income inequality essentially reflects individual choices and preferences of economic agents as well as the stage in their life cycle[13]. Recognizing the existence of imperfections that may prevent individuals from following their market oriented rational choices, economic policy could and should promote equal access to education as a way of ameliorating the gap

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[12]See Ramos and Reis [1991] for a comprehensive survey. We neglect here the stochastic theories of income distribution.

[13]Important qualifications emphasized by the theory but neglected in empirical applications are variables related to family background and innate abilities of individuals. Most empirical studies also neglect the role of family wealth and do not consider the direction of causality between income and education.

between the desired and actual distribution of education and, indirectly, of income. Moreover, expanding education may contribute to reduce inequality as eventual unbalances between supply and demand are eliminated and quasi-rents associated with previous scarcity of qualified labor disappear[14].

The applicability of these theories to the experience of developing and underdeveloped countries is handicapped by the fact that these countries lack many institutions and environments found in the developed world. Thus, for instance, the norm in a LDC is the persistence/existence of imperfect or incomplete markets, difficulties of access to information, high degree of monopoly or oligopolist behavior in many markets, precarious communication among economic agents, sectors and regions, differences in the mechanisms of price formation among sectors and restrictions on the freedom of choice. The non-restrict applicability of models based on optimizing behavior by rational profit-seeking agents operating in competitive product and labor markets results, therefore, in a piece of fiction in many countries.

On the other hand there is a class of models that aims at explaining the size distribution of income by exploring the ideas of:

(i) segmentation and other market imperfections (theories of the "internal labor markets", dualism in the labor market and

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[14]The objections to these arguments raised by the "credentialist" explanation are not enough to dismiss them. One needs to add more hypotheses to explore the major shortcoming of human capital theories: an exaggerated emphasis upon supply and demand in labor markets.

the models of job competition). In the former case, sector specific and regional variables have a say in explaining inequality - besides education itself - as the costs of labor turnover and the bargaining power of organized labor tend to influence the functional progression of workers. In the latter, wages are determined by the characteristics of jobs: the marginal product of labor is not only determined by the degree of human capital previously attained but also by other factors specific to the occupations themselves.

(ii) institutional factors, such as the approaches which emphasize the role of the minimum wage and economic policies in determining the wage structure.

Many of the ideas in this second group are difficult to formalize and integrate in an analytical framework that could be used to model changes in the income profile. The fact that the analyses here have an ad hoc character does not imply that they are less relevant, though.

In a sense, the so-called Brazilian debate on income distribution reproduced these competing sets of ideas in trying to explain the observed increase in inequality between 1960 and 1970. On the one hand we find variants of a human capital interpretation which attributed the change to two basic sets of factors[15]:

(i) classic changes in the distribution of income related to any process of economic development in a capitalist setting

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[15]See Langoni [1973], Senna [1976], Castello Branco [1979].

such as the one experienced in Brazil, a Kuznets-type explanation based on compositional changes in the labor force;

(ii) temporary labor market disequilibria associated with a differentiated expansion of qualified labor demands facing short term inelastic supplies.

The analysis pointed to the conclusion that the observed increase of inequality was not only temporary but also inevitable and self-correcting in a growing economy, as the appropriate expansion of the educational system and growth of supply of qualified (educated) labor would eventually eliminate the quasi-rents appropriated by the workers with more years of formal schooling, which constituted the basic source of the increase in inequality.

Thus, for instance, Langoni [1973], using the variance of logs as a measure of inequality, showed that 35% of the variation in inequality between 1960 and 1970 was due to changes in the educational composition of the labor force, 23% was due to changes in mean incomes of educational groups, and the remaining 42% to increased inequality within each educational group.

Seeing from the vantage point of the early 1990s, the hypothesis of labor market disequilibria due to differentiated labor demands according to education does not seem sufficient to explain why inequality did not decrease - i.e., why the education effect was not transitory as predicted by the human capital theory. Of particular interest is the issue of how to reconcile this long term evidence on inequality with the huge increase of school enrollment at the university level observed since the late

1960s: given the reduction of growth rates experienced by the Brazilian economy, it is difficult to explain the increase in the rates of return to education in more recent years (Barros and Reis [1991], Ramos e Trindade [1991], Leal and Werlang [1991], Barros and Ramos [1992] )[16].

Competing views disputed the conclusions reached by the proponents of the human capital model and emphasized the effects of economic policies. Of particular importance were: the role played by wage policies under inflationary conditions and the non-neutrality of other economic policies adopted in the mid-1960s, importance of managerial wages and profits of firms, factors related to the cyclical evolution of manufacturing output and variables associated with the functioning of imperfect markets. As an alternative explanation, the critics identified as central variables the distribution between wages and profits (or non-wages) and the segmentation of labor markets[17].

Since an individual's income is the outcome of a complex process largely determined by his/her initial endowment of wealth, preferences and investment decisions taken over his/her life cycle as well as societal characteristics, a theory that fails to take into account any of these can provide at most a partial explanation of inequality levels and changes. Thus, by neglecting

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[16]See, however, the works by Lam and Levinson ([1990.a] and [1990.b]), who identified in cross section analyses a decrease in the returns to education for the younger cohorts.

[17]See, among others, Hoffman and Duarte [1972], Fishlow [1972,1973], Malan and Wells [1973] and Bacha and Taylor [1978].

the importance of intergenerational transmissions of wealth the many existing theories leave unexplained one of the major sources of changes in income inequality.

Despite the wide variety of alternative explanations and qualifications, however, the role of specific characteristics of the labor force kept being recognized as of extreme importance. Given the strong empirical evidence which emphasizes the role of education, the theory of human capital continued to be adopted at least as an organizing device upon which subsequent researchers would build their models. Before turning to a more detailed exploration of these issues, however, we present some evidence on the relationship between inequality and economic growth in Brazil since the mid-1970s.

## 4. INEQUALITY AND ECONOMIC PERFORMANCE: THE RECORD SINCE THE MID-1970s.

Annual movements in the profile of income distribution in Brazil have been documented with the use of PNAD (IBGE household surveys) data. The next table shows a set of inequality measures derived from such a source since 1976 for a sample of 18-65 year old males with non-zero incomes living in urban areas. The table also shows selected coefficients of inequality for the Economically Active Population (EAP) as a whole.

Table 2: The Evolution of Inequality (various indices) 1976-1990

| Year | Gini (sample) | Gini (EAP) | Theil T (sample) | Theil L (sample) | R1/40 (sample) | R1/40 (EAP) |
|---|---|---|---|---|---|---|
| 1976 | 0.564 | 0.607 | 0.709 | 0.556 | 1.394 | |
| 1977 | 0.543 | (0.594) | 0.607 | 0.511 | 1.054 | |
| 1978 | 0.531 | (0.581) | 0.571 | 0.488 | 0.966 | |
| 1979 | 0.530 | 0.580 | 0.560 | 0.486 | 0.957 | 1.453 |
| 1981 | 0.514 | 0.568 | 0.513 | 0.457 | 0.817 | 1.309 |
| 1982 | 0.520 | (0.577) | 0.527 | 0.465 | 0.832 | |
| 1983 | 0.534 | 0.592 | 0.565 | 0.496 | 1.000 | 1.549 |
| 1984 | 0.536 | 0.587 | 0.558 | 0.498 | 0.967 | 1.454 |
| 1985 | 0.545 | 0.599 | 0.584 | 0.521 | 1.047 | 1.628 |
| 1986 | | 0.588 | | | | 1.606 |
| 1987 | | 0.595 | | | | 1.662 |
| 1988 | | 0.612 | | | | 1.768 |
| 1989 | | 0.635 | | | | 2.318 |
| 1990 | | 0.615 | | | | 2.012 |

Sources: Gini, Theil T and Theil L from Ramos [1990]; Gini (EAP) from Bonelli and Sedlacek [1989],[1991] up to 1989 and authors' estimate for 1990; R 1/40 is the ratio of income accrued by the top 1% divided by the share of the lowest 40%.

From the above data we conclude that: first, there is a clear downward trend from the beginning of the series to 1981; second, the movement is upward from 1981 to 1985, with the exception of 1984; third, the trend after that date is less clear, but certainly increasing after 1987; fourth, inequality unambiguously increased since the beginning of the 1980s as the accumulated Lorenz curve in 1990 is dominated by the 1981 curve[18].

Note that the R 1/40 index, a very sensitive indicator of income inequality that considers only the extremes of the distribution, conforms to the pattern of both the Gini and Theil

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[18]See IBGE [1992].

indices, but makes movements much more visible. Its interpretation is very simple: a R 1/40 equal to one means that the average income of the individuals in the top 1% of the income profile is 40 times the average income of those located in the bottom 40%[19]. The fact that the R 1/40 index varies so much is additional evidence of the significant changes that characterize the Brazilian income profile.

These movements seem to be related to the effects of the business cycles. A central question here is whether or not short run output expansion contributes to reduce inequality. The literature on "labor hoarding" suggests that more skilled workers are more difficult to replace as a result of increasingly specific needs of firms, which leads to higher training costs. These expenditures act like quasi-fixed costs driving a wedge between wages and marginal product values - the higher the skills, the higher the quasi-fixed costs. This approach indicates that the lowest paid unqualified workers experience the largest wage cuts and unemployment in the downturn of economic activity, contributing to deteriorate the distribution of earnings. As economic activity recovers inequality should go down[20].

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[19]A value of 1.5, for instance, indicates a multiple of 60. In other words, it means that the individuals in the bottom 40% of the distribution would have to wait five years before accumulating an average income equal to the monthly average income of individuals in the top 1%.

[20]See Ramos [1990] for a discussion and references. An important qualification is that this hypothesis only applies to slowdowns that are not regarded as permanent: the rationale for not firing workers during down swings rests on the expectation that economic activity will soon pick up again.

To what extent do the pronounced changes in economic performance observed in Brazil since the mid-1970s conform to such a pattern ? Or, in other words, is there a conflict between growth and distributive targets in the time interval here considered ? Can the macroeconomic policies adopted in Brazil during most of the 1980s be blamed for the observed deterioration of the income profile ?

Obviously, we do not intend to provide definite and complete answers to these questions in the present context. However, the evidence at hand is suggestive of positive answers to the first and third questions above - and a negative one for the second.

In order to explore these issues the following table and the accompanying figure show an indicator of economic performance (the index of per capita GDP) and the sign of yearly variations in the Gini coefficient[21] and per capita GDP. We also show the inflation rate for the month in which the PNAD survey was conducted. It is apparent from the inspection of both the table and the figure that changes are inversely related for most of the period, but particularly so up to 1986.

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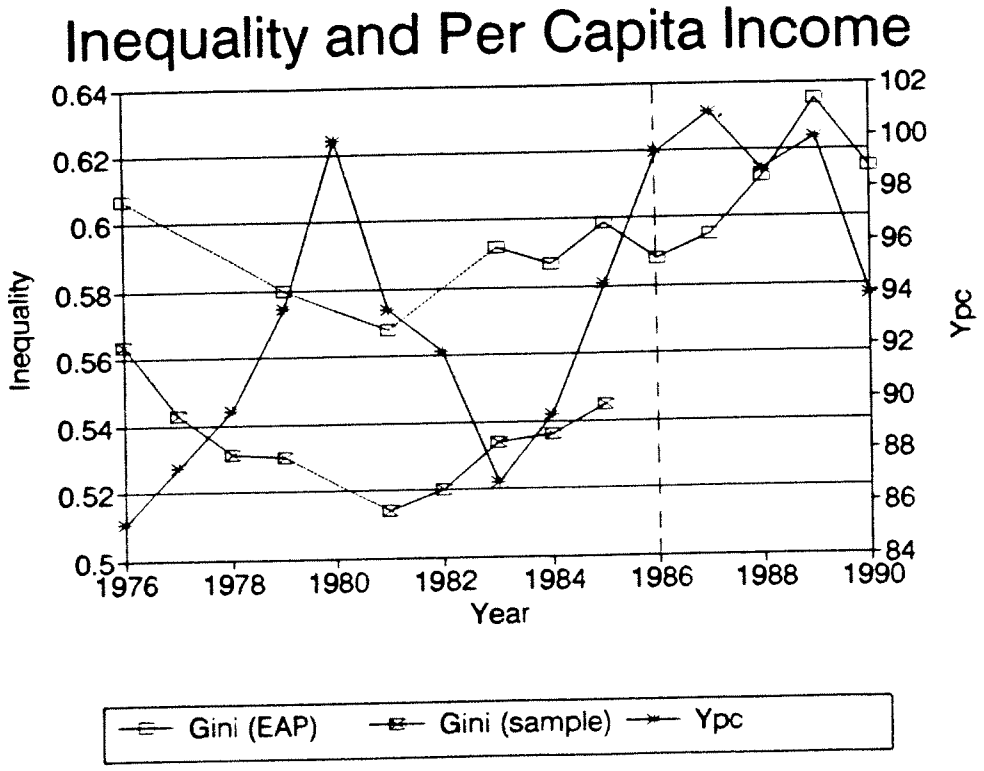
[21]The change in the G series used in the Table comes from the second column in Table 2.

Table 3: GDP per capita, Inflation and Direction of Changes in the Inequality Indices and per capita GDP 1976-1990

| Year | GDP per capita [Y] | Inflation | dG | dY |
|---|---|---|---|---|
| 1976 | 85.4 | 2.9 | n.a. | + |
| 1977 | 87.5 | 2.8 | - | + |
| 1978 | 89.7 | 2.8 | - | + |
| 1979 | 93.6 | 5.1 | - | + |
| 1981 | 93.5 | 4.6 | n.a. | - |
| 1982 | 91.9 | 4.6 | + | - |
| 1983 | 86.8 | 11.3 | + | - |
| 1984 | 89.4 | 11.1 | - | + |
| 1985 | 94.4 | 10.1 | + | + |
| 1986 | 99.4 | 1.2 | - | + |
| 1987 | 100.9 | 7.2 | + | + |
| 1988 | 98.7 | 20.9 | + | - |
| 1989 | 99.9 | 36.3 | + | + |
| 1990 | 93.9 | 14.3 | - | - |

Sources: [Y] from IBGE - National Accounts (index number 1980 = 100); Inflation: change in consumer price index during the PNAD reference months (see Hoffmann [1992]).

FIGURE 1



Results after 1985-86 do not seem to conform to such a pattern. This coincides with the phase of increasing inflation towards hyperinflationary levels and the accompanying series of stabilization programs and "shocks" which characterized the second half of the 1980s. Thus, in 1987, for instance, one of the results of the so-called Bresser Stabilization Plan was the imposition of generalized losses upon wage earners, thereby contributing to an increase in inequality.

The results for 1989 - increased inequality coupled with growth, albeit small - are surprising in the sense that one of the features of data on income from this PNAD is a (still unexplained) substantial increase in the average incomes for all income groups[22] - an unexpected result if one takes into account that monthly inflation rates were reaching all-time record highs at the time, under conditions of nearly perfect indexation of wages and, particularly, other incomes.

The fact that inequality increased so much after 1988 indicates that individuals at the top of the income profile have been more capable of defending their earnings (through daily indexation, for example) than those at the bottom.

The relationship between inflation and inequality constitutes a very polemic issue that goes beyond the scope of the present work[23]. Our purpose here is only to investigate for the

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[22]See, for instance, Bonelli and Sedlacek [1991], Post-scriptum.

[23]R. Hoffmann, for instance, suggested to the authors that one of the effects of very high inflation is a statistical noise arising from the fact that low income respondents tend to under-report their earnings.

existence of association between the relevant variables. What is apparent from the data is a change in the pattern of association between inequality and growth after 1986 - not coincidentally, when inflation rates began to soar.

A non-parametric test was used next to test for the existence of association between the direction of changes in inequality and income per capita[24]. A sign test was applied to the series on dG and dY in Table 3 for the direction of changes in the period 1977-1990. The results show a p-value of 0.19, leading to the rejection of the hypothesis of a negative association between the direction of changes in the two series. The same test applied to the period 1977-1986, however, results in a p-value of 0.07 (total of 8 observations, 7 "right" ones), lending some statistical support to the hypothesis of a negative association.

The next step was to test for the existence of association between inequality and inflation. A coefficient of correlation was estimated for this purpose for the two periods of interest: 1976-1986 and 1976-1990, with the following results:

1976-1986 : Rho = - 0.29 (not significant at 20%)

1976-1990 : Rho = + 0.71 (significant at 1%).

Therefore, we conclude that the inflationary surge after 1986 changed in a substantial way the previous pattern. Before 1986 growth and inequality are inversely related; after that date this relationship is weakened by inflation[25].

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[24]The analysis replicates the work of Ramos [1990] on this point.

[25]Considering the period 1981-1990 the association is also very strong (Rho=0.77). It should be stressed that in the second half of the 1980s the relationship between inequality and growth is even reversed due to inflation.

Whatever the reasons for these results the evidence is suggestive of the fact that economic growth and economic policy may occasionally have worked in the short run towards reducing inequality. Perhaps more important, it implies that growth can be a weapon both against inequality and poverty: not only it results in overall gains via higher incomes but it may be associated with increases in the share of income held by the poorest strata of the population. A much more difficult job is to identify the most important underlying economic forces and variables - a task to which we now turn.

## 5. THE EXPLANATION OF INEQUALITY CHANGE: EVOLUTION FROM THE LATE 1970s AND A DECOMPOSITION EXERCISE FOR SELECTED SUB-PERIODS.

To what extent can changes in the labor force associated with macroeconomic performance be responsible for the observed changes in inequality? An useful tool for exploring inequality change and the effects of socio-economic transformations on the distribution of income is a decomposition model. This section considers the role of four variables (education, age, sector of activity and position in occupation)[26] in the explanation of inequality at a point in time (sub-section 5.1, static

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[26]See the Appendix 2 for the definition and description of level of aggregation for each of them.

decomposition) and in the explanation of inequality changes over time (5.2, dynamic decomposition)[27].

## 4.1. The Static Decomposition

The Theil measures are particularly suitable for the proposed exercise as they allow for the decomposition of total inequality in two parts: the inequality between the socioeconomic groups of interest and the inequality within them[28]. Results for the static decomposition using the Theil T[29] for 1977, 1981, 1985 and 1989 are shown in Table 4, where both univariate (i.e., based on partitions of the population according to the groups of a single variable) and some multi variate (i.e., based on partitions according to the combination of two or more variables) decompositions have been performed.

Education stands out, by far, as the single variable which explains most of the inequality in each year. It explains between 29% and 36% of total inequality, depending on the year considered.

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[27]See the Appendix. Basic data from the PNADs of 1977, 1981, 1985 and 1989 and refer to a sample of 18 to 65 year old males, working 20 or more hours/week in urban areas. Only individuals with positive labor income have been included.

[28]The weights for the within inequalities are the group shares in total income and in the population for the Theil T and the Theil L respectively.

[29]T = Sum [1,n](a[i]b[i]log a[i]) = Sum [1,G](a[g]b[g]log a[g]) + Sum [1,G](a[g]b[g]T[g]) where T[g] is the Theil T calculated for group g, a[g] is the ratio between the average income of the g-th group and the mean income and b[g] is the share of the population in group g. See Ramos [1990].

position in occupation (the division of the labor force in employers, employees and self-employers) comes next (9 to 13%), followed closely by age. The variable "sector of activity" presents the lowest contributions, around 5%. The picture does not change when the marginal contribution of each variable to the overall inequality is considered, except by the fact that now age and position in occupation are at nearly the same level.

Note that, when taken together, the four variables considered in the analysis explain over 50 % of the overall labor earnings inequality, as measured by the Theil-T index.

Table 4: Explanatory Power in the Static Decomposition (% of T)

| Variable | S77 | M77 | S81 | M81 | S85 | M85 | S89 | M89 |
|---|---|---|---|---|---|---|---|---|
| EDUC | 31.6 | 27.0 | 36.2 | 19.5 | 34.2 | 27.2 | 29.4 | 23.7 |
| AGE | 8.2 | 8.6 | 8.8 | 8.8 | 9.3 | 9.0 | 8.3 | 7.5 |
| POS | 11.2 | 8.6 | 8.7 | 6.2 | 10.5 | 7.2 | 13.2 | 9.5 |
| SET | 5.0 | 4.3 | 7.4 | 5.1 | 6.3 | 3.9 | 4.9 | 4.5 |
| EDUC+AGE | 42.4 | | 47.0 | | 45.3 | | 38.2 | |
| EDUC+POS | 42.2 | | 42.6 | | 42.7 | | 40.3 | |
| AGE+POS | 17.0 | | 16.3 | | 18.2 | | 19.4 | |
| EDUC+AGE+POS | 49.8 | | 51.5 | | 51.3 | | 46.6 | |
| EDUC+AGE+SET | 45.4 | | 50.4 | | 48.0 | | 41.6 | |
| EDUC+POS+SET | 45.5 | | 46.6 | | 46.2 | | 43.6 | |
| AGE+POS+SET | 27.1 | | 26.9 | | 28.0 | | 27.4 | |
| EDUC+AGE+POS+SET | 54.1 | | 56.4 | | 55.2 | | 51.1 | |

EDUC: education; POS: position in occupation; SET: sector of activity.
St: gross explanatory power for year t.
Mt: marginal explanatory power for year t.

Table 5 compares these results with the results from other studies. It also shows estimates for the contributions of gender and geographical regions. Even though the periods are different,

all estimates are very similar with respect to the following variables: education, age and sector of activity. Regional differences seem to be as important as age and position in occupation. Gender, in turn, has little explanatory power.

Whatever the methodology used, or the period analyzed, a common feature of all studies is the importance of educational attainment in explaining the observed pattern of income distribution. Inequality would be substantially reduced (up to one third to one half) if the educational differentials were narrowed, or eliminated. This provides an evidence of the potential role of policies focused on the improvement of educational profile towards reducing income inequality in Brazil.

Table 5: Explanatory Power of Variables in Other Studies

| Variables/Studies | Period | Explanatory Power[%] |
|---|---|---|
| Education | | |
| Langoni (1973) | 1960/70 | 35-43 |
| Reis e Barros (1989) | 1976/86 | 35-50 |
| Ramos (1990) | 1977/85 | 32-36 |
| Age | | |
| Langoni (1973) | 1960/70 | 7-10 |
| Wajnman (1989) | 1970/80 | 8-10 |
| Ramos (1990) | 1977/85 | 5-7 |
| Sector of Activity | | |
| Langoni (1973) | 1960/70 | 13-15 |
| Ramos (1990) | 1977/85 | 8-9 |
| Gender | | |
| Langoni (1973) | 1960/70 | 2-3 |
| Region | | |
| Langoni (1973) | 1960/70 | 13-14 |
| Position in Occupation | | |
| Ramos (1990) | 1977/85 | 8-11 |

Results for Langoni's study (Theil T) are from his figures in Tables 4.1 and 4.2. Cf. Langoni [1973].

## 4.2. The Dynamic Decomposition

The idea behind the dynamic decomposition is to identify changes in the composition and income profiles related to socioeconomic variables that can be associated with observed changes the level of inequality. It is possible, for a group of indices that includes the Theil T, to break down the change in inequality between two points of time according to whether it can be attributed to modifications in the socioeconomic groups relative incomes, relative group sizes or in the internal dispersions.

Referring to the general index I in expression (1) in the Appendix 1, the composition or allocation effect corresponds to the variation induced in the inequality index I by modifications in the allocation of the population among groups (i.e., changes in the b's), with no direct changes in the group relative incomes (a's) . The income effect corresponds to the change in I induced by changes in group incomes (a's) without changing the group population shares (b's); the internal effect is the change in the inequality index caused only by changes in the group-level dispersions (the I's)[30].

The exercise of decomposition was carried out for three time periods selected with the objective of taking into account

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[30]The precise derivation of this decomposition for the Theil-T index can be found in Ramos [1990].

both the overall economic performance and the behavior o: inequality, as well as the whole 1977-1989 period: the first one (1977-1981), is characterized by a substantial reduction o: inequality and high annual growth rates of income during most o: the period[31]; the second period (1981-1985) is marked b: increasing income inequality and a recessive economic environmen during most of the time (income per capita grew a meager 1% usin end-point data, concentrated in 1984-85); the third period, fro 1985 to 1989, witnessed a further deterioration of th distribution under a somewhat chaotic economic scenario, marked b the alternation of threats of hyperinflation and price freeze that affected the normal working conditions of the economy (incom per capita, however, grew 5.8%).

Two observations clearly stand out when the complete mode (with the four variables) is considered. First, nearly hal (ranging from 42% to 52%) of the observed variation in th distribution of labor earnings can be traced back to changes i the composition of the urban male labor force according t education, age, sector of activity and position in occupation together with changes in the groups income differentials (se Appendix 2). Second, the allocation effect is irrelevant for th first two time periods, and of little importance both from 1985 t

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[31]Income per capita grew 6.9% between 1977 and 1981. Since 1981 was a year of domestic recession, a better choice of period woul be 1976-80. Comparable data, however, is not available for this period.

1989 and for the whole 1977-1989 period. In all cases it is completely dominated by the income effect.

Table 6: Results of the Dynamic Decomposition (% of variation in T)

| Period and Variable | Alloc Effect | Income Effect | Gross Contrib. | M4 |
|---|---|---|---|---|
| 1977-81 | | | | |
| EDUC | -7.0 | 13.2 | 6.2 | 18.6 |
| AGE | 1.2 | 6.0 | 7.2 | 7.4 |
| POS | -4.4 | 28.6 | 24.2 | 17.8 |
| SET | 8.2 | -7.1 | 1.1 | 1.7 |
| All Variables | -0.3 | 48.5 | 48.2 | - |
| 1981-85 | | | | |
| EDUC | 3.9 | 16.6 | 20.5 | 13.4 |
| AGE | -2.9 | 20.0 | 17.1 | 0.3 |
| POS | -0.3 | 21.8 | 21.5 | 16.2 |
| SET | 3.4 | 2.0 | 5.4 | -1.7 |
| All Variables | -1.5 | 53.8 | 52.3 | - |
| 1985-89 | | | | |
| EDUC | -0.7 | 10.0 | 9.3 | 12.9 |
| AGE | 1.2 | 8.3 | 9.5 | 1.3 |
| POS | 9.6 | 13.4 | 23.0 | 18.8 |
| SET | -1.4 | 4.2 | 2.8 | 6.3 |
| All Variables | 8.0 | 34.2 | 42.2 | - |
| 1977-89 | | | | |
| EDUC | 3.6 | 11.4 | 15.0 | 10.8 |
| AGE | -2.2 | 16.4 | 14.2 | -1.2 |
| POS | 5.8 | 19.7 | 25.5 | 20.2 |
| SET | -6.8 | 9.5 | 2.7 | 6.8 |
| All Variables | 5.9 | 38.1 | 44.0 | - |

Notes: M4 - Marginal contribution of each variable in four-variab model; the Theil-T index decreased in the first period and increased the other ones.

When the whole period is taken into account the four variables explain 44% of the total change in the distribution of earnings - the remaining 56% being due to changes within the groups formed by the variables considered. Of these 44% nearly 38% can be traced back to changes in the average incomes of the groups. Only 6% can be attributed to the allocation effect.

The importance of this second point is related to a possible Kuznetsian characterization of changes in the distribution of earnings in Brazil - a relevant aspect in the debate on the distribution of income that took place in the mid-1970s. According to the Kuznets-type models the allocation effect should be of considerable magnitude and at least more important than the income effect. This is clearly not the case since the late 1970s.

The evidence against an explanation à la Kuznets is reinforced by the analysis at sectoral level (see Appendix 2). The sector composition of the labor force is very stable over the time span of 12 years. Thus, it comes as no surprise that the allocation effect associated with sector-specific activity shown in Table 6 is very small. Moreover, its overall explanatory power is barely positive either in gross or in marginal terms.

In his seminal work for the 1960s Langoni [1973] put considerable emphasis on the role of education in the explanation of inequality changes from 1960 to 1970. He observed that, despite an increase in the average level of schooling, the distribution of education became less egalitarian due to the marked expansion of universities relative to primary and intermediate schools. As this was not followed by narrowing income differentials, there was a natural deterioration of the distribution of earnings. According to his interpretation the increased concentration should be viewed as a "self-correcting problem": further increases in per capita income would eventually move the country away from the ascending part of the Kuznets curve and additional educational upgrade would eventually result in an improvement of the distribution.

The results presented in the Appendix 2 and Table 6 are somewhat surprising in the sense that they reveal that schooling looses a good deal of its explanatory power both when compared to the static decomposition and Langoni's results for the 1960s. When education was considered alone, changes related to allocation and differentials were responsible for 6.2% of the variation in total inequality between 1977 and 1981, 20.5% between 1981 and 1985, and 9.3% from 1985 to 1989. During 1977-1989 it accounted for 15%. Alternatively, in the four-variable model education had a marginal explanatory power ranging from 12.9% in the last period to 18.6 % in the first one - the average for 1977-1989 being 10.8%.

Looking at the results for 1977-81 the conclusion seems to be in line with Langoni's predictions. The conjunction of educational upgrade (Table A2.1 indicates a decrease in the proportion of illiterates coupled with an increase in the share of workers with college education) and economic growth resulted in declining inequality.

Things start to get less clear in the 1980s - i.e., after 1981. The first half of the decade witnessed further improvements in the level of educational attainment of the labor force - but now in a context of virtual economic stagnation (accumulated GDP growth reached 1% between 1981 and 1985). In 1981-85 there was a widening of the income differentials related to education that heavily contributed to a deterioration in the degree of earnings inequality[32].

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[32]There is some evidence (Ramos [1990]) that the labor hoarding hypotheses may provide a plausible explanation for this behavior.

Finally, in the second half of the 1980s one finds a further widening of the income differentials in the presence of educational expansion, rising inequality, inflationary pressures and spasmodic income growth. It seems safe to conclude that, under these circumstances, the contribution of education to the distribution of income was mainly through offering a better access to mechanisms of protection against inflation.

The decomposition results for the whole period point to the fact that the most important variable in explaining changes in inequality is position in occupation, followed by education and age. The gross contributions are, respectively, 25.5%, 15.0% and 14.2%. The marginal contribution of position in occupation reaches 20%, while education responds for 11% and sector for 7%.

To sum up: the level, distribution, and returns to education have changed continuously since the mid-1970s. These changes seem to be related to the evolution of earnings inequality in the period. There is no indication, however, of a consistent and systematic way by which education has affected the dynamics of income distribution.

Finally, despite not being important for the explanation of the degree of static inequality, the variable "position in occupation" is correlated with changes in inequality over time. Movements related to position in occupation both in terms of its distribution and relative incomes outweighted changes related to

education. This provides an indication that the changes in the employment structure since the late 1970s played a decisive role in influencing inequality and deserve further attention.

## 6. FINAL COMMENTS: ECONOMIC POLICY, ECONOMIC PERFORMANCE AND THE EXPLANATION OF INCOME INEQUALITY.

The paper aimed at analyzing changes in the size distribution of income since the mid-1970s. Whenever possible, we tried to identify relevant variables that might explain how macroeconomic policies and performance contributed to the observed record. A summary of the main conclusions identifies the following ones:

1. The first, and perhaps more important finding, is the evidence of an almost continuous deterioration of the income distribution in the three decades for which data is available. Changes over the 1980s seem to have been on the same order of magnitude than changes in the 1970s. Nothing compares to changes observed in the 1960s, though. It is worth noting that this long term trend does not seem to be affected by changes in economic performance in the three decades analyzed.

2. Short term trends, on the other hand, seem to be associated with economic performance - at least, as far as the evidence from yearly household surveys indicates. There is evidence, based on such data, pointing to a negative relationship

between changes in inequality and economic growth as measured by variations in per capita GDP. Therefore, there seems to be no conflict in the short run between the objectives of growth and equity. The persistence of high inflation in the second half of the 1980s blurs the relationship. In particular, we found evidence of a positive association between inequality and inflation.

3. The importance of the educational variable is highlighted in all decompositions performed - but particularly so in the so-called static decomposition. When interpreting changes in inequality over time the role of education looses a lot of its explanatory power. In particular, the evidence from 1977 to 1989 points to the fact that the variable position in occupation ( a proxy for capital deepening or labor market economic structure) is more important than education in accounting for changes in inequality. The contribution of this variable is on the same order of magnitude than the gross contribution of age.

4. The income effect is by far more relevant than the allocation effect for all variables considered in the dynamic decomposition: this means that changes in the income profiles are the driving mechanism behind inequality changes in all sub-periods examined, as well as in the whole 1977-1989 period. Reallocation of the labor force among the socio-economic groups - a factor of considerable importance in explaining income inequality changes in the 1960s according to Langoni [1973] - looses nearly all its explanatory power when the experience of the more recent years is

analyzed. Therefore, a Kuznetsian characterization of the dynamics of income distribution in Brazil is not confirmed by the data since the mid-1970s.

5. The evidence against an explanation à la Kuznets is reinforced by the analysis at sectoral level, which shows that the sector composition of the labor force is very stable over the time span of 12 years since 1977. This explains why the allocation effect associated with sector-specific activity is small. In addition, its overall explanatory power is barely positive either in gross or in marginal terms. Notice that the income profile did not change as well.

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APPENDIX 1: A Note on the Methodology of decomposition

Assuming a partition of the population in G groups, a measure of inequality I is said to be decomposable when it can be written as:

$I = a[g],b[g],I[g]) = IB(a[g],b[g]) + Sum\ w(a[g],b[g])*I[g]$ (1)

where a[g] is the ratio between average income of the g-th group and the overall average income, b[g] is the proportion of the population in group g, and I[g] is its internal dispersion as measured by I. In the right side term, IB is the between groups inequality (i.e., the one that would prevail after a redistribution in the interior of each group, in such a way that all of its individuals would end up with the same income, with no change in the group average income), and the sum corresponds to IW, the within groups inequality (i.e., the remaining level of inequality after a redistribution that would equalize the average incomes of all G groups without changing their internal dispersion).

Thus, if the population is classified according to, for instance, educational groups, the contribution of this stratification to the "explanation" of inequality can be measured by I , as this would be the reduction in inequality in the case the income differentials associated with education were eliminated (I , accordingly, reflects the inequality that is not related to education in this case).

APPENDIX 2: Data Base, Sample Selection and Aggregation.

Brazilian data on personal and family incomes are of unusually good quality. Household surveys conducted by IBGE, the Pesquisas Nacionais de Amostra de Domicílios (PNADs), have been applied yearly since the late sixties, with the exception of the Census years. The PNADs were initially implemented upon request of the United States Agency for International Development (USAID), in order to create a system of population statistics comparable to the ones existing in other countries as well as to provide information similar to that made available by the censuses in a more frequent basis.

The survey has passed through several changes since its inception, both in terms of geographical and informational range, but has essentially kept its present form since 1976. Some work aiming at "conformation" has to be done at times since then, but it can safely be stated that the data allows for consistent and comparable analyses of the Brazilian income distribution.

The surveys are rich in information on individual and family profiles and are aimed at making it feasible to trace back the social-economic development of the country. They have information on labor and total income, education, age distribution, gender, sectoral and regional allocation, activities, position in occupation, hours of work, unemployment, and many other variables of economic interest.

Sample Selection: In order to minimize problems involving self selection, temporal heterogeneity of the survey coverage and

peculiarities in the process of earnings formation, the universe of analysis of the present study was limited to individuals: (i) participating of the labor force; (ii) not unemployed;(iii) males; (iv) between 18 and 65 years old; (v) working more than 20 hours per week; (vi) living in urban areas; (vii) having the attributes of interest clearly identified.

Aggregation: The evolution of the sample size is presented in Table A.1. The individuals in the sample were aggregated according to their educational level in the following categories: (1) illiterates - less than one year of schooling; (2) elementary school - 1 to 4 years of schooling; (3) intermediate school - 5 to 8 years of schooling; (4) high school - 9 to 11 years of schooling; (5) college education - 12 or more years of schooling. Concerning age the labor force was grouped according to five categories: (1) 18 to 24 years old; (2) 25 to 34 years old; (3) 35 to 44 years old; (4) 45 to 54 years old; (5) 55 to 65 years old. The classification according to sector of activity led to nine categories: (1) heavy industry, (2) light industry, (3) civil construction, (4) trade, (5) credit, (6) transports, (7) services, (8) public administration and (9) agriculture. Concerning position in occupation, an individual can be classified as an (1) employee, (2) self employer or (3) employer.

Table A.1: Sample Size by Year

| Year | Sample Size |
|---|---|
| 1976 | 56145 |
| 1977 | 70671 |
| 1978 | 77687 |
| 1979 | 64020 |
| 1981 | 74622 |
| 1982 | 80227 |
| 1983 | 79806 |
| 1984 | 80773 |
| 1985 | 84570 |
| 1986 | 43309 |
| 1987 | 45253 |
| 1988 | 44792 |
| 1989 | 46365 |
| 1990 | 47023 |

## APPENDIX 2 : GENERAL STATISTICS

### Table A2.1: Basic Statistics By Variable

| Var | Cat | 77 a | 77 b | 77 T | 81 a | 81 b | 81 T | 85 a | 85 b | 85 T | 89 a | 89 b | 89 T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| EDUC | 1 | 0.41 | 0.13 | 0.35 | 0.43 | 0.12 | 0.30 | 0.39 | 0.11 | 0.30 | 0.36 | 0.10 | 0.5 |
| | 2 | 0.71 | 0.46 | 0.43 | 0.69 | 0.42 | 0.31 | 0.66 | 0.37 | 0.40 | 0.63 | 0.34 | 0.5 |
| | 3 | 0.91 | 0.23 | 0.44 | 0.86 | 0.23 | 0.36 | 0.80 | 0.26 | 0.43 | 0.74 | 0.27 | 0.5 |
| | 4 | 1.48 | 0.11 | 0.48 | 1.33 | 0.14 | 0.39 | 1.27 | 0.16 | 0.42 | 1.23 | 0.18 | 0.5 |
| | 5 | 3.36 | 0.08 | 0.35 | 3.15 | 0.09 | 0.29 | 3.08 | 0.10 | 0.33 | 3.08 | 0.11 | 0.4 |
| AGE | 1 | 0.51 | 0.25 | 0.31 | 0.52 | 0.24 | 0.28 | 0.48 | 0.23 | 0.32 | 0.46 | 0.23 | 0.4 |
| | 2 | 1.06 | 0.31 | 0.52 | 1.05 | 0.32 | 0.40 | 1.01 | 0.33 | 0.45 | 0.97 | 0.32 | 0.5 |
| | 3 | 1.21 | 0.22 | 0.55 | 1.25 | 0.23 | 0.50 | 1.33 | 0.23 | 0.57 | 1.31 | 0.24 | 0.6 |
| | 4 | 1.30 | 0.15 | 0.69 | 1.25 | 0.15 | 0.58 | 1.25 | 0.14 | 0.64 | 1.36 | 0.15 | 0.8 |
| | 5 | 1.15 | 0.07 | 0.79 | 1.04 | 0.07 | 0.68 | 1.05 | 0.07 | 0.77 | 1.08 | 0.07 | 0.9 |
| POS | 1 | 0.86 | 0.75 | 0.53 | 0.94 | 0.74 | 0.49 | 0.90 | 0.74 | 0.54 | 0.83 | 0.74 | 0.6 |
| | 2 | 1.04 | 0.20 | 0.54 | 0.85 | 0.21 | 0.42 | 0.91 | 0.20 | 0.52 | 0.95 | 0.20 | 0.5 |
| | 3 | 2.96 | 0.05 | 0.56 | 2.45 | 0.05 | 0.41 | 2.78 | 0.05 | 0.45 | 2.95 | 0.07 | 0.6 |
| SET | 1 | 1.11 | 0.14 | 0.49 | 1.28 | 0.14 | 0.40 | 1.19 | 0.13 | 0.50 | 1.09 | 0.14 | 0.5 |
| | 2 | 0.81 | 0.09 | 0.56 | 0.83 | 0.09 | 0.46 | 0.79 | 0.09 | 0.51 | 0.76 | 0.09 | 0.7 |
| | 3 | 0.67 | 0.15 | 0.46 | 0.61 | 0.15 | 0.40 | 0.55 | 0.12 | 0.49 | 0.57 | 0.12 | 0.5 |
| | 4 | 1.05 | 0.14 | 0.56 | 0.91 | 0.14 | 0.45 | 0.97 | 0.17 | 0.60 | 1.08 | 0.16 | 0.8 |
| | 5 | 1.89 | 0.03 | 0.45 | 2.02 | 0.03 | 0.40 | 1.89 | 0.04 | 0.42 | 2.14 | 0.03 | 0.4 |
| | 6 | 0.96 | 0.80 | 0.47 | 0.98 | 0.08 | 0.38 | 1.02 | 0.08 | 0.39 | 0.99 | 0.07 | 0.5 |
| | 7 | 1.13 | 0.16 | 0.56 | 1.12 | 0.18 | 0.56 | 1.06 | 0.19 | 0.63 | 1.12 | 0.21 | 0.7 |
| | 8 | 1.28 | 0.11 | 0.59 | 1.18 | 0.11 | 0.48 | 1.25 | 0.12 | 0.55 | 1.06 | 0.11 | 0.6 |
| | 9 | 0.74 | 0.10 | 1.14 | 0.73 | 0.08 | 0.78 | 0.76 | 0.09 | 0.83 | 0.79 | 0.07 | 1.0 |

a: relative average income; b: population share; T: internal inequality.
*: categories are defined in Appendix 1.

Textos para Discussão

271. Amadeo, E.J. "Adjustment, stabilization and investment performance: Chile, Mexico and Bolivia"

272. Amadeo, E.J. "Causes for persistent unemployment and fluctuations in monetary economics"

273. Amadeo, E.J. & Camargo, J.M. "Liberalização comercial, distribuição e emprego"

274. Amadeo, E.J. & Landau, E. " Indexação e dispersão de preços relativos: análise do caso brasileiro (1975-1991)"

276. Amadeo, E.J.; Camargo, J.M.; Marques, A.E.S. & Gomes, C. " Fiscal crisis and assymetries in educational system in Brazil"

278. Bonelli, R.; Franco, G.H.B. & Fritsch, W. "Macroeconomic instability and trade liberalization in Brazil: Lessons from 1980s to the 1990s"

279. Abreu, M.P. "Trade policies in a heavily indebted economy: Brazil, 1979-1990"

280. Abreu, M.P. "O Brasil e o GATT: 1947-1991"

281. Bonomo, M. & Garcia, R. "Indexation, staggering and disinflation"

282. Werneck, R.L.F. "Fiscal federalism and stabilization policy in Brazil"

283. Carneiro, D.D. & Werneck, R.L.F. "Public savings and private investment: Requirements for growth resumption in the Brazilian economy"

284. Bonomo, M. & Garcia, R. "Consumption and equilibrium asset pricing: An empirical assessment"

285. Bacha, E.L. "Savings and investment for growth resumption in Latin America: The cases of Argentina, Brazil and Colombia"

286. Fritsch, W. & Franco, G.H.B. "Aspects of the Brazilian experience under the gold standard"

287. Fritsch, W. & Franco, G.H.B. " Import repression, productivity slowdown and manufactured export dynamism: Brazil, 1975-1990"