STRUCTURAL REFORMS, MACROECONOMIC FLUCTUATIONS AND INCOME DISTRIBUTION IN BRAZIL

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CONTENTS

ABSTRACT

This paper attempted to measure the evolution of income distribution and its determinants during the period of economic reforms. The paper was divided in two parts: in the first and main part of the paper, long-run relations between reforms and income distribution were explored. The second part of the paper explored relations between movements of distributive variables, on the one hand, and economic reforms and macroeconomic fluctuations, on the other.

First, we attempted to study the impact of the economic reforms on the riches. First, we assessed absolute income changes in the top 10% of the income distribution assessing how the composition of this group changed during the reform period. We also assessed how much of the changes in inequality observed between pre-reform and post-reform periods comes from changes at the 10% richest. While the absolute contribution of the 10% richest to total inequality is extremely high in Brazil, there is not much evidence to suggest that it has increased over the period of the reforms. In the 1990-93 period this contribution in the case of the economically active population has risen from 79.5 to 83.5 then fall to 81.7 in 1997. It is interesting to note that the peak of the series was found in 1976.

The second channel analyzed here is the skill-differential between the high school group and the rest of the labor force. One of the reasons why this breakdown is of interest is the evidence that growth is increasingly skill-intensive. The analysis of the profile of the 10% richest stresses the importance of general human capital explanatory power: 7.83% of the population has 12 or more years of education while the share of this group among the rich corresponds to 44% and 61% when one take into account the extension of the rich group income. This last statistic was 53% in 1990 which indicates a sharp effect of the reforms on the composition of the riches towards highly educated groups. In the period of reforms 1990-97, the rate of return to primary and secondary education levels falls while the rate of return on university degree rises steeply.

The third distributive channel emphasized here is the effect of stabilization on inequality measures, specially those operating through changes in the volatility of individual income. We used PME the micro-longitudinal aspect of PME in two alternative ways: first, the 4 consecutive observations of the same individuals were treated independently. The second way took earnings average across four months before inequality measures were calculated.

The main result obtained is that the post-stabilization fall of inequality measures is 2 to 4 times higher on a monthly basis that is traditionally used in Brazil than when one uses mean earnings across four months. Another way of looking at these effects of stabilization on inequality measures is to note that most of the fall of the inequality measures is attributed to the within groups component in the monthly inequality measures. Overall, the main point here is that most of the monthly earnings inequality fall observed after stabilization may be credited to a reduction of earnings volatility and not to a fall in permanent earnings inequality.

I. INTRODUCTION

Brazil is not only a late-comer in terms of structural reforms and stabilization but major institutional changes observed during the last 11 years did not point towards the so-called New Economic Model (NEM). In particular, while all major Latin American economies were moving towards sounder fiscal apparatus and more flexible labor regulation schemes, the Brazilian Constitution of 1988 introduced many obstacles to the NEM on both accounts.

On the other hand, liberalization of international trade started with the Collor administration in 1990 and were intensified with Cardoso administration in 1994. Similarly, domestic financial reforms, liberalization of the capital account and privatization were implemented rather late in comparison with the rest of the continent but at least they are in line with the NEM.

Complementarily, the impacts of the reforms implemented by Collor and Cardoso on income distribution were dominated by changes in the macroeconomic environment (inflationary instability, deep recession, stabilization boom and external crisis). It is not a trivial exercise capturing the impacts of economic reforms. For instance, the overlapping of the post-Constitution period with the period after the external opening of the economy does not allow us to identify which impulses drove the rather sharp increase in labor productivity observed (i.e. increased labor costs or increased exposure to competition).

This paper attempts to measure the evolution of income distribution and its determinants during the period of economic reforms. Our point of departure is to establish few conceptual points: first, the movement towards reforms is not unidirectional in Brazil and many institutional changes occurred simultaneously. This creates difficulties in the assessment of distributive effects of specific reforms. Second, there has been a rather long lag before the idea of doing reforms gets momentum in the country. Fernando Henrique Cardoso 1995-98 first term administrative record will be more known as a period of consolidating stabilization rather than of reforms implementation. The peak of the first generation of reforms is only now becoming visible in Brazil. In this sense an analysis of the effects of Brazilian reforms on income distribution must include updated data and a prospective component. Third, the permanent fall of inflation observed after the Real plan should be treated as an economic reform given its effects on economic behavior and institutions. Finally, the effects of macroeconomic fluctuations in Brazilian distributive variables is so prominent that it can not be left out of the analysis.

The paper is divided in two parts: in the first part, long-run relations between reforms and income distribution are explored. The main empirical strategy pursued here is to establish comparisons between reform related institutional characteristics and income distribution aspects at different points in time. The contrasts between portraits observed before and after reforms were launched allows tentative interpretations of casual relations between implemented reforms and distributive outcomes.

In order to set key days in terms of reforms implementation, we use indexes of institutional reforms found in the literature (Morley et all (1999) and Lora (1997)) and other types of evidence (section 2). The main reforms measured are related to the following fields: trade, labor, tax, financial, capital account and privatization. The change of inflationary regime in 1994 is perceived as a separate reform.

On the income distribution side, we use national level information extracted from PNAD household surveys to construct aggregate inequality measures (section 3) and to apply standard decomposition techniques (section 4). These exercises are performed for different definitions (income concepts, population concepts and inequality measures) calculated for the following years: 76, 85, 90, 93 and 97. The 1976-90 period is used as evidence of the pre-reform period while the proposed reform period (1990-97) occupy the central role in the analysis. The reform period is divided in two parts: the 1990-93 initial period of reforms and inflationary instability and the 1993-97 period where the effects of the new round of reforms implemented, including stabilization, are assessed.

In the end of the first part of the paper, we attempt to study the impact of the economic reforms on the riches (section 5). First, we analyze absolute income changes in the top 10% of the income distribution. At this point we also assess how the composition of this group changed during the reform period. Second, we assess the contribution of this group and the university graduates group to overall inequality.

The second part of the paper explores PME monthly household surveys to extract relations between movements of distributive variables, on the one hand, and economic reforms and macroeconomic fluctuations, on the other. It qualifies the effects of the 1994 stabilization on income distribution (section 7). First, it takes advantage of the higher degrees of freedom provided PME in comparison with PNAD to choose dates before and after stabilization income distribution comparisons are performed. For instance, PME allows to measure the moment just before the launching of the stabilization plan and compare it with the end of 1998, incorporating the effects of the adverse external that hit recently the Brazilian economy. Second, the fact that PME follows the same individuals across short periods of time allows to qualify the nature of changes of inequality observed. In particular, the longitudinal aspect to PME allows to disentangle the effects of lower inflation rates on temporal earnings variability from those exerted on *stricto sensu* inequality measures (and its between groups and within groups components).

Given the occurrence of sharp macroeconomic fluctuations in the Brazilian case and the possibility of measuring various aspects of income distribution in a detailed manner with PME, the final part of the paper attempts to isolate distributive effects of macro shocks and policies. The possibility of constructing for the 1980-99 period monthly series of specially tailored variables according to individual and family records of PME allow us to apply standard time series techniques capturing the effects of macro variables on labor earnings distribution variables (section 7). We analyze the correlation patterns between macro variables (unemployment, inflation, various types of exchange rates, interest rates and minimum wages) and distributive variables (aggregate inequality measures and mean earnings of different groups (by years of schooling, age, household status, sector of activity and working class).

PART A. PORTRAITS OF REFORMS AND INCOME DISTRIBUTION

Part A assesses the long-run impacts of reforms on income distribution in Brazil. It performs comparisons between reform related institutional characteristics and income distribution aspects at different points in time. The contrasts between portraits observed before and after reforms were launched allows tentative interpretations of casual relations between implemented reforms and distributive outcomes. We start setting an economic background for the implementation of reforms. The second step is to identify key dates in terms of reform implementation. These points are used to study the effects of reforms on income distribution.

II. ANALYSIS OF REFORMS

1. Economic background

Amongst Latin American countries, the experience of Brazil has been quite peculiar in the sense that reforms, and in particular trade liberalization, only started a few years ago. Whereas other countries in the region started opening their economies in the early and mid-1980's, in Brazil the process started effectively in the early 1990's. With stabilization, the story is the same. Whereas Mexico started its stabilization process in the mid-80's and Argentina in the early 1990's, in Brazil only in 1994 successful price stabilization was achieved. In the early 1990's two major changes have taken place. First, the opening of the economy. Second, the launching of a successful stabilization plan in 1994. The structural changes introduced with trade liberalization and stabilization are so significant to explain the macroeconomic environment and the dynamic of other reforms implementation that it is inevitable to focus the present analysis on these events.

1.1 Stabilization

Since at least the early 1980's, inflation became the central policy issue in Brazil. Three major stabilization efforts were attempted since then: the Cruzado plan in 1986, the Collor plan in 1990 and the Real plan in 1994. The first two plans failed. The Real plan has been very successful in bringing down inflation and the prospects in this respect are very good even after the waves of external shocks that hit the Brazilian economy in September, 1997 (Asian crisis), September, 1998 (Russian crisis) and the January, 1999 exchange rate fluctuation.

The Real plan of 1994 had at least two major differences in comparison with previous plans. First, a very successful process of "de-indexation" based on the establishment of a transitory unit of account fully indexed to inflation. The second difference in relation to previous plans was that the

economy was considerably more open and the government was prepared to let the currency appreciate. As a consequence, imports played the role of the adjustment variable between aggregate demand and domestic aggregate supply and the nominal exchange rate established a ceiling for prices, at least in the tradable sector. The opening of the economy and the appreciation of the Real are two central elements in what is so far seen as a very successful stabilization effort. Trade liberalization helped the stabilization and, at the same time, it is seen by the government as a key element in the new development strategy. The enormous impact on the balance of payments is the subject of the following section.

1.2 Trade opening

Besides perhaps stabilization, the most important element of the reforms is the opening of the economy. Until 1990 Brazil was a very closed economy. This resulted from a deliberate strategy of import substitution and, due to the debt crisis in the 1980's, from the pressures to produce trade surpluses. Since the early 1990's the environment has changed. On the one hand, the international context has changed with the return of foreign credit. On the other, there is a widely shared view that the closeness of the economy and the active trade and industrial policies of the 1980's were an hindrance to price stability and sustained growth. The debt crisis of the 1980's imposed a severe external constraint on the Brazilian economy. The drastic reduction of foreign credit and the increase in interest services on the external debt required the creation of trade surpluses. The exchange rate became pegged to the rate of inflation and imports were gradually reduced with the increase of tariff and non-tariff barriers.

Since 1985 the trade surplus varied between US$ 8 billion (1986) and US$ 19 billion (1988). On average, between 1985 and 1994, it surpassed the mark of US$ 10 billion. Trade surpluses were roughly enough to balance the current account until 1994. Trade liberalization starts formally in the late 1980's but more effectively in the early 1990's but its most dramatic effects show up after 1994 with the expansion of domestic demand and the appreciation of the Real. There were two episodes of currency appreciation. The first, in 1989-90, is associated with the rapid acceleration of inflation and, to a certain extent, can be seen as "involuntary". The second episode, in 1994-5, however was used as an instrument of the stabilization strategy. The government deliberately let the nominal exchange rate appreciate in order to increase the competitive pressure on the prices of tradable.

Until mid-1994 the average monthly trade surplus was around US$ 1.1 billion. The surpluses turned into deficits in 1994. Imports of intermediary and capital goods increased roughly 150% between 1992-3 and 1995-6 and imports of consumption goods increased 300%. In the period 1993-95 GDP grew around 15% which gives an idea of the increase in the import coefficient.

2. Dating reforms

In terms of measuring the timing of institutional reforms we use estimates found in Morley and all (1999) and Lora (1997). The reforms measured are related to the following fields: trade, labor, tax, financial, capital account and privatization. Each index is normalized to be between zero and one, with one being the most reformed or free from distortion or government intervention. Graphs 1.A. to G. present a comparison for various indexes of reforms in Brazil with a simple average of 17 Latin America countries. Tables 1A to E present evidence of specific reforms and some of its direct effects on economic variables.

Graph 1

A - General
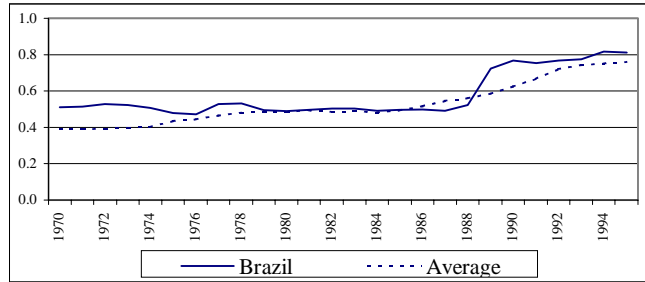
Source: Morley et all (1999)

B - Capital Account Reforms
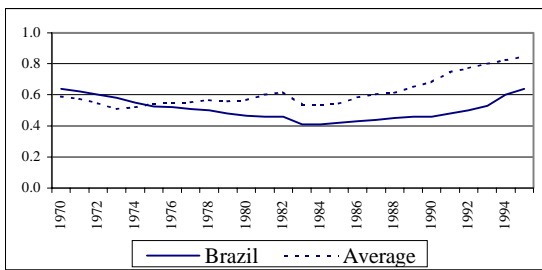
Source: Morley et all (1999)

C - Privatization
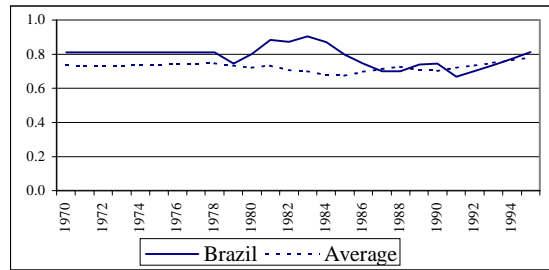
Source: Morley et all (1999)

D - Trade Reforms
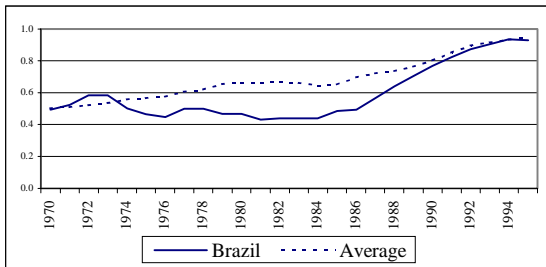
Source: Morley et all (1999)

E - Tax Reforms
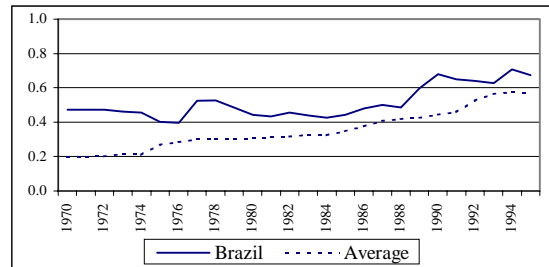
Source: Morley et all (1999)

F - Financial Reforms
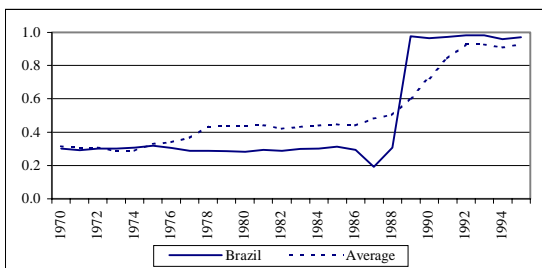
Source: Morley et all (1999)

G - Labor Reforms
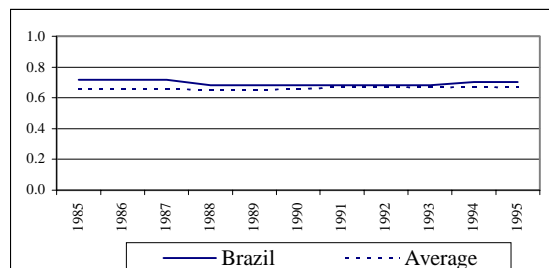
Source: Lora (1997)

Before the analysis proceeds it should be noted that besides inevitable imperfections included in these indexes from the view of specific countries, it presents a very good perspective of the main relative trends observed. Graph 1.A presents the simple average across five reforms (it excludes labor reforms). Brazil that was more liberalized than the other countries in the region in the begin of the series, stagnated during the 70s and 80s, falling slightly behind given the

generalized movement towards reforms in the region then observed. The average regional reform index rises by 50% during the 1970-90 period. In the end of the1980s, Brazil engages in a serious reform catch-up effort. In a period of three years starting in 1988, the general Brazilian reform index rises 40%. The analysis of individual reforms components reveals that financial reforms, trade reform and tax reforms are the main determinants of this jump. The upward trend continues until the end of the period of analysis and beyond. The index rises from 0.74 to 0.81 in the last three years.

It is important now to make a few qualifications about the general reform index in Brazil. First, it attributes equal weights to the different reforms considered while some aspects of reforms are clearly more important than others. Trade liberalization is probably more important for income distribution purposes than other reforms considered. The problem is that the trade reform index only incorporates tariffs practices in the calculations (average level and dispersion) and perhaps the most important international trade related reform observed in the Brazilian was the abandonment of quantitative restrictions beginning in 1990. So if one incorporates these restrictions in the analysis and a greater weight to international trade as well, Brazil would be less liberalized before 1990 and the size of the jump observed in this year would be magnified.

A second problem of the general Brazilian index used is to attribute zero weights to labor and social security reforms which have rather important distributive consequences. Labor and social security went through a counter-reform with the 1988 Constitution. The labor reform index presented in graph 1.G illustrate the in labor legislation reversal.

A final related problem is that the general index also not considered the inflationary environment and its pervasive effects on income distribution. The 1987-94 period was characterized by high and instable inflation rates which produced decisive influences on economic behavior and institutions. For example, as Table1.A shows annual inflation rates that were 475% in 1991, reached a peak of 2489% in 1993 falling to 9.1% in 1996. The coefficient of variation follows a similar movement 3.86 in 1991, 20.03 in 1994 and 0.41 in 1996[1] [2]. Once again, the result would be to neutralize at least in part the jump towards liberalization observed in 1988. By the same token, the permanent fall of inflation observed in 1994 after the Real plan should be treated as a key economic reform.

In sum, our perception is that once the end of quantitative restrictions on international trade occurred in 1990, the labor and social security counter-reforms observed in 1988 and the inflationary environment is considered there would remain two decisive dates in the reforms implementation path in Brazil: 1990 and 1994.

Table 1
A. STABILIZATION

	1991	1996	Peak Value	Date Peak	Source
Annual inflation rate level	475.10	9.10	2,489.10	1993	CPI - IBGE
Variability of monthly inflation rates [1]	3.86	0.41	20.03	1994	CPI - IBGE
Temporal real earnings variability [2]	0.1206	0.1060	0.1363	1994	PME Longitudinal
Nominal wage rigidity [3]	24.8	30.7	32.25	1995	PME Longitudinal

[1] Coefficient of variation within year

[2] Variance of Log real earnings across 4 consecutive months

[3] Percentage of fixed wages between 2 consecutive months

B. TRADE REFORM

	1991	1996	Peak Value	Date Peak	Source
Weighted Average Nominal Protection Rate	27.4	11.5 *	27.4	1991	H. Kume (IPEA, 1996)
Labor Productivity Index	100	144.2	144.2	1996	Mercado de Trabalho, IPEA
Exchange Rate Versus the US$	77	61*	77	1991	World Bank data files
Real Effective Exchange Rate1	83	59	91	1992	World Bank data files

C. FISCAL REFORM

	1991	1996	Peak Value	Date Peak	Source
Net Debt of the Public Sector - Internal (% of GDP)	12.6	30.3	30.3	1996	Fabio Giambagi (BNDES, 1996)
Net Debt of the Public Sector - External (% of GDP)	24.5	4.0	24.5	1991	Boletim, Central Bank
Public Investment (% of GDP)	2.6	2.2	3.4	1993	Boletim Conjuntural, IPEA
Public Domestic Savings - excluding enterprises (% of GDP)	3.2	-1.4	3.4	1994	Pinheiro e Giambiagi (1997)

D. FINANCIAL REFORMS (DOMESTIC AND CAPITAL ACCOUNT) AND PRIVATIZATION

	1991	1996	Peak Value	Date Peak	Source
Private Investment (% of GDP)	16.2	16.8	16.8	1996	Boletim Conjuntural, IPEA
Private Savings (% of GDP)	15.2	17.1	18.6	1995	Pinheiro e Giambiagi (1997)
External Savings (% of GDP)	0.4	3.3	---	1996	Pinheiro e Giambiagi (1997)
Net Capital Flows (in US$ millions)	897	32895.0	---	1996	BNDES
Flows of Privatization Revenues (in US$ millions)	1988.1	4749.8	---	1996	Central Bank
No. of Enterprises Privatized	4	11	14	1992	BNDES

E. TAX REFORM

	1991	1996	Peak Value	Date Peak	Source
Total tax burden (% of GDP)	25.2	28.9	28.9	1996	SRJ, STN, MPAS, IBGE
Social security tax burden (% of GDP)	5.7	6.6	6.6	1996	SRJ, STN, MPAS, IBGE
Goods and services tax burden (% of GDP)	12.6	13.3	13.3	1996	SRJ, STN, MPAS, IBGE
Income tax burden (% of GDP)	4.2	5.2	5.2	1996	SRJ, STN, MPAS, IBGE
Property tax burden (% of GDP)	0.46	0.9	0.9	1996	SRJ, STN, MPAS, IBGE
Other types of tax burden (% of GDP)	2.2	2.9	2.9	1996	SRJ, STN, MPAS, IBGE

III. TEMPORAL EVOLUTION OF INCOME DISTRIBUTION

The biggest advantage of the Brazilian case in this type of study is in terms of data availability. There is a long established tradition with household surveys. We will focus our empirical analysis in two geographical dimensions: a) national level; b) six main metropolitan areas. As we move from the national to the metropolitan level, the availability of updated data increases. We will use as basic data sources two household surveys: i) PNAD 1976, 1981, 1985, 1990, 1993 and 1997. ii) PME from 1980 onwards. We start the study using PNAD, PME will be described and used in the second part of the paper.

1. Description of Pesquisa Nacional de Amostras a Domicilio – PNAD

This is a national annual household survey performed in the third quarter that interviews 100,000 households every year. It is conducted by Instituto Brasileiro de Geografia e Estatística - IBGE since 1967. PNAD underwent a major revision between 1990 and 1992 increasing the size of the questionnaire from 60 to 130 questions. The new questionnaire is available for 1992, 1993, 1995, 1996 and 1997. The National coverage and the diversity of income sources is the main advantage of using PNAD here. The change of questionnaire mentioned will impose compatibility efforts and imperfections in the comparison across time.

2. Income concepts and units of analysis

We will work with two basic inequality measures the Gini coefficient and the Theil-T. The popularity of the Gini coefficients and the fact that it allows to incorporate null incomes in the analysis justifies its use. The Theil-T will be the central measure used here given its exact decomposable property. PNAD will be our main data source in this study. We will analyze the following years: 76, 85, 90, 93, 97.

We will work with the five pairs of population-income concepts using PNAD:

Income Concept	Population Concept			
		Economically		
	Occupied	Active	Active Age	Total
Labor NH				
Labor				
Individuals All sources				
Per Capita All sources				

We use as benchmark value the Theil-T based on economically active and all income sources.

