

DEPARTAMENTO DE ECONOMIA
PUC-RIO

TEXTO PARA DISCUSSÃO
Nº. 434

**Understanding Inequality in Brazil:
A Conceptual Overview**

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NOVEMBRO 2000

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JEL Classification: D63, I38

Keywords: Inequality, Inequality and Growth, Intergenerational Mobility.

Abstract: This is a background note to a joint IPEA/World Bank Report, provisionally entitled "Selected Topics on Income Inequality in Brazil", with publication planned for 2001. The purpose of the note is twofold. First we propose four central questions which the Report should seek to address, and around which it can be structured. These are: "What is unique about Brazil's inequality?"; "Why does inequality matter?"; "Which inequality matters most?"; and "What - if anything - can the government do about it?". Second, we provide reasonably detailed outlines for four background papers for the Main Report: each addressing one of the foregoing questions.

1. The Main Questions.

Brazil is almost as famous for its inequality as for its football. In *Facing Up to Inequality in Latin America*, the IDB (1998) ranked both Brazil's total Gini coefficient (0.60) and its urban-only Gini coefficient (0.57) as the highest in the region.² Its ratio of per-capita urban to per-capita rural household incomes (3.0) was also the highest in Latin America. The World Bank's point estimates for Gini coefficients, listed in *Attacking Poverty* (WDR 2001) for as many countries as the Bank dares, include only two higher than Brazil's, worldwide: Sierra Leone's and the Central African Republic's. However skeptical one chooses to be about the quality of household-level data in many countries, there is very little doubt that Brazil has one of the most unequal income distributions in the world. Furthermore, while most fellow unequal societies - Sierra Leone, CAR, Paraguay and Guatemala - are relatively small countries, Brazil has the fifth largest population and the eighth largest GNP in the world. We suggest that this Report should aim to advance the state of the debate on inequality in Brazil by addressing four basic questions.

The first question is "What is unique about Brazil's inequality?". We suggest that the Report addresses this question with respect to scalar inequality measures; to the shape of the density function; and to differences in the determinants of inequality across countries. Rather than adopting a cross-country regression approach, we recommend a set of more in-depth comparisons, by setting relevant statistics, figures and decompositions of Brazil's income and education distributions side by side with analogous information for three or four relevant comparison countries, such as Indonesia, Mexico, Spain and the United States.

The second question is "Why does inequality matter?". A first set of answers to this question has to do with the normative concepts of social justice and social cohesion. From a more positive point of view, however, the question also arises as to whether there exists an "optimal range" in inequality space, within which an economy functions more efficiently. That such an "intermediate range" might exist is suggested, on the one hand,

by the long-held understanding, in economics, that most realistically available instruments for redistribution are non-lump-sum taxes and transfers, and may reduce incentives for private agents to work, save or invest efficiently. On the other hand, a more recent literature has suggested that too much inequality may hamper opportunities for poor people, or indeed the process of political decision making in society. If there is some truth to both of these arguments, there may be an internal solution to the question of how much inequality is compatible with maximum economic efficiency. For countries at the upper tail of the distribution of observed inequality, the relevant question is: how much is too much?

The third question, which is clearly intertwined with the former, is "Which inequality matters?". Economic theory and cross-country empirics on the relationship between economic growth and inequality - which will also bear on the discussion about the second question - suggest that the distribution of assets (such as land and human capital) has a greater impact on aggregate economic performance than the distribution of incomes or consumption expenditures. See, for example, Birdsall and Londoño (1997), Deininger and Squire (1998) and Deininger and Olinto (2000). In addition, to the extent that individual abilities - whether innate or acquired - differ, both the positive efficiency effects of income inequality and its normative desirability may change. Many authors have proposed that the concept of "inequality of opportunity" would provide a better measure of injustice than inequality of outcomes (see Roemer, 1998). Thus, a relatively high level of inequality of outcomes might conceivably be consistent with relatively low level of inequality of opportunities, e.g. the common argument that there may be more inequality in the US than in Europe but also more income and social mobility. Similarly, from a positive point of view, some of the mechanisms through which it has been claimed that inequality hampers economic efficiency have to do with unequal access to economic opportunity (see, e.g. Galor and Zeira, 1993, Banerjee and Newman, 1993 and Aghion and Bolton, 1997).

The fourth and final question is "If reducing inequality (of something) is judged to be a legitimate objective for public policy, how should the government pursue it?". The manner in which this question is addressed will clearly depend on the answers to the previous two

² At 0.54, the country's rural-only Gini coefficient came second to Paraguay's.

questions. Should the Report present convincing evidence that inequality is either a 'bad' due to cohesive social preferences, or has harmful effects on other valued goods (such as growth, public health or social peace), then there may be reasons to attempt to reduce inequality (presumably over some range). Which inequality is reduced will depend on the answer to the second question: different policies should obviously be proposed, depending on whether the central objective is to mitigate income inequality, educational inequality or inequality in the distribution of land. We recommend focusing on the dynamic interdependence between educational and income inequalities, and suggest an applied calibration procedure for the design and benefit levels of programs of the Bolsa-Escola type, based on estimates of the demand for schooling.

The remainder of this note is organized as follows. There are four sections, each providing a tentative outline of a background paper for the relevant section in the Report. Within each section, we suggest which approaches seem most fruitful to us at the outset. As usual, it would be surprising if the very process of research did not suggest new directions to investigate, leading to a revision of these priors. They should therefore be taken merely as a preliminary sketch of the work ahead, and reinterpreted as this work progresses.

2. What is Unique About Brazil's Inequality?

This first background paper would set information on Brazil's income and educational distributions side by side with those of four other countries, selected for diversity along the per capita GNP and geographical dimensions: Indonesia, Mexico, Spain and the United States. The comparisons are based on an analysis of the original household-level data by the authors, with the PNAD 1996 and 1999 being used for Brazil; the SUSENAS 1996 being used for Indonesia; the ENIGH 1994 for Mexico, and a similar household survey data set for Spain.

Even though consumption data is available for some countries, we restrict our attention to earnings and income distributions, in order to allow for comparisons with the Brazilian PNAD data. Descriptive statistics and kernel analysis are presented for the entire

distribution of individual earnings, and for the entire distribution of gross household per capita (or equivalized) income. In addition, they are also calculated for various within-group distributions. Care is taken to ensure that the distributions used are as comparable as possible. We intend to work with data unadjusted for misreporting but, wherever possible, adjusted to include the value of imputed rents. The desirability of adjusting for regional price level differences within countries will be assessed, on the basis of the costs of the procedure for Mexico and the United States. The comparison of distributions proceeds in four stages, corresponding to increasing levels of detail and causality.

Scalar Indices:

This section will describe tables containing the Gini Coefficient, $E(0)$, $E(1)$ and $E(2)$ - both for the distribution of individual earning and for that of household per capita income for each country. In both cases, results will be presented for incomes per capita and for equivalized incomes.³

Density functions

Disaggregating the picture presented by the scalar summary indices, this section compares stochastic kernel estimates of distribution density functions for the five countries. Particular attention is paid to the degree of skewness in the upper tail, which has previously been found to be particularly high. See, for instance, Cowell et. al. (1998). Density differences will also be plotted against percentiles for the most interesting comparisons.

Theil Decompositions

This section decomposes $E(0)$ and $E(1)$ by population subgroup, in the standard manner⁴, computing the R_B statistic developed by Cowell and Jenkins (1995). This statistic is an

³ $E(\alpha)$ are members of the Generalized Entropy class of inequality indices. The three indices cited correspond to the mean log deviation, the Theil T index and a transform of the coefficient of variation. For equivalizing incomes, we intend to use one or two parameter values for the Buhmann et. al. equivalence scale.

⁴ See Bourguignon (1979), Cowell (1980) and Shorrocks (1980).

indicator of the relative importance of each attribute used to partition the population, in the process of "accounting for" the inequality. The idea is that the larger the share of dispersion which is between groups defined by some attribute - rather than within those groups - the more likely it is that something about the distribution of or returns to that attribute are causally related to the observed inequality.

The attributes to be used include education of the earner (or main earner for the distribution of household incomes); his or her age; his or her race or ethnic group; his or her gender; as well as the location of the household (both regional and rural/urban) and its size. The results of each decomposition do *not* control for the other attributes, and are not to be interpreted as tests of causality, but can provide useful indications of the nature of inequality in the different countries.

In addition, this section will contain a "microscopic view" of within-group inequality. Going beyond a fine partition of the population - which is constructed by crossing all attributes used in the above decomposition - we will measure inequality within groups composed by people with a set of identical observable characteristics. For example, we will compute scalar inequality measures across all white males, aged 30-35, with four years of schooling, living in medium-sized urban areas of the Southeast of the country.⁵ We will compare those degrees of dispersion across countries, in an attempt to understand the relative importance of unobservables in determining inequality differentials across countries. The analysis is then followed by a more in-depth decomposition, as follows.

Price and Endowment Effect Decompositions

Based on the results of the Theil decompositions briefly described above, a few key household attributes are selected for scrutiny using a micro-simulation based decomposition which is the cross-section analogue of the methodology used by Bourguignon et. al. (1999) and Ferreira and Paes de Barros (1999). This methodology allows us to compute the changes in distribution that would be expected in urban Brazil, as a consequence of altering

some of the country characteristics which appear to be associated with its high degree of inequality. We can thus ask how Brazil's inequality and poverty would change if the country had the structure of returns to earnings which prevails in the US, or in Spain. Or how they would change if Brazil had a distribution of years of schooling like Mexico's. Or a demographic structure like Indonesia's.

Unlike in Ferreira and Paes de Barros (1999), occupational choice and participation will not be modeled explicitly. Educational attainment will be modeled semi-parametrically, through a set of dummies for each grade or year completed, rather than imposing a quadratic functional form for the returns. Changes in the structure of returns will be simulated by importing β s across equations estimated for different countries. Endowment effects will be simulated by importing γ s from multinomial logit models for schooling demand and household composition, across countries. For estimating the importance of unobservables, variances of the distributions of residuals can similarly be simulated across countries.

If the simulation exercises are selected appropriately, based on the information gauged about both Brazil and the comparison countries, this exercise can help us determine which of Brazil's characteristics are most likely to be responsible for the uniqueness of the country's inequality, whether it is in terms of summary measures; shapes of density functions; or determinants.

This background paper is currently in the early stages of preparation. The authors are François Bourguignon, Francisco Ferreira and Phillippe George Leite.

3. Why does Inequality Matter?

This paper will draw on the growing body of both theory and evidence about the role played by inequality in economic and social development, focusing on four areas: social

⁵ Doing this both for earnings and household per capita incomes should provide insights into the role played by household formation and other demographic factors, in generating the latter from the former.

justice and the effects of inequality on poverty reduction; the effects of inequality on growth; the effects of inequality on the economic management of shocks and short-term cycles; and the effects of inequality on social outcomes, such as public health; and crime and violence. In so doing, it will discuss the relevance of the debate and the applicability of international evidence to the case of Brazil. Wherever possible, existing or original empirical evidence on the topic from Brazil will be presented.

Social Justice and poverty reduction

Inequality may matter on purely normative grounds and independently of whether more or less inequality is associated with better or worse economic performance. While this Report is not really the place to discuss this in depth, we will nod towards the basic result that if a society has preferences over the distribution of welfare, and individual marginal utilities are decreasing in income, then any preference structure which is weakly concave in individual utilities will record an increase in social welfare from a rich-to-poor transfer. This implies that any efficiency cost from a given redistribution scheme should, in principle, be traded off against its equity gains, arising from the concavity of the individual utility functions and/or of the social welfare function.

In addition, if poverty eradication is taken to be a social priority independently of any other consideration then inequality is bound to occupy a broad area in the policy debate. Indeed, the basic issue in poverty reduction is whether it is most efficiently achievable through widespread economic growth, even if that entails that the richest become relatively richer - i.e. that inequality increases - or through the progressive redistribution of income or productive assets towards the poor.

The crucial point is that these two dimensions of poverty reduction are not independent of each other and inequality may have a multiple role in poverty reduction. On the one hand, it may affect the structure and the pace of economic growth, an issue that is analyzed in more detail below. On the other hand, besides affecting poverty directly and instantaneously, a permanent change in inequality affects the effectiveness with which a *given* growth rate

reduces poverty. Ravallion (1997) has documented this by investigating the poverty reduction elasticities with respect to growth across a number of countries. It is shown in Bourguignon (2000b) that the elasticity of poverty reduction in Brazil - as measured by the proportion of people below \$1 a day - with respect to growth is presently around 2, whereas it could be as high as 5 if inequality could be made comparable to what is observed on average in the rest of the world. Drawing upon these papers and some of their references this paper will make the point that this effect of inequality on the rate of poverty reduction, through a lowering of the relevant elasticity, should be taken into account when evaluating redistribution policies.

The effects of inequality on economic growth

It is best to start skeptically, and to bear the burden of proof. Since the development of human capital theory in the 1960s, by Jacob Mincer, Gary Becker and others, we have known that if "ability" were normally distributed, economic returns were an increasing (say linear) function of human capital, and investment in human capital increased with ability, then the resulting distribution of earnings would be skewed, like the ones observed in practice. In that framework, furthermore, as long as all markets were perfect, any intervention to redistribute earnings ex-post would reduce mean earnings, by reducing the ex-ante incentive of the ablest to invest in themselves. Some form of this basic incentive argument, whether applied to the accumulation of human or physical capital, has long lain behind the presumed general "efficiency-equity trade-off", according to which redistribution policