F U N D A Ç Ã O
GETULIO VARGAS

EPGE
Escola de Pós-Graduação em Economia

Ensaios Econômicos

Escola de

Pós-Graduação

em Economia

da Fundação

Getulio Vargas

Macroeconomic Policy And Poverty In Brazil

Edward Joaquim Amadeo, Marcelo Cortes Neri

Março de 2000

Os artigos publicados são de inteira responsabilidade de seus autores. As opiniões neles emitidas não exprimem, necessariamente, o ponto de vista da Fundação Getulio Vargas.

MACROECONOMIC POLICY AND POVERTY IN BRAZIL[1]

Edward Amadeo[2]

Marcelo Neri[3]

RESUMO

O Brasil é um país onde os 50% mais pobres se apropriam aproximadamente de 10% da renda agregada, e os 10% mais ricos detêm quase 50% deste mesmo. O colorário desse alto grau de desigualdade é que se uma pessoa está somente preocupada em maximizar o nível de GPD, a função de bem–estar social implícita adotada devota parte do seu peso ao bem-estar de 10% da população. Em outras palavras, a concentração brasileira de renda cria uma anomalia dentro da perspectiva de agente representativo implícito na análise macroeconômica aonde as pessoas valem aquilo que ganham. A análise da pobreza inverte esse peso estrutural da população, estipulando zero de peso para o segmento não pobre da sociedade e atribuindo pesos aos indivíduos que aumentam com suas necessidades insatisfeitas.

Esse projeto estuda as conexões entre a evolução macroeconômica Brasileira recente e da pobreza. A análise é dividida em duas partes: A primeira parte descreve a evolução da pobreza brasileira e seus principais determinantes macroeconômicos durante os últimos 15 anos. A segunda parte tira proveito das mudanças da pobreza e desigualdades medidas durante o período 1993-96 para estudar seus principais determinantes macroeconômicos. Dado a maior importância do Plano Real, uma especial atenção foi dada a análise dos impactos da desinflação no nível e na distribuição de renda e a possível sinergia entre essas duas dimensões de determinação da pobreza. A terceira parte do projeto decompõe as mudanças dos diversos índices de pobreza através dos diferentes grupos dado pelas características dos chefes de família (i.e.; sexo, anos de estudo, raça, classe trabalhadora, setores de atividades, região, densidade populacional). Depois essa decomposição é avançada um passo desatrelando as mudanças nessa diferentes células de pobreza em termos de suas respectivas mudanças em termos de desigualdade da renda per capita. Esse perfil de pobreza ajuda a mapear as diferentes fontes de mudança da pobreza na análise histórica e fornece consistência interna para os exercícios de análises contra-factuais.

ABSTRACT

Brazil is a country where the 50% poorest detain nearly 10% of its aggregate income and where the 10% richest detain almost 50% of aggregate income[4]. The corollary of this high degree of inequality is that if one is only concerned with maximizing the level of the GDP, the implicit social welfare function adopted devotes half of its weight to the well being of 10% of the population. In other words, Brazilian concentration of income creates anomalies within the representative agent assumptions implicit in macroeconomic analysis where people are worth what they earn. Poverty analysis invert this population weight structure assigning zero weight to the non-poor segments of society and ideally attributing weights to individuals increasing with their unsatisfied needs.

This project studies links between macroeconomic developments in Brazil and poverty. The analysis is divided in two parts: The first part describes the evolution of Brazilian poverty and its main macroeconomic determinants during the last 15 years. The second part takes advantage of the wild swings of poverty and inequality measures during the 1993-96 period to study their main macroeconomic determinants. Given the major importance of the Real plan, special attention will be paid to the analysis of the disinflation impacts on the level and the distribution of income and to possible synergism between these two dimensions of poverty determination. The third part of the project decomposes changes of various poverty indexes across different groups assigned by characteristics of the heads of households (i.e.; gender, years, schooling, race, working class, sectors of activity, region, population density). Next this decomposition is taken one step further by disentangling changes in these different poverty cells in terms of their respective changes in mean inequality of per capita income. These poverty profiles helps to map the sources of poverty changes in historical analysis and it gives internal consistency to counter-factual exercises.

---

[4]   According to PNAD, the share of the 10% richest was 49.8% and the share of the 50% poorest was 11.5 % during 1 995. The top 1% alone held 15.5% of aggregate income during the same year.

Executive Summary

This paper aims to discuss structural and macroeconomic determinants of poverty in the recent Brazilian experience. The third and final part of the paper looks at the evolution of the main structural determinants of poverty in Brazil during the last two decades. It decomposes changes of various poverty indexes across different groups assigned by characteristics of the heads of households (i.e.; gender, years, schooling, race, working class, sectors of activity, region, population density). Next this decomposition is taken one step further by disentangling changes in these different poverty cells in terms of their respective changes in mean and in the degree of inequality of per capita income. These poverty profiles helps to map the sources of poverty changes in historical analysis and it gives internal consistency to counter-factual exercises. The main lesson here is that inequality reduction is a fundamental component of poverty alleviation policies.

The first part of the paper describes the evolution of poverty, inequality and macroeconomic developments in Brazil during the last decade. It also develops an aggregate monthly time series analysis of the determinants of poverty in the 1980-96 period. This analysis shows that higher inflation and higher unemployment imply lower per capita earnings for all deciles. The direct effects of inflation on per capita family earnings were somewhat milder and decreases as we move to the upper tail of the distribution. In other words, poverty tend to be more adversely affected by higher inflation rates than mean incomes. Similarly, the unemployment elasticity of per capita earnings decreases as we move towards the upper tail of the distribution.

The real minimum wage elasticity of per capita earnings turns out to be positive and statistically different from zero. Although, economic theory does not provide definite answers with respect to the sign impact of the minimum wage on per capita earnings, the partial elasticity of per capita earnings with respect to the minimum is greater in module than the sum of inflation and unemployment partial elasticities in all deciles under analysis. Furthermore, the module of minimum wage partial elasticities estimated also tend to decrease with earnings levels.

A partial regression analysis showed that real minimum wages explains one half of the unexplained variance of the head-count ratio when only inflation and unemployment rates are taken into account. In sum, a negative partial elasticity of poverty with respect to minimum wages is a robust result for the Brazilian case during the 1980-96 period. Still, this regression analysis does not warrant a casual interpretation of minimum wages hikes as a poverty alleviation device.

The second and main part of the paper pursues a macro oriented analysis of the close

determinants of poverty during the Brazilian experience from 1993 to 1996. Given the major importance of the Real plan, special attention was paid to the analysis of impacts of the disinflation process on the level and the distribution of income, and to possible synergism between these two dimensions of poverty determination.

One set of effects are related to the impact of the Real plan on mean per capita income that operates through aggregate demand channels. We devote special attention to the impact of the disinflation process on aggregate consumption like the reduction of inflation tax losses. Besides this redistributive effect, we also take into account the effects of reductions of inflationary uncertainties such as the reduction of precautionary savings and increases in the supply and demand of consumer credit. The main lesson here is that the increases of aggregate demand observed after the Real may be largely financed by disaving and not by increases in the purchasing power of income (i.e., redistributive mechanisms).

Although, the paper identifies redistributive effects of the Real plan, there were few qualifications made to the reduction of inequality observed after July 1994 and its possible links with the launching of the Real Plan. First, inequality of current monthly income has fallen more than the inequality of income measured for longer periods. The difference between these two inequality measures can be explained in terms of the fall of the temporal variability of individual income. As its name suggests one key implication of a successful stabilization program is to make actual earnings more stable and to reduce measurement error on earnings. However, one should be careful not to mix reductions in the temporal variability of earnings, actual or measured, with changes in *stricto sensu* inequality.

Second, the basis of comparison for the analysis of the post Real plan is very low: during June 94 inequality was close to its historic record.

Third, the increase in inequality observed during the period of accelerating inflation before the Real plan is perhaps a better evidence of the adverse effects of inflation on earnings distribution than the post-stabilization period. The whole disinflation technology applied in the Real plan attempted to keep the *status quo* of income distribution before and after the stabilization through the imposition of conversion rules to wages (i.e., the URV mechanism). Of course, there are specific impacts of the stabilization such as changes in the relative prices between tradable and non-tradable goods and the reduction of inflation tax losses on income distribution that were not neutralized. However, one should look at characteristics impacts of the stabilization on inequality like the two impacts just mentioned or on the reduction of the temporal variability of earnings and not treat stabilization as a inequality reduction program.

Finally, although our analysis indicated that the poorest Brazilian that faced higher losses in the high inflation period that preceded the Real and that this same group experienced higher gains in post stabilization period, it does not necessarily implies that the Real plan is the sole reason for the improvement of social indicators. Stabilization may be seen more as a necessary, than a sufficient, condition for inequality reduction.

But what else explains the reduction of poverty and inequality observed in the last three years? The month by month analysis of poverty and inequality indicators revealed that the bulk of the fall of poverty and inequality observed after the Real plan happened exactly in May 1995, nine months after stabilization. Maybe it was just a long pregnancy before the baby, namely the benefits of stabilization, was delivered. In our opinion, other forces besides lagged effects of stabilization on income distribution should be looked after as well. The May 95 minimum wage hike seems to us a good candidate, at least for a secondary role in this story.

PART 1 - MACROECONOMICS DETERMINANTS OF POVERTY

**1.1 - SOCIAL INDICATORS AND MACROECONOMIC DEVELOPMENTS**

Besides the census, there are two main sources of household income at a micro level that can be used to evaluate the evolution of per capita income distribution in Brazil: PNAD and PME. PNAD offers the possibility of covering different income sources at a national level. In this respect, PME basically covers labor earnings in the six main metropolitan regions. On the other hand, PME allow us to work with per cata family earnings. Therefore, earnings based social measures, generated either from PNAD or from PME, capture income effects of changes in unemployment and ´precariousness` of jobs.

However, one must have in perspective that PNAD presents just one picture at one point in every year that the survey is carried out. Since PME is a monthly survey it can provide a better idea of what happened during the whole year to a less comprehensive set of variables than PNAD. In sum, PNAD offers a detailed *picture once a year* of Brazilian social indicators while PME offers a not so detailed *monthly film* of the same object. This and the next part of the paper will use PME to capture macroeconomic aspects of social welfare while the last part will use PNAD to study structural aspects of poverty.

PNAD is implemented in a given week of the third quarter of the year. Graphs 1A and 1B present the evolution of the head-count ratio[5] and the Gini coefficient of per capita family earnings in the months that PNAD went (or was supposed to go) to the field. These graphs compare these indicators with their respective yearly average figures and allow us to check how possibly changing seasonal patterns of these indicators may undermine temporal comparisons based on PNAD data.

---

[5]   All poverty lines used in the paper correspond to regions specific lines calculated for Rocha's (1993). We termed as low, medium and high poverty line 0.5, 1 and 1.5 times the value proposed by Rocha. The high line for São Paulo (i.e., a high cost of living area) is reasonably close to the one proposed by Rob Vos. When the line was applied to PME data we adjusted for the fact that it only captures labor earnings. PME data were aggregated by metropolitan regions using population weights.