3. Temporal evolution of inequality

Tables 2.A and 2.B presents the Theil-T and the Gini coefficient during the 1976-97 across the different pairs of population-income concepts. The analysis of the temporal evolution of the inequality reveals the following features:

i) The 1976-85 period corresponds to the final years of the military regime: fall of inequality in the 1976-85 period for all concepts used. Our benchmark measure (i.e.; Theil-T based on all income sources for the economic active population) falls from 0.825 to 0.72 in this interval.

ii) The 1985-90 period is characterized by the absence of reforms and rises in inflationary levels and volatility induced by the launching of successive failed stabilization attempts which produced a rise of inequality in the 1985-90 period for all concepts analyzed. Our basic inequality measure rises from 0.72 to 0.748 during this interval.

Looking at the period before economic reforms 1976-90 as a whole, our basic benchmark measure falls from 0.825 to 0.748. This downward trend is closed followed by broader inequality concepts such as those based on the active age population and on total per capita income while narrower measures based on occupied population shows a very mild upward movement. This contrast can be partially credited to the increase of female participation in labor markets, as next section shows.

The 1990-97 is the period of most interest here due to the implementation of economic reforms. Our benchmark inequality measure (i.e.; economically active and all income sources) falls from 0.748 to 0.699. This downward movement is followed by all Theil-T measures except the one for the per capital all income sources concepts. As posed in section 2, the period of reforms 1990-97 can be further divided into two subperiods.

iii) the 1990-93 period is characterized by the combination of high inflation with economic reforms: the direction of inequality changes is not robust across the different concepts used. For example, while our basic measure rises from 0.748 to 0.793, the inequality concept based on the occupied population-labor income concepts falls. While broader concepts present mild increases. The difference between broader and narrower inequality concepts may be explained by the decrease in the participation of young cohorts in labor markets in the begin of the decade which compensates partially the effects of increased female participation observed in the previous years.

iv) The 1993-97 period is characterized by the combination of successful stabilization and the intensification of economic reforms. The result is a fall of inequality for all concepts used. For example, the measure based on economically active and all income sources falls from 0.793 to 0.699.

Overall, during the 1976-97 period there is a fall of all five population-income pair of concepts for both inequality measures used. The average Theil-T index across concepts falls 12.6%. The same statistic for the Gini coefficient presents a fall of 2.87% This result is

interesting because during the 1976-93 period the inequality fall is not unanimous across population-income concepts pairs used for both inequality measures. The average Theil-T index across concepts falls 4.83% in the 1976-93 period which is only 38.3% of the total fall observed in the 1976-97 period. The same exercise applied to the Gini index yields similar results: a fall of 0.08% in the 1976-93 period which corresponds 28.9% of the total fall observed in the 1976-97 period. In other words, the main part of inequality measures drop observed in Brazil during the 21 years analyzed occurred in the last four years. We believe that this is mostly explained by the effects of the 1994 stabilization on income distribution. We will return to these issues in section 6 of the paper.

Table 2
A. THEIL-T INDEX - BRAZIL

Population Concept - Income Concept	1976	1985	1990	1993	1997
Occupied - Labor Income	0.795	0.702	0.800	0.771	0.686
Occupied - Labor Income Normalized b	0.846	0.772	0.854	0.831	0.809
Economically Active - All Income Source	0.825	0.720	0.748	0.793	0.699
Active Age - All Income Sources	0.850	0.745	0.782	0.791	0.710
Total - Per Capita All Income Sources	0.826	0.698	0.748	0.756	0.715

Source: PNAD

B. GINI COEFFICIENT - BRAZIL

Population Concept - Income Concept	1976	1985	1990	1993	1997
Occupied - Labor Income	0.595	0.590	0.600	0.596	0.578
Occupied - Labor Income Normalized b	0.610	0.608	0.615	0.610	0.602
Economically Active - All Income Source	0.603	0.595	0.605	0.601	0.583
Active Age - All Income Sources	0.609	0.604	0.618	0.600	0.587
Total - Per Capita All Income Sources	0.616	0.590	0.607	0.599	0.595

Source: PNAD

IV. INCOME DISTRIBUTION DECOMPOSITIONS

This section attempts to identify the main structural determinants of Brazilian inequality. As we saw in the previous section, income distribution according to the several concepts analyzed went through various changes in the last years. Now, it is necessary to go beyond and to quantify the close determinants of this evolution. In search of an association between inequality measures, on the one hand, and the availability, utilization, and return of different factors of production and personal characteristics on the other, we perform a standard inequality decomposition exercise.

1. Theil index decomposition

$$T = \Sigma\ \alpha g\ \beta g\ Log\ \alpha g + \Sigma\ \alpha g\ \beta g\ Tg \qquad (1)$$
where,

$\alpha g = Yg/\mu$ - Ratio between mean income of group G (Yg) and overall mean income.

$\beta g = ng/N$ - Share of group G in the total population.

Tg - Theil index of group G.

The first term of expression (1) corresponds to the between groups component while the second term corresponds to the within groups component. Table 3.A. identifies between and within groups components for the following subgroups arbitrarily defined: gender, age, schooling, working class, sector of activity, population density and region.

The different classification criteria used in the table 3 can be aggregated in terms of variables related to human capital (education and age), physical capital accumulation (sector of activity and working class), personal characteristics subject to discrimination (sex and race) and localization (demographic region and population density). Table 3 implements this decomposition for the economically active population and all income sources concept used as a benchmark. This table illustrates the different arbitrary chosen categories for each classification criteria used.

As a specific illustrative example, take the third partition of table 3.A. with the decomposition when groups are defined according to the educational attainment of individuals. In terms of the static picture presented for 1997 in the three first columns of table, we see that the between group component explains 34.7% (0.243/0.699) of the total Theil-T index of 0.699.

Table 3
A. THEIL-T INDEX DECOMPOSITION AND VARIATION - BRAZIL
Universe : Economically Active Population - All Income Sources

		1997			Diff. Between 97 and 90		
		Total	**Between**	**Within**	**Total**	**Between**	**Within**
Gender	**Male**	0.602	0.099	0.503	-0.071	-0.012	-0.059
	Female	0.097	-0.080	0.177	0.022	0.006	0.016
Total		**0.699**	**0.019**	**0.680**	**-0.049**	**-0.006**	**-0.043**
Race	**Indigenous**	0.000	0.000	0.000	0.000	0.000	0.000
	White	0.667	0.183	0.484	-0.028	0.003	-0.031
	Black	0.010	-0.131	0.141	-0.018	0.000	-0.017
	Yellow	0.022	0.014	0.008	-0.003	-0.002	0.000
	Not specified	0.000	0.000	0.000	0.000	0.000	0.000
Total		**0.699**	**0.066**	**0.633**	**-0.049**	**0.000**	**-0.048**
Age	**Up to 24 years**	-0.042	-0.079	0.038	-0.001	0.015	-0.016
	25 to 34 years	0.130	-0.014	0.144	-0.045	-0.022	-0.023
	35 to 59 years	0.536	0.146	0.389	0.006	0.003	0.003
	More than 60 years	0.076	0.005	0.071	-0.008	-0.004	-0.004
Total		**0.699**	**0.058**	**0.642**	**-0.049**	**-0.008**	**-0.040**
Schooling	**0 Years**	-0.030	-0.046	0.017	0.001	0.010	-0.009
	1 to 4 years	0.002	-0.096	0.098	-0.024	0.002	-0.026
	5 to 8 years	0.032	-0.054	0.087	-0.036	-0.011	-0.025
	9 to 12 years	0.177	0.050	0.127	-0.013	-0.018	0.006
	13 to 16 years	0.407	0.295	0.111	-0.007	-0.011	0.004
	More than 16 years	0.112	0.094	0.018	0.030	0.027	0.003
	Not specified	0.000	0.000	0.000	0.000	0.000	0.000
Total		**0.699**	**0.243**	**0.456**	**-0.049**	**-0.001**	**-0.048**
Working Class	**Unemployed**	0.001	-0.003	0.003	0.001	-0.002	0.002
	Public Servant	0.160	0.065	0.095	0.008	0.009	-0.002
	Formal Employee	0.137	-0.006	0.142	-0.057	-0.009	-0.048
	Informal Employee	-0.026	-0.083	0.056	-0.001	-0.003	0.002
	Self-Employed	0.140	-0.019	0.159	0.034	0.017	0.017
	Employer	0.293	0.204	0.089	-0.029	-0.009	-0.021
	Unpaid	-0.004	-0.009	0.005	-0.005	-0.008	0.003
	Not specified	0.000	0.000	0.000	0.000	0.000	0.000
Total		**0.699**	**0.149**	**0.550**	**-0.049**	**-0.005**	**-0.044**
Sector of Activity	**Agriculture**	0.008	-0.056	0.063	-0.017	-0.001	-0.016
	Manufacturing	0.103	0.007	0.096	-0.018	0.004	-0.022
	Construction	0.015	-0.012	0.027	-0.008	-0.002	-0.006
	Public Sector	0.168	0.066	0.102	-0.031	-0.013	-0.018
	Services	0.405	0.036	0.369	0.025	0.014	0.011
	Not specified	0.001	-0.003	0.003	0.001	-0.002	0.002
Total		**0.699**	**0.039**	**0.660**	**-0.049**	**0.000**	**-0.049**
Population Density	**Metropolitan**	0.425	0.145	0.280	-0.032	0.002	-0.034
	Urban	0.286	-0.026	0.312	-0.023	-0.021	-0.002
	Rural	-0.012	-0.064	0.053	0.006	0.014	-0.008
Total		**0.699**	**0.055**	**0.645**	**-0.049**	**-0.004**	**-0.044**
Region	**South**	0.115	0.009	0.106	0.006	0.006	0.000
	South-east	0.463	0.111	0.352	-0.017	0.018	-0.035
	North	0.020	-0.006	0.026	-0.015	-0.012	-0.002
	North-east	0.035	-0.081	0.116	-0.010	-0.001	-0.009
	Center-west	0.066	0.005	0.061	-0.013	-0.008	-0.005
Total		**0.699**	**0.038**	**0.661**	**-0.049**	**0.003**	**-0.051**

Source: PNAD

B. THEIL-T INDEX DECOMPOSITION AND VARIATION - BRAZIL
Universe : Economically Active Population - All Income Sources

		Diff. Between 76 aand 97			Diff. Between 76 and 90		
		Total	**Between**	**Within**	**Total**	**Between**	**Within**
Gender	**Male**	-0.201	-0.026	-0.175	-0.129	-0.014	-0.116
	Female	0.075	0.006	0.069	0.053	0.000	0.052
Total		**-0.125**	**-0.019**	**-0.106**	**-0.077**	**-0.014**	**-0.063**
Age	**Up to 24 years**	-0.012	0.029	-0.041	-0.011	0.015	-0.026
	25 to 34 years	-0.130	-0.050	-0.080	-0.085	-0.028	-0.057
	35 to 59 years	0.001	0.011	-0.011	-0.005	0.008	-0.013
	More than 60 years	0.016	0.001	0.015	0.025	0.005	0.020
Total		**-0.125**	**-0.009**	**-0.116**	**-0.077**	**-0.001**	**-0.076**
Schooling	**0 Years**	0.011	0.039	-0.028	0.010	0.029	-0.019
	1 to 4 years	-0.118	-0.010	-0.108	-0.094	-0.012	-0.082
	5 to 8 years	-0.130	-0.066	-0.063	-0.094	-0.055	-0.039
	9 to 12 years	0.001	-0.029	0.030	0.014	-0.010	0.024
	13 to 16 years	0.055	0.030	0.025	0.062	0.042	0.021
	More than 16 years	0.055	0.046	0.010	0.025	0.018	0.007
	Not specified	0.000	0.000	0.000	0.000	0.000	0.000
Total		**-0.125**	**0.010**	**-0.135**	**-0.077**	**0.011**	**-0.088**
Working Class	**Unemployed**	0.002	0.002	0.000	0.001	0.004	-0.003
	Public Servant	0.029	0.024	0.005	0.021	0.015	0.006
	Formal Employee	-0.163	-0.047	-0.116	-0.107	-0.039	-0.068
	Informal Employee	-0.013	-0.008	-0.005	-0.012	-0.005	-0.007
	Self-Employed	-0.020	0.005	-0.025	-0.054	-0.012	-0.042
	Employer	0.045	0.035	0.010	0.074	0.044	0.030
	Unpaid	-0.004	-0.007	0.004	0.001	0.000	0.001
	Not specified	-0.002	0.007	-0.008	-0.002	0.007	-0.008
Total		**-0.125**	**0.010**	**-0.136**	**-0.077**	**0.015**	**-0.092**
Sector of Activity	**Agriculture**	-0.002	0.037	-0.039	0.015	0.038	-0.023
	Manufacturing	-0.078	-0.025	-0.053	-0.060	-0.029	-0.031
	Construction	-0.022	-0.006	-0.015	-0.014	-0.005	-0.009
	Public Sector	-0.037	-0.009	-0.028	-0.006	0.004	-0.010
	Services	0.019	-0.007	0.027	-0.006	-0.021	0.016
	Not specified	-0.006	-0.005	-0.001	-0.007	-0.003	-0.004
Total		**-0.125**	**-0.016**	**-0.109**	**-0.077**	**-0.016**	**-0.060**
Population Density	**Metropolitan**	-0.156	-0.058	-0.098	-0.125	-0.061	-0.064
	Urban	0.037	-0.004	0.041	0.060	0.017	0.043
	Rural	-0.006	0.037	-0.043	-0.012	0.023	-0.035
Total		**-0.125**	**-0.025**	**-0.101**	**-0.077**	**-0.021**	**-0.056**
Region	**South**	-0.004	0.010	-0.014	-0.010	0.004	-0.014
	South-east	-0.162	-0.022	-0.140	-0.145	-0.040	-0.105
	North	0.006	-0.004	0.010	0.020	0.008	0.013
	North-east	0.011	0.009	0.002	0.021	0.010	0.011
	Center-west	0.023	-0.003	0.026	0.036	0.005	0.031
Total		**-0.126**	**-0.010**	**-0.115**	**-0.077**	**-0.013**	**-0.064**

Source: PNAD

The last three columns of table 3.A. presents the changes of these levels observed for 1997 when compared with the begin of the economic reform period in 1990. Most of the inequality fall of -0.049 (0.699 minus 0.748) observed from the perspective of different schooling categories proposed is explained by the fall of the within group component of –0.048 (0.456 –0.504). while the between groups component remained almost unchanged –0.001. Table 3.B. allows a similar analysis for the pre-reform and the whole period of analysis.

1.1 Gross rates of contribution

The gross decomposition of the Theil index synthesizes the relative importance of the between groups term of different criteria used in total inequality. Among all the variables considered, years of schooling and working classes related classifications are the most explicative (or contributive) variables for total inequality. Both variables explanatory power increased substantially during the whole period under analysis (table 3.A). Between 1976 and 1997, the gross contribution of years of schooling and working class for total inequality increased from 28,2% to 34,7%, and from 16.9% to 21.4%, respectively.

Age, which represents a proxy of human capital accumulation due to the acquisition of experience, presents the third highest gross contribution in total inequality in 1997 but also an oscilating pattern across time. Between 1976 and 1990, the gross contribution increases from 8.1% to 8.8%, decreasing in the period after reaching values similar to the begin of the series 8.2% in 1997.

The gender classification presents the lower gross contribution rate for total inequality and decreased almost monotonically between 1976 and 1997 from 4,6% to 2,7%. The variable sector of activity also presents a low contribution for total inequality even not considering its likely interactions with working class. The gross contribution of this variable decreased from 6,7% to 5,2% between 1976 and 1990 but it was slightly increased to 5,6% until 1997.

A behavior similar to the one presented in sector of activity classification is observed with population density classification falling from 9,7% to 7,9% between 1976 and 1990, and constant until in 1997 (7,8%). Finally, the classification related to the five main Brazilian regions shows a more stable behavior with a small decrease in its explicative power between 1976 and 1997, from 5,9% to 5,4%.

1.2 Marginal rates of contribution

In order to take into account interactions between the different classifications to get the marginal impact of each variable once the other classifications were taken into account, we choose a smaller set of different classification criteria to be implemented simultaneously. Since the sum of the gross contribution of the between group components of the three main variables (age, working class and years of schooling variables) is 64.6% of total inequality while the gross effects of the other five variables is residual amounting less than 30% of total inequality. We will be working with the interactions between age, working class and years of schooling variables as shown in table 3.B.

Table 4
A - GROSS RATES OF CONTRIBUTION THEIL-T
Universe : Economically Active Population - All Income Sources

	1976	1985	1990	1993	1997
Groups:					
Gender	4.6%	4.9%	3.3%	3.5%	2.7%
Age	8.1%	9.9%	8.8%	8.0%	8.2%
Schooling	28.2%	32.0%	32.6%	30.3%	34.7%
Working Class	16.9%	22.3%	20.6%	18.7%	21.4%
Sector of Activity	6.7%	5.2%	5.2%	3.7%	5.6%
Population Density	9.7%	7.1%	7.9%	5.6%	7.8%
Region	5.9%	4.6%	4.7%	4.0%	5.4%

Source: PNAD

B. MARGINAL RATES OF CONTRIBUTION THEIL-T
Universe : Economically Active Population - All Income Sources

	1976	1985	1990	1993	1997
Age	7.1%	8.0%	6.8%	6.2%	5.9%
Schooling	25.7%	25.3%	26.0%	23.8%	26.4%
Working Class	9.2%	9.6%	8.7%	8.2%	8.7%

Source: PNAD

The first point to note is that the sum of the marginal contribution to overall inequality produced by the three classifications choose that in the other four years of the series is fairly stable and do not go below 41% reaches a rather low value of 38.2% in 1993. A similar phenomenon is also observed when we use the sum of the gross contributions of the seven classification criteria used reaching a value of 73.8% in 1993 and values always above 80% in the other years. The specially low explanatory power of between groups components in 1993 may be credited to the high inflationary instability observed what would magnify the within groups components. We will return to this point in section 6. For now we will abstract from 1993 in the analysis of table 3.B.

The marginal explanatory power of schooling which by far is the most important variable rises from 25.7% in 1976 to 26% in 1990, increasing to 26.4 in 1997. The marginal contribution of age, that is once years of schooling and working class effects were taken into account, decreases slightly from 7.1% in 1976 to 6.8% in 1990 and then decreases more sharply reaching 5.9% in 1997. Finally, the marginal working class contribution decreases from 9.2% in 1976 to 8.7% in 1990 and remain on these levels in 1997. In sum, the 1990-97 period that can be characterized by the implementation of reforms in Brazil presents an increase of the explanatory power of education, a decrease for age while working class remained on the same levels in the extreme points of the series.

Table 5
A. RATES OF CONTRIBUTION THEIL-T - 1997
GROSS RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH[1]	Labor	All Sources	All Sources	All Sources
Groups:					
Gender	0.6%	2.7%	2.7%	3.3%	0.0%
Race	8.3%	9.4%	9.4%	8.5%	12.1%
Age	6.6%	7.8%	8.2%	7.3%	0.9%
Schooling	35.0%	34.6%	34.7%	36.0%	41.3%
Working Class	16.8%	21.0%	21.4%	19.8%	14.2%
Sector	5.9%	5.1%	5.6%	6.0%	10.2%
Population Density	6.9%	7.5%	7.8%	7.5%	11.1%
Region	4.0%	5.4%	5.4%	4.9%	8.3%

MARGINAL RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH[1]	Labor	All Sources	All Sources	All Sources
Groups:					
Age	3.9%	4.7%	5.9%	5.7%	2.8%
Schooling	26.6%	25.7%	26.4%	28.0%	34.9%
Working Class	5.6%	8.7%	8.7%	8.5%	5.3%

1/ Normalized by Hours

B. RATES OF CONTRIBUTION THEIL-T - 1993
GROSS RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH1	Labor	All Sources	All Sources	All Sources
Groups:					
Gender	1.1%	3.5%	3.5%	4.2%	0.0%
Race	7.5%	8.3%	8.3%	7.6%	10.8%
Age	7.0%	7.7%	8.0%	7.0%	0.4%
Schooling	34.4%	30.0%	30.3%	30.5%	36.8%
Working Class	16.0%	18.4%	18.7%	17.6%	11.9%
Sector	4.9%	3.4%	3.7%	4.2%	7.8%
Population Density	6.0%	5.5%	5.6%	5.4%	9.1%
Region	2.9%	4.2%	4.0%	3.9%	6.9%

MARGINAL RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH1	Labor	All Sources	All Sources	All Sources
Groups:					
Age	4.6%	5.0%	6.2%	6.1%	2.6%
Schooling	26.6%	22.8%	23.8%	24.4%	32.3%
Working Class	5.2%	7.9%	8.2%	8.3%	4.8%

1/ Normalized by Hours

C - RATES OF CONTRIBUTION THEIL-T - 1990
GROSS RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH1	Labor	All Sources	All Sources	All Sources
Groups:					
Gender	1.4%	4.0%	3.3%	4.2%	0.1%
Race	7.7%	8.0%	8.8%	7.9%	11.2%
Age	8.4%	9.3%	8.8%	7.5%	0.2%
Schooling	38.1%	32.6%	32.6%	34.0%	40.3%
Working Class	24.0%	26.6%	20.6%	19.3%	13.4%
Sector	10.3%	7.8%	5.2%	6.1%	10.3%
Population Density	11.5%	10.5%	7.9%	7.7%	13.5%
Region	4.7%	5.3%	4.7%	4.6%	8.0%

MARGINAL RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH1	Labor	All Sources	All Sources	All Sources
Groups:					
Age	4.7%	5.3%	6.8%	6.5%	2.4%
Schooling	27.6%	23.1%	26.0%	27.5%	34.4%
Working Class	9.4%	12.3%	8.7%	8.9%	4.9%

1/ Normalized by Hours

D. RATES OF CONTRIBUTION THEIL-T - 1985
GROSS RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH1	Labor	All Sources	All Sources	All Sources
Groups:					
Gender	2.0%	5.0%	4.9%	5.9%	0.1%
Age	8.4%	9.3%	9.9%	8.6%	0.1%
Schooling	36.7%	30.9%	30.4%	31.6%	41.5%
Working Class	20.9%	22.0%	22.3%	21.4%	15.1%
Sector	7.4%	5.0%	5.2%	6.3%	11.3%
Population Density	8.2%	7.0%	7.1%	6.8%	13.6%
Region	3.8%	4.6%	4.6%	4.4%	8.4%

MARGINAL RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH1	Labor	All Sources	All Sources	All Sources
Groups:					
Age	6.9%	7.3%	8.4%	8.3%	1.9%
Schooling	28.3%	23.9%	24.4%	25.6%	34.0%
Working Class	6.9%	9.4%	9.6%	10.0%	5.2%

1/ Normalized by Hours

E - RATES OF CONTRIBUTION THEIL-T - 1976
GROSS RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH1	Labor	All Sources	All Sources	All Sources
Groups:					
Gender	2.6%	4.8%	4.6%	5.1%	0.0%
Age	6.9%	7.5%	8.1%	7.2%	0.2%
Schooling	33.9%	28.6%	28.2%	27.3%	36.6%
Working Class	15.9%	16.9%	16.9%	16.0%	12.0%
Sector	8.8%	6.9%	6.7%	6.8%	13.7%
Population Density	11.4%	9.8%	9.7%	8.8%	17.6%
Region	5.1%	5.9%	5.9%	5.8%	10.2%

MARGINAL RATES

Population Concept	Occupied	Occupied	Economically A	Active Age	Total - Per Capita
Income Concept	Labor NH1	Labor	All Sources	All Sources	All Sources
Groups:					
Age	6.2%	6.4%	7.1%	7.0%	1.6%
Schooling	29.1%	25.3%	25.7%	25.0%	30.6%
Working Class	7.1%	9.2%	9.2%	9.3%	4.9%

1/ Normalized by Hours

1.3 Gross and Marginal Contributions: Robustness Analysis

Table 5 allows to test the difference of gross contribution rates across the five population-income concepts pairs used for 1997. The comparison of contribution rates between occupied population with and without controls for hours shows that the explanatory power attributed to gender, race and age reduces drastically, specially gender, once the effects of partial working hours is taken into account.

The comparison of individual based concepts, take for example the economically active population, with family based measures, here represented by the per capita income concept classified according to head of household characteristics shows:

i)   Gender and age contribution rates falls from 2.7% to zero and 7.3% to 0.9%, respectively.
ii)   Race gross contribution rises from 9.4% to 12.1%. This is explained by the high propensity of marriages within the same race groups.
iii)   Similarly, spatial related classifications such as population density and region are also less subject to marriages of different sorts which reinforces the inequality contribution at family level when compared with individual level inequality measures.
iv)   Age gross and marginal contribution rates decrease when one moves from individual to family level concepts. Marginal rates of contribution falls from 5.9 to 2.8% when one moves from EAP to per capita concepts.
v)   Years of schooling gross and marginal contribution rates increase substantially when one moves from individual to family level concepts. Marginal rates of contribution rises from 26.4 to 34.9% when one moves from EAP to per capita concepts.
vi)   In contrast, working class gross and marginal contribution rates reduce when we move from EAP to per capita concepts. Marginal rates of contribution falls from 8.7% to 5.3%.

V. THE IMPACT OF REFORMS ON THE RICHES

1. Aggregate absolute impact

In Brazil the 10% richest hold nearly half of aggregate per capita income. This subsection evaluates how this wealthy group performed during the reform period using standard poverty techniques applied to the analysis of the top of the income distribution.

In order to evaluate how the rich were affected during the post-reform period 1990-97, we take the per capita income level roughly at the 90% percentile for 1997. More precisely, we take individuals with per capita income above R$ 500 at 97 values which corresponds to the 89.39% or above richest in 1997, 91.39% in 1993 and 87.08% in 1990, according to table 6. This data shows that there was an initial reduction on the number of riches of 33% between 1990 and 1993, this process may be credited not only to the effects of the economic reforms implemented by the Collor Administration such as the opening of the economy that broke the monopoly power of the industrial elite including both entrepreneurs and unionized workers and an aggressive and short-lived administrative reform that affected public servants but also the freezing of 80% of the M4 affected mostly the wealthy groups.

Table 6
WEALTH INDICES
Wealth Line : R$ 500,00

	P0 (%)	P1 (%)	P2 (%)
1997	10.61	12.99	58.71
1993	8.61	10.57	66.85
1990	12.92	16.39	90.79

Source: PNAD - IBGE

During the second part of the reform period 1993-97, there was a 23% increase in the number of riches (per capita income above 500 reais of 1997). Overall, the number of riches fell 17.9% in the reform period 1990-97. The evolution of the wealthy can also be captured by the mean distance of the rich per capita income with respect to the wealth line assumed. In other words, we calculate not only the size of the group defined as rich but the extend of the their income flows as well, as in a standard P1 poverty measures. During 1990, it amounts to 16.39%, which means that the rich average per capita income corresponds to 583 Reais of 1997. It goes down sharply in 1993 to 10.57% and finally it recovers approximately half of the loss incurred in the 1990-93 period, reaching 12.99% in 1997.

2. Profile of the impact of the reforms on the riches

Tables 7.A to C compute besides the share of the total population considered rich also a profile of the wealthy. This profile allows comparisons between the rich and the whole population according to the following characteristics.

- Household Characteristics: Region, population density, dependency ratio, housing status, access to water, access to sanitation, access to electricity and access to garbage collection.

- Heads Characteristics: Gender, Race, Age, Schooling, Immigration status, working class, employment tenure, enterprise size, sector of activity.

Table 7
A. WEALTH PROFILE - 1997

Wealth Line : R$ 500,00   Contribution to Total Wealth

Characteristics of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Total		155,627,427	242.65	10.61	12.99	58.71	100.00	100.00	100.00	100.00
Region	North	7,566,784	180.54	6.55	7.23	30.20	4.86	3.00	2.71	2.50
	North-East	45,341,554	127.56	4.31	4.68	14.01	29.13	11.83	10.50	6.95
	Center-East	10,769,715	264.26	11.43	15.61	96.04	6.92	7.45	8.32	11.32
	South-East	68,126,103	313.05	14.59	18.52	87.30	43.78	60.17	62.38	65.09
	South	23,823,271	270.34	12.16	13.67	54.24	15.31	17.54	16.10	14.14
Zone	Metropolitan Core	28,004,399	428.35	22.77	34.09	163.72	17.99	38.60	47.21	50.17
	Metropolitan Periphery	18,652,518	249.41	9.27	9.69	68.30	11.99	10.46	8.93	13.94
	Large Urban	29,628,427	302.41	15.10	16.46	59.35	19.04	27.08	24.11	19.24
	Medium Urban	24,257,879	228.42	9.54	9.72	35.18	15.59	14.01	11.66	9.34
	Small Urban	23,310,326	153.81	4.46	4.51	18.76	14.98	6.29	5.19	4.79
	Rural	31,773,878	95.34	1.85	1.84	7.24	20.42	3.56	2.89	2.52
Dependency Ratio	1	16,164,540	550.54	29.33	48.80	289.84	10.39	28.70	39.01	51.27
	1<d≤1.5	23,361,120	351.68	17.41	19.24	71.96	15.01	24.62	22.23	18.40
	1.5<d≤2	34,885,439	274.46	12.36	13.21	48.67	22.42	26.10	22.79	18.58
	2<d≤3	33,734,418	175.55	5.83	5.72	19.63	21.68	11.90	9.54	7.25
	3<d≤4	21,829,495	148.64	4.65	4.54	16.31	14.03	6.14	4.90	3.90
	d>4	22,890,854	83.31	1.83	1.36	2.42	14.71	2.53	1.53	0.61
	Other/Not Specified	2,761,561	0.00	0.00	0.00	0.00	1.77	0.00	0.00	0.00
Housing	Own House already Paid with Own Land	99,802,985	247.55	10.96	13.59	64.08	64.13	66.22	67.09	69.99
	Own House already Paid without Own Land	8,638,718	133.64	3.67	5.53	37.40	5.55	1.92	2.36	3.54
	Own House Still Paid	9,270,837	372.92	19.57	24.16	85.67	5.96	10.98	11.08	8.69
	Rent	19,109,555	311.61	14.86	17.77	74.84	12.28	17.19	16.79	15.65
	Ceded	17,814,217	129.85	3.17	2.66	6.62	11.45	3.42	2.34	1.29
	Other	728,085	150.99	3.36	2.99	8.23	0.47	0.15	0.11	0.07
	Not Specified	263,030	257.89	8.10	18.00	268.15	0.17	0.13	0.23	0.77
Water	Canalized	126,630,268	284.56	12.97	15.88	71.41	81.37	99.46	99.43	98.96
	No Canalized	28,740,940	57.91	0.24	0.24	0.87	18.47	0.42	0.34	0.27
	Other/Not Specified	256,219	255.49	7.88	17.92	274.58	0.16	0.12	0.23	0.77
Sanitation	Sewage System	60,056,979	366.74	18.70	23.78	108.33	38.59	67.97	70.63	71.20
	Concrete Cesspit 1	14,617,434	344.11	17.14	21.09	87.33	9.39	15.17	15.24	13.97
	Concrete Cesspit 2	18,604,745	223.20	8.55	8.84	35.67	11.95	9.62	8.14	7.26
	Rudimental Cesspit	37,168,933	126.19	2.72	2.73	15.43	23.88	6.11	5.02	6.28
	Drain	3,179,433	100.26	0.99	0.83	1.24	2.04	0.19	0.13	0.04
	River or Lake	4,339,763	142.04	2.55	2.53	9.55	2.79	0.67	0.54	0.45
	Other	350,581	100.06	1.12	0.87	0.85	0.23	0.02	0.02	0.00
	Not Specified	17,309,559	51.72	0.23	0.33	4.16	11.12	0.24	0.28	0.79
Eletricity	Yes	143,923,608	258.05	11.45	14.00	62.96	92.48	99.74	99.67	99.16
	No	11,440,615	48.61	0.18	0.16	0.53	7.35	0.12	0.09	0.07
	Other/Not Specified	263,204	257.31	8.52	18.20	267.97	0.17	0.14	0.24	0.77
Garbage	Collected Directly	103,304,297	303.61	14.28	17.31	78.49	66.38	89.33	88.45	88.73
	Collected Indirectly	11,854,587	245.26	10.31	14.97	64.91	7.62	7.40	8.78	8.42
	Burned	21,971,909	100.15	1.86	1.86	7.44	14.12	2.47	2.02	1.79
	Unused Plot of Land	16,529,644	65.04	0.58	0.53	1.24	10.62	0.58	0.43	0.22
	Other/Not Specified	1,966,990	110.07	1.84	3.29	38.60	1.26	0.22	0.32	0.83

Source: PNAD - IBGE

Wealth Line : R$ 500,00

Head of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Contribution to Total Wealth Population (%)	P0 (%)	P1 (%)	P2 (%)
Total		155,627,427	242.65	10.61	12.99	58.71	100.00	100.00	100.00	100.00
Gender	Men	127,476,261	243.89	10.66	13.18	61.72	81.91	82.30	83.09	86.10
	Women	28,151,166	237.06	10.38	12.15	45.13	18.09	17.70	16.91	13.90
Race	Indigenous	240,718	125.46	2.26	1.05	0.98	0.15	0.03	0.01	0.00
	White	82,813,067	330.20	16.37	21.18	100.33	53.21	82.06	86.72	90.93
	Black	71,883,113	138.22	3.73	3.12	8.18	46.19	16.23	11.10	6.43
	Yellow	668,257	671.48	41.35	65.54	360.85	0.43	1.67	2.17	2.64
	Not Specified	22,272	175.51	6.72	1.61	0.39	0.01	0.01	0.00	0.00
Age	24 Years or Less	6,090,113	149.17	3.95	3.30	7.35	3.91	1.46	0.99	0.49
	25 to 44 Years	75,353,866	227.17	9.59	11.29	43.50	48.42	43.75	42.05	35.87
	45 to 64 Years	56,395,297	266.22	12.45	15.29	76.62	36.24	42.51	42.65	47.29
	65 Years or More	17,788,151	265.51	11.41	16.26	84.01	11.43	12.28	14.30	16.35
Years of Schooling	Less than 1 Year	32,566,084	87.37	0.81	0.58	2.02	20.93	1.60	0.93	0.72
	1 to 4 Years	31,961,631	126.36	2.49	1.65	4.61	20.54	4.82	2.61	1.61
	4 to 8 Years	47,030,711	186.32	5.47	3.98	9.80	30.22	15.57	9.26	5.05
	8 to12 Years	31,890,847	341.70	17.56	16.52	70.63	20.49	33.91	26.06	24.65
	More than 12 Years	12,178,154	921.28	59.82	101.51	510.00	7.83	44.10	61.13	67.97
Immigration	No Immigrant	63,148,690	219.05	9.55	11.67	42.33	40.58	36.51	36.46	29.26
	0 to 5 Years	11,681,757	230.42	10.04	11.69	44.16	7.51	7.10	6.75	5.65
	6 to 9 Years	6,439,113	223.19	8.84	11.28	50.84	4.14	3.45	3.59	3.58
	More Than 10 Years	46,134,746	250.79	11.03	12.67	58.07	29.64	30.82	28.91	29.32
	Other/Not Specified	28,223,121	291.67	12.95	17.41	104.25	18.14	22.13	24.29	32.20
Working Class	Inactive	27,548,418	231.52	10.26	10.65	33.79	17.70	17.12	14.50	10.19
	Unemployed	4,801,946	91.20	2.05	1.94	4.84	3.09	0.59	0.46	0.25
	Formal Emploees	35,783,905	245.47	9.50	10.25	34.13	22.99	20.59	18.13	13.37
	Informal Employees	20,520,320	133.52	3.72	3.65	10.93	13.19	4.62	3.70	2.45
	Self-Employed	42,541,735	195.69	7.59	8.60	32.78	27.34	19.55	18.09	15.26
	Employer	8,211,702	698.78	40.30	70.96	522.55	5.28	20.03	28.82	46.96
	Public Servant	13,136,777	378.23	21.10	24.26	78.36	8.44	16.78	15.76	11.27
	Unpaid	3,061,738	127.50	3.89	3.56	7.47	1.97	0.72	0.54	0.25
	Other/Not Specified	20,886	70.91	4.01	0.80	0.16	0.01	0.01	0.00	0.00
Employment Tenure	0 Years	32,350,364	210.69	9.04	9.35	29.49	20.79	17.71	14.96	10.44
	1 Years or More	19,308,095	184.75	6.68	6.93	21.72	12.41	7.81	6.62	4.59
	1 to 3 Years	23,380,174	225.14	8.72	10.25	45.36	15.02	12.35	11.85	11.61
	3 to 5 Years	13,340,239	248.03	9.71	12.28	52.69	8.57	7.84	8.10	7.69
	More than 5 Years	66,249,243	282.23	13.50	17.81	90.48	42.57	54.13	58.33	65.60
	Other/Not Specified	999,312	110.08	2.62	2.72	6.63	0.64	0.16	0.13	0.07
Enterprise Size	1	2,293,312	460.07	26.48	32.62	112.53	1.47	3.68	3.70	2.82
	2 a 5	11,266,094	317.90	16.24	20.95	92.12	7.24	11.08	11.67	11.36
	6 a 10	5,523,207	333.26	15.24	23.41	157.32	3.55	5.10	6.39	9.51
	>11	934,794	1503.79	72.27	211.72	2,451.17	0.60	4.09	9.79	25.08
	Other/Not Specified	135,610,020	220.34	9.26	10.21	34.52	87.14	76.06	68.44	51.23
Sector of Activity	Agriculture	29,740,290	103.64	2.54	3.12	17.97	19.11	4.56	4.59	5.85
	Manufacturing	18,465,354	265.42	11.29	13.20	81.16	11.87	12.62	12.05	16.40
	Construction	12,999,652	171.71	4.19	4.62	17.84	8.35	3.29	2.97	2.54
	Services	49,398,856	318.54	15.17	19.74	93.24	31.74	45.36	48.23	50.40
	Public Sector	12,658,127	394.69	21.46	27.48	108.71	8.13	16.45	17.20	14.37
	Other/Not Specified	32,365,148	210.61	9.04	9.35	29.48	20.80	17.71	14.96	10.44

Source: PNAD - IBGE

B. WEALTH PROFILE - 1993

Wealth Line : R$ 500,00   **Contribution to Total Wealth**

Characteristics of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Total		148,216,677	14095.33	8.61	10.57	66.85	100.00	100.00	100.00	100.00
Region	North	6,825,151	11199.41	5.97	6.57	31.14	4.60	3.19	2.86	2.14
	North-East	43,944,639	7571.44	3.63	4.12	16.29	29.65	12.50	11.56	7.22
	Center-East	9,921,263	16020.20	10.31	13.77	73.17	6.69	8.02	8.73	7.33
	South-East	64,812,862	17575.98	11.43	14.23	89.06	43.73	58.08	58.89	58.26
	South	22,712,762	16814.79	10.23	12.38	109.28	15.32	18.21	17.96	25.05
Zone	Urban	71,755,781	13663.42	7.83	8.70	51.13	48.41	44.05	39.88	37.03
	Metropolitan	44,330,968	20492.70	14.58	19.64	135.10	29.91	50.69	55.61	60.44
	Rural	32,129,928	6233.17	2.09	2.20	7.80	21.68	5.26	4.51	2.53
Dependency Ratio	1	13,682,883	31729.48	24.64	37.90	252.76	9.23	26.43	33.12	34.90
	1<d<1.5	21,035,274	20809.19	13.51	15.60	120.31	14.19	22.27	20.95	25.54
	1.5<d<2	32,269,440	16449.02	10.49	11.93	47.65	21.77	26.54	24.58	15.52
	2<d<3	33,272,436	10964.96	5.27	6.03	52.96	22.45	13.73	12.82	17.78
	3<d<4	21,701,830	9190.36	4.38	4.46	23.47	14.64	7.45	6.18	5.14
	d>4	24,106,839	5505.61	1.89	1.53	4.58	16.26	3.57	2.35	1.11
	Other/Not Specified	2,147,975	0.00	0.00	0.00	0.00	1.45	0.00	0.00	0.00
Housing	Own House already Paid with Own Land	89,528,179	14512.51	9.02	11.17	74.79	60.40	63.31	63.83	67.58
	Own House already Paid without Own Land	8,765,530	7404.95	2.41	3.89	27.43	5.91	1.65	2.18	2.43
	Own House Still Paid	9,831,835	21944.16	16.17	20.68	132.32	6.63	12.47	12.98	13.13
	Rent	19,986,880	17463.75	11.61	13.52	65.93	13.48	18.20	17.25	13.30
	Ceded	19,154,347	7874.01	2.71	2.82	16.99	12.92	4.07	3.45	3.28
	Other	646,491	8798.88	2.98	4.40	37.58	0.44	0.15	0.18	0.25
	Not Specified	303,415	12088.70	6.10	6.50	12.01	0.20	0.14	0.13	0.04
Water	Canalized	112,488,014	17274.74	11.20	13.80	87.68	75.89	98.75	99.09	99.54
	No Canalized	35,434,415	4027.00	0.40	0.37	1.25	23.91	1.10	0.83	0.45
	Other/Not Specified	294,248	11102.99	6.20	4.24	5.95	0.20	0.14	0.08	0.02
Sanitation	Sewage System	53,608,120	22090.84	16.11	20.67	128.60	36.17	67.70	70.77	69.58
	Concrete Cesspit 1	11,563,226	20078.09	13.50	17.04	176.84	7.80	12.24	12.58	20.64
	Concrete Cesspit 2	16,971,034	13997.55	7.67	8.49	34.57	11.45	10.21	9.20	5.92
	Rudimental Cesspit	36,248,436	8210.13	2.75	2.58	8.98	24.46	7.82	5.97	3.28
	Drain	3,589,323	6480.34	1.10	0.70	2.20	2.42	0.31	0.16	0.08
	River or Lake	4,106,914	8855.25	3.33	2.96	6.40	2.77	1.07	0.78	0.27
	Other	942,927	5188.67	1.74	1.76	5.65	0.64	0.13	0.11	0.05
	Not Specified	21,186,697	3448.82	0.31	0.32	0.86	14.29	0.52	0.43	0.18
Eletricity	Yes	131,435,156	15438.87	9.64	11.87	75.28	88.68	99.37	99.59	99.86
	No	16,484,910	3435.18	0.39	0.29	0.61	11.12	0.51	0.30	0.10
	Other/Not Specified	296,611	11204.60	5.34	5.44	13.21	0.20	0.12	0.10	0.04
Garbage	Collected Directly	90,947,610	18585.13	12.47	15.42	100.74	61.36	88.93	89.53	92.46
	Collected Indirectly	8,046,380	13321.37	7.73	10.64	58.88	5.43	4.87	5.47	4.78
	Burned	24,571,019	7126.00	2.25	2.34	8.70	16.58	4.33	3.67	2.16
	Unused Plot of Land	21,768,540	4444.15	0.85	0.68	1.69	14.69	1.45	0.95	0.37
	Other/Not Specified	2,883,128	6890.10	1.83	2.09	7.80	1.95	0.41	0.38	0.23

Source: PNAD - IBGE

Head of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Wealth Line : R$ 500,00							**Contribution to Total Wealth**			
Total		148,216,677	14095.33	8.61	10.57	66.85	100.00	100.00	100.00	100.00
Gender	**Men**	125,006,526	14223.10	8.73	10.82	72.09	84.34	85.60	86.37	90.95
	Women	23,210,151	13407.18	7.91	9.20	38.62	15.66	14.40	13.63	9.05
Race	**Indigenous**	179,183	5273.26	1.33	1.47	2.00	0.12	0.02	0.02	0.00
	White	78,747,428	19017.79	13.13	16.90	112.25	53.13	81.08	85.00	89.21
	Black	68,412,293	8144.90	3.09	2.76	10.31	46.16	16.57	12.06	7.12
	Yellow	860,987	38612.32	34.37	53.01	421.49	0.58	2.32	2.91	3.66
	Not Specified	16,786	9483.72	3.06	9.07	26.86	0.01	0.00	0.01	0.00
Age	**24 Years or Less**	6,121,868	9750.19	4.16	3.33	7.63	4.13	2.00	1.30	0.47
	25 to 44 Years	74,476,291	13318.96	8.01	9.56	56.90	50.25	46.77	45.46	42.77
	45 to 64 Years	52,425,125	15180.12	9.69	12.18	77.89	35.37	39.84	40.78	41.21
	65 Years or More	15,193,393	15908.65	9.56	12.84	101.39	10.25	11.39	12.46	15.55
Years of Schooling	**Less than 1 Year**	33,499,753	5477.45	0.68	0.59	2.20	22.60	1.78	1.26	0.74
	1 to 4 Years	33,464,436	7637.19	1.94	1.47	6.02	22.58	5.09	3.14	2.03
	4 to 8 Years	44,350,211	11745.17	5.25	4.34	15.97	29.92	18.24	12.28	7.15
	8 to12 Years	26,463,979	20688.49	15.27	14.40	100.26	17.85	31.68	24.33	26.78
	More than 12 Years	10,438,298	55726.93	52.81	88.50	600.85	7.04	43.22	58.99	63.30
Immigration	**No Immigrant**	58,230,183	12878.21	7.76	9.81	70.76	39.29	35.42	36.49	41.58
	0 to 5 Years	12,780,304	12666.40	7.77	8.66	29.21	8.62	7.79	7.07	3.77
	6 to 9 Years	6,393,023	12607.53	7.52	7.38	21.61	4.31	3.77	3.01	1.39
	More Than 10 Years	43,387,048	14468.52	8.47	10.01	68.96	29.27	28.82	27.74	30.19
	Other/Not Specified	27,426,119	17101.76	11.26	14.66	83.33	18.50	24.21	25.68	23.06
Working Class	**Inactive**	22,846,843	13941.20	8.56	8.63	32.18	15.41	15.33	12.59	7.42
	Unemployed	3,434,280	5457.42	1.85	2.82	22.47	2.32	0.50	0.62	0.78
	Formal Emploees	36,257,634	14712.93	8.16	9.24	66.16	24.46	23.19	21.39	24.21
	Informal Employees	19,661,690	7134.94	2.33	3.04	24.52	13.27	3.58	3.82	4.87
	Self-Employed	40,394,970	10799.51	5.47	5.90	23.01	27.25	17.32	15.22	9.38
	Employer	7,809,595	37555.41	31.88	51.49	439.15	5.27	19.52	25.68	34.61
	Public Servant	14,907,958	21482.05	16.83	20.87	117.36	10.06	19.67	19.87	17.66
	Unpaid	2,873,813	9780.23	3.88	4.42	37.11	1.94	0.88	0.81	1.08
	Other/Not Specified	29,894	8975.70	5.67	2.80	1.39	0.02	0.01	0.01	0.00
Employment Tenure	**0 Years**	26,281,123	12832.59	7.68	7.87	30.92	17.73	15.83	13.21	8.20
	1 Years or More	19,853,998	9771.18	4.38	5.14	29.74	13.40	6.81	6.52	5.96
	1 to 3 Years	22,260,141	12232.86	6.13	7.17	28.75	15.02	10.70	10.19	6.46
	3 to 5 Years	13,249,873	13851.06	8.02	8.94	32.83	8.94	8.33	7.56	4.39
	More than 5 Years	65,582,680	16713.17	11.32	14.91	113.26	44.25	58.22	62.43	74.96
	Other/Not Specified	988,862	6053.32	1.27	1.45	2.87	0.67	0.10	0.09	0.03
Enterprise Size	**1**	2,100,461	27613.01	23.42	28.79	150.83	1.42	3.86	3.86	3.20
	2 a 5	9,677,647	18216.44	12.88	16.96	91.89	6.53	9.77	10.48	8.97
	6 a 10	4,903,496	17281.95	11.20	15.19	77.88	3.31	4.31	4.76	3.85
	>11	829,280	79829.27	63.22	156.56	2,511.18	0.56	4.11	8.29	21.02
	Other/Not Specified	130,705,793	13036.36	7.61	8.70	47.73	88.19	77.96	72.61	62.96
Sector of Activity	**Agriculture**	31,857,905	7092.51	2.80	3.34	19.37	21.49	7.00	6.79	6.23
	Manufacturing	19,598,968	16081.07	9.30	12.26	163.53	13.22	14.28	15.34	32.35
	Construction	12,438,874	9334.05	3.16	4.27	16.76	8.39	3.09	3.39	2.10
	Services	45,179,952	17944.65	12.04	15.16	84.04	30.48	42.66	43.74	38.32
	Public Sector	12,854,056	22089.45	17.01	21.36	98.72	8.67	17.14	17.53	12.81
	Other/Not Specified	26,286,922	12829.76	7.68	7.87	30.91	17.74	15.83	13.21	8.20

Source: PNAD - IBGE

C – WEALTH PROFILE - 1990

Wealth Line : R$ 500,00   **Contribution to Total Wealth**

Characteristics of the Household	Sub-Groups	Total Population	Average Per Capita Earnings	P0 (%)	P1 (%)	P2 (%)	Population (%)	P0 (%)	P1 (%)	P2 (%)
Total		147,294,349	231.38	12.92	16.39	90.79	100.00	100.00	100.00	100.00
Gender	Men	126,560,807	234.81	13.23	16.84	97.01	85.92	87.93	88.32	91.81
	Women	20,733,542	210.40	11.08	13.59	52.80	14.08	12.07	11.68	8.19
	Indigenous	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Race	White	79,889,706	311.14	19.35	25.96	151.64	54.24	81.22	85.93	90.59
	Black	66,465,032	130.55	4.73	4.21	15.20	45.12	16.52	11.60	7.55
	Yellow	939,611	582.80	45.82	63.64	264.08	0.64	2.26	2.48	1.86
	Not Specified	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Age	24 Years or Less	5,821,510	176.74	8.22	8.30	28.91	3.95	2.51	2.00	1.26
	25 to 44 Years	74,084,128	224.61	12.95	15.24	63.06	50.30	50.39	46.78	34.93
	45 to 64 Years	53,118,154	246.51	13.91	18.27	83.57	36.06	38.82	40.20	33.20
	65 Years or More	14,265,192	232.57	11.06	18.65	286.97	9.69	8.29	11.02	30.61
	Other/Not Specified	5,365	28.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Years of Schooling	Less than 1 Year	37,433,211	79.42	0.97	0.76	4.95	25.41	1.91	1.18	1.39
	1 to 4 Years	31,663,773	128.30	3.90	2.68	7.82	21.50	6.49	3.51	1.85
	4 to 8 Years	43,769,010	200.71	9.27	7.87	77.29	29.72	21.32	14.26	25.30
	8 to 12 Years	24,387,711	368.90	26.16	27.46	96.47	16.56	33.52	27.74	17.59
	More than 12 Years	10,040,644	923.16	69.69	128.15	717.52	6.82	36.76	53.31	53.87
Region	Center-East	10,475,894	266.72	15.26	21.21	111.27	7.11	8.40	9.20	8.72
	North	5,023,228	247.78	12.83	17.72	138.32	3.41	3.39	3.69	5.20
	South	22,899,688	241.67	13.66	15.84	62.05	15.55	16.43	15.02	10.62
	South-East	65,883,203	296.25	17.69	22.79	137.74	44.73	61.21	62.21	67.86
	North-East	43,012,336	116.02	4.68	5.54	23.64	29.20	10.57	9.87	7.60
Zone	Metropolitan	46,843,426	345.50	21.65	30.18	159.56	31.80	53.27	58.57	55.89
	Urban	62,251,120	233.99	12.97	15.03	89.50	42.26	42.42	38.77	41.66
	Rural	38,199,803	87.20	2.15	1.68	8.56	25.93	4.31	2.67	2.45
Dependency Ratio	1	13,045,417	518.11	33.34	58.89	383.21	8.86	22.85	31.83	37.38
	1<d<1.5	21,170,965	331.65	20.45	24.39	87.40	14.37	22.75	21.39	13.84
	1.5 <d<2	32,118,768	274.02	15.77	19.79	154.04	21.81	26.60	26.33	37.00
	2 <d<3	33,329,283	179.65	8.69	8.88	33.66	22.63	15.21	12.26	8.39
	3 <d<4	20,136,488	153.43	7.47	6.58	15.76	13.67	7.90	5.49	2.37
	d>4	25,737,201	93.64	3.46	2.51	5.27	17.47	4.68	2.68	1.01
	Other/Not Specified	1,756,227	2.24	0.18	0.34	0.64	1.19	0.02	0.02	0.01
Working Class	Inactive	23,850,368	215.70	11.43	13.60	51.53	16.19	14.32	13.44	9.19
	Unemployed	2,552,789	71.70	2.47	1.95	4.80	1.73	0.33	0.21	0.09
	Formal Emploees	41,860,278	245.74	13.88	14.48	42.31	28.42	30.53	25.11	13.24
	Informal Employees	19,361,252	114.91	4.07	4.52	15.98	13.14	4.14	3.62	2.31
	Self-Employed	39,352,947	167.68	7.98	8.30	36.16	26.72	16.49	13.53	10.64
	Employer	9,740,936	587.07	40.14	71.77	726.36	6.61	20.54	28.96	52.91
	Public Servant	10,436,121	372.00	24.66	34.57	147.36	7.09	13.52	14.95	11.50
	Unpaid	139,658	307.27	17.70	29.47	107.68	0.09	0.13	0.17	0.11
	Other/Not Specified	-	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Sector of Activity	Agriculture	30,123,247	96.60	3.11	4.32	88.86	20.45	4.91	5.39	20.02
	Manufacturing	21,726,883	248.86	14.22	15.71	93.36	14.75	16.23	14.14	15.17
	Construction	11,363,177	173.29	5.94	7.28	69.45	7.71	3.54	3.43	5.90
	Services	44,588,345	300.86	18.24	23.69	108.27	30.27	42.73	43.76	34.43
	Public Sector	13,089,540	386.01	26.07	36.22	155.31	8.89	17.93	19.64	15.20
	Other/Not Specified	26,403,157	201.77	10.57	12.48	47.01	17.93	14.65	13.65	9.28

Source: PNAD - IBGE

The profiles of 1990 covers a more limited range of household characteristics than the 93 and 97 profiles. These profiles also compute standard FGT poverty indexes of the individuals ABOVE the arbitrary wealth line chosen and their as well as contribution to these measures.

For 1997, the South-east region that contributes to 44% of the population, contributes to 60% of the riches and 62% if we take into account their distance to the wealth line assumed. These statistics were quite similar in 1990 indicating that reforms did not affect the spatial distribution of the wealth in Brazil between macroregions.

In terms of population density, while 18% of the population is in the core of metropolitan regions, 39% of the rich and 47% average wealth are located in these type of areas.

As expected the rich are overrepresented among those with unitary dependency ratios: 11% of total population against 29% among the rich. The rich are also overrepresented in groups that are paying their own house and those that rent, underepresented among those living in ceded places and on own house without land property rights and approximately represented in own house status with land rights.

The access to public services such as water, sanitation, electricity and garbage collection is nearly universal among the rich but not in the non-rich groups of the Brazilian society.

The gender, age and immigration status of the head of household biases among the rich are relatively small while the race bias is quite expressive: 53% of individuals are headed by whites, this statistic reaches 82% among the rich.

The importance of general human capital explanatory power is impressive: 7.83% of the population has 12 or more years of education while the share of this group corresponds to 44% among the rich and 61% when one take into account the extension of the rich group income. This last statistic was 53% in 1990 which indicates a sharp effect of the reforms on the composition of the riches towards highly educated groups.

In terms of specific human capital acquired through job tenure 43% of the total population declared to be headed by an individual with five or more years of experience in the present job while this statistic raises to 54% among the riches. In other words, most of the riches heads indicated that did not switch jobs during the reform period preserving and enhancing their stock of specific human capital.

Finally, the working class and sector of activity status of the heads of household status revealed that the riches are overrepresented among the public sector, services and employers in 1997. Among this group the increase of the employer group degree of overrepresentation is the most noticeable change observed.

3. Inequality decomposition exercises

This sub-section evaluates how much of the changes in inequality observed between pre-reform and post-reform periods comes from changes at the top of the distribution[3]. We do this exercise in two ways: we use the 10% richest and the group with university degrees.

Table 8
A. DECOMPOSITION THEIL-T INDEX – BRAZIL
Universe : Active Age Population - All Income Sources

| | 1976 | | | 1985 | | | 1990 | | |
	Total	Between	Within	Total	Between	Within	Total	Between	Within
10+	1.056	0.815	0.241	0.930	0.777	0.153	0.961	0.800	0.161
90-	-0.206	-0.300	0.094	-0.185	-0.295	0.110	-0.179	-0.298	0.119
Total	**0.850**	**0.516**	**0.334**	**0.745**	**0.482**	**0.263**	**0.782**	**0.502**	**0.281**

| | 1993 | | | 1997 | | |
	Total	Between	Within	Total	Between	Within
10+	0.991	0.792	0.199	0.902	0.756	0.147
90-	-0.200	-0.297	0.097	-0.192	-0.292	0.100
Total	**0.791**	**0.495**	**0.296**	**0.710**	**0.463**	**0.247**

Source: PNAD.

B. DECOMPOSITION THEIL-T INDEX - BRAZIL
Universe : Economically Active Population - All Income Sources

| | 1976 | | | 1985 | | | 1990 | | |
	Total	Between	Within	Total	Between	Within	Total	Between	Within
10+	1.002	0.812	0.189	0.866	0.752	0.114	0.883	0.763	0.119
90-	-0.177	-0.297	0.120	-0.146	-0.288	0.141	-0.135	-0.288	0.153
Total	**0.825**	**0.515**	**0.309**	**0.720**	**0.464**	**0.256**	**0.748**	**0.475**	**0.273**

| | 1993 | | | 1997 | | |
	Total	Between	Within	Total	Between	Within
10+	0.957	0.794	0.162	0.858	0.740	0.118
90-	-0.164	-0.295	0.130	-0.159	-0.287	0.128
Total	**0.793**	**0.500**	**0.293**	**0.699**	**0.453**	**0.246**

Source: PNAD.

C. DECOMPOSITION THEIL-T INDEX - BRAZIL
Universe : Per Capita - All Income Sources

| | 1976 | | | 1985 | | | 1990 | | |
	Total	Between	Within	Total	Between	Within	Total	Between	Within
10+	0.966	0.806	0.159	0.817	0.722	0.095	0.864	0.756	0.108
90-	-0.140	-0.294	0.155	-0.119	-0.280	0.161	-0.116	-0.286	0.170
Total	**0.826**	**0.512**	**0.314**	**0.698**	**0.443**	**0.255**	**0.748**	**0.470**	**0.278**

| | 1993 | | | 1997 | | |
	Total	Between	Within	Total	Between	Within
10+	0.889	0.759	0.131	0.835	0.732	0.103
90-	-0.134	-0.287	0.153	-0.120	-0.282	0.162
Total	**0.756**	**0.472**	**0.283**	**0.715**	**0.450**	**0.265**

3.1 The top 10%

Table 8.A. to C. shows the details for the top 10%/90% decomposition, with these elements one can assess how the share of the overall Theil due to the 10% changed over time. It is defined as the total between groups Theil plus the within group for 10% richest as a percentage of the total Theil index. Thus for example for 1990, the percentage contribution of the top 10% is

(.475+.119)/0.748 = 74.9%. This evidence demonstrates that it is differences within the top group and between it and everyone else that are mainly responsible for high levels of inequality in Brazil. Of these two sources of inequality, differences in average income are by far the most important component.

While the absolute contribution of the rich to total inequality is extremely high, there is not much evidence to suggest that it has increased over the period of the reforms. In the 1990-93 period this contribution in the case of the economically active population has risen from 79.5 to 83.5 then fall to 81.7 in 1997. It is interesting to note that the peak of the series was found in 1976. The contribution of the top 10% according to the active age population concept displays a similar movement rising from 84.8 to 87.7. between 1990 and 1993 then falling to 85.9 in 1997. Finally, the per capita income concept displays a similar movement in the reform period, the only difference is that the fall observed in the 1993-97 period more than compensates the rise observed in the 1990-93 period. The top 10% contribution to inequality rises from 59.5 to 66.2 between 1990 and 1993 then falls to 57.2 in 1997.

3.2 University Graduates

The decomposition for university graduates is shown in table 9. One of the reasons why this breakdown is of interest is the evidence that growth is increasingly skill-intensive and that there has been a rise in the skill-differential between the university group and the rest of the labor force. The idea here is to evaluate how much this increased differential has contributed to changes in inequality over the period. In addition we can look at changes within the university group to see whether the new economic model has created a subgroup of winners within those with the university group. If that has occurred we will see it reflected in a rise in the within groups Theils.

Table 9
PERCENT OF TOTAL VARIANCE EXPLAINED BY UNIVERSITY GRADS - BRAZIL
Universe:Occupied - Labor Income Normalized By Hours

	Pop Share	Y Share	Theil	Within	Between	Total	Percent of Contrib. Univ.	Skill Diff.
1976								
Univ. Grad	0.0032	0.0272	0.3600	0.00979	0.05848			
Rest	0.9968	0.9728	0.7840	0.76268	-0.02373			
Total	1.0000	1.0000		0.77247	0.03475	0.80722	5.52%	8.8
1990								
Univ. Grad	0.0071	0.0485	0.4326	0.02100	0.09332			
Rest	0.9929	0.9515	0.7932	0.75467	-0.04057			
Total	1.0000	1.0000		0.77567	0.05275	0.82842	8.90%	7.13
1997								
Univ. Grad	0.0083	0.0567	0.4100	0.02323	0.10857			
Rest	0.9917	0.9433	0.7645	0.72114	-0.04713			
Total	1.0000	1.0000		0.74437	0.06144	0.80581	10.51%	7.14

Source: PNAD and Morley (1999).

The rise in the university group contribution to overall inequality was so great that it completely offsets favorable trends in the remainder of the population. If one looks at the within

group Theils for the non-university group, one can see what inequality would look like and how it would have changed over the period.

Morley (1999) determined how much of the rise in the university contribution comes from the increase in the skill differential, how much comes from the change in the size of the university group, and how much comes from increased variance within the university group itself. Is the rising university component of inequality because growth is raising the return of all university graduates relative to everyone else, or is it because the new economic model is creating a sub-group of big winners among the university group, or is it mainly because the size of the group is getting bigger? Brazil offers a curious contrast to the other countries in the sample. In Brazil the contribution of university graduates to total inequality is far lower than elsewhere in spite of the fact that its skill differential is by far the highest in the region. Looking at the table, the reason is that the fraction of the labor force with university education is so small, that it simply does not carry much weight in any inequality computations.

This illustrates an important point, and a serious problem for those wishing for a reduction in observed inequality. As Morley (1999) put, "As Brazil gradually improves its education profile, the percentage of university graduates in its labor force is going to rise. If nothing else changes, that improvement is going to increase inequality. Look again at the calculations for occupied labor for 1976 for Brazil. The total Theil was .81, university graduates made up only.3% of the adult population, and they earned 8.8 times as much as the non-university group. To show how this works, suppose that over time the university groups expands until it accounts for 5% of the labor force. If the wage differential stays at 8.8, the group will have about 31.5% of total income. Holding the within group Theils constant at their 1976 levels, we can calculate the hypothetical distribution with this better educated labor force. It turns out to be a full twenty points higher than the 1976 distribution. For countries with very small university educated population, raising the share of the university graduates in the labor force is regressive over a large range or for a very long time unless it is accompanied by a significant decline in the skill differential. In the Brazil case, to hold the overall Theil constant at its 1976 level when the university population share grows to 5%, one would have to cut the skill differential in half. (from 8.8 to 4.2). The reason that countries have this problem is that a small favored group (the university graduates) expands relative to the rest of the population. That is regressive, until the group gets big enough to be representative of the population as a whole."

Rates of return to schooling: This sub-section complements the previous one assessing the changes observed in the rates of return to schooling during the reform period. The continuous movement of active age individuals towards higher years of schooling brackets combined with the trend towards technological progress based on high skilled workers generate ambiguous effects on the rates of returns to education (table 10.A. and B.).

In the period of reforms 1990-97 the rate of return to primary and secondary education levels falls while the rate of return on university degree rises steeply. Overall, calculations based on more desegregated categories show that the average rate of return to each additional years of schooling falls from 18% to 17%.

Table 10
A. RETURNS TO SCHOOLING (BASIS: 0 YEARS OF EDUCATION)
Universe : Economically Active Population - All Income Sources

Years of Schooling	1976	1985	1990	1993	1997
0	1.00	1.00	1.00	1.00	1.00
1-4	1.88	1.77	1.80	1.65	1.70
4-8	2.59	2.26	2.24	1.91	2.05
8-12	4.01	3.80	3.75	3.24	3.35
12-16	10.11	9.79	9.26	8.35	8.48
16+	17.67	17.35	14.99	14.75	16.12

Source: PNAD

B. POPULATION COMPOSITION (%)
Universe : Economically Active Population - All Income Sources

Years of Schooling	1976	1985	1990	1993	1997
0	24.4	18.2	15.5	14.9	12.9
1-4	43.7	38.6	35.2	37.4	33.0
4-8	18.5	22.1	24.2	23.3	25.4
8-12	9.0	14.3	17.1	17.0	20.3
12-16	4.1	6.3	7.3	6.8	7.6
16+	0.3	0.4	0.7	0.7	0.8

Source: PNAD

PART B. DYNAMIC ASPECTS OF INCOME DISTRIBUTION

The second part of the paper explores PME monthly household surveys to extract relations between movements of distributive variables, on the one hand, and economic reforms and macroeconomic fluctuations, on the other. It first provides a description of PME data used. We argue that PME allows higher degrees of freedom to choose pre and post stabilization dates. At the same time, PME longitudinal aspect allows us to refine the inequality decomposition exercises performed in section 4 with PNAD. Then it qualifies the effects of the 1994 stabilization on income distribution. The remaining of this part attempts to isolate distributive effects of macro shocks and policies using standard time-series techniques.

VI. REFORMS, STABILIZATION AND INCOME DISTRIBUTION

We start providing a brief description of PME that will also be used in the section 7.

1. Description of Pesquisa Mensal do Emprego – PME

This monthly employment survey was performed in the six main Brazilian metropolitan regions by IBGE. It covered an average of 40000 monthly households since 1980. PME presents detailed characteristics on personal and occupational characteristics of all household members. This allows to perform standard inequality decomposition analysis. PME large sample size combined with its high frequency also allow us to construct monthly time series on earnings distribution at a reasonably detailed level of desegregation.

Finally, PME replicates the US Current Population Survey (CPS) sampling scheme attempting to collect information on the same dwelling eight times during a period of 16 months. More specifically, PME attempts to collect information on the same dwelling during months t, t+1, t+2, t+3, t+12, t+13, t+14, t+15. This short-run panel characteristic of PME will allow us to infer a few dynamic aspects of reforms on income distribution.

2. An updated assessment of inequality

Despite of its geographical and income concepts limitations, PME is more suitable than PNAD to provide a detailed picture of the effects of macroeconomic shocks and in particular stabilization on income inequality in Brazil. First, the peak of inflation was reached in mid-1994 just before the launching of the Real plan. Unfortunately, PNAD did not go to the field in 1994 so the PNAD-93 (it went to the field in September) analyzed in sections 3 and 4 is not the ideal

proxy for the inequality level just before stabilization was implemented in Brazil. PME can be more suitably used for this purpose. For example, the first line of table 11.A. shows that labor earnings Theil-T for the population that were always occupied during four observations in 1994 was 11% above the corresponding one for 1993 (0.79 against 0.71). Similar comparisons using Ginis found on the first line of table 6.1.B. shows that the values found for 1994 were 4.3% above the values found for 1993 (0.62 against 0.59).

Second, the various external shocks that hit the Brazilian economy in September 97 (Asian crisis), August 98 (Russian Crisis) and January 99 (Real Devaluation Crisis) should be incorporated in the analysis. Otherwise, we would have a too optimistic view of the behavior of the trends of Brazilian income distribution and its relation with economic reforms (in particular, the opening of the economy). In this sense, PNAD-97 (September) the last national level survey available can be perceived only as a (broad) picture just before the new waves of external shocks hit the Brazilian economy.

The comparison between PME data gathered in 1998, 1997 and 1996 provides evidence on the effects of Asian Crisis on Brazilian income distribution. The first line of table 11.A shows that labor earnings Theil-T for the population that were always occupied during four observations went from 0.533 in 1996 to 0.545 in 1997 and to 0.547 in 1998. That is the upward inequality movement occurred before the bulk of the effects of the Asian Crisis were felt. At the same time, the upward trend observed between 1996 and 1998 is not confirmed by the Gini coefficient series presented on table 11.B.

One could argue that given the rise of unemployment rates observed after January 1998, most of the effects of the 1997 Asian Crisis were not exerted on the occupied population. Nevertheless, the first line of table 11.C shows the Gini for the group of active age individuals were almost constant between 1997 and 1998.

Finally, one could extrapolate this exercise to make inferences about the possible effects of the Russian crisis on income distribution not yet fully incorporated in the data. The effects of the latest Devaluation Crisis are harder to predict given the exchange rate regime shift observed[4].

3. PME longitudinal aspect and inequality comparisons

We also decided to incorporate PME data because its longitudinal aspects provide relevant insights of what happen to inequality in Brazil during the recent years, specially the pre and post stabilization inequality comparisons. We used PME the micro-longitudinal aspect of PME in two alternative ways: first, the 4 consecutive observations of the same individuals were treated independently before inequality measures were assessed. The second way took earnings average across four months before inequality measures were calculated. In the case of the Theil-T the following decomposition is exact: Month by Month Theil-T equals to Mean Earnings Theil-T plus Individual Earnings Across Time Theil-T. In other words, the difference in levels between month by month and average across four months inequality measures is explained by the variability component of individual earnings across the four month period.

Table 11

A.-

Population Concept - Income Concept	THEIL-T INDEX						
	1985	**1990**	**1993**	**1994**	**1996**	**1997**	**1998**
Always Occupied - Month by Month	0.504	0.651	0.709	0.787	0.533	0.545	0.547
Always Occupied - Mean Earnings	0.448	0.580	0.551	0.646	0.497	0.508	0.512

B.-

Population Concept - Income Concept	GINI COEFFICIENT						
	1985	**1990**	**1993**	**1994**	**1996**	**1997**	**1998**
Always Occupied - Month by Month	0.520	0.566	0.592	0.618	0.527	0.530	0.527
Always Occupied - Mean Earnings	0.496	0.541	0.529	0.566	0.510	0.514	0.512

C.-

Population Concept - Income Concept	THEIL-T INDEX			GINI COEFFICIENT		
	1993	**1997**	**1998**	**1993**	**1997**	**1998**
Once Occupied - Month by Month	0.915	0.746	0.753	0.6666	0.6142	0.6137
Once Occupied - Mean Earnings	0.703	0.653	0.660	0.5955	0.5810	0.5806

Source : PME

D.-

Population Concept - Income Concept	GINI COEFFICIENT		
	1993	**1997**	**1998**
Active Age Individuals - Month by Month	0.8021	0.7634	0.7688
Active Age Individuals- Mean Earnings	0.7599	0.7431	0.7490

Source : PME

The main result here is that the fall of month to month inequality measures observed after the fall of inflation in 94 drastically overestimates the fall of inequality when one compares it with mean earnings across four months. The comparison of the first two lines of table 11.A shows that among the always occupied population the month by month Theil-T indices fall from 0.709 in 1993 to 0.545 in 1997. The same concept of Gini coefficient time series presented on the third line of table 1.A. present a fall from 0.592 to 0.530. The fall of inequality measures based on mean individual earnings across four months is much smaller than in the case of monthly earnings. Theil-T falls from 0.551 to 0.508 between 1993 and 1997 while Ginis fell from 0.529 to 0.514. Similar results were obtained for two other population concepts such as the active age population and individuals at least once occupied in four consecutive observations shown in tables 11 C. and 11.D, respectively.

The greater fall of traditional monthly inequality measures in comparison to four month based measures is explained by the fall of the individual volatility measures observed produced by the sharp fall of inflation rates observed in this period. In sum, stabilization produced more stable earnings trajectories (i.e., lower temporal inequality (in fact, volatility) of individual earnings). On the other hand, the observed fall of stricto sensu inequality was much smaller than monthly earnings based inequality measures suggest.

In sum, the post-stabilization inequality fall for the group of always occupied population inequality measures is much higher on a monthly basis that is traditionally used in Brazil than when one uses mean earnings across four months. The fall of Theils and Ginis is between 2 and 4 times higher when one uses the former concept.

Another way of looking at the effects of inflation and stabilization mentioned above on inequality measures is to note that most of the fall of the inequality measures is attributed to the within groups component, specially in the month by month inequality measures. Tables 12.A to D present a desegregated view of these components for the population always occupied in four consecutive observations for 1997 and their changes observed between 1993 and 1997, 1994 and 1997 and 1997 and 1998. Tables 13. synthesizes this information in terms of the gross and the marginal contribution of different groups characteristics[5]. For example, in 1993 the sum of the marginal contributions of the three main characteristics between groups component explains only 31.5% of total inequality, this statistic rises to 42.3% in 1997 which correspond to a 34.3% increase of relative contributive power to total inequality. In the case of the corresponding measures based on mean earnings across 4 months, the relative rise of explanatory power is 12%. These results seems to corroborate the idea that the explained part of the inequality fall tends to increase as we approximate the permanent income concept.

Overall, the main point of this section is that most of the monthly earnings inequality fall observed after stabilization may be credited to a reduction of earnings volatility and not to a fall in permanent income inequality that may be denominated *stricto senso* inequality.

4. Other distributive impacts of stabilization[6]

Besides the volatility reduction effects of stabilization on earnings inequality measures discussed in the previous subsection stabilization produces *true* redistributive impacts of stabilization.

Reduction of the inflation tax:. The inflation tax results from the fact that some agents are not able to protect part of their financial wealth from inflation. During the period of high inflation in Brazil government bonds were indexed to inflation and very liquid. Agents who kept bank accounts were able to protect their financial wealth from inflation by using government bonds as a *store of value*. The low income group did not have bank accounts and therefore could not protect their cash balances from inflation. There were other forms of protection which the low income group could use: anticipating consumption and buying construction material for example. As inflation increased over the 1980's, these forms of protection were developed. However, since these forms of protection were partial, low income group families kept paying the inflation tax. When inflation fell from an average monthly rate of 45% to 2% in 1994, there was an income gain due to the reduction in the inflation tax. This gain was significantly more important to the low income families (10% gain) than to the middle and high income families (1% gain).

Changes in relative prices: The Real plan is part of the family of "exchange-rate based stabilization" plans in which the exchange rate plays an important part in imposing a ceiling for the prices of tradable goods. The prices of the non-tradable goods do not suffer from the opening of the

economy and the appreciation of the exchange rate. Hence there is a change in relative prices against the tradable sectors and in favor of the non-tradable sectors (see figure below). Low income workers are concentrated in some of the non-tradable sectors notably personal and social services. In the labor market, they are concentrated among the informal wage earners and the self-employed. In the educational scale, they are concentrated among the less educated. Hence, there are reasons to believe that the change in relative prices has important redistributive effects.

Tables 12
A. DECOMPOSITION THEIL-T INDEX 1997- BRAZIL
Universe : Longitudinal Data - 4 Observations - Always Occupied

		Mean Earnings			Month by Month		
		Total	Between	Within	Total	Between	Within
Gender	**Male**	0.443	0.097	0.346	0.470	0.097	0.373
	Female	0.065	-0.079	0.144	0.075	-0.079	0.154
Total		**0.508**	**0.018**	**0.490**	**0.545**	**0.018**	**0.527**
Age	**Up to 24 years**	-0.044	-0.067	0.023	-0.041	-0.067	0.026
	25 to 34 years	0.078	-0.025	0.103	0.087	-0.025	0.112
	35 to 59 years	0.455	0.135	0.320	0.478	0.135	0.342
	More than 60 years	0.019	0.004	0.016	0.021	0.004	0.017
Total		**0.508**	**0.047**	**0.461**	**0.545**	**0.047**	**0.498**
Schooling	**0 Years**	-0.011	-0.015	0.004	-0.010	-0.015	0.005
	1 to 4 years	-0.039	-0.072	0.033	-0.034	-0.072	0.039
	5 to 8 years	-0.029	-0.088	0.059	-0.020	-0.088	0.067
	9 to 12 years	0.101	0.001	0.100	0.112	0.001	0.111
	13 to 16 years	0.411	0.307	0.104	0.422	0.307	0.114
	More than 16 years	0.074	0.063	0.011	0.076	0.063	0.012
Total		**0.508**	**0.196**	**0.311**	**0.545**	**0.196**	**0.348**
Working Class*	**Public Servant**	0.107	0.045	0.063	0.111	0.045	0.067
	Formal Employee	0.131	-0.032	0.162	0.140	-0.032	0.172
	Informal Employee	-0.007	-0.023	0.016	-0.006	-0.023	0.017
	Self-Employed	0.036	-0.020	0.056	0.042	-0.020	0.062
	Employer	0.120	0.097	0.023	0.124	0.097	0.027
	Not specified	0.120	-0.007	0.128	0.133	-0.007	0.140
Total		**0.508**	**0.060**	**0.448**	**0.545**	**0.060**	**0.485**
Sector of Activity*	**Agriculture**	0.002	-0.001	0.003	0.003	-0.001	0.004
	Manufacturing	0.071	0.007	0.064	0.076	0.007	0.069
	Construction	0.008	-0.008	0.016	0.009	-0.008	0.017
	Public Sector	0.123	0.053	0.071	0.128	0.053	0.075
	Services	0.220	-0.038	0.257	0.238	-0.038	0.276
	Not specified	0.083	-0.002	0.086	0.091	-0.002	0.093
Total		**0.508**	**0.010**	**0.497**	**0.545**	**0.010**	**0.534**
Region	**Rio de Janeiro**	0.079	-0.006	0.085	0.085	-0.006	0.091
	São Paulo	0.203	0.078	0.125	0.214	0.078	0.136
	Porto Alegre	0.082	0.001	0.081	0.087	0.001	0.087
	Belo Horizonte	0.125	0.001	0.124	0.135	0.001	0.134
	Recife	0.009	-0.025	0.034	0.012	-0.025	0.037
	Salvador	0.009	-0.027	0.036	0.012	-0.027	0.039
Total		**0.508**	**0.022**	**0.486**	**0.545**	**0.022**	**0.523**

Source: PME

* Individuals that changed status are classified as Not Specified

B. VARIATION OF THEIL-T INDEX. BETWEEN 93 AND 97
Universe : Longitudinal Data - 4 Observations - Always Occupied

		Mean Earnings			Month by Month		
		Total	Between	Within	Total	Between	Within
Gender	**Male**	-0.043	-0.006	-0.037	-0.131	-0.006	-0.125
	Female	0.000	0.003	-0.003	-0.033	0.003	-0.037
Total		**-0.043**	**-0.003**	**-0.040**	**-0.164**	**-0.003**	**-0.161**
Age	**Up to 24 years**	-0.006	0.003	-0.009	-0.019	0.003	-0.023
	25 to 34 years	-0.049	-0.019	-0.030	-0.085	-0.019	-0.066
	35 to 59 years	0.011	0.021	-0.010	-0.057	0.021	-0.078
	More than 60 years	0.001	0.002	-0.001	-0.002	0.002	-0.005
Total		**-0.043**	**0.007**	**-0.050**	**-0.164**	**0.007**	**-0.171**
Schooling	**0 Years**	0.004	0.006	-0.002	0.001	0.006	-0.005
	1 to 4 years	-0.014	0.010	-0.024	-0.034	0.010	-0.044
	5 to 8 years	-0.017	-0.009	-0.008	-0.041	-0.009	-0.033
	9 to 12 years	-0.053	-0.038	-0.015	-0.087	-0.038	-0.049
	13 to 16 years	0.015	0.028	-0.013	-0.021	0.028	-0.049
	More than 16 years	0.022	0.021	0.000	0.019	0.021	-0.003
Total		**-0.043**	**0.019**	**-0.062**	**-0.164**	**0.019**	**-0.183**
Working Class*	**Public Servant**	0.014	0.010	0.003	-0.003	0.010	-0.013
	Formal Employee	-0.130	-0.071	-0.059	-0.184	-0.071	-0.113
	Informal Employee	0.003	-0.002	0.005	0.000	-0.002	0.003
	Self-Employed	0.026	0.007	0.019	0.017	0.007	0.010
	Employer	0.026	0.031	-0.005	0.016	0.031	-0.015
	Not specified	0.018	0.033	-0.015	-0.011	0.033	-0.045
Total		**-0.043**	**0.009**	**-0.052**	**-0.164**	**0.009**	**-0.173**
Sector of Activity*	**Agriculture**	0.003	0.001	0.002	0.003	0.001	0.002
	Manufacturing	-0.068	-0.029	-0.039	-0.094	-0.029	-0.065
	Construction	0.002	0.002	0.000	-0.002	0.002	-0.005
	Public Sector	0.022	0.018	0.003	0.003	0.018	-0.015
	Services	0.012	0.011	0.001	-0.040	0.011	-0.051
	Not specified	-0.014	-0.005	-0.009	-0.034	-0.005	-0.029
Total		**-0.043**	**-0.002**	**-0.041**	**-0.164**	**-0.002**	**-0.162**
Region	**Rio de Janeiro**	0.018	0.018	0.000	0.004	0.018	-0.014
	São Paulo	-0.005	0.012	-0.017	-0.041	0.012	-0.053
	Porto Alegre	0.037	0.013	0.023	0.016	0.013	0.002
	Belo Horizonte	-0.058	-0.022	-0.036	-0.090	-0.022	-0.068
	Recife	-0.036	-0.018	-0.018	-0.049	-0.018	-0.031
	Salvador	0.001	0.001	0.001	-0.005	0.001	-0.005
Total		**-0.043**	**0.004**	**-0.047**	**-0.164**	**0.004**	**-0.168**

Source: PME

* Individuals that changed status are classified as Not Specified

C. VARIATION OF THEIL-T INDEX - BETWEEN 94 AND 97
Universe : Longitudinal Data - 4 Observations - Always Occupied

		Mean Earnings			Month by Month		
		Total	Between	Within	Total	Between	Within
Gender	**Male**	-0.121	-0.010	-0.111	-0.199	-0.010	-0.190
	Female	-0.017	0.006	-0.023	-0.043	0.006	-0.049
Total		**-0.138**	**-0.004**	**-0.134**	**-0.243**	**-0.004**	**-0.239**
Age	**Up to 24 years**	-0.014	0.003	-0.017	-0.026	0.003	-0.029
	25 to 34 years	-0.073	-0.013	-0.059	-0.104	-0.013	-0.091
	35 to 59 years	-0.054	0.011	-0.065	-0.113	0.011	-0.124
	More than 60 years	0.003	0.003	0.000	0.001	0.003	-0.002
Total		**-0.138**	**0.003**	**-0.141**	**-0.243**	**0.003**	**-0.246**
Schooling	**0 Years**	0.005	0.008	-0.003	0.003	0.008	-0.006
	1 to 4 years	-0.021	0.014	-0.036	-0.039	0.014	-0.054
	5 to 8 years	-0.037	-0.011	-0.026	-0.058	-0.011	-0.047
	9 to 12 years	-0.087	-0.039	-0.048	-0.119	-0.039	-0.080
	13 to 16 years	-0.020	0.006	-0.026	-0.049	0.006	-0.055
	More than 16 years	0.022	0.020	0.002	0.020	0.020	-0.001
Total		**-0.138**	**-0.002**	**-0.136**	**-0.243**	**-0.002**	**-0.241**
Working Class*	**Public Servant**	-0.009	0.005	-0.014	-0.025	0.005	-0.030
	Formal Employee	-0.124	-0.046	-0.077	-0.170	-0.046	-0.123
	Informal Employee	0.003	0.005	-0.002	-0.001	0.005	-0.005
	Self-Employed	0.012	0.013	-0.001	0.003	0.013	-0.009
	Employer	-0.006	0.002	-0.008	-0.015	0.002	-0.017
	Not specified	-0.014	0.011	-0.025	-0.036	0.011	-0.047
Total		**-0.138**	**-0.011**	**-0.127**	**-0.243**	**-0.011**	**-0.231**
Sector of Activity*	**Agriculture**	0.003	0.001	0.002	0.003	0.001	0.002
	Manufacturing	-0.075	-0.031	-0.044	-0.094	-0.031	-0.063
	Construction	-0.002	0.002	-0.004	-0.006	0.002	-0.008
	Public Sector	-0.004	0.008	-0.011	-0.020	0.008	-0.028
	Services	-0.032	0.016	-0.048	-0.078	0.016	-0.094
	Not specified	-0.028	0.000	-0.027	-0.048	0.000	-0.047
Total		**-0.138**	**-0.005**	**-0.133**	**-0.243**	**-0.005**	**-0.238**
Region	**Rio de Janeiro**	0.002	0.018	-0.016	-0.013	0.018	-0.031
	São Paulo	-0.127	-0.050	-0.077	-0.166	-0.050	-0.116
	Porto Alegre	0.081	0.034	0.047	0.077	0.034	0.043
	Belo Horizonte	-0.070	-0.019	-0.051	-0.099	-0.019	-0.080
	Recife	-0.024	-0.011	-0.013	-0.033	-0.011	-0.023
	Salvador	-0.001	0.004	-0.005	-0.008	0.004	-0.012
Total		**-0.138**	**-0.024**	**-0.115**	**-0.243**	**-0.024**	**-0.219**

Source: PME

* Individuals that changed status are classified as Not Specified

D. VARIATION OF THEIL-T INDEX - BETWEEN 97 AND 98
Universe : Longitudinal Data - 4 Observations - Always Occupied

		Mean Earnings			Month by Month		
		Total	Between	Within	Total	Between	Within
Gender	**Male**	0.007	0.000	0.007	0.006	0.000	0.006
	Female	-0.002	0.000	-0.003	-0.003	0.000	-0.003
Total		**0.004**	**0.000**	**0.004**	**0.002**	**0.000**	**0.003**
Age	**Up to 24 years**	-0.001	-0.001	0.000	-0.001	-0.001	0.000
	25 to 34 years	-0.003	0.001	-0.004	-0.005	0.001	-0.005
	35 to 59 years	0.003	-0.003	0.006	0.003	-0.003	0.005
	More than 60 years	0.005	0.003	0.003	0.005	0.003	0.003
Total		**0.004**	**0.000**	**0.004**	**0.002**	**0.000**	**0.003**
Schooling	**0 Years**	0.002	0.002	0.000	0.001	0.002	-0.001
	1 to 4 years	0.001	0.006	-0.005	0.000	0.006	-0.006
	5 to 8 years	-0.012	-0.004	-0.007	-0.013	-0.004	-0.009
	9 to 12 years	0.002	-0.005	0.007	0.002	-0.005	0.007
	13 to 16 years	0.016	0.002	0.014	0.016	0.002	0.014
	More than 16 years	-0.005	-0.004	-0.001	-0.005	-0.004	-0.001
Total		**0.004**	**-0.003**	**0.007**	**0.002**	**-0.003**	**0.005**
Working Class*	**Public Servant**	-0.009	-0.003	-0.006	-0.009	-0.003	-0.006
	Formal Employee	-0.013	-0.007	-0.006	-0.014	-0.007	-0.007
	Informal Employee	-0.001	-0.002	0.001	-0.001	-0.002	0.001
	Self-Employed	-0.009	-0.005	-0.004	-0.009	-0.005	-0.005
	Employer	0.008	0.004	0.004	0.008	0.004	0.004
	Not specified	0.028	0.015	0.013	0.028	0.015	0.012
Total		**0.004**	**0.003**	**0.001**	**0.002**	**0.003**	**0.000**
Sector of Activity*	**Agriculture**	0.000	0.000	0.000	0.000	0.000	-0.001
	Manufacturing	-0.001	-0.003	0.002	-0.002	-0.003	0.001
	Construction	-0.003	-0.002	-0.001	-0.003	-0.002	-0.001
	Public Sector	-0.002	0.000	-0.002	-0.003	0.000	-0.002
	Services	0.001	-0.004	0.005	0.001	-0.004	0.004
	Not specified	0.009	0.009	0.001	0.010	0.009	0.001
Total		**0.004**	**0.001**	**0.004**	**0.002**	**0.001**	**0.002**
Region	**Rio de Janeiro**	0.009	0.004	0.004	0.008	0.004	0.004
	São Paulo	-0.024	-0.013	-0.010	-0.025	-0.013	-0.011
	Porto Alegre	0.028	0.006	0.022	0.029	0.006	0.023
	Belo Horizonte	-0.026	-0.004	-0.022	-0.029	-0.004	-0.025
	Recife	0.010	-0.001	0.011	0.011	-0.001	0.012
	Salvador	0.007	0.002	0.005	0.008	0.002	0.005
Total		**0.004**	**-0.005**	**0.009**	**0.002**	**-0.005**	**0.007**

Source: PME

* Individuals that changed status are classified as Not Specified

Tables 13

A. GROSS AND MARGINAL RATES OF CONTRIBUTION THEIL-T

Universe : Longitudinal Data - 4 Observations - Always Occupied

Mean Earnings Across 4 Months

	GROSS							MARGINAL						
	1985	**1990**	**1993**	**1994**	**1996**	**1997**	**1998**	**1985**	**1990**	**1993**	**1994**	**1996**	**1997**	**1998**
Groups:														
Gender	6.5%	4.4%	3.7%	3.4%	3.6%	3.5%	3.4%							
Age	9.7%	8.7%	7.1%	6.7%	9.1%	9.2%	9.0%	10.4%	7.0%	6.3%	5.7%	6.9%	7.1%	7.6%
Schooling	34.5%	35.8%	32.2%	30.7%	37.5%	38.7%	37.8%	31.5%	30.7%	28.8%	26.8%	32.5%	33.2%	33.1%
Working Class*	10.7%	10.5%	9.2%	11.0%	11.8%	11.8%	12.2%	5.2%	4.5%	5.4%	6.3%	5.7%	5.2%	5.8%
Sector of Activity*	3.4%	2.7%	2.2%	2.3%	1.7%	2.0%	2.1%							
Region	1.6%	2.0%	3.2%	7.0%	4.9%	4.3%	3.3%							

Source: PME

* Individuals that changed status are classified as Not Specified

B. GROSS AND MARGINAL RATES OF CONTRIBUTION THEIL-T

Universe : Longitudinal Data - 4 Observations - Always Occupied

Month by Month Labor Earnings

	GROSS							MARGINAL						
	1985	**1990**	**1993**	**1994**	**1996**	**1997**	**1998**	**1985**	**1990**	**1993**	**1994**	**1996**	**1997**	**1998**
Groups:														
Gender	5.8%	4.0%	2.9%	2.8%	3.4%	3.3%	3.2%							
Age	8.6%	7.8%	5.5%	5.5%	8.4%	8.6%	8.5%	9.3%	6.2%	4.9%	4.7%	6.4%	6.6%	7.1%
Schooling	30.6%	31.9%	25.0%	25.2%	34.9%	36.1%	35.4%	27.9%	27.4%	22.4%	22.0%	30.2%	30.9%	31.0%
Working Class*	9.5%	9.3%	7.2%	9.0%	11.0%	11.0%	11.5%	4.6%	4.0%	4.2%	5.2%	5.3%	4.8%	5.4%
Sector of Activity*	3.0%	2.4%	1.7%	1.9%	1.6%	1.9%	2.0%							
Region	1.4%	1.8%	2.5%	5.8%	4.5%	4.0%	3.1%							

Source: PME

* Individuals that changed status are classified as Not Specified

Tables 14
A. DECOMPOSITION THEIL-T INDEX 1997- BRAZIL
Universe : Longitudinal Data - Once Occupied in 4 Observations

		Mean Earnings			Month by Month		
		Total	**Between**	**Within**	**Total**	**Between**	**Within**
Gender	**Male**	0.553	0.131	0.422	0.610	0.131	0.479
	Female	0.100	-0.101	0.201	0.135	-0.101	0.236
Total		**0.653**	**0.030**	**0.623**	**0.746**	**0.030**	**0.715**
Age	**Up to 24 years**	-0.044	-0.088	0.044	-0.026	-0.088	0.062
	25 to 34 years	0.124	-0.008	0.131	0.146	-0.008	0.154
	35 to 59 years	0.550	0.164	0.387	0.599	0.164	0.435
	More than 60 years	0.023	0.001	0.023	0.027	0.001	0.026
Total		**0.653**	**0.069**	**0.585**	**0.746**	**0.069**	**0.677**
Schooling	**0 Years**	-0.011	-0.018	0.007	-0.008	-0.018	0.010
	1 to 4 years	-0.025	-0.079	0.054	-0.008	-0.079	0.071
	5 to 8 years	-0.003	-0.093	0.090	0.022	-0.093	0.115
	9 to 12 years	0.152	0.018	0.134	0.179	0.018	0.162
	13 to 16 years	0.462	0.338	0.124	0.481	0.338	0.143
	More than 16 years	0.078	0.066	0.011	0.079	0.066	0.013
Total		**0.653**	**0.232**	**0.421**	**0.746**	**0.232**	**0.514**
Working Class*	**Unemployed**	-0.019	-0.033	0.014	-0.002	-0.033	0.031
	Inactive	-0.007	-0.009	0.003	-0.001	-0.009	0.008
	Public Servant	0.148	0.076	0.071	0.154	0.076	0.078
	Formal Employee	0.236	0.045	0.191	0.255	0.045	0.210
	Informal Employee	0.007	-0.046	0.053	0.018	-0.046	0.065
	Self-Employed	0.103	-0.017	0.119	0.125	-0.017	0.142
	Employer	0.187	0.143	0.044	0.196	0.143	0.053
	Unpaid	-0.001	-0.002	0.001	0.000	-0.002	0.002
	Not specified	0.000	0.000	0.000	0.000	0.000	0.000
Total		**0.653**	**0.201**	**0.478**	**0.746**	**0.201**	**0.548**
Sector of Activity*	**Agriculture**	0.003	-0.001	0.004	0.004	-0.001	0.005
	Manufacturing	0.122	0.034	0.088	0.133	0.034	0.099
	Construction	0.018	-0.010	0.027	0.023	-0.010	0.033
	Public Sector	0.190	0.096	0.094	0.199	0.096	0.103
	Services	0.347	0.010	0.336	0.390	0.010	0.380
	Not specified	-0.026	-0.042	0.016	-0.003	-0.042	0.039
Total		**0.653**	**0.087**	**0.566**	**0.746**	**0.087**	**0.658**
Region	**Rio de Janeiro**	0.106	0.005	0.101	0.120	0.005	0.115
	São Paulo	0.250	0.090	0.160	0.274	0.090	0.184
	Porto Alegre	0.108	0.008	0.100	0.121	0.008	0.112
	Belo Horizonte	0.162	0.002	0.160	0.185	0.002	0.183
	Recife	0.015	-0.031	0.046	0.023	-0.031	0.054
	Salvador	0.013	-0.039	0.052	0.023	-0.039	0.062
Total		**0.653**	**0.035**	**0.618**	**0.746**	**0.035**	**0.711**