GRAPH 1A
HEAD-COUNT RATIO (P0):
YEARLY AVERAGES X PNAD DATES
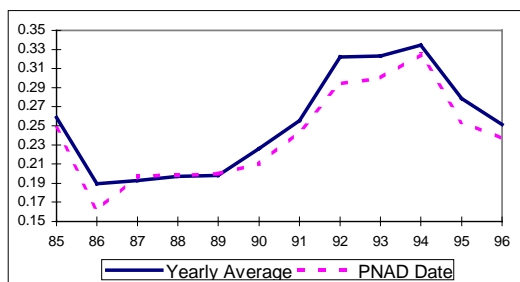
GRAPH 1B
INEQUALITY (GINI) :
YEARLY AVERAGES X PNAD DATES

Source: PME
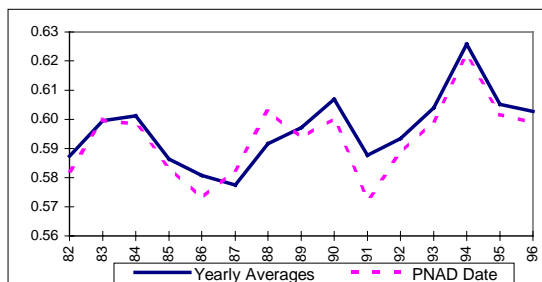
We present now a brief overview of the evolution of poverty and inequality from 1985 to 1996 and their relationship with the main macroeconomic developments. Graph 2 presents the evolution of the growth rate of each tenth per capita earnings on a yearly basis.

During the recent period, starting with the *Nova Republica* in 1985, social indicators were dominated by the macroeconomic instability observed. This period is characterized in macroeconomic terms by the launching of the so-called heterodox stabilization plans. There were six stabilization plans: Cruzado (February 1986), Bresser (June 1987), Verão (January 1989), Collor (March 1990), Collor II (February 1992) and Real (July 1994). These plans produced sharp drops oscillations in inflation rates, as shown in Graph 3A, and in the level of economic activity, captured in Graph 3B by the unemployment rate.

GRAPH 3 : GROWTH RATES OF AVERAGE PER CAPITA EARNINGS BY DECILE - 12-Month MA

Source: PME

8
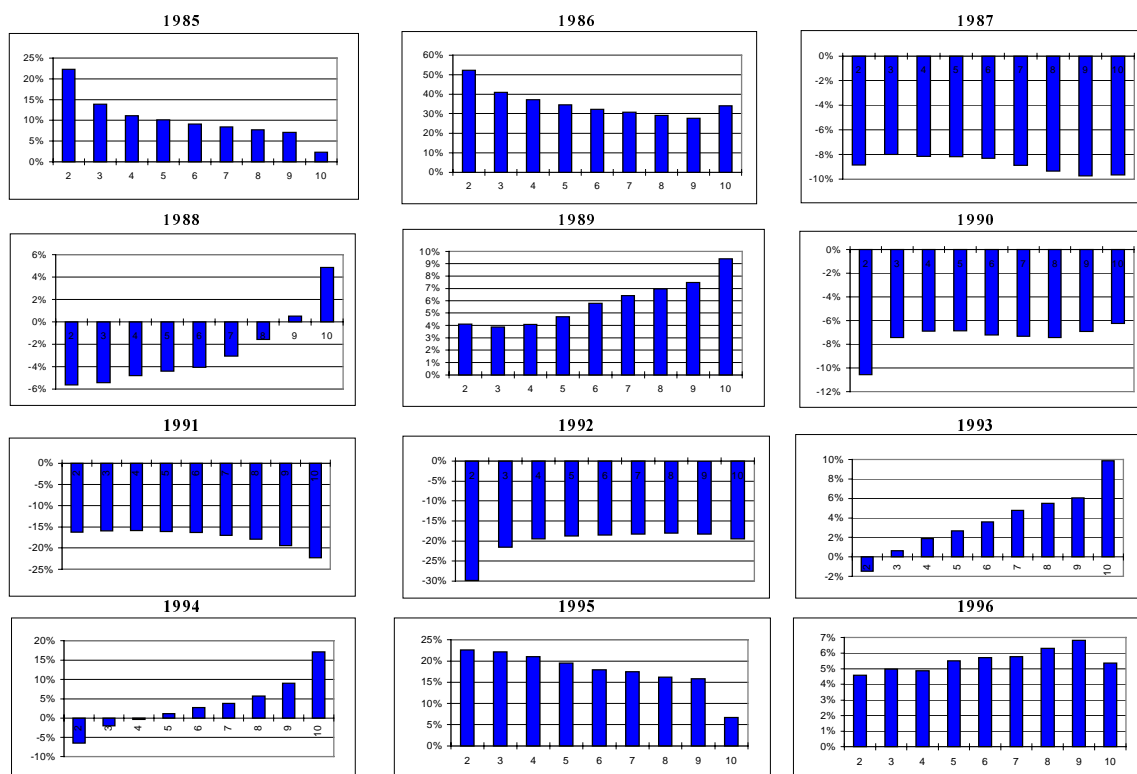
GRAPH 3A- Monthly Inflation Rate
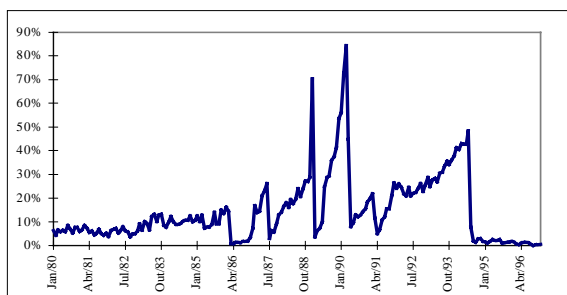
GRAPH 3B - Monthly Unemployment Rate
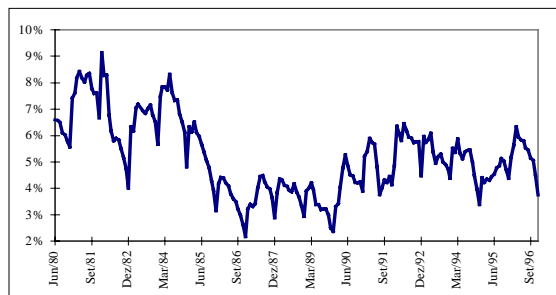
During 1985 and 1986, we observe positive growth rates for all deciles with higher rates for lower deciles. This implied a sharp reduction on both poverty and inequality indices. 1986 is the best year of the series in terms of poverty reduction, all deciles present growth rates above 24% pushed by the Cruzado stabilization plan consumption boom, generous conversion rules for all wages and a minimum wage hike. During 1987 inequality falls slightly but poverty also rises slightly because lower deciles also suffer income losses (first five deciles loose between 8 and 9 %).

The period between 1988 and 1990 presents a sharp deterioration of inequality measures. Notwithstanding, poverty changes are not marked in the 1988-89 period. During the 1990-92 period a deep recession reaches the economy as a result of stabilization attempts by the Collor government that not only attempted to curb price rises with incomes policies (i.e., price freezes, exchange rate pegging, wage conversions) but also through vigorous and interventionist demand restrained policies. In March 1990, two thirds of M4 were decreed illiquid in the financial system. This asset freeze would last 18 months. The result was the largest recession in the statistically documented Brazilian economic history. The patterns of changes assumed by the degree of earnings concentration in this period are quite diverse: rise in 1990, sharp fall in 1991 and slight increase in 1992. Despite of this diversity, poverty indices increase during each of these years.

The 1993-94 period is marked by steadily increasing already high inflation rates. The economy presents aggregate growth but the lowest deciles face incomes loses, worsening inequality. As a consequence, poverty and inequality measures reach new records in 1994, the year the Real plan was launched. This stabilization plan produced an instantaneous fall from hyperinflationary levels of 50% per month with no immediate consequences on unemployment rates. In 1995, there was a sharp reduction on both poverty and inequality. In May 1995, minimum wages got a 43% hike while inflation were already at level of the 2 % per month. In 1996, poverty kept falling at a slower pace but inequality remained constant. The causes behind the wild swing of earnings based social indicators in the period immediately before and after the Real plan will be studied in detail in the second part of the paper.

1.2 - TIME SERIES ANALYSIS OF POVERTY (1980-96)

This sub-section presents an analysis of correlation patterns between inflation, unemployment and real minimum wages, on the one hand, and earnings based social indicators, on the other. We use monthly PME data in logs for the June 1980 to December 1996 period. Table 1 presents the ordinary least square estimation of the partial elasticity of the mean income of different deciles with respect to inflation rates, unemployment rates and real minimum wages. Inflation and unemployment elasticities are not only statistically different from zero but present the expected sign. Higher inflation and higher unemployment imply in lower per capita earnings for all deciles. The direct effects of inflation on per capita family earnings are somewhat milder[6]. The inflation-elasticity decreases from -0.079 in the second decile to -0.066 as we move to the upper tail of the distribution. In other words, the poorest segments of the population tend to be more adversely affected by higher inflation rates. Similarly, the unemployment elasticity of per capita earnings decreases as we move towards the upper tail of the distribution. This elasticity falls monotonically from -0.556 to -0.23.

The real minimum wage partial elasticity of per capita earnings is positive and statistically different from zero. Although, economic theory does not provide definite answers with respect to the sign impact of the minimum wage on per capita earnings, the partial elasticity of per capita earnings with respect to the minimum is greater in module than the sum of inflation and unemployment partial elasticities in all deciles under analysis. Furthermore, the module of minimum wage partial elasticities also tend to decrease with earnings levels. The only exception is the upper decile where the elasticity reaches 0.443 reaching a value close to the one observed in the fifth decile. Nevertheless, this result indicates that per capita earnings mostly correlated with minimum wages are, in general, located in the bottom of the per capita income distribution.

---

[6] The effect captured here abstracts completely from inflation losses incurred in the interval between income is earned and spent. The effect of inflation tax losses will be analyzed in separate in section 2.3.3.

TABLE 1 -THE IMPACT OF MINIMUM WAGES, INFLATION AND UNEMPLOYMENTON AVERAGE PER CAPITA EARNINGS BY DECILE

	Inflation Rate		Unemployment Rate		Minimum Wage		R^2
1	----	----	----	----	----	----	----
2	-0.079	-6,050	-0.556	-9,358	0.786	15,157	63%
3	-0.075	-8,690	-0.390	-9,935	0.511	14,925	65%
4	-0.074	-9,642	-0.347	-9,965	0.458	15,068	67%
5	-0.073	-10,197	-0.328	-10,000	0.437	15,279	68%
6	-0.072	-10,559	-0.315	-10,068	0.427	15,653	69%
7	-0.072	-10,916	-0.308	-10,238	0.420	15,986	70%
8	-0.072	-11,123	-0.305	-10,346	0.412	16,034	70%
9	-0.073	-11,208	-0.305	-10,311	0.399	15,458	69%
10	-0.066	-7,255	-0.230	-5,568	0.443	12,291	52%

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

Next, we turn to the analysis of the correlation patterns between inflation, unemployment and minimum wages, on the one hand, and poverty measures, on the other. Table 2 presents OLS estimates of the elasticity the head-count-ratio with respect to the set of macroeconomic variables mentioned before. As one would expect , given the results of Table 1 the module of these elasticities are greater for lower poverty lines[7].

Given the major importance of the minimum wage on explaining poverty variation we move to a partial regression analysis of this variable. Graph 4 presents a bivariate plot of minimum wages and the residual component of the head-count ratio once a constant, seasonal dummies, inflation and unemployment rates are taken into account. Minimum wages explains 49% of the unexplained variance of the first stage regression. Still, regression analysis does not warrant a casual interpretation of the impact of minimum wages hikes on poverty.

---

7   Appendix 1.1 present a robustness analysis of the impacts of the minimum wage on poverty. These regressions combine three poverty indices (P^0, P^1 and P^2), three different poverty lines, three data frequencies (monthly, quarterly and annual), two different criteria of aggregating poverty across metropolitan regions and for each of the six metropolitan regions taken in isolation. These regressions are runned with all variables in logs and all variables in levels. The appendix also replicates these results using as explanatory variables just minimum wages, a constant and seasonal dummies. This second type of regression is relevant since minimum wages rises can impact adversely inflation and unemployment.   860 of the 864 results obtained presented a negative and statistically different from zero elasticity of poverty with respect to minimum wages. In sum, a negative partial correlation of poverty with respect to minimum wages is a robust result for the recent Brazilian experience.

11

TABLE 2 HEAD-COUNT RATIO (P0) MONTHLY DATA IN LOGS BRAZIL			
Poverty Line	LOW	MEDIUM	HIGH
Inflation Rate	0.018 3.32	0.017 4.154	0.013 4.344
Unemployment Rate	0.377 8.548	0.262 7.95	0.176 7.594
Minimum Wage	-0.434 -11.449	-0.305 -10.743	-0.219 -11.012

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

GRAPHS 4- PARTIAL REGRESSION ANALYSIS MINIMUM WAGES X UNEXPLAINED POVERTY*

MINIMUM WAGES X UNEXPLAINED
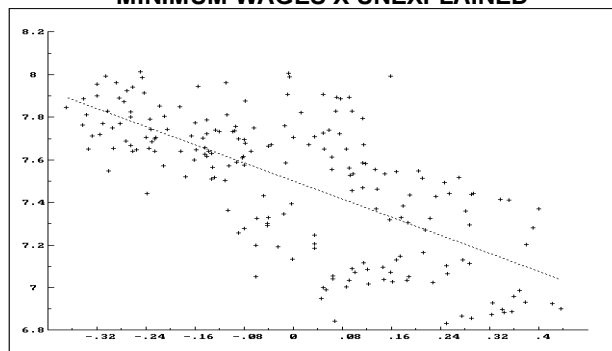
* Residual of the regression of P0 against inflation and unemployment
Source: PME

PART 2. THE IMPACT OF THE REAL PLAN ON POVERTY

This part starts using PME to study dynamic aspects of income distribution that are not available using PNAD. At an aggregate level PME allows us to measure possible lags in the response of social indicators to policy changes. At a micro level, the possibility offered by PME of following the same household through short periods of time allows us to capture mobility aspects and to use different time aggregating procedures in calculating earnings based social measures.

The analysis of the impact of the Real plan on income based social indicators through PNAD data is specially problematic since the survey was not collected in 1994. This section assesses the impacts of the Real plan on earnings distribution from PME data using an approach that in normal conditions would be also be feasible to implement using PNAD. As the analysis proceeds we will explore a rich variety of dynamic aspects available from PME.

2.1 - PRE AND POST STABILIZATION DISTRIBUTIVE CHANGES

The analysis of changes in income distribution will be divided in three stages: first, the period before the Real plan (from June 93 to June 94), the transition period from high inflation to stable prices (from July to September 94) and the post-transition period (from September 94 to September 95). The second stage, characterized as a transition period, is hard to assess gauged since it involves incomes earned in currencies of different natures and different inflation levels. The evaluation of changes in the purchasing power of income involves necessarily assumptions with respect to the dates of receipts and payments. For now we restrict ourselves to the first and the third period mentioned above, where the analysis is more direct.

Table 3 presents the evolution of the three poverty indices P0, P1 and P2 of the class

proposed for the two poverty lines proposed in part 1 during the two periods under analysis. The results are consistent with the analysis of the mean and the inequality of per capita earnings presented above: first, we observe a deterioration of all poverty indices during the 12-month period that preceded the Real plan. Since the earnings loss was more strongly felt in lower deciles, the rise in poverty indices tend to be inversely related to the poverty line used. For example, the proportion of poor (P0) rises 15,7% for the low poverty line and 2,6% for the high poverty line.

Table 3 - Changes in Poverty and the Real Plan

Poverty Index	P0	P0	P1	P1	P2	P2
Poverty Line	Low	High	Low	High	Low	High
12 Months Before Real Plan	15,79%	2,64%	13,96%	7,84%	11,06%	10,33%
12 month after transition	-21,80%	-9,04%	-16,48%	-14,29%	-12,10%	-15,97%
Source: PME - IBGE						

In contrast, from September 94 to September 95 there was a substantive improvement in all poverty indices. During this period, the proportion of poor (P0) falls 21.8% for the low poverty line and 9,2% for the high poverty line. This movement reflects the fact that lower deciles had bigger gains in earnings during this period. Similarly, the average income gap of the poor (P1) falls 16.5% for the low poverty line and 14.3% for the high poverty line. On the other hand, the average squared income gap falls 12.1% for the low poverty line and 15.9% for the higher poverty line, inverting the trend seen in the previous analyzed indices to present bigger falls for lower poverty lines.

2.2 - THE MACRO-EFFECTS OF THE REAL PLAN ON POVERTY

This part pursues a macro oriented analysis of poverty determinants during the 1990s in Brazil. Given the major importance of the Real plan, special attention will be paid to the period immediately before and after the stabilization. In particular, we attempt to assess the impacts of the disinflation process on the level and the distribution of income, and to possible synergism between these two dimensions of poverty determination.

Illustration 1 presents the main impacts of stabilization on poverty to be studied in this section: the first set of poverty determinants analyzed are related to redistributive effects. These effects include characteristic impacts of stabilization programs on income distribution such as changes in relative prices between tradable and non-tradable goods and the reduction of inflation tax incidence. We will also argue that the increases in the nominal minimum wage in a context of stable prices played a major role in explaining the observed reduction in poverty after the Real plan.

The second set of effects are related to the impact of the Real plan on mean per capita income that operates through aggregate demand channels. We devote special attention to the impact

of the disinflation process on aggregate consumption like the reduction of inflation tax losses. We also take into account the effects of reductions of inflationary uncertainties such as the reduction of precautionary savings and increases in the supply of consumer credit. The main lesson here is that the increases of aggregate demand observed after the Real plan, specially in the poorest segment of the Brazilian economy, may be largely financed by disaving and not only by increases in the purchasing power of per capita income.

Illustration 1

THE MACRO-EFFECTS OF THE REAL PLAN ON POVERTY

Impact of stabilization on inequality:
■ Reduction in inflation tax   ■ Changes in relative prices tradables/non-tradables   ■ 43% minimum wage hike in a stable economy

Distribution of income

Stabilization

Poverty

Impact of stabilization on aggregate demand and level of activity:
■ Reduction in inflation tax and liquidity constrains   ■ Reduction in income variability and precautionary savings   ■ Reduction in income variability and greater demand and supply of credit

Per capita income

2.3 - THE DETERMINANTS OF INCOME DISTRIBUTION

2.3.1 - CHANGES IN RELATIVE PRICES, EARNINGS AND POVERTY

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 reduction in tariff and non-tariff protection which preceded the plan had essentially the same effect. The prices of the non-tradable goods did 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. It is possible to show that the poor workers are

concentrated in some of the non-tradable sectors notably personal 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 (see the poverty profiles in part 3). Hence, there are reasons to believe that the change in relative prices has had important redistributive effects[8.]

2.3.2 - STABILIZATION, MINIMUM WAGE AND POVERTY

This sub-section studies the role played by the May 95 minimum wage hike of 42.86% in the path followed by social indicators. Graphs 5 and 6 present the evolution of the real minimum wage vis a vis, respectively, the evolution of the proportion of poor and the Gini coefficient of per capita earnings.
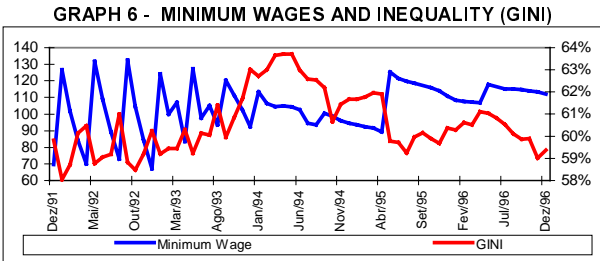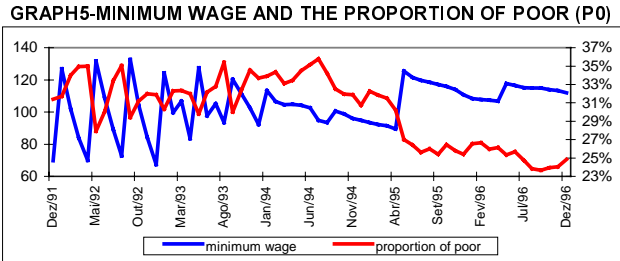
During the period of high inflation, up to July 1994, we observe synchronous movements of poverty and inequality indices and the minimum wage. That is, when minimum wages are in a local maximum (i.e., a readjustment date) poverty and inequality indices are on their local minimum. This pattern is specially true when a low poverty line is chosen. This result is consistent with the idea that minimum wages operate mostly at lower tail of per capita income distribution.

The first substantive fall in poverty after the Real plan was launched occurred in September 94 when the minimum wage was adjusted from R$64 to R$ 70, which corresponded to a nominal rate of change of 9,4% while monthly inflation rate was around 2.11% per month. Table 4 shows that the fall of the number of poor individuals occurred this month ranged from 5% using the low poverty line to 1.2% using the high poverty line.