Source: PME

* Refers to the status observed at the second observation

B. VARIATION OF THEIL-T INDEX BRAZIL- BETWEEN 93 AND 97
Universe : Longitudinal Data - Once Occupied in 4 Observations

		Mean Earnings			Month by Month		
		Total	**Between**	**Within**	**Total**	**Between**	**Within**
Gender	**Male**	-0.052	-0.015	-0.037	-0.138	-0.015	-0.124
	Female	0.002	0.008	-0.005	-0.031	0.008	-0.039
Total		**-0.050**	**-0.007**	**-0.043**	**-0.170**	**-0.007**	**-0.163**
Age	**Up to 24 years**	-0.011	0.003	-0.015	-0.027	0.003	-0.031
	25 to 34 years	-0.056	-0.019	-0.037	-0.094	-0.019	-0.075
	35 to 59 years	0.020	0.023	-0.004	-0.042	0.023	-0.065
	More than 60 years	-0.002	0.001	-0.003	-0.006	0.001	-0.008
Total		**-0.050**	**0.009**	**-0.059**	**-0.170**	**0.009**	**-0.179**
Schooling	**0 Years**	0.003	0.007	-0.004	-0.001	0.007	-0.008
	1 to 4 years	-0.025	0.009	-0.035	-0.049	0.009	-0.058
	5 to 8 years	-0.023	-0.010	-0.013	-0.049	-0.010	-0.039
	9 to 12 years	-0.051	-0.039	-0.012	-0.083	-0.039	-0.044
	13 to 16 years	0.025	0.031	-0.006	-0.008	0.031	-0.039
	More than 16 years	0.022	0.022	0.000	0.019	0.022	-0.003
Total		**-0.050**	**0.020**	**-0.070**	**-0.170**	**0.020**	**-0.190**
Working Class*	**Unemployed**	-0.001	0.001	-0.002	-0.003	0.001	-0.004
	Inactive	-0.001	0.000	-0.001	-0.002	0.000	-0.002
	Public Servant	0.018	0.012	0.006	0.000	0.012	-0.011
	Formal Employee	-0.138	-0.079	-0.059	-0.197	-0.079	-0.118
	Informal Employee	0.005	-0.005	0.010	-0.003	-0.005	0.002
	Self-Employed	0.042	0.013	0.029	0.030	0.013	0.017
	Employer	0.035	0.038	-0.003	0.023	0.038	-0.015
	Unpaid	0.000	0.000	0.000	0.000	0.000	0.000
	Not specified	-0.008	0.022	-0.030	-0.018	0.022	-0.040
Total		**-0.050**	**0.000**	**-0.048**	**-0.170**	**0.000**	**-0.165**
Sector of Activity*	**Agriculture**	0.002	0.001	0.001	0.001	0.001	0.000
	Manufacturing	-0.085	-0.039	-0.046	-0.114	-0.039	-0.075
	Construction	0.001	0.002	0.000	-0.005	0.002	-0.006
	Public Sector	0.024	0.019	0.005	0.002	0.019	-0.017
	Services	0.010	0.014	-0.005	-0.049	0.014	-0.063
	Not specified	-0.002	0.001	-0.003	-0.005	0.001	-0.006
Total		**-0.050**	**-0.003**	**-0.047**	**-0.170**	**-0.003**	**-0.167**
Region	**Rio de Janeiro**	0.022	0.021	0.001	0.009	0.021	-0.012
	São Paulo	-0.018	0.003	-0.020	-0.055	0.003	-0.058
	Porto Alegre	0.044	0.018	0.025	0.025	0.018	0.006
	Belo Horizonte	-0.058	-0.022	-0.036	-0.088	-0.022	-0.066
	Recife	-0.040	-0.012	-0.028	-0.056	-0.012	-0.044
	Salvador	0.000	-0.002	0.002	-0.004	-0.002	-0.002
Total		**-0.050**	**0.006**	**-0.056**	**-0.170**	**0.006**	**-0.176**

Source: PME

* Refers to the status observed at the second observation

C. VARIATION OF THEIL-T INDEX – BRAZIL BETWEEN 97 AND 98
Universe : Longitudinal Data - Once Occupied in 4 Observations

		Mean Earnings			Month by Month		
		Total	Between	Within	Total	Between	Within
Gender	**Male**	0.005	-0.005	0.010	0.007	-0.005	0.012
	Female	0.001	0.003	-0.002	0.001	0.003	-0.002
Total		**0.006**	**-0.002**	**0.008**	**0.007**	**-0.002**	**0.009**
Age	**Up to 24 years**	0.001	0.001	0.000	0.000	0.001	-0.001
	25 to 34 years	-0.004	-0.002	-0.002	-0.004	-0.002	-0.002
	35 to 59 years	0.004	-0.004	0.008	0.006	-0.004	0.010
	More than 60 years	0.005	0.002	0.003	0.005	0.002	0.003
Total		**0.006**	**-0.002**	**0.009**	**0.007**	**-0.002**	**0.010**
Schooling	**0 Years**	0.001	0.002	0.000	0.001	0.002	-0.001
	1 to 4 years	-0.001	0.006	-0.007	-0.003	0.006	-0.009
	5 to 8 years	-0.010	-0.003	-0.006	-0.010	-0.003	-0.007
	9 to 12 years	0.003	-0.007	0.010	0.005	-0.007	0.012
	13 to 16 years	0.019	0.006	0.013	0.020	0.006	0.014
	More than 16 years	-0.006	-0.005	-0.001	-0.006	-0.005	0.000
Total		**0.006**	**-0.002**	**0.008**	**0.007**	**-0.002**	**0.009**
Working Class*	**Unemployed**	0.001	0.001	0.000	0.001	0.001	0.001
	Inactive	-0.002	-0.002	0.001	0.000	-0.002	0.002
	Public Servant	0.004	0.005	-0.001	0.004	0.005	-0.001
	Formal Employee	-0.010	-0.002	-0.009	-0.011	-0.002	-0.009
	Informal Employee	0.004	0.000	0.004	0.003	0.000	0.004
	Self-Employed	-0.014	-0.006	-0.009	-0.016	-0.006	-0.010
	Employer	0.023	0.014	0.009	0.025	0.014	0.011
	Unpaid	0.000	0.000	0.000	0.000	0.000	0.000
	Not specified	0.000	0.000	0.000	0.000	0.000	0.000
Total		**0.006**	**0.011**	**-0.005**	**0.007**	**0.011**	**-0.005**
Sector of Activity*	**Agriculture**	0.001	0.001	0.001	0.002	0.001	0.001
	Manufacturing	0.000	-0.002	0.002	-0.001	-0.002	0.002
	Construction	-0.005	-0.003	-0.003	-0.005	-0.003	-0.003
	Public Sector	0.004	0.005	0.000	0.004	0.005	0.000
	Services	0.006	0.004	0.003	0.006	0.004	0.003
	Not specified	0.000	-0.002	0.001	0.001	-0.002	0.003
Total		**0.006**	**0.002**	**0.004**	**0.007**	**0.002**	**0.005**
Region	**Rio de Janeiro**	0.010	0.006	0.005	0.011	0.006	0.005
	São Paulo	-0.027	-0.015	-0.013	-0.028	-0.015	-0.014
	Porto Alegre	0.035	0.009	0.026	0.037	0.009	0.028
	Belo Horizonte	-0.034	-0.006	-0.028	-0.038	-0.006	-0.033
	Recife	0.013	-0.002	0.015	0.015	-0.002	0.017
	Salvador	0.009	0.001	0.008	0.011	0.001	0.010
Total		**0.006**	**-0.006**	**0.012**	**0.007**	**-0.006**	**0.013**

Source: PME

* Refers to the status observed at the second observation

Tables 15
A. GROSS AND MARGINAL RATES OF CONTRIBUTION THEIL-T
Universe : Longitudinal Data - Once Occupied in 4 Observations
Month by Month Labor Earnings

	GROSS			MARGINAL		
	1993	**1997**	**1998**	**1993**	**1997**	**1998**
Groups:						
Gender	4.1%	4.1%	3.7%			
Age	6.5%	9.2%	8.8%	4.3%	5.4%	5.4%
Schooling	23.1%	31.1%	30.5%	17.1%	22.5%	21.9%
Working Class*	22.0%	26.8%	28.1%	9.6%	10.1%	10.7%
Sector of Activity*	9.8%	11.7%	11.9%			
Region	3.2%	4.7%	3.9%			

Source: PME

* Refers to the status observed at the second observation

B. GROSS AND MARGINAL RATES OF CONTRIBUTION THEIL-T
Universe : Longitudinal Data - Once Occupied in 4 Observations
Mean Earnings Across 4 Months

	GROSS			MARGINAL		
	1993	**1997**	**1998**	**1993**	**1997**	**1998**
Groups:						
Gender	5.3%	4.6%	4.3%			
Age	8.5%	10.5%	10.0%	5.6%	6.2%	6.2%
Schooling	30.1%	35.5%	34.8%	22.2%	25.7%	25.0%
Working Class*	27.6%	29.6%	30.9%	12.6%	11.5%	12.3%
Sector of Activity*	12.8%	13.3%	13.5%			
Region	4.1%	5.4%	4.4%			

Source: PME

* Refers to the status observed at the second observation

VII. MACRO DETERMINANTS OF INCOME DISTRIBUTION: A TIME SERIES APPROACH

The possibility of constructing for the 1980-99 period monthly series of specially tailored variables according to individual and family records of PME allow us to apply standard time series techniques capturing the effects of macro variables on labor earnings distribution variables. All the variables included in the regression are expressed in logs, so the coefficients can be read directly as elasticities. We analyze below the partial correlation patterns between macro variables (unemployment, inflation , various types of exchange rates, interest rates and minimum wages) and the following endogenous variables:

- a) Gini coefficient of labor earnings.
- b) Mean earnings.
- c) Mean earnings of different groups by Years of Schooling, Age, Household Status, Sector of Activity and Working Class.

The series discussed above are presented in Graphs 2 A to H.

1. Income distribution determinants

The option adopted here was to center the analysis on the whole active age population (including individuals with null incomes) during the 1982-96 period. The fact that some relevant variables related to the exchange rate regime are only available for this period explains this choice. In terms of inequality measure, we choose the Gini coefficient since, as opposed to the Theil-T, it can incorporate null incomes into the analysis. Table 16. presents the central equation to be analyzed here where the Gini is the dependent variable[7]. We also analyze the effect of each macro variable in isolation on mean earnings (also on table 16) and on mean earnings of different socio-economic groups (Tables 18.A. to E.)[8]. The idea of this last exercise is to identify the main winners and losers of specific macroeconomic innovations, meaning both exogenous shocks and policies adopted. Graphs 3 A to G present the relative earnings of these groups in 1982, 1997 and in the whole 1982-97 period, so we can assess how well off were these groups at different intervals. Heuristically, this part can be perceived as the time series counterpart of the inequality decomposition analysis developed in section 4.
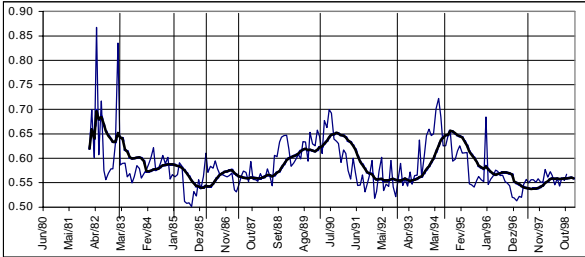
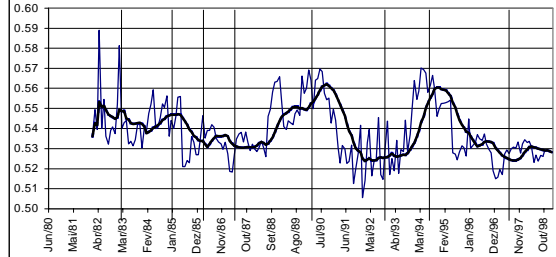**Graph 2**

A - Unemployment Rates
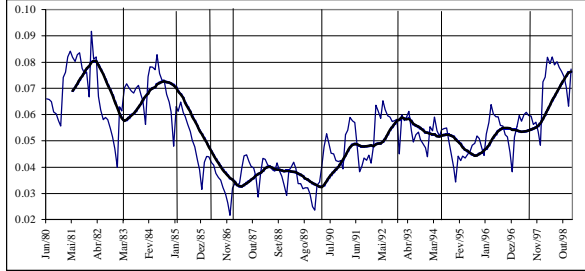
B - Inflation Rates
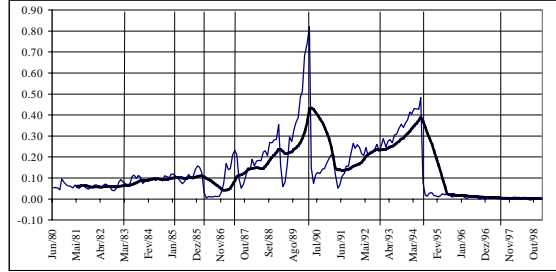
C - Theil-T Index
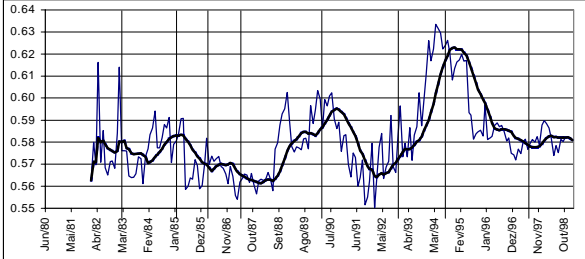(Universe : Active Age Population -Only Positive Labor Earnings)

D - Gini Coefficient
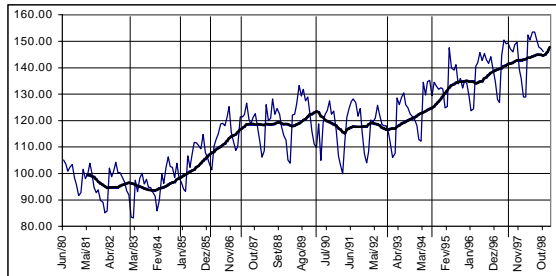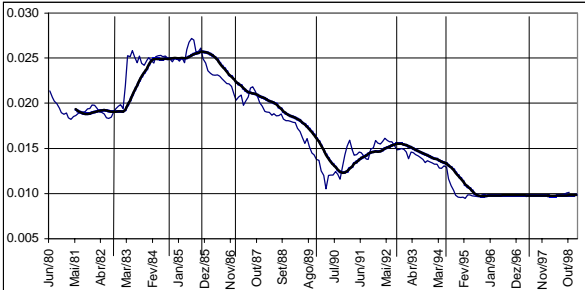(Universe : Active Age Population - Only Positive Labor Earnings)

E - Gini Coefficient
(Universe : Active Age Population - Total Labor Earnings)

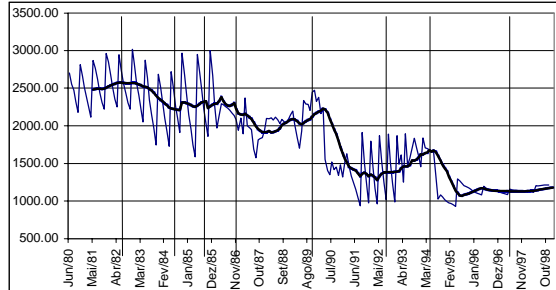F - GDP

G - Real Exchange Rate

H - Minimum Wages

Table 16

	Unemployment Rate		Inflation Rate		Real Exchange Rate I		Real Interest Rate		Minimum Wages		R^2
Gini	0.025	2.88	0.004	2.45	-0.064	-6.53	0.072	1.02	-0.003	-0.19	37%
Mean Earnings	-0.416	-11.38	-0.045	-6.51	-0.038	-0.89	-0.824	-2.78	0.323	6.57	68%

Table 17
Partial Correlation Signs Between Macro Variables and Inequality Measures

Concept : Active Age Population - Labor Earnings　　　　　　　　　　　　　　　　　　　　(Data in Logs)

		Unemployment Rate		Inflation Rate		Real Exchange Rate I		Real Interest Rate		Minimum Wages		R^2
Gini (1982 a 1996)	**All Earnings**	0.025	2.88	0.004	2.45	-0.064	-6.53	0.072	1.02	-0.003	-0.19	37%
	Only PositiveEarnings	0.004	0.49	0.004	3.17	-0.029	-2.96	0.040	0.57	-0.001	-0.38	15%
Gini (1982 a 1998)	**All Earnings**	0.051	2.41	0.011	4.46	-0.168	-6.64	0.093	0.49	0.087	3.22	28%
	Only PositiveEarnings	0.002	0.23	0.003	3.45	-0.026	-2.81	0.035	0.50	0.030	2.95	16%
Theil (1982 a 1996)	**Only PositiveEarnings**	0.014	0.58	0.015	3.31	-0.130	-4.70	0.037	0.18	0.087	2.88	21%
Theil (1982 a 1998)	**Only PositiveEarnings**	0.025	1.09	0.010	3.80	-0.131	-4.78	-0.005	-0.03	0.126	4.26	20%

Source : PME

Table 18
A - Partial Correlation Signs Between Macro Variables and Mean Earnings
By Years of Schooling

Universe : Active Age Population - Labor Earnings　　　　　　　　　　　　　　(Period : 1983 to 96 - Data in Logs)

	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R^2
0 Years	**-0.45**	-12.32	**-0.04**	-6.10	**0.06**	1.36	**-0.81**	-2.73	**0.23**	4.62	68%
0 to 4 Years	**-0.45**	-12.14	**-0.06**	-7.89	**0.10**	2.31	**-1.10**	-3.64	**0.27**	5.33	72%
4 to 8 Years	**-0.45**	-11.11	**-0.05**	-7.12	**0.19**	3.98	**-0.91**	-2.77	**0.28**	5.20	73%
8 to 12 Years	**-0.46**	-11.87	**-0.05**	-7.27	**0.15**	3.31	**-0.83**	-2.66	**0.34**	6.55	75%
More Than 12 Years	**-0.42**	-10.67	**-0.05**	-6.19	**0.00**	0.09	**-0.75**	-2.35	**0.33**	6.21	66%

OBS.: a)Small numbers correspond to t-statistics　　b) Constant and seasonal dummies ommited

B - Partial Correlation Signs Between Macro Variables and Mean Earnings
By Age Brackets

Universe : Active Age Population - Labor Earnings   (Period : 1983 to 96 - Data in Logs)

	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R^2
15 to 25 Years	-0.56	-15.63	-0.05	-7.95	0.14	3.44	-0.42	-1.43	0.36	7.33	80%
25 to 45 Years	-0.43	-13.26	-0.06	-9.84	0.02	0.49	-0.46	-1.76	0.35	7.93	76%
45 to 60 Years	-0.45	-11.94	-0.07	-9.25	-0.16	-3.69	-0.55	-1.81	0.35	7.03	69%
More than 60 Years	-0.49	-9.29	-0.07	-7.44	-0.03	-0.42	-0.98	-2.31	0.41	5.77	62%

OBS.: a)Small numbers correspond to t-statistics   b) Constant and seasonal dummies ommited

C - Partial Correlation Signs Between Macro Variables and Mean Earnings
By Household Status

Universe : Active Age Population - Labor Earnings   (Period : 1983 to 96 - Data in Logs)

	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R^2
Head	-0.44	-11.65	-0.05	-7.52	0.03	0.69	-0.85	-2.77	0.32	6.39	71%
Spouse	-0.43	-12.62	-0.06	-8.94	-0.30	-7.73	-0.54	-1.98	0.27	5.91	74%
Son or Daughter	-0.52	-13.72	-0.05	-6.97	0.06	1.30	-0.74	-2.41	0.32	6.33	74%
Other Relatives	-0.49	-12.17	-0.05	-6.18	0.02	0.44	-0.74	-2.29	0.32	5.88	70%
Non Family Member	-0.47	-6.96	-0.02	-1.82	-0.03	-0.39	-0.10	-0.17	0.16	1.76	36%
Domestic Servant	-0.34	-7.31	-0.07	-7.44	0.01	0.20	-1.19	-3.10	0.07	1.17	47%
Collective Dwelling Res	-0.47	-6.96	-0.09	-6.84	-0.09	-1.20	-0.97	-1.77	0.52	5.75	55%

OBS.: a)Small numbers correspond to t-statistics   b) Constant and seasonal dummies ommited

D - Partial Correlation Signs Between Macro Variables and Mean Earnings
By Sectors of Activity

Universe : Occupied - Labor Earnings   (Period : 1983 to 96 - Data in Logs)

	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R^2
Services	-0.37	-10.99	-0.05	-7.62	-0.10	-2.62	-0.75	-2.75	0.29	6.40	66%
Commerce	-0.46	-12.61	-0.05	-7.89	-0.07	-1.56	-1.06	-3.59	0.28	5.80	70%
Public Sector	-0.42	-9.63	-0.06	-6.98	0.06	1.22	-1.05	-2.99	0.22	3.82	59%
Construction	-0.51	-13.04	-0.05	-6.52	0.04	0.78	-0.93	-2.95	0.24	4.59	69%
Manufacturing	-0.25	-7.69	-0.04	-7.01	0.01	0.26	-0.62	-2.39	0.32	7.40	67%
Mining	-0.30	-5.58	-0.03	-2.76	0.01	0.23	-0.35	-0.81	0.23	3.29	43%
Other	-0.30	-5.95	-0.03	-2.78	-0.06	-1.04	-1.27	-3.11	0.31	4.53	46%

OBS.: a)Small numbers correspond to t-statistics   b) Constant and seasonal dummies ommited

E - Partial Correlation Signs Between Macro Variables and Mean Earnings
By Working Class

Universe : Occupied - Labor Earnings   (Period : 1983 to 96 - Data in Logs)

	Unemployment Rate		Inflation Rate		Real Exchange Rate		Real Interest Rate		Minimum Wages		R^2
Formal Employees	-0.24	-7.56	-0.05	-7.64	0.06	1.58	-0.73	-2.87	0.30	7.03	69%
Informal Employees	-0.42	-11.71	-0.05	-7.84	-0.04	-0.95	-0.99	-3.44	0.16	3.40	64%
Self-Employed	-0.62	-16.56	-0.05	-7.05	-0.24	-5.51	-0.98	-3.27	0.23	4.68	77%
Employer	-0.59	-13.63	-0.05	-6.04	-0.31	-6.21	-0.72	-2.07	0.35	6.13	72%

OBS.: a)Small numbers correspond to t-statistics   b) Constant and seasonal dummies ommited
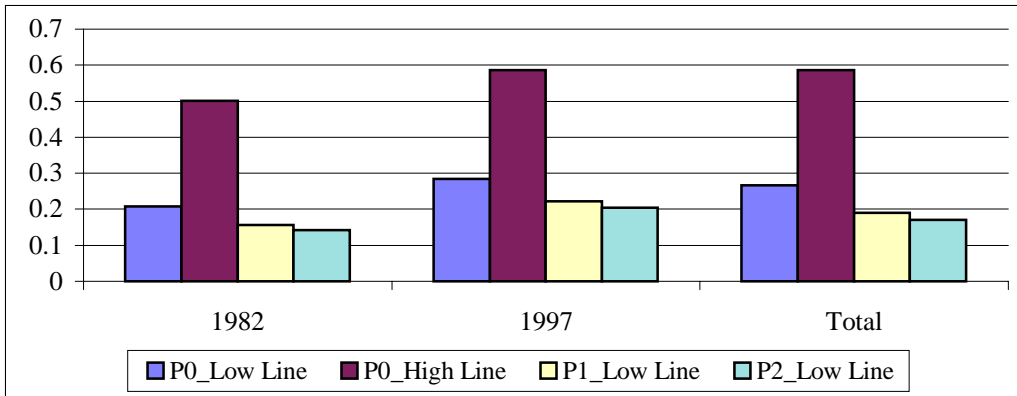
Graph 3
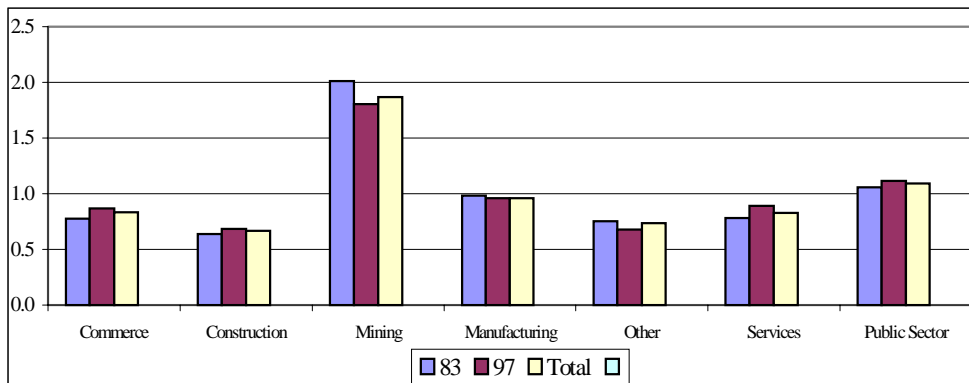**A. LEVEL OF VARIABLES OF INTEREST IN DIFFERENT POINTS OF TIME**
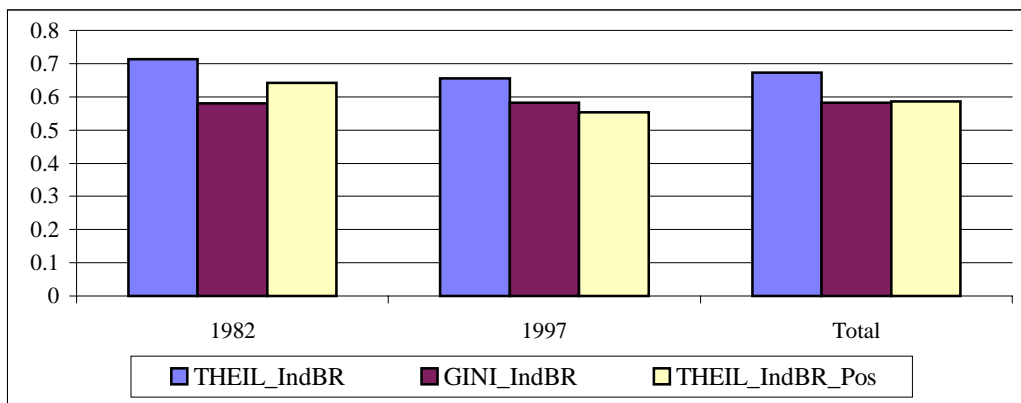
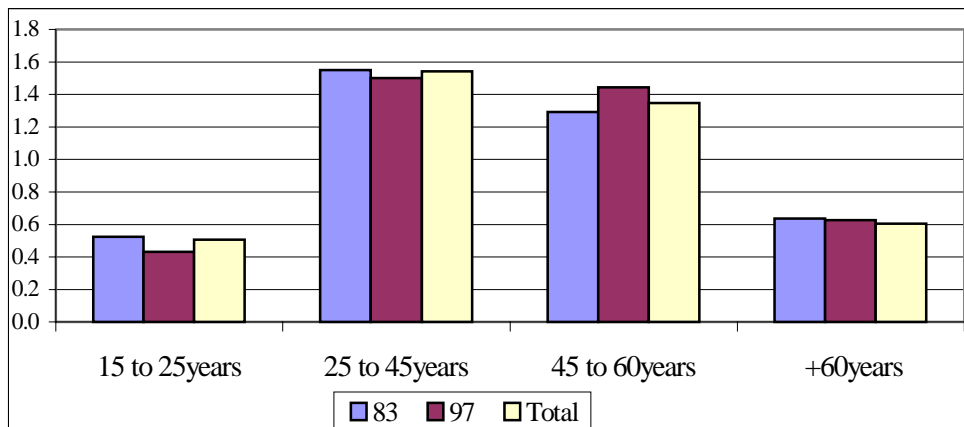**B. LEVEL OF VARIABLES OF INTEREST IN DIFFERENT POINTS OF TIME**

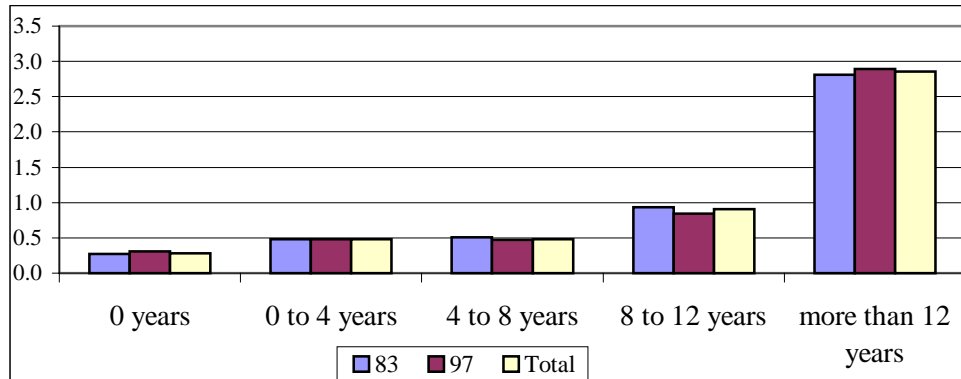## C. LEVEL OF VARIABLES OF INTEREST IN DIFFERENT POINTS OF TIME

D. RELATIVE EARNINGS BY SECTOR OF ACTIVITY

E. RELATIVE EARNINGS BY AGE GROUP

F. RELATIVE EARNINGS BY YEARS OF SCHOOLING

G. RELATIVE EARNINGS BY WORKING CLASS

2. Unemployment

The unemployment rate variable attempts to capture the effects of the level of activity on earnings inequality. The effect is positive. In order to simplify exposition we will omit from the analysis mentions that the variable is statistically significant from zero. We will instead point variables that are not significant at conventional confidence levels. Table 16 shows that the coefficient on the Gini equals to 0.025. Table shows that the effects on mean earnings is equal to -0.42. This means that, as expected, higher unemployment are correlated with both a worsening of the level and inequality measures.

Table 18. also allows to analyze the unemployment effects on mean earnings of different labor market segments. As the economy slows down less skilled workers are strongly affected, these can be perceived in all categories analyzed:

Years of education: The unemployment elasticity is -0.45 for illiterate active age individuals and -0.42 for workers with more than 12 years of education. The intermediary skill groups are much alike this former group but overall the elasticity's are well estimated (t ratios above 11) but not statistically different one from another.

Age: The elasticity for less experienced workers (between 15 and 25 years) is -0.56 against -0.49 for workers above 60 years of age. The intermediary age groups are much alike this latter group.

Household Status: The elasticities for sons (-0.52) is greater than the ones found for Heads (-0.44) and Spouses (-0.43).

Sector of Activity: The elasticity for manufacturing workers (-0.25) is smaller than the ones found for construction (-0.51) and services (-0.37) workers.

Working class: Similarly, formal employees unemployment elasticity (-0.24) is smaller than the ones found for informal workers (illegal employees (-0.42) and the self-employed (-0.62)).

It is interesting to note that when one uses the sample of occupied workers the results related to schooling, age and household status pointed above are reversed. This may be explained by the fact that low wage workers are more easily displaced during recessions (and/or conversely more easily hired during booms).

3. Inflation

Higher inflation implies in general a worsening of the income distribution either in terms of levels or inequality. However, inflation rate elasticities found are in general much smaller than the ones found for unemployment. The Gini coefficient inflation elasticity is 0.004 while the mean earnings inflation elasticity is –0.05. Graph 4.B. shows that the simple Gini inflation elasticity is zero. This exercise can be understood by means of a simple Phillips curve rationale: if higher inflation buys lower unemployment then the induced effect of the fall of unemployment on inequality can offset the direct inequality effect of higher inflation.

One interpretation for the positive inflation partial elasticity of the Gini coefficients found is that earnings at the bottom of the distribution are less perfectly indexed. This interpretation is not confirmed by the analysis of the elasticities of the different groups portioned by schooling, age, working class and sector of activity. Low income groups such uneducated, young, spouses or sons, service sector or civil construction workers and informal employees elasticities are not statistically significant from the ones estimated for the whole population.

An alternative explanation for the partial positive effects of inflation on earnings dispersion is through earnings temporal volatility and inflation related measurement problems. This result is consistent with the evidence presented in section 6 where we show that stabilization reduces inequality through the within groups component and not the between groups component that is affected by relative earnings levels.
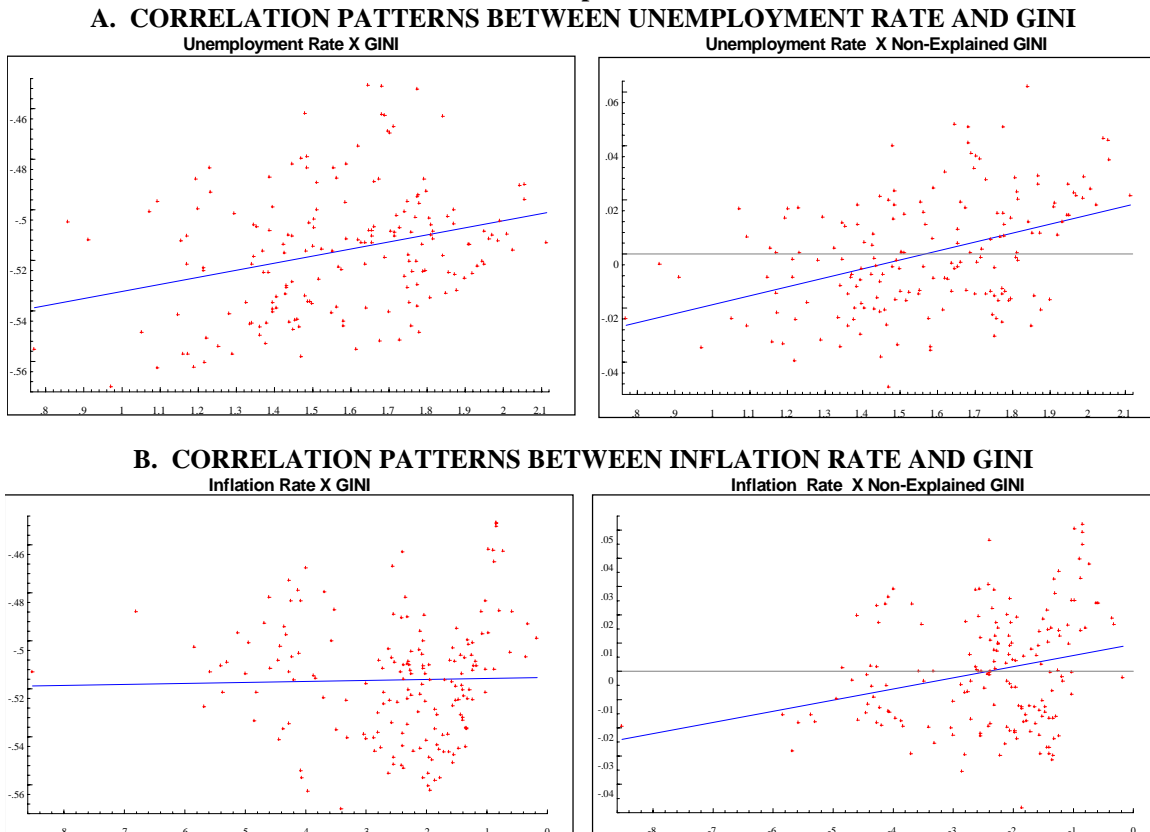
4. Real interest rates

Higher interest rates do not imply higher inequality (the coefficients are positive but not statistically different from zero). One interpretation is that once the contractionary effects of

higher interest rates are taken into account through the unemployment variable, there is no residual to be explained. A complementary explanation is that since PME does not capture financial income the positive effect of higher interest on high income individuals that have access to financial applications are not taken into account (Neri (1990)). As Graphs show the pure Gini interest rate elasticity is positive while the other Graph 4.C. with the partial regression exercise demonstrate that this correlation goes away when we take into account the other variables belonging to the basic regression estimated. However, higher interest rates do imply lower mean aggregate incomes with an elasticity equals to –0.82, even when one control for unemployment.
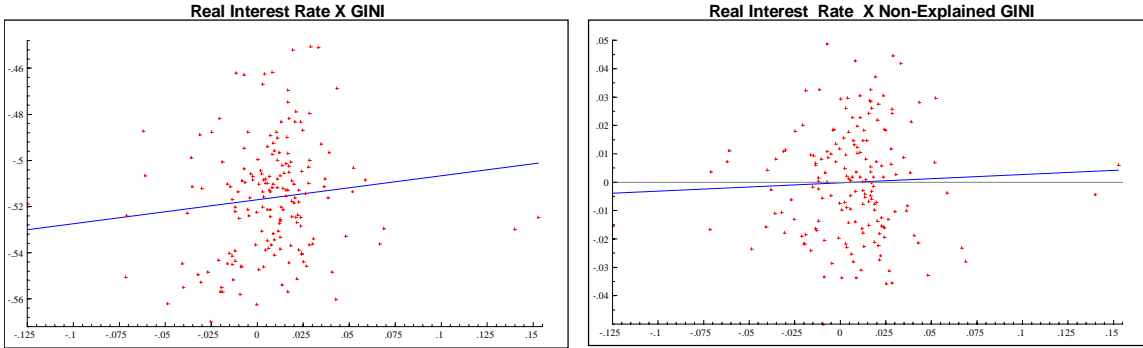
5. Minimum Wages

The partial elasticity of the Gini with respect to the minimum wage is null. This result is somewhat surprising given that the pure elasticity of the Gini with respect to the minimum is negative. According to standard economic theory a rise in the minimum should increase unemployment that is positively related with the Gini[9]. One possible solution to this puzzle is that higher minimum wages decreases unemployment. The effect of the minimum wage on mean earnings is positive. The partial elasticity corresponds to 0.32.

Graph 4
A. CORRELATION PATTERNS BETWEEN UNEMPLOYMENT RATE AND GINI

B. CORRELATION PATTERNS BETWEEN INFLATION RATE AND GINI

C. CORRELATION PATTERNS BETWEEN REAL INTEREST RATE AND GINI

Real Interest Rate X GINI

Real Interest Rate X Non-Explained GINI

D. CORRELATION PATTERNS BETWEEN MINIMUM WAGES AND GINI

Minimum Wages X GINI

Minimum Wages X Non-Explained GINI

E. CORRELATION PATTERNS BETWEEN REAL EXCHANGE RATE AND GINI
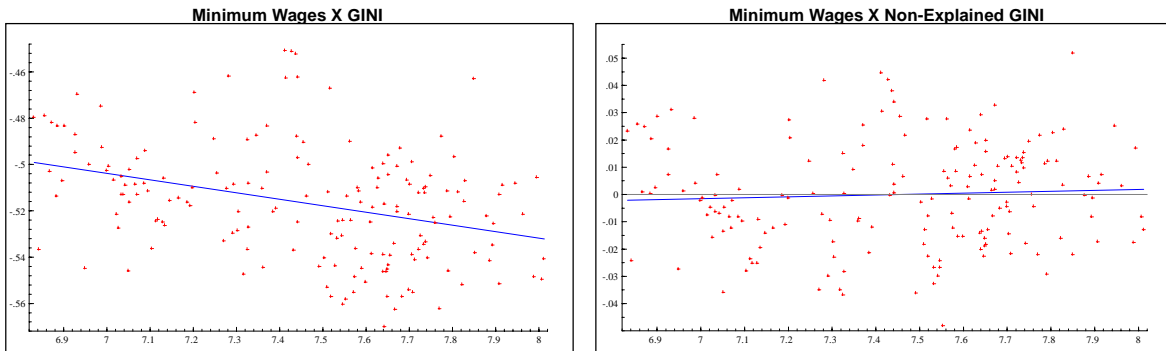
Real Exchange Rate X GINI

Real Exchange Rate X Non-Explained GINI
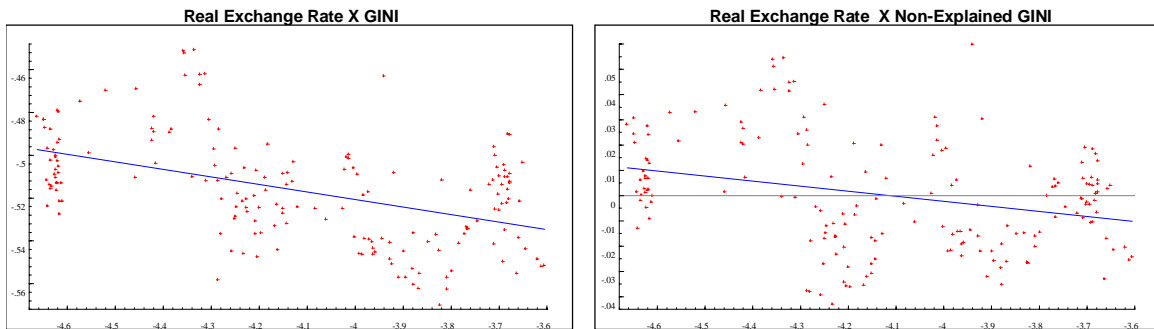
Graph 5

A. CORRELATION PATTERNS BETWEEN UNEMPLOYMENT RATE AND AVERAGE EARNINGS

Unemployment Rate X Average Earnings

Unemployment Rate X Non-Explained Average Earnings
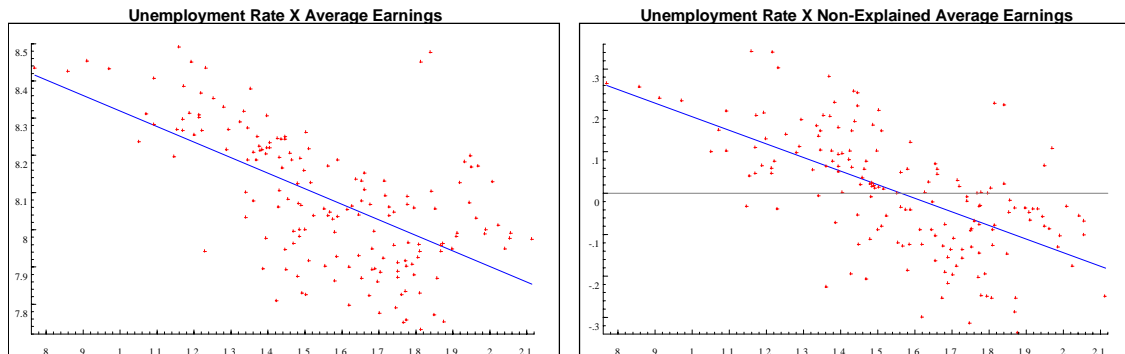
B. CORRELATION PATTERNS BETWEEN INFLATION RATE AND AVERAGE EARNINGS

Inflation Rate X Average Earnings

Inflation Rate X Non-Explained Average Earnings
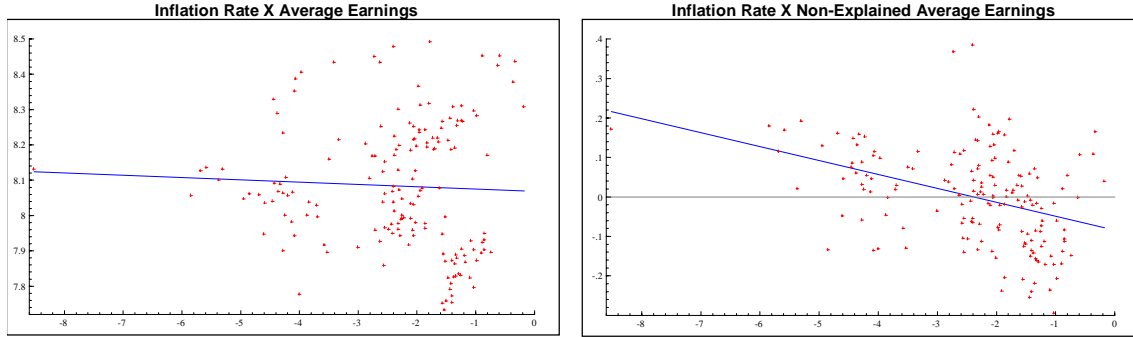
C. CORRELATION PATTERNS BETWEEN REAL INTEREST RATE AND AVERAGE EARNINGS

Real Interest Rate X Average Earnings

Real Interest Rate X Non-Explained Average Earnings
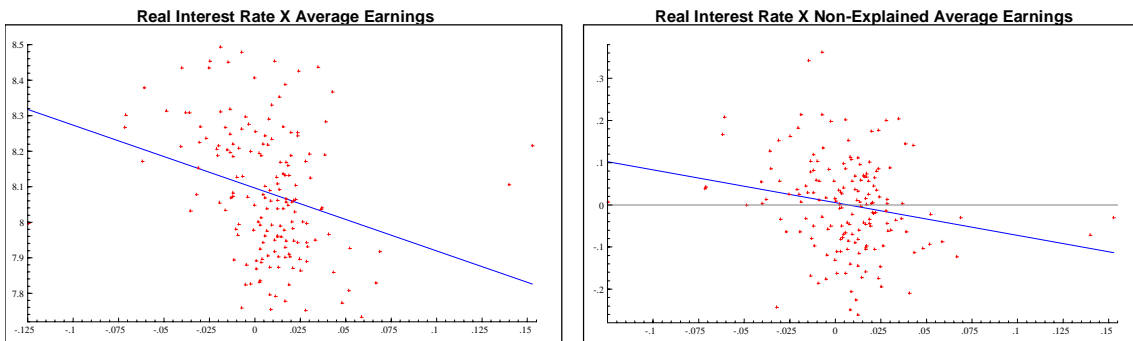
D. CORRELATION PATTERNS BETWEEN MINIMUM WAGES AND AVERAGE EARNINGS

Minimum Wages X Average Earnings

Minimum Wages X Non-Explained Average Earnings
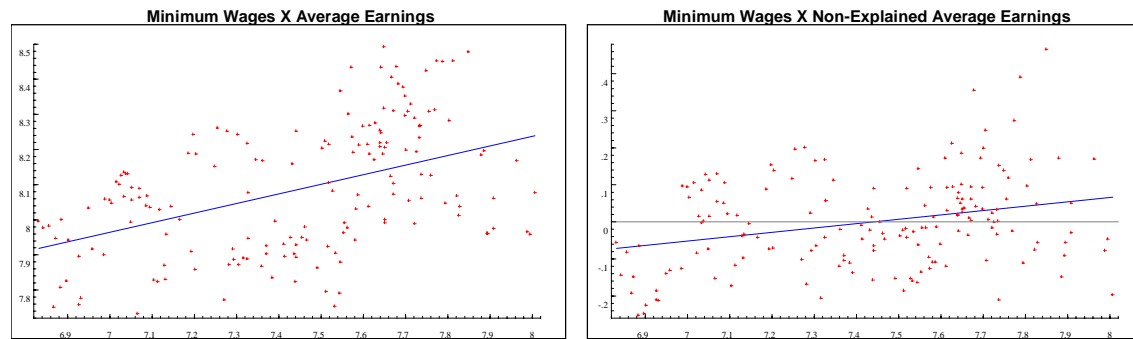
E. CORRELATION PATTERNS BETWEEN REAL EXCHANGE RATE AND AVERAGE EARNINGS

Real Exchange Rate X Average Earnings

Real Exchange Rate X Non-Explained Average Earnings
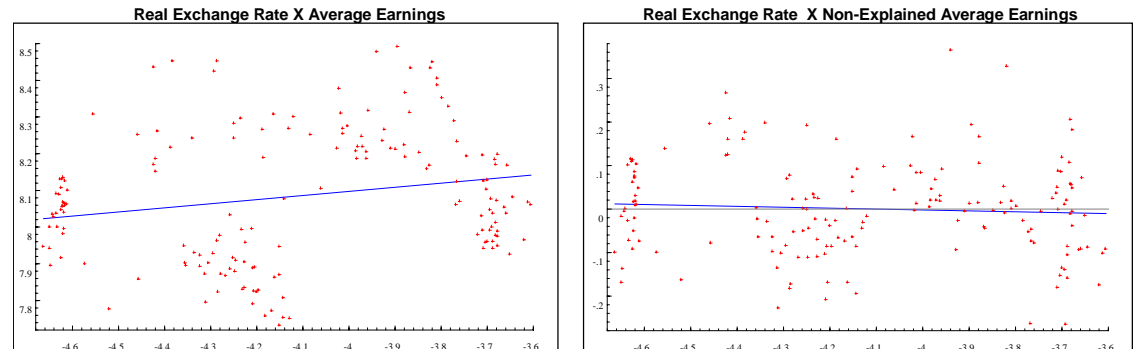
VIII. CONCLUSIONS

This paper attempted to measure the evolution of income distribution and its determinants during the period of economic reforms. The paper was divided in two parts: in the first and main part of the paper, long-run relations between reforms and income distribution were explored. The second part of the paper explored relations between movements of distributive variables, on the one hand, and economic reforms and macroeconomic fluctuations, on the other.

The main empirical strategy pursued in the long-run part of the paper was to establish comparisons between reform related institutional characteristics and income distribution aspects at different points in time. The contrasts between portraits observed before and after reforms were launched allowed tentative interpretations of casual relations between implemented reforms and distributive outcomes.

In order to set key days in terms of reforms implementation, indexes of institutional reforms found were used. The two main institutional changes observed in the Brazilian case were the opening of the economy and stabilization. The two turning points identified in the reforms implementation paths in Brazil were 1990 and 1994.

On the inequality side, the period before economic reforms 1976-90, the basic benchmark measure used based on the economically active population falls from 0.825 to 0.748. This downward trend is close followed by broader inequality concepts such as those based on the active age population and on total per capita income while narrower measures based on occupied population shows a slight upward movement.

The 1990-97 is the period of most interest here due to the implementation of economic reforms. Our benchmark inequality measure falls from 0.748 to 0.699. This downward movement is followed by almost all inequality measures

The period of reforms 1990-97 can be further divided into two subperiods. the 1990-93 period is characterized by the combination of high inflation with economic reforms: i) the direction of inequality changes is not robust across the different concepts used. For example, while our basic measure rises from 0.748 to 0.793, the inequality concept based on the occupied population-labor income concepts falls. ii) The 1993-97 period is characterized by the combination of successful stabilization and the intensification of economic reforms. The result is a fall of inequality for all concepts used. For example, the benchmark measure falls from 0.793 to 0.699.

Overall, the average Theil-T index across concepts falls 4.83% in the 1976-93 period which is only 38.3% of the total fall observed in the 1976-97 period. The same exercise applied to the Gini index yields similar results: a fall of 0.08% in the 1976-93 period which corresponds 28.9% of the total fall observed in the 1976-97 period. In other words, the main part of inequality measures drop observed in Brazil during the 21 years analyzed occurred in the last four years, the post stabilization phase.

The following step was to identify the main structural determinants of the evolution of Brazilian income using standard inequality decomposition exercises with respect to variables related to human capital (education and age), physical capital accumulation (sector of activity and working class), personal characteristics subject to discrimination (sex and race) and localization (demographic region and population density).

The gross decomposition of the Theil index synthesizes the relative importance of the between groups term of different criteria used in total inequality. Among all the variables considered, years of schooling and working classes related classifications are the most contributive variables for total inequality. Both variables explanatory power increased substantially during the whole period under analysis. Between 1976 and 1997, the gross contribution of years of schooling and working class for total inequality increased from 28,2% to 34,7%, and from 16.9% to 21.4%, respectively.

In order to take into account interactions between the different classifications to get an idea of the marginal impact of each variable once the other classifications were taken into account, we choose a smaller set of different classification criteria to be implemented simultaneously. Since the sum of the gross contribution of the between group components of the three main variables (age, working class and years of schooling variables) is 64.6% of total inequality while the gross effects of the other five variables is residual amounting less than 30% of total inequality we worked with the interactions between the former group of variables.

The marginal explanatory power of schooling which by far is the most important variable rises from 25.7% in 1976 to 26% in 1990, increasing to 26.4 in 1997. The marginal contribution of age, that is once years of schooling and working class were taken into account, decreases slightly from 7.1% in 1976 to 6.8% in 1990 and then decreases more sharply reaching 5.9% in 1997. Finally, the marginal working class contribution decreases from 9.2% to 8.7% in 1990 and remain on these levels in 1997.

In sum, the 1990-97 period that can be characterized by the implementation of reforms in Brazil presents an increase of the explanatory power of education, a decrease for age while working class remained on the same levels in the extreme points of the series.

The paper stresses three channels which reforms affected income inequality as shown in the illustration below:

Figure 1
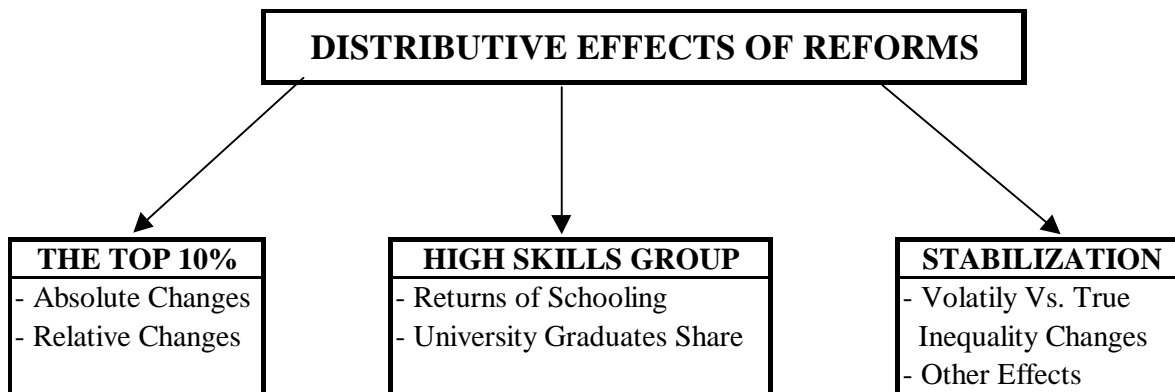
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┌─────────────────────────────────────────────────┐
│        DISTRIBUTIVE EFFECTS OF REFORMS            │
└─────────────────────────────────────────────────┘
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THE TOP 10%	HIGH SKILLS GROUP	STABILIZATION
- Absolute Changes - Relative Changes	- Returns of Schooling - University Graduates Share	- Volatily Vs. True Inequality Changes - Other Effects

First, we attempted to study the impact of the economic reforms on the riches. First, we assessed absolute income changes in the top 10% of the income distribution assessing how the composition of this group changed during the reform period. The share of individuals with per capita incomes above the one need to be among the 10% richest in 97 fell 17.9% in the reform period 1990-97 as a combination of a 33% fall in the 1990-93 period and a 23.9% rise in the 1993-97 period.

We also assessed how much of the changes in inequality observed between pre-reform and post-reform periods comes from changes at the 10% richest. While the absolute contribution of the 10% richest to total inequality is extremely high in Brazil, there is not much evidence to suggest that it has increased over the period of the reforms. In the 1990-93 period this contribution in the case of the economically active population has risen from 79.5 to 83.5 then fall to 81.7 in 1997. It is interesting to note that the peak of the series was found in 1976.

The second channel analyzed here is the skill-differential between the high school group and the rest of the labor force. One of the reasons why this breakdown is of interest is the evidence that growth is increasingly skill-intensive. The analysis of the profile of the 10% richest stresses the importance of general human capital explanatory power: 7.83% of the population has 12 or more years of education while the share of this group among the rich corresponds to 44% and 61% when one take into account the extension of the rich group income. This last statistic was 53% in 1990 which indicates a sharp effect of the reforms on the composition of the riches towards highly educated groups. In the period of reforms 1990-97, the rate of return to primary and secondary education levels falls while the rate of return on university degree rises steeply.

The third distributive channel emphasized here is the effect of stabilization on inequality measures, specially those operating through changes in the volatility of individual income. We used PME the micro-longitudinal aspect of PME in two alternative ways: first, the 4 consecutive observations of the same individuals were treated independently. The second way took earnings average across four months before inequality measures were calculated. In the case of the Theil-T the following decomposition is exact: Month by Month Theil-T equals to Mean Earnings

Theil-T plus Individual Earnings Across Time Theil-T. In other words, the difference in levels between month by month and average across four months inequality measures is explained by the variability component of individual earnings across the four month period.

The main result obtained is that the fall of monthly inequality measures observed after the fall of inflation in 94 drastically overestimates the fall of inequality based on mean earnings across four months: monthly based Theil-T indices fall from 0.709 in 1993 to 0.545 in 1997 while four month based Theil-T falls from 0.551 to 0.508in the same period. The greater fall of traditional monthly inequality measures in comparison to four month based measures is explained by the fall of the individual volatility measures observed produced by the sharp fall of inflation rates observed in this period.

In sum, the post-stabilization fall of inequality measures is 2 to 4 times higher on a monthly basis that is traditionally used in Brazil than when one uses mean earnings across four months. Another way of looking at these effects of stabilization on inequality measures is to note that most of the fall of the inequality measures is attributed to the within groups component in the monthly inequality measures. Overall, the main point here is that most of the monthly earnings inequality fall observed after stabilization may be credited to a reduction of earnings volatility and not to a fall in permanent earnings inequality.

Finally, section 7 took advantage of the possibility of constructing monthly series of specially tailored variables according to individual and family records of PME and applied standard time series techniques capturing the effects of macro variables on distribution variables. We analyzed the correlation patterns between macro variables (unemployment, inflation, exchange rates, interest rates and minimum wages) and distributive variables (aggregate inequality measures and mean earnings of different groups (by years of schooling, age, household status, sector of activity and working class). The idea of this exercise is to identify the main winners and losers of specific macroeconomic changes. In general, the correlations between macro variables and income distribution variables observed follows standard text book predictions. The main lesson here is to stress the close association between macroeconomic fluctuations and income distribution variables in Brazil. Without taking into account such factors one may not succed in assessing the distributive impacts of structural reforms.

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STATISTICAL ANNEX

EVOLUTION OF THE LEVEL OF INCOME

Year	Per Capita GDP	Per Capita Family Income	Family Income	EAP Average Wages
1985	3841.50	224.80	991.09	496.68
1990	3874.99	230.77	946.50	527.30
1992	3736.20	163.88	632.90	356.68
1993	3837.04	175.06	624.24	280.12
1995	4116.51	246.02	952.68	536.94
1996	4172.09	246.24	940.41	541.16
1997	4267.21	241.83	916.45	526.69

Source: PNAD

INCOME INEQUALITY IN BRAZIL

	Individuals by Per Capita Income				EAP by Individual Income			
	All Incomes		Only Positive Income		All Incomes		Only Positive Income	
	10+	10+	10+	10+	10+	10+	10+	10+
Year	10-	40-	10-	40-	10-	40-	10-	40-
1985	54.77	5.58	50.27	5.47	---	5.58	58.98	5.46
1990	74.41	6.51	62.09	6.26	---	6.51	54.91	5.99
1992	73.20	5.21	54.12	4.91	---	5.21	54.22	4.65
1993	71.74	5.70	57.83	5.46	---	5.70	67.52	5.69
1995	72.82	6.00	55.67	5.67	---	6.00	43.45	5.25
1996	83.99	6.19	57.66	5.73	---	6.19	41.80	5.18
1997	77.58	6.10	57.72	5.74	---	6.10	44.03	5.17

Sources: PNAD

LORENZ CURVE - ALL INCOMES

	EAP by Individual Income							Individuals by Per Capita Income						
	1985	1990	1992	1993	1995	1996	1997	1985	1990	1992	1993	1995	1996	1997
10	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.6	0.6	0.6	0.6	0.5	0.6
20	0.9	1.1	0.1	0.1	1.0	0.3	0.2	2.5	2.1	2.3	2.3	2.2	2.0	2.1
30	3.2	3.3	1.8	1.7	3.4	2.4	2.3	5.0	4.3	4.9	4.9	4.6	4.4	4.5
40	6.4	6.0	5.3	5.0	6.4	5.2	5.1	8.3	7.4	8.6	8.3	7.9	7.6	7.7
50	10.4	9.9	9.6	8.8	10.5	9.3	9.1	12.7	11.5	13.4	12.8	12.3	12.0	12.1
60	15.8	15.2	15.2	13.9	15.9	14.7	14.6	18.4	17.0	19.6	18.6	17.9	17.6	17.8
70	23.1	22.5	22.8	21.0	23.1	22.0	21.9	26.1	24.5	27.7	26.1	25.4	25.2	25.3
80	33.3	32.9	33.7	30.9	33.4	32.2	32.2	36.7	35.0	38.6	36.3	35.9	35.9	36.0
90	50.0	49.5	50.6	46.7	49.8	48.9	48.9	53.2	51.7	55.0	52.2	52.3	52.5	52.5
100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: PNAD.

LORENZ CURVE - ONLY POSITIVE INCOME

	EAP by Individual Income													
	1985	1990	1992	1993	1995	1996	1997	1985	1990	1992	1993	1995	1996	1997
10	0.8	0.8	0.8	0.7	1.0	1.1	1.0	0.9	0.7	0.8	0.8	0.8	0.8	0.8
20	2.6	2.7	2.8	2.6	3.1	3.1	3.1	2.6	2.2	2.6	2.5	2.5	2.4	2.4
30	5.4	4.9	6.1	5.5	5.6	5.6	5.6	5.1	4.5	5.3	5.2	4.9	4.8	4.8
40	8.7	8.0	9.7	8.7	9.0	9.1	9.1	8.5	7.6	9.0	8.6	8.3	8.1	8.2
50	12.9	12.2	14.3	12.9	13.3	13.5	13.5	12.8	11.8	13.9	13.2	12.7	12.5	12.6
60	18.4	17.7	20.2	18.4	18.9	19.1	19.2	18.6	17.3	20.1	19.0	18.4	18.2	18.2
70	25.7	25.1	27.9	25.3	26.2	26.4	26.5	26.2	24.8	28.2	26.4	25.9	25.8	25.8
80	36.0	35.4	38.5	35.1	36.3	36.6	36.7	36.8	35.3	39.0	36.6	36.3	36.5	36.4
90	52.3	51.6	54.6	50.5	52.4	52.7	52.8	53.3	52.0	55.4	52.5	52.7	53.0	52.9
100	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: PNAD.

ANALYSIS BY INCOME SOURCES

Desegregated Income - 1997

		Only Positive Income			All Incomes	
Desegregated Income	**% of Zero Earnings**	**Average Earnings**	**Theil**	**Gini**	**Average Earnings**	**Gini**
All Sources of Income	54.40	511.25	0.72	0.59	233.46	0.81
Earnings from All Occupations	62.20	513.55	0.60	0.59	191.55	0.85
Earnings from Main Occupation	62.30	493.84	0.59	0.58	184.07	0.84
Income from Other Sources	97.00	277.76	0.91	0.70	7.82	0.99
Monthly Income in Cash	62.40	495.25	0.59	0.58	183.82	0.84
Monthly Income in Products or Merchandise	99.80	111.03	0.13	0.51	0.23	1.00
Monthly Income in Cash - Secondary	98.30	421.95	0.52	0.63	6.96	0.99
Monthly Income in Products or Merchandise - Secondary	100.00	76.66	(0.26)	0.54	0.03	1.00
Monthly Income in Cash - Other	99.90	623.98	0.15	0.62	0.75	1.00
Monthly Income in Products or Merchandise - Other	100.00	191.45	(0.28)	0.69	0.00	1.00
Retirement	93.00	354.89	3.27	0.97	26.03	0.97
Pension	97.60	266.52	0.52	0.48	6.60	0.99
Other type of Retirement	99.90	977.10	0.50	0.56	0.74	1.00
Other type of Pension	99.30	257.28	0.58	0.55	1.74	1.00
Permanent Bonus (Abono de Permanência)	100.00	237.03	0.45	0.50	0.01	1.00
Rent	99.00	494.35	0.66	0.57	5.08	1.00
Donation received from not-resident	99.20	184.13	0.57	0.56	1.30	1.00
Interest from Savings and other applications, dividends and other income	98.70	121.71	1.37	0.82	1.45	1.00

Desegregated Income - 1990

		Only Positive Income			All Incomes	
Desegregated Income	**% of Zero Earnings**	**Average Earnings**	**Theil**	**Gini**	**Average Earnings**	**Gini**
Monthly Income from Main Occupation	78.19	17,703.49	0.62	0.56	3,841.73	0.90
Monthly Income from All Occupation	78.18	18,259.13	0.63	0.57	3,959.56	0.91
Monthly Income from All Sources	74.56	17,622.02	0.68	0.58	4,458.10	0.89
Monthly Income in Cash	53.12	30,057.16	0.73	0.59	14,045.71	0.81
Monthly Income in Products or Merchandise	98.92	11,664.45	0.57	0.53	123.06	1.00
Monthly Income in Cash - Other	97.78	31,161.71	0.81	0.64	676.14	0.99
Monthly Income in Products or Merchandise - Other	99.97	10,069.47	0.71	0.62	2.43	1.00
Retirement	91.94	18,157.56	0.96	0.66	1,458.07	0.97
Pension	96.93	11,910.50	0.66	0.55	364.41	0.99
Permanent Bonus (Abono de Permanência)	99.94	6,579.47	0.33	0.43	3.78	1.00
Rent	98.02	21,264.53	0.83	0.64	420.73	0.99
Others	88.33	2,487.41	2.33	0.89	289.40	0.99

RETURNS TO SCHOOLING (BASIS: 0 YEARS OF EDUCATION)

Universe : Active Age Population - All Income Sources

Years of Schooling	1976	1985	1990	1993	1997
0	1.00	1.00	1.00	1.00	1.00
1-4	1.95	1.94	2.01	1.71	1.78
4-8	2.70	2.55	2.63	2.03	2.25
8-12	4.18	4.10	4.40	3.42	3.67
12-16	10.35	10.01	10.77	8.66	9.14
16+	17.94	17.49	17.03	15.14	17.21

Source: PNAD.

RETURNS TO SCHOOLING (BASIS: 0 YEARS OF EDUCATION)

Universe : Occupied - Labor Earnings

Years of Schooling	1976	1985	1990	1993	1997
0	1.00	1.00	1.00	1.00	1.00
1-4	1.89	1.82	1.81	1.69	1.72
4-8	2.62	2.32	2.27	2.03	2.12
8-12	3.98	3.73	3.79	3.38	3.45
12-16	9.92	9.00	9.20	8.46	8.50
16+	17.03	15.65	14.74	14.84	16.12

Source: PNAD.

POPULATION COMPOSITION (%)

Universe : Active Age Population - All Income Sources

	1976	1985	1990	1993	1997
0	26.9	21.2	18.6	17.0	15.4
1-4	42.6	38.8	36.0	37.9	34.0
4-8	18.9	22.3	24.1	23.4	25.5
8-12	8.4	12.8	15.2	15.7	18.5
12-16	3.0	4.6	5.6	5.5	6.1
16+	0.2	0.3	0.5	0.5	0.6

Source: PNAD

RETURNS TO SCHOOLING (BASIS: 0 YEARS OF EDUCATION)

Universe : Occupied - Labor Earnings Normalized by Hours

Years of Schooling	1976	1985	1990	1993	1997
0	1.00	1.00	1.00	1.00	1.00
1-4	1.81	1.76	1.77	1.59	1.62
4-8	2.62	2.34	2.29	1.94	2.02
8-12	4.46	4.15	4.15	3.45	3.40
12-16	11.62	10.75	10.68	9.26	9.25
16+	21.18	12.37	20.29	18.32	18.56

Source: PNAD

POPULATION COMPOSITION (%)

Universe : Occupied - Labor Earnings

Years of Schooling	1976	1985	1990	1993	1997
0	24.58	18.65	15.86	15.34	13.39
1-4	43.77	38.91	35.40	38.09	33.65
4-8	18.24	21.53	23.72	22.35	24.45
8-12	8.92	14.10	16.88	16.63	19.78
12-16	4.17	6.35	7.42	6.95	7.89
16+	0.32	0.45	0.71	0.65	0.83

Source: PNAD.

Notes

[1] Perhaps the most beneficial consequence of stabilization is that real earnings temporal variance of logs measured at an individual level across four consecutive months falls from 0.1363 in 1994 to 0.106 in 1996 (table 1.A). The sharp reduction of volatility observed had direct consequences on the level of social welfare but it creates additional difficulties to measure inequality.

[2] On the other hand, the level of nominal wage rigidity, measured by the proportion of fixed nominal wages between two consecutive months was augmented from 24.8 in 1991 to 32.25 in 1995 (table 1.A). In this sense, inflation greased the wheels of the labor market, in the sense that frequent (and costly) nominal adjustments induced by inflation did not allow real wages to depart too much from equilibrium values. In this sense one consequence of stabilization was to augment the demand of labor reforms that would reinstate the level of wage flexibility lost.

[3] See also Morley (1999).

[4] The PNAD/98 data will only be available by the begin of year 2000.

[5] Tables 14 and 15 replicate tables 12 and 13, respectively for the universe of individuals once occupied in four consecutive observations.

[6] This sub-section synthesizes the results found in Amadeo and Neri (1997).

[7] A robustness analysis of the different coefficients found using alternative periods (1982-96 versus 1982-98), income concepts (individual versus family per capita), population concepts (all versus those with positive earnings) and inequality measures (Gini versus Theil-T) is presented in table 17.

[8] In the case of sector of activity and working class we used the universe of occupied individuals, instead of the economically active population.

[9] One could explore a similar effect through the inflationary effects of the minimum, however Graph shows that the pure correlation between inflation and the Gini is null.