Table 4 - Changes in Poverty and Minimum Wage Adjustments

Poverty Index	P0	P0	P1	P1	P2	P2
Poverty Line	Low	High	Low	High	Low	High
10% MW Change September 94	-4,99%	-1,17%	-3,58%	-2,15%	-3,38%	-2,72%

---

8   The measurement of changes in relative earnings observed between tradable and non-tradable goods sectors after sharp drops in inflation should take into account differences in payments practices across sectors. Appendix 2.1 develops a methodology to deflate earnings at the time they are paid. The main result is to reduce the rise in earnings differentials between non-tradable and tradable goods sectors observed after stabilization. Still, after the application of this procedure earnings in the. non tradable goods sectors experienced a relative earnings increase in the 1993-96 period: (services (25%), commerce (27%), construction (21%) against 16% in both manufacturing and mining.).

| 43% MW Change May 95 | -10,52% | -3,16% | -8,32% | -6,21% | -6,33% | -7,22% |
| 15 month period after stabilization | -26,28% | -11,85% | -20,11% | -18,02% | -14,83% | -19,87% |

Last and most important, the 42,86% nominal adjustment of May 95 when the minimum changes moved from R$ 70 to R$ 100 as contemporaneous to a substantial fall in all poverty indices. During may 95 the monthly inflation rate was around 2.14%. Table 4 shows that the fall of the number of poor individuals ranges from 10.5% to 3.2% between April and May 95. Once again the minimum seems to have greater impact when a lower poverty line is used. If we use the lower poverty line around 40% of the fall of the poverty observed during the 15 month period that started after the Real plan was launched occurred in May 95.

In sum, the analysis of the comovements between the minimum wage and poverty and per capita income inequality indices can be viewed as a reduced form of a series of effects of minimum wages on the labor market. These effects include heads and non-heads earnings, employment levels, precariousness of jobs and so on. The preliminary evidence presented here can be divided in two parts: during the high inflation period most of the minimum wage increases seemed to have a transitory impact on poverty and inequality. The combination between the frequency of adjustments and the level of inflation seems to influence the seasonal pattern of various poverty indices. After the stabilization, changes in the minimum wage appear to have a more permanent impact on poverty. In particular, around one half of the fall of the number of poor using a low poverty line observed between June 94 and September 95 happened in the two months the minimum was readjusted.

Our basic conjecture is that the analysis of the observed fall of inflation induced by the Real plan is not enough to explain the improvement of various poverty measures based on earnings. It seems as if stabilization increased the role placed by minimum wages in affecting poverty. Obviously, the extraction of a definite casual relationship between minimum wages and poverty requires an additional research effort.

2.3.3- INFLATION TAX AND INCOME DISTRIBUTION

This section evaluates the impact of inflationary losses incurred in the interval between incomes are paid and spend on poverty High inflation also implies in the adoption of costly procedures to economize on cash balances. Some of these costs do not accrue to the emissaries of debts fixed in nominal terms (for example, the time cost of waiting in a banking cue).

This sub-section simulates the evolution of the relationship between inflationary losses and

poverty during the stabilization period**.** The key feature of the simulation of relative inflationary losses (defined as the ratio between short run financial losses to family consumption) is to impose a restriction of access to short run assets . In quantitative terms poor individuals without access to bond markets get a net increase in the purchasing power of approximately10% with stabilization9.

In order to simulate the poverty alleviation effect of the reduction of relative inflationary losses , we incorporated a 10% increase in the poor income just after the disinflation process took place. Table 5 shows that he poverty indices during the transition period that goes from May 94 to September 1994 presents a fall the inflation tax effect correspond to about one half of the reduction observed. For example, the proportion of poor using a low poverty line falls by 11.2% between May and September 1994 if the inflation tax effect of 10% is added on top of labor income.   This same statistic drops to 5.7% if the inflation tax effect is not considered. In sum, if one accepts our set of hypothesis, the impact of the inflation tax effects on the proportion of the very poor amounts to a reduction around 5.50%.

Table 5 - Changes in Poverty and Inflation Tax Incidence

Poverty Index	P0	P0	P1	P1	P2	P2
Poverty Line	Low	High	Low	High	Low	High
Transition Period with ITE(*)	-11,23%	-6,69%	-9,48%	-8,80%	-8,46%	-9,45%
Transition Period without ITE(*)	-5,73%	-3,09%	-4,34%	-4,35%	-3,10%	-4,64

(*) ITE - refers to the Inflation Tax Effect of 10%. Source: PME

2.4- TEMPORAL COMPARISONS OF INCOME DISTRIBUTION

The availability of monthly data also allow us to work with yearly averages and not only with one point in time as in PNAD. This allow us to avoid problems of changes in the seasonal structure of the series. The relevance of both points can be exemplified by the path of poverty and inequality indices showed in Graphs 5 and 6. Table 6 presents yearly averages of the share of the 20% richest and the 50% poorest in terms of per capita earnings.

TABLE 6 - The Recent Evolution of Poverty and Inequality - 1990/96

---

9   These simulations are based on the model presented in appendix 2.2 using stylized values of its exogenous variables based on the evidence presented in appendix 2.3. These appendices look directly into four flight from money channels: the substitution of money for short run financial assets, non-monetary transactions, the substitution of money for commodities inventories and the frequency of earnings payments.

	1990	1991	1992	1993	1994	1995	1996
INCOME SHARE OF 50 % POOREST*	12,8	13,6	13,1	12,5	11,3	12,2	12,3
INCOME SHARE OF 20 % RICHEST*	62,8	60,9	61,1	62,1	64,7	62,6	62,4
PER CAPITA GDP GROWTH	-5,9	-1,3	-2,3	2,7	4,5	2,8	1,5

SOURCE:PME - YEARLY AVERAGES OF MONTHLY ESTIMATES

Graph 7 presents average yearly incomes rates of change across different deciles for all six years of the 1990´s decade grouped two by two:

Graph7 - . Annual Rate of Growth of Yearly Average Per Capita Income by Decile
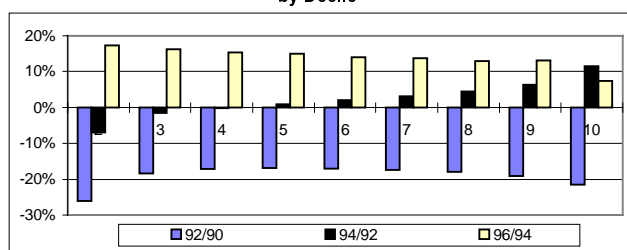
Source: PME - Six Metropolitan Regions

Graph8 -Cumulative Distribuition Function - Real Per Capita Earnings Adjustment
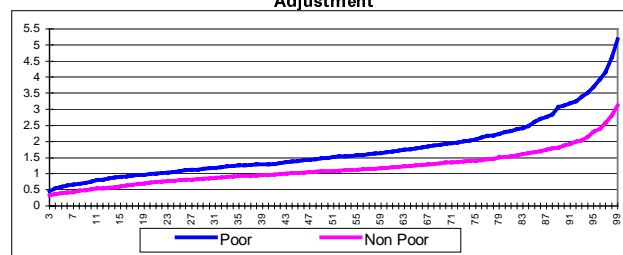
Source: PME - Six Metropolitan Regions

During the first period, corresponding roughly to the Collor administration (1990-92), we observed a fall in per capita earnings for all deciles, so in spite of the observed fall in inequality, there was a severe social welfare loss. During the 1992-94 period, corresponding to the Itamar Franco administration, it becomes clear the inequality enhancing effect rising inflation can produce. Although, GDP grew during these years (see table 6), the lower income groups suffered net earning losses. These losses are reverted as we move towards the upper tail of the earnings distribution. In this period the top decile got an average yearly earnings increases above 10%.

The 1994-96 period, corresponding to the changes observed during the first two years of the Fernando Henrique Cardoso administration, reverted the direction of the income concentration process observed until then: the lowest deciles of the distribution that presented higher losses during the period of rising inflation, gets the highest earnings increase. As we move towards the upper tail of the distribution we observe a decrease of earnings gains. The top decile that presented the higher growth rates during the previous high inflation period presents the lowest earnings gain. The redistributive effects of this relative loss is expressive given the high share of the top decile on aggregate earnings (49.8% of total earnings during 1995 according to PNAD). Nevertheless, since all deciles experienced net absolute earnings increases, one can say that there was a increase in the level of social welfare.

2.4.1 - LONGITUDINAL COMPARISONS OF INCOME DISTRIBUTIONS

The possibility offered by PME of following the same dwelling during short periods of time allow us to improve comparisons between income distributions before and after stabilization. The longitudinal aspect of PME makes it possible to analyze earnings changes at an individual level. The option adopted here was to analyze the distribution of real per capita earnings *annual rates of change* for different sub-groups of the population. Graph 8 plots the cumulative distribution function of the ratio of real earnings between September 1994 and September 1995 (i.e., one plus their *rate of change)* for two groups of individuals classified as poor and non-poor if their initial earnings are above or below according to the specific month median . Note that the axis of graph are inverted with respect to the usual representation of distribution functions.

Graph 7 shows that the distribution of earnings changes of the poor first-order stochastically dominates the corresponding distribution of the non-poor segment.. This means that any percentile of the distribution of real per capita earnings *annual rates of change* of the poor is never below the corresponding percentile of the non-poor segment.

Another basic result of Graph 7 is that while 20% of the initially poor individuals obtained real earnings reductions during the post-stabilization period (i.e., ratio between real earnings below one). This number raise to 45% in the case of the initially non poor individuals. This statistic may be interpreted as the distance in terms of proportion of individuals with respect to a Pareto improvement in income distribution between September 1994 and September 1995. Note that the longitudinal aspect of earnings data allow us to relax the hypothesis of anonymity (or alternatively that there are not ranking inversions) in temporal comparisons between income distributions.

2.4.2 - EARNINGS RISK AND EARNINGS INEQUALITY

Longitudinal data up to four consecutive months can also be obtained from PME. The analysis of the recent evolution of the distribution of per capita earnings will use two components: the cross-sectional variance of logs of average per capita earnings during the four month period and the average temporal variance of log per capita earnings around its mean during the four-month period complement each other as measures of dispersion.

As in a standard ANOVA decomposition, the sum of these two components equals to the total variance of logs of observed during any four month period. In other words, the total variance of logs for any four month period, when the different observations of the same individual are treated independently, can be decomposed into two terms: a) a term corresponding to the temporal dispersion of earnings of the same individual across time; b) a term corresponding to the cross-

sectional dispersion of the average income earned during the four month period for the different individuals included in the sample.

Table 7 presents the behavior of total dispersion and the two components mentioned above in two periods: a) four month periods just before the stabilization (March-June 94); b) one and a half years after the launching of the Real Plan (March-June 96).

Table 7 - Analysis of Variance

	March 94	March 96
Cross-sectional variance of log earnings month by month	**0.97**	**0.88**
Cross-sectional variance of log earnings average 4 months	**0.85**	**0.80**
Temporal variance of log earnings across the 4 months	**0.12**	**0.08**

Source: PME

The analysis of variance of table 7 shows that while the true cross sectional variance (cross-sectional variance of log earnings average 4 months)falls 5.88% during the period under consideration, the usual cross-sectional variance of monthly earnings (cross-sectional variance of log earnings month by month) falls by 9.28%. This difference is explained by the huge fall of the volatility measure used (mean of temporal variance of log earnings across the 4 month period). In particular, the share of average earnings dispersion on total dispersion increases by 3.5%. This result points to an overestimation of the fall of earnings inequality according to the main household surveys available in Brazil. (that is, PNAD, PME etc.) .

Graphs 9 and 10 illustrate the path of two components of total dispersion of per capita log earnings. The *12-month moving average* of the cross-sectional coefficient of variation of log earnings averaged over a 4 month period shows three different stages: a) mild growth until August 1993; b) sharp growth until May 1995; c) moderate fall until the end of the series (April 1996).

Graph 9 - Cross-sectional Coefficient of Variation of Log Per Capita Income Measured during 4 months - 12 Month Moving Average
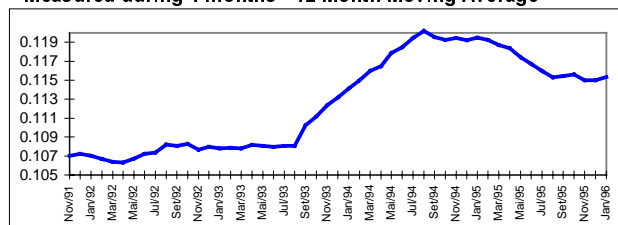
Source PME

Graph 10 - Temporal Coefficient of Variation of Log Per Capita Income During 4 months - 12 Month Moving Average
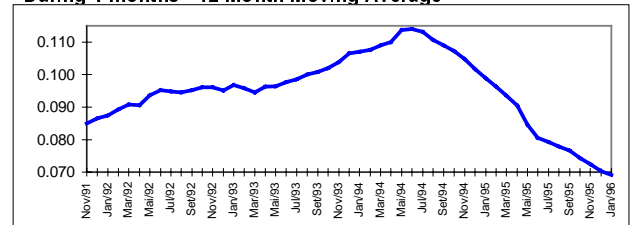
Source: PME

The analysis of the temporal dispersion of individual per capita earnings, captured here by the coefficient of variation we observe two stages: a) continuous growth until the launching of the Real Plan in July 1994 (i.e.; it includes the URV period); b) sharp fall until the end of the series (April 1996).

In sum, the analysis developed in this sub-section reveals that traditional measures of earnings inequality used in Brazil based on monthly earnings tend to overestimate the fall of earnings inequality measured for longer periods. On the other hand, the improvement of social welfare measures based on labor earnings were not restricted to the binomial mean-inequality. In particular, there was a fall of 33% in the temporal variability of log per capita earnings calculated at a desegregated level in the post-stabilization period. Reductions in the temporal earnings variability will also play a key role in explaining the rise of consumption booms after the stabilization. This issue will be studied in more detail next section.

2.5 - THE DETERMINANTS OF PER CAPITA INCOME

Graph 11 reveals that the evolution of the 12-month moving average of the mean per capita income from 1992 onwards presents three different sub-periods: a) a fall until the end of the Collor administration (October 1992); b) moderate growth until the launching of the Real Plan (July 1994); c) sharp increase in the growth rate in the post-stabilization period.

Graph 11 - Mean of Log Per Capita Income Measured during 4 Months

Graph 12 - Industrial Production: Total and Consumption Goods 12 Months Moving Average

Source: PME-IBGE
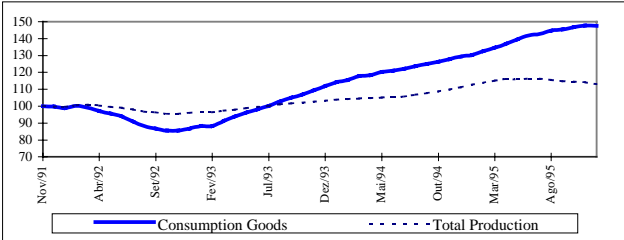
Source:PIM-IBGE

This section attempts to offer an integrated view of possible sources for the rise in the growth rate of per capita income after the Real plan. The first point to note is that this process was consumption driven, as shown by the comparison between index of total industrial production and of consumption goods production in Graph 12.. Illustration 1 in section 2.2 presents the main channels behind the Real plan consumption boom. In principle, the operation of redistributive mechanisms like the incidence of the inflation tax should not have substantial effects on aggregate consumption. However, if there is a coincidence between lack of access to short run financial assets and lack of access to credit then one can postulate a negative relation between inflation tax incidence and aggregate consumption. Economies of scope establish a close connection between asset and liabilities sides of household units. The idea is that banks consumer credit availability is larger to their own customers, who are more easily monitored.

It is possible to show that a large part of the Brazilian population does not have access to

short run financial assets. This restriction implied in purchasing power losses due to inflation tax incidence. Since this segment of the population is less likely to have access to credit, they are more likely to face binding liquidity constraints[10]. In this sense a fall in inflation does not only increases the wealth of the poorest segments of the population but also increases the share of liquid wealth in the hands of liquidity constrained individuals.

Another channel through which a fall in inflation would affect the share of liquidity constrained individuals in the population is through an increase in the supply of consumer credit. The idea is that the reduction in inflationary uncertainty would low monitoring costs of loan suppliers and thus increase the supply of credit. While the inflation tax effect raises the share of liquidity constrained individuals in income at the expense of other segments of the economy, this effect grants access to credit to agents that were before restricted in credit markets. In this sense, this effect would correspond to a Pareto improvement proportioned by stabilization.

The empirical relevance of the share of liquidity constrained consumers in Brazilian GDP can be assessed from recent time series estimates of Reis et alii (1996). These authors find that around 80% of aggregate income accrues to individuals with a unitary marginal propensity to consume of their income. Given the degree of inequality observed in Brazil this would correspond to the share of income that accrues to the 95% poorest segments of the Brazilian economy.

One last impact of stabilization on consumption is related to the lower demand for savings and a higher demand for credit associated with the reduction of inflationary uncertainties. The idea is that in the presence of instabilities consumers postpone their consumption decisions to the future waiting for uncertainty resolution. That is, uncertainty implies in a exchange of present consumption for future consumption (i.e., a steeper consumption profile) and consequently higher savings stocks to buffer adverse income shocks. In this context, an abrupt fall of earnings risk produces a flatter temporal consumption profile and smaller savings demand (or alternatively higher demand for credit). Accordingly, the rise of the consumption boom would be financed by disaving (and not by an increase of the poor segment income). In other words, according to this channel one should stress the risk alleviation side of stabilization and not its inequality reducing impact.

PART 3 - STRUCTURAL DETERMINANTS OF POVERTY (1976-95)

---

10   Appendix 3.2 analysed in detail financial strategies adopted by different segments of the population during high inflation in Brazil.

We start discussing the evolution of the mean and inequality of per capita income during the 1976-95 period. Table 8 shows that between 1976 and 1985 per capita GDP grew at an average rate of 1.81% per year while inequality decreased: the Gini coefficient dropped from 0.619 to 0.605 while the Theil-T index fell from 0.922 to 0.750. During the 1985-95 period per capita GDP growth rate fell to 0.21% and inequality increased. The Gini coefficient and the Theil T increased from 0.605 to 0.620 and from 0.750 to 0.799, respectively.

Table 8: Evolution of the Mean and Inequality of Per Capita Earnings - 1976/95

	Growth Rate	Inequality Measures	
Years	Per Capita GDP	Gini	Theil - T
1976		0.619	0.922
	1.81%		
1985		0.605	0.750
	0.21%		
1995		0.620	0.799

Sources: PNAD 76, 85, 93 e 95.

3.1 - 1995 POVERTY PROFILE

This section traces a poverty profile according to the main attributes of the heads of households (i.e.; gender, age, schooling, race, sectors of activity, working class, population density and region) using the latest PNAD available. Table 9 presents the three FGT poverty indexes for the basic poverty line proposed by Rocha (1993) plus one half and one and half times its value, making a total of nine poverty measures. The analysis in the text will be centered around the head-count ratio for the Rocha's poverty line (i.e., the second column of Table 9).

Table 9

23

Poverty Profile in Brazil - 1995
Sample: All Households

Head of the Household	Poverty Indices / Poverty Line (Multiples)	P0 0.5 (%)	P0 1 (%)	P0 1.5 (%)	P1 0.5 (%)	P1 1 (%)	P1 1.5 (%)	P2 0.5 (%)	P2 1 (%)	P2 1.5 (%)	Total Population (%)
Total		11.05	27.68	42.71	5.73	12.45	20.10	4.42	8.07	12.78	100.00
Gender	Male	9.96	26.53	41.58	4.79	11.40	19.01	3.52	7.09	11.75	82.79
	Female	16.33	33.22	48.14	10.27	17.47	25.34	8.75	12.81	17.76	17.21
Age	Less than 15 years	31.55	36.99	41.90	28.79	31.40	34.50	28.21	29.63	31.55	0.02
	15 to 25 years	22.67	42.95	58.67	16.66	24.71	33.63	15.25	19.49	25.08	5.73
	25 to 45years	13.04	31.71	47.25	6.62	14.49	22.89	5.00	9.38	14.74	51.24
	45 to 60 years	8.87	23.88	38.25	4.00	10.02	17.08	2.79	6.08	10.36	27.87
	More than 60 years	3.93	15.25	29.49	1.73	5.32	11.05	1.29	2.95	5.93	15.13
Years of Schooling	0 years	17.35	43.06	62.13	7.88	19.18	30.55	5.41	11.84	19.36	21.04
	0 to 4 years	14.46	36.16	54.17	6.95	16.19	26.00	5.08	10.20	16.47	21.56
	4 to 8 years	9.59	25.09	41.06	5.26	10.96	18.36	4.29	7.23	11.48	31.13
	8 to 12 years	5.70	14.10	24.74	3.91	6.71	10.85	3.48	4.86	7.08	19.51
	More than 12 years	2.79	3.85	5.11	2.60	2.94	3.48	2.55	2.72	3.00	6.76
Race	Indigenous	23.82	53.17	66.82	12.94	27.64	39.08	9.53	18.23	27.00	0.11
	White	6.74	18.07	30.36	3.88	7.89	13.31	3.23	5.26	8.30	53.03
	Black	16.01	38.82	57.11	7.83	17.68	27.96	5.76	11.29	17.94	46.31
	Yellow	7.36	10.86	15.70	5.31	7.24	9.12	4.85	5.99	7.23	0.54
	Ignored	6.99	26.63	33.53	2.27	8.74	15.04	0.74	3.93	8.60	0.02
Sector of Activity	Agriculture	16.63	39.81	57.01	7.60	17.99	28.35	5.14	11.20	18.12	24.69
	Industry	6.11	21.25	36.23	2.39	7.83	14.76	1.52	4.26	8.28	15.89
	Constuction	7.28	27.36	46.39	2.70	9.75	18.84	1.78	5.17	10.40	9.96
	Public Sector	4.61	15.80	27.62	1.61	5.85	11.19	0.89	3.09	6.19	10.18
	Service	6.78	21.38	35.92	2.48	8.17	15.02	1.54	4.49	8.55	39.28
Working Class	Unemployed	54.95	74.02	82.25	42.27	53.43	61.76	38.57	46.14	52.82	3.18
	Inactive	14.25	28.42	42.52	10.00	15.45	22.22	8.97	11.90	15.88	17.17
	Employees (w/card)	4.40	19.74	36.66	1.42	6.36	13.58	0.84	3.11	7.01	27.16
	Employees (no card)	13.20	40.09	59.81	4.30	15.57	27.33	2.22	8.30	15.90	15.43
	Self-Employed	12.33	30.75	46.02	5.20	13.40	21.78	3.29	8.05	13.54	31.12
	Employer	2.41	5.37	10.68	1.66	2.73	4.46	1.51	2.03	2.89	5.95
	Public Servant	4.52	15.44	27.45	1.64	5.81	11.12	0.97	3.10	6.15	10.04
	Unpaid	24.32	38.20	50.98	19.51	25.61	32.18	18.11	21.60	25.79	2.27
Population Density	Rural	13.84	33.70	49.98	7.40	15.61	24.51	5.65	10.23	15.89	21.10
	Urban	9.94	25.36	39.95	5.06	11.36	18.60	3.87	7.26	11.69	49.25
	Metropolitan	10.92	27.24	42.11	5.65	12.00	19.45	4.46	7.88	12.38	29.65
Region	North	19.90	44.23	61.54	8.69	20.67	31.59	5.95	12.96	20.57	4.47
	North-East	18.25	43.12	61.25	9.05	20.32	31.34	6.57	13.01	20.43	29.56
	South-East	7.62	20.94	35.70	4.25	8.94	15.31	3.50	5.87	9.43	43.39
	South	4.97	13.49	23.18	2.95	5.80	9.94	2.55	3.92	6.16	15.16
	Center-West	9.56	24.61	38.39	5.04	10.19	17.15	4.11	6.82	10.76	7.41

Source: PNAD - IBGE

TABLE 10

Decomposition of Poverty Indices according to Characteristics of the Households - 1995
Sample: All Households

Head of the Household	P0	P1	P2	Total Population	Contribution to Total Poverty P0	P1	P2
Gender							
Male	26.53	11.40	7.09	82.79	79.35	75.84	72.69
Female	33.22	17.47	12.81	17.21	20.65	24.16	27.32
Age							
Less than 15 years	36.99	31.40	29.63	0.02	0.03	0.06	0.09
15 to 25 years	42.95	24.71	19.49	5.73	8.89	11.38	13.84
25 to 45 years	31.71	14.49	9.38	51.24	58.70	59.66	59.55
45 to 65 years	23.88	10.02	6.08	27.87	24.04	22.43	21.00
more than 65 years	15.25	5.32	2.95	15.13	8.33	6.47	5.53
Years of Schooling							
0 years	43.06	19.18	11.84	21.04	32.74	32.43	30.86
0 to 4 years	36.16	16.19	10.20	21.56	28.17	28.05	27.25
4 to 8 years	25.09	10.96	7.23	31.13	28.21	27.40	27.88
8 to 12 years	14.10	6.71	4.86	19.51	9.94	10.52	11.75
more than 12 years	3.85	2.94	2.72	6.76	0.94	1.60	2.27
Race							
Indigenous	53.17	27.64	18.23	0.11	0.22	0.25	0.26
White	18.07	7.89	5.26	53.03	34.62	33.63	34.58
Black	38.82	17.68	11.29	46.31	64.94	65.80	64.76
Yellow	10.86	7.24	5.99	0.54	0.21	0.31	0.40
Sector of Activity							
Agriculture	39.81	17.99	11.20	24.69	35.51	35.68	34.27
Industry	21.25	7.83	4.26	15.89	12.20	10.00	8.39
Construction	27.36	9.75	5.17	9.96	9.85	7.81	6.38
Public Sector	15.80	5.85	3.09	10.18	5.81	4.79	3.90
Service	21.38	8.17	4.49	39.28	30.33	25.80	21.86
Working Class							
Unemployed	74.02	53.43	46.14	3.18	8.50	13.64	18.16
Inactive	28.42	15.45	11.90	17.17	17.64	21.32	25.32
Employees (w/card)	19.74	6.36	3.11	27.16	19.37	13.87	10.46
Employees (no card)	40.09	15.57	8.30	15.43	22.35	19.30	15.87
Self-Employed	30.75	13.40	8.05	31.12	34.57	33.50	31.02
Employer	5.37	2.73	2.03	5.95	1.15	1.30	1.49
Public Servant	15.44	5.81	3.10	10.04	5.60	4.68	3.86
Unpaid	38.20	25.61	21.60	2.27	3.13	4.66	6.07
Population Density							
Rural	33.70	15.61	10.23	21.10	25.70	26.47	26.74
Urban	25.36	11.36	7.26	49.25	45.12	44.94	44.32
Metropolitan	27.24	12.00	7.88	29.65	29.18	28.59	28.94
Region							
North	44.23	20.67	12.96	4.47	7.14	7.42	7.18
North-East	43.12	20.32	13.01	29.56	46.06	48.26	47.66
South-East	20.94	8.94	5.87	43.39	32.82	31.18	31.53
South	13.49	5.80	3.92	15.16	7.39	7.07	7.37
Center-West	24.61	10.19	6.82	7.41	6.59	6.07	6.27

The overall proportion of poor (P^0) during 1995 was 28%. As expected, the groups with higher head-counts ratios were headed by: females (33%), young families (15 to 25 years old (43%)), illiterates (43%), non-whites (indigenous (53%) and black (38%)), inhabitants of rural areas (34%), inhabitants of the Northern part of Brazil (North (44%) and North-east region (43%)) ,

working in agriculture (40%) and construction (27%), unemployed (74%) and informal employees (40%). Table 10 presents the contribution to aggregate poverty indices of each of these cells:

Since a few restricted groups (minorities) tend to present higher poverty rates, the contribution of the poorest groups mentioned in the previous paragraph to poverty is not always substantial: females (20 %), young families (15 to 25 years old 8.9 %), illiterates (32%), non-whites (indigenous (0.22%) and black (65%)), inhabitants of rural areas (25%), inhabitants of the Northern part of Brazil (North (7.1%) and North-east region (46%)) , working in agriculture (35%) and construction (9.8%), unemployed (8.5%) and informal employees 22.3%). Tables below replicate Tables 10 and 11 for the poverty line of 1985 PPP 60 US dollars per month proposed by Rob Vos. This amounts to 97 current Reais of September 1995. It is important to notice that these latter estimates are not adjusted for cost of living regional differences within Brazil, like the ones used in Tables 9 and 10. The appendix also present the same tables for female and male headed households for 1995.

3.2 - CHANGES IN THE POVERTY PROFILE BETWEEN 1985 AND 1995.

Table 11 presents the percentile differences between the 1985 and 1995 poverty profiles adjusted for a rather small rate of per capita GDP growth of 2.09% during the period:

TABLE 11

Decomposition of Poverty Changes (1985 - 95) - Total Change
Adjusted for National Accounts

Head of the Household	Poverty Indices Poverty Line (Multiples)	P0 0.5	P0 1	P0 1.5	P1 0.5	P1 1	P1 1.5	P2 0.5	P2 1	P2 1.5
Total		1.02	-2.74	-4.31	1.88	0.47	-0.91	2.05	1.40	0.46
Gender	Male	0.95	-2.82	-4.43	1.70	0.36	-1.03	1.81	1.23	0.32
	Female	-0.67	-4.45	-5.68	1.25	-0.85	-2.23	1.94	0.58	-0.64
Age	15 to 25 years	7.20	6.70	5.34	6.91	7.05	6.79	6.93	7.01	6.99
	25 to 45 years	1.28	-1.97	-2.62	2.18	0.92	-0.24	2.34	1.74	0.91
	45 to 60 years	0.97	-3.09	-5.42	1.35	0.07	-1.42	1.40	0.90	-0.01
	More than 60 years	-1.81	-7.57	-11.10	-0.07	-2.50	-4.76	0.36	-0.90	-2.46
Years of Schooling	0 years	0.04	-5.07	-6.37	1.91	-0.33	-2.15	2.19	1.09	-0.27
	0 to 4 years	3.65	0.62	-1.35	2.90	2.66	1.65	2.65	2.85	2.45
	4 to 8 years	2.15	0.82	0.36	2.03	1.61	1.22	2.04	1.90	1.63
	8 to 12 years	2.36	3.66	4.68	1.98	2.55	3.02	1.88	2.20	2.55
	More than 12 years	1.87	1.10	0.50	2.08	1.80	1.52	2.14	1.99	1.80
Sector of Activity	Agriculture	2.73	-0.78	-1.78	2.88	2.03	0.92	2.69	2.55	1.93
	Industry	0.50	-1.89	-3.99	0.98	0.05	-1.11	0.98	0.63	-0.03
	Constuction	-2.99	-11.01	-12.85	0.05	-3.63	-6.49	0.76	-1.22	-3.47
	Public Sector	0.83	-1.23	-3.14	0.61	0.39	-0.48	0.48	0.56	0.22
	Service	-0.56	-3.24	-3.39	0.20	-0.87	-1.72	0.46	-0.14	-0.82
Working Class	Unemployed	-4.48	-3.07	-2.82	-3.41	-4.13	-3.81	-2.44	-3.64	-3.79
	Inactive	2.09	-2.64	-5.80	3.63	1.45	-0.46	4.06	2.90	1.53
	Employees (w/card)	0.30	-1.92	-2.78	0.56	-0.27	-1.13	0.57	0.26	-0.29
	Employees (no card)	-2.54	-6.72	-6.80	-0.57	-2.62	-3.94	0.03	-1.23	-2.43
	Self - Employed	-0.05	-4.45	-5.55	1.03	-0.58	-2.13	1.18	0.44	-0.62
	Employer	1.38	0.43	0.78	1.48	1.31	1.10	1.45	1.43	1.28
	Public Servant	-0.03	-0.08	-0.07	-0.03	-0.06	-0.08	-0.02	-0.04	-0.06
	Unpaid	2.93	5.04	6.72	1.39	3.01	4.24	0.95	1.98	2.95
Population Density	Rural	2.46	-1.60	-3.78	3.20	2.05	0.40	3.18	2.78	1.87
	Urban	1.08	-2.11	-3.67	1.61	0.60	-0.49	1.69	1.27	0.58
	Metropolitan	0.51	-2.79	-3.48	1.58	-0.19	-1.38	1.93	0.97	-0.06
Region	North	5.71	4.51	5.05	3.67	4.61	4.77	3.08	4.04	4.41
	North - East	0.45	-4.48	-4.70	2.45	0.49	-1.06	2.77	1.75	0.56
	South - East	0.04	-4.28	-5.91	1.27	-0.58	-2.25	1.57	0.63	-0.57
	South	1.47	-0.70	-4.76	1.27	0.79	-0.42	1.29	1.14	0.61
	Center - West	3.80	1.17	-1.89	2.92	1.90	0.82	2.75	2.56	1.90

Source: PNAD - IBGE

Table 11 shows that using the basic poverty line the proportion of poor fell by 2.74 percentage points which is equivalent to 9% in relative terms. Given the inequality rise in the period

when higher weights are given to societies poorest segment poverty indices actually rise in the last decade. For the basic poverty line, the poverty gap (P1) rose 0.47% percentage points while the average squared poverty gap (P2) rose 1.4 percentage points.

The inequality increase also implied that all poverty indices present either greater falls or smaller increases when higher poverty lines are used. For the low poverty line the head-count ratio rose 1.02 percentage points and fell 4.31 percentage points when the highest poverty line were used. This respective statistics are 1.88 and -0.91 for the average poverty gap (P1) and 2.05 and 0.46 for the average squared poverty gap (P2). These results altogether implied that the pattern of unbalanced growth across different segments of the Brazilian economy generated different results depending on the binomial poverty measure-poverty line used. This lack of robustness of poverty changes is also influenced by the low per capita GDP growth rate observed in the period (average 0.2% per year).

The head-count ratio fell more intensively among individuals belonging to female headed families (-4.45 percentage points). The fall of poverty is also positively related with household head age (e.g. (6.7 percentage points) in the 15 to 25 years of age group and (-7.57 percentage points) for the more than 60 years of age group). The head-count fall is inversely related with the formal level of education attained by household heads (e.g., (-5.57 percentage points) for the illiterate and (1.1 percentage points) for the group with more than 12 years of completed schooling). In geographical terms the fall of poverty was more pronounced in regions with larger populations (e.g., (-4.48 percentage points) in the North-east and (-4.28 percentage points) in the South-east) and more densely populated regions ((-2.79 percentage points) in metropolitan areas).

The sector of activity analysis of poverty reduction shows that greater head-count falls were observed in families headed by individuals employed in civil construction (-11.1 percentage points) and in the service sector (-3.24 percentage points). Families headed by individuals employed in the so-called informal sector presented greater poverty reductions ((-6.72 percentage points) for employees without work permit and (-4.45 percentage points) for self-employed individuals).

3.3 - DECOMPOSITION OF POVERTY CHANGES BETWEEN 1985 AND 1995.

This section replicates Datt and Ravallion (1992) decomposition methodology of poverty changes into a balanced growth component, a change in inequality component and residual term for the 1985-95 period. This decomposition throws light in what is driving the poverty change process discussed last subsection. First, we describe the methodology then we apply it to the Brazilian case.

Tables 12 and 13 attempt to demonstrate that poverty changes across different cells characterized by the household head status shown on Table 12 can be better understood in terms of three close determinants: changes in mean per capita income, changes in the degree of inequality of per capita income and changes in a residual term that captures the interaction between these two terms (not shown here). This simple decomposition between a balanced growth component that affects all agents and a redistributive component allows quite general comparisons of poverty across different societies and time periods.

This growth-inequality-residual decomposition when applied to the 1985 and 1995 PNADS reveals that growth explains most of the fall of the head-count ratio observed. Inequality changes tend to increase poverty when either a low poverty line is used or poverty index that attributes more weight to the very poor is used (i.e., P^1 and specially P^2). Table 14 decomposes changes in poverty in three components: within groups, between groups and a residual term.

Table 12

Decomposition of Poverty Changes (1985 - 95) - Growth Component
Adjusted for National Accounts

Head of the Household	Poverty Indices Poverty Line (Multiples)	P0 0.5	P0 1	P0 1.5	P1 0.5	P1 1	P1 1.5	P2 0.5	P2 1	P2 1.5
Total		-0.41	-0.97	-0.87	-0.12	-0.38	-0.54	-0.06	-0.22	-0.36
Gender	Male	-0.40	-0.92	-0.82	-0.11	-0.34	-0.49	-0.05	-0.19	-0.32
	Female	-1.02	-2.18	-2.30	-0.47	-1.14	-1.58	-0.26	-0.72	-1.09
Age	15 to 25 years	4.89	9.31	9.69	1.61	4.64	6.35	0.80	2.74	4.37
	25 to 45 years	0.80	1.63	1.69	0.34	0.91	1.20	0.17	0.55	0.84
	45 to 60 years	-1.56	-3.85	-4.64	-0.50	-1.70	-2.60	-0.24	-0.94	-1.64
	More than 60 years	-1.10	-3.34	-4.62	-0.35	-1.36	-2.31	-0.15	-0.71	-1.36
Years of Schooling	0 years	-1.55	-2.79	-2.25	-0.51	-1.30	-1.67	-0.25	-0.80	-1.20
	0 to 4 years	1.70	3.22	3.31	0.48	1.51	2.10	0.23	0.86	1.41
	4 to 8 years	2.71	6.53	8.31	0.89	2.95	4.51	0.43	1.64	2.86
	8 to 12 years	1.28	4.94	7.38	0.42	1.74	3.27	0.20	0.87	1.83
	More than 12 years	0.00	0.00	0.03	0.00	0.01	0.01	0.00	0.00	0.01
Sector of Activity	Agriculture	0.99	1.81	1.89	0.46	1.22	1.54	0.23	0.74	1.12
	Industry	0.57	1.52	1.52	0.16	0.59	0.93	0.07	0.32	0.58
	Constuction	-1.49	-3.35	-3.86	-0.49	-1.68	-2.30	-0.21	-0.92	-1.54
	Public Sector	-0.25	-1.24	-1.22	-0.10	-0.41	-0.69	-0.04	-0.21	-0.40
	Service	0.12	0.17	0.22	0.03	0.11	0.15	0.02	0.06	0.10
Working Class	Inactive	-1.86	-4.58	-6.59	-0.75	-2.27	-3.47	-0.36	-1.29	-2.20
	Unemployed	-1.17	-1.62	-0.71	-0.93	-1.33	-1.35	-0.62	-1.04	-1.21
	Employees (w/card)	2.08	5.64	6.63	0.56	2.34	3.69	0.21	1.22	2.27
	Employees (no card)	-4.68	-9.70	-8.64	-1.66	-4.73	-6.16	-0.80	-2.77	-4.35
	Self - Employed	-3.11	-6.41	-6.31	-1.05	-2.84	-3.91	-0.53	-1.70	-2.69
	Employer	-0.15	-0.23	-0.17	-0.01	-0.05	-0.10	0.00	-0.03	-0.06
	Public Servant	-0.08	-0.14	-0.16	-0.02	-0.10	-0.16	-0.01	-0.05	-0.09
	Unpaid	1.22	1.00	2.91	1.02	1.57	2.47	0.64	1.27	1.77
Population Density	Rural	0.48	1.18	1.41	0.24	0.71	0.97	0.12	0.41	0.66
	Urban	0.04	0.06	0.06	0.01	0.03	0.05	0.01	0.02	0.03
	Metropolitan	-0.22	-0.42	-0.51	-0.10	-0.28	-0.38	-0.05	-0.16	-0.26
Region	North	6.77	9.51	8.54	2.66	5.95	7.22	1.32	3.86	5.46
	North - East	-1.77	-3.13	-2.31	-0.60	-1.52	-1.89	-0.30	-0.94	-1.39
	South - East	-0.37	-1.14	-1.31	-0.13	-0.45	-0.70	-0.06	-0.24	-0.43
	South	-0.41	-1.78	-2.88	-0.12	-0.60	-1.18	-0.05	-0.29	-0.64
	Center - West	1.26	3.60	4.18	0.35	1.40	2.14	0.15	0.74	1.34

Source: PNAD - IBGE

The reader is invited to evaluate through Tables 12 to 14 the main stylized facts of poverty changes between 1985 and 1995 across poverty indexes, poverty lines and main characteristics of the heads of households.

TABLE 13

Decomposition of Poverty Changes (1985 - 95) - Inequality Component
Adjusted for National Accounts

Head of the Household	Poverty Indices Poverty Line (Multiples)	P0 0.5	P0 1	P0 1.5	P1 0.5	P1 1	P1 1.5	P2 0.5	P2 1	P2 1.5
Total		1.48	-1.67	-3.60	2.00	0.80	-0.44	2.11	1.58	0.77
Gender	Male	1.37	-1.83	-3.77	1.80	0.66	-0.60	1.86	1.39	0.60
	Female	0.46	-2.27	-3.44	1.65	0.17	-0.82	2.13	1.17	0.32
Age	15 to 25 years	3.78	-0.99	-3.00	5.82	3.50	1.56	6.44	5.02	3.57
	25 to 45years	0.45	-3.77	-4.43	1.91	0.19	-1.30	2.20	1.30	0.20
	45 to 60 years	2.47	0.57	-1.20	1.92	1.67	0.93	1.69	1.82	1.52
	More than 60 years	-1.20	-4.34	-6.59	0.17	-1.40	-2.84	0.46	-0.39	-1.38
Years of Schooling	0 years	1.38	-2.61	-4.50	2.38	0.83	-0.66	2.43	1.80	0.79
	0 to 4 years	2.32	-2.08	-4.49	2.44	1.40	-0.17	2.42	2.10	1.23
	4 to 8 years	0.17	-4.78	-7.20	1.41	-0.49	-2.41	1.76	0.76	-0.54
	8 to 12 years	1.35	-0.30	-2.09	1.65	1.20	0.37	1.73	1.51	1.11
	More than 12 years	1.84	0.94	0.47	2.08	1.79	1.51	2.14	1.99	1.80
Sector of Activity	Agriculture	1.84	-2.69	-3.77	2.46	1.00	-0.46	2.46	1.91	0.95
	Industry	0.14	-3.36	-5.86	0.85	-0.42	-1.88	0.91	0.37	-0.51
	Constuction	-1.82	-7.65	-9.23	0.41	-2.35	-4.53	0.91	-0.54	-2.25
	Public Sector	1.33	-0.21	-2.31	0.72	0.76	0.13	0.54	0.76	0.59
	Service	-0.90	-4.08	-4.08	0.17	-0.96	-1.85	0.45	-0.19	-0.91
Working Class	Inactive	3.82	2.11	0.01	4.33	3.53	2.64	4.41	4.04	3.50
	Unemployed	-3.00	-1.63	-1.55	-2.53	-2.73	-2.43	-1.91	-2.61	-2.56
	Employees (w/card)	-0.92	-6.74	-9.58	0.22	-1.88	-4.06	0.44	-0.53	-1.96
	Employees (no card)	3.05	2.38	1.17	1.38	2.24	2.10	0.96	1.73	1.99
	Self - Employed	2.77	0.55	0.12	2.20	2.16	1.56	1.82	2.16	1.97
	Employer	1.44	0.72	1.02	1.50	1.35	1.20	1.46	1.45	1.33
	Public Servant	0.27	-2.88	-4.78	0.53	-0.15	-1.30	0.53	0.32	-0.28
	Unpaid	-31.61	-27.62	-24.11	-30.79	-30.53	-28.76	-30.52	-30.74	-30.07
Population Density	Rural	2.02	-2.59	-5.23	2.99	1.47	-0.42	3.07	2.44	1.32
	Urban	1.07	-2.16	-3.76	1.60	0.57	-0.53	1.68	1.25	0.55
	Metropolitan	0.61	-2.52	-3.16	1.66	0.05	-1.04	1.97	1.10	0.16
Region	North	-0.17	-3.67	-4.26	1.85	0.12	-1.22	2.24	1.23	0.17
	North - East	2.51	-0.77	-2.51	3.03	1.88	0.66	3.07	2.61	1.83
	South - East	0.26	-3.46	-4.96	1.41	-0.09	-1.43	1.64	0.89	-0.08
	South	1.62	-0.06	-2.99	1.41	1.33	0.53	1.35	1.42	1.17
	Center - West	2.34	-3.29	-5.45	2.62	0.94	-0.87	2.60	2.02	0.86

Source: PNAD - IBGE

Table 14

Changes in Poverty Profile in Brazil - From 1985 to 1995

Head of the Household	Poverty Indices	P0 Within Groups	P0 Between Groups	P0 Multiplicative Term	P1 Within Groups	P1 Between Groups	P1 Multiplicative Term	P2 Within Grupos	P2 Between Grupos	P2 Multiplicative Term
Total Change		-2.74	-2.74	-2.74	0.48	0.48	0.48	1.40	1.40	1.40
Gender	Male	-2.46	-1.29	0.12	0.32	-0.48	-0.02	1.07	-0.26	-0.05
	Female	-0.57	1.65	-0.19	-0.11	0.80	-0.04	0.07	0.54	0.03
Age	15 to 25 years	0.35	0.16	0.03	0.37	0.08	0.03	0.37	0.06	0.03
	25 to 45 years	-1.03	-0.35	0.02	0.48	-0.14	-0.01	0.91	-0.08	-0.02
	45 to 60 years	-0.90	-0.37	0.04	0.02	-0.13	0.00	0.26	-0.07	-0.01
	more than 60	-1.00	0.44	-0.15	-0.33	0.15	-0.05	-0.12	0.07	-0.02
Years of Schooling	0 years	-1.40	-3.18	0.34	-0.09	-1.29	0.02	0.30	-0.71	-0.07
	0 to 4 years	0.15	-0.72	-0.01	0.63	-0.27	-0.05	0.67	-0.15	-0.06
	4 to 8 years	0.24	0.41	0.01	0.47	0.16	0.03	0.56	0.09	0.03
	8 to 12 years	0.50	0.62	0.22	0.35	0.25	0.15	0.30	0.16	0.13
	more than 12 ages	0.06	0.03	0.02	0.10	0.01	0.02	0.11	0.01	0.02
Sector of Activity	Agriculture	-0.24	-2.22	0.04	0.61	-0.87	-0.11	0.77	-0.47	-0.14
	Industry	-0.34	-0.51	0.04	0.01	-0.17	0.00	0.11	-0.08	-0.01
	Construction	-0.95	0.53	-0.15	-0.31	0.18	-0.05	-0.10	0.09	-0.02
	Public Sector	-0.12	0.03	0.00	0.04	0.01	0.00	0.06	0.00	0.00
	Service	-1.08	1.51	-0.20	-0.29	0.55	-0.05	-0.05	0.28	-0.01
Working Class	Unemployed	-0.42	0.40	-0.03	0.23	0.18	0.02	0.46	0.12	0.04
	Inactive	-0.04	1.39	-0.06	-0.06	1.04	-0.07	-0.05	0.90	-0.07
	Employees (w/card)	-0.60	-0.87	0.08	-0.09	-0.27	0.01	0.08	-0.11	-0.01
	Employees (no card)	-1.07	-0.26	0.04	-0.42	-0.10	0.01	-0.20	-0.05	0.01
	Self - Employed	-1.36	0.23	-0.03	-0.18	0.09	0.00	0.13	0.05	0.00
	Employer	0.02	0.04	0.00	0.07	0.01	0.01	0.07	0.01	0.01
	Public Servant	-0.21	0.55	-0.09	-0.02	0.18	-0.01	0.02	0.08	0.01
	Unpaid	-0.04	1.28	-0.48	-0.05	1.12	-0.59	-0.05	1.07	-0.61
Population Density	Rural	-0.44	-2.27	0.10	0.56	-0.87	-0.13	0.77	-0.48	-0.18
	Urban	-0.88	2.08	-0.16	0.25	0.81	0.05	0.53	0.45	0.10
	Metropolitan	-0.86	-0.34	0.03	-0.06	-0.14	0.00	0.30	-0.08	-0.01
Region	North	0.14	0.54	0.06	0.14	0.22	0.06	0.13	0.12	0.05
	North - East	-1.32	0.06	-0.01	0.14	0.02	0.00	0.51	0.01	0.00
	South - East	-1.92	-0.39	0.07	-0.26	-0.15	0.01	0.28	-0.08	-0.01
	South	-0.11	-0.06	0.00	0.12	-0.02	0.00	0.18	-0.01	0.00
	Center - West	0.08	0.11	0.01	0.13	0.04	0.01	0.18	0.02	0.01

Source: PNAD - IBGE

CONCLUSIONS

This paper aimed to discuss structural and macroeconomic determinants of poverty in the recent Brazilian experience. The third and final part of the project looked at the evolution of the main structural determinants of poverty in Brazil during the last two decades. It decomposed changes of various poverty indexes across different groups assigned by characteristics of the heads of households (i.e.; gender, years, schooling, race, working class, sectors of activity, region, population density). Next this decomposition was taken one step further by disentangling changes in these different poverty cells in terms of their respective changes in mean and in the degree of inequality of per capita income. These poverty profiles helped to map the sources of poverty changes in historical analysis and it gives internal consistency to counter-factual exercises. The main lesson here is that inequality reduction is a fundamental component of poverty alleviation policies.

The first part of the project described the evolution of poverty, inequality and macroeconomic developments in Brazil during the last decade. It also developed an aggregate monthly time series analysis of the determinants of poverty in the 1980-96 period. This analysis showed that higher inflation and higher unemployment imply lower per capita earnings for all deciles. The direct effects of inflation on per capita family earnings were somewhat milder and decreases as we move to the upper tail of the distribution. In other words, poverty tend to be more adversely affected by higher inflation rates than mean incomes. Similarly, the unemployment elasticity of per capita earnings decreases as we move towards the upper tail of the distribution.

The real minimum wage elasticity of per capita earnings turned out to be positive and statistically different from zero. Although, economic theory does not provide definite answers with respect to the sign impact of the minimum wage on per capita earnings, the partial elasticity of per capita earnings with respect to the minimum is greater in module than the sum of inflation and unemployment partial elasticities in all deciles under analysis. Furthermore, the module of minimum wage partial elasticities estimated also tend to decrease with earnings levels.

A partial regression analysis showed that real minimum wages explains one half of the unexplained variance of the head-count ratio when only inflation and unemployment rates are taken into account. In sum, a negative partial elasticity of poverty with respect to minimum wages is a robust result for the Brazilian case during the 1980-96 period. Still, this regression analysis did not warrant a casual interpretation of minimum wages hikes as a poverty alleviation device.

The second and main part of the paper pursued a macro oriented analysis of the close determinants of poverty during the Brazilian experience from 1993 to 1996. Given the major

importance of the Real plan, special attention was paid to the analysis of impacts of the disinflation process on the level and the distribution of income, and to possible synergism between these two dimensions of poverty determination. An overview of these effects is presented in illustration 1.

One set of effects are related to the impact of the Real plan on mean per capita income that operates through aggregate demand channels. We devoted special attention to the impact of the disinflation process on aggregate consumption like the reduction of inflation tax losses. Besides this redistributive effect, we also take into account the effects of reductions of inflationary uncertainties such as the reduction of precautionary savings and increases in the supply and demand of consumer credit. The main lesson here is that the increases of aggregate demand observed after the Real may be largely financed by disaving and not by increases in the purchasing power of income (i.e., redistributive mechanisms).

Although, the paper identifies redistributive effects of the Real plan, there were few qualifications made to the reduction of inequality observed after July 1994 and its possible links with the launching of the Real Plan. First, inequality of current monthly income has fallen more than the inequality of income measured for longer periods. The difference between these two inequality measures can be explained in terms of the fall of the temporal variability of individual income. As its name suggests one key implication of a successful stabilization program is to make actual earnings more stable and to reduce measurement error on earnings. However, one should be careful not to mix reductions in the temporal variability of earnings, actual or measured, with changes in *stricto sensu* inequality.
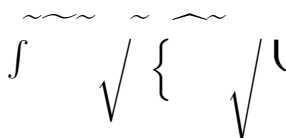
Second, the basis of comparison for the analysis of the post Real plan is very low: during June 94 inequality was close to its historic record.

Third, the increase in inequality observed during the period of accelerating inflation before the Real plan is perhaps a better evidence of the adverse effects of inflation on earnings distribution than the post-stabilization period. The whole disinflation technology applied in the Real plan attempted to keep the *status quo* of income distribution before and after the stabilization through the imposition of conversion rules to wages (i.e., the URV mechanism). Of course, there are specific impacts of the stabilization such as changes in the relative prices between tradable and non-tradable goods and the reduction of inflation tax losses on income distribution that were not neutralized. However, one should look at characteristics impacts of the stabilization on inequality like the two impacts just mentioned or on the reduction of the temporal variability of earnings and not treat stabilization as a inequality reduction program.

Finally, although our analysis indicated that the poorest Brazilian that faced higher losses in

the high inflation period that preceded the Real and that this same group experienced higher gains in post stabilization period, it does not necessarily implies that the Real plan is the sole reason for the improvement of social indicators. Stabilization may be seen more as a necessary, than a sufficient, condition for inequality reduction.

But what else explains the reduction of poverty and inequality observed in the last three years? The month by month analysis of poverty and inequality indicators revealed that the bulk of the fall of poverty and inequality observed after the Real plan happened exactly in May 1995, nine months after stabilization. Maybe it was just a long pregnancy before the baby, namely the benefits of stabilization, was delivered. In our opinion, other forces besides lagged effects of stabilization on income distribution should be looked after as well. The May 95 minimum wage hike seems to us a good candidate, at least for a secondary role in this story.

$$\int \quad \sqrt{} \quad \{ \quad \sqrt{} \,\iota$$

Barros, Ricardo P. de, Mendonça R., A Evolução do Bem-Estar, Pobreza e Desigualdade no Brasil ao longo das Últimas Três Décadas - 1960/90, Pesquisa e Planejamento Econômico, V. 25, n.1, abril 1995.

Considera, C, Neri, M.,. and Pinto [a] , "Crescimento, Desigualdade e Pobreza: O Impacto da Estabilização", in Economia Brasileira em Perspectiva, IPEA, Rio de Janeiro 1996.

Foster, J., Greer, J., Thorbecke, E. A Class of Decomposable Poverty Measures, Econometrica, 1984

Morley, S., Poverty and Inequality in Latin America: the Impact of Adjustment and Recovery in the 1980's, 1995.

Neri, M., Inflação e Consumo: Modelos Teóricos Aplicados ao Pós-Cruzado, BNDES, Rio de Janeiro, 1990.

Reis E., Issler J., et alli , Os Determinantes Macroeconômicos da Poupança no Brasil, mimeo, DIPES /IPEA, 1996.

Rocha, S., Poverty Lines for Brazil: New Estimates from Recent Empirical Evidence, mimeo, DIPES/IPEA, 1993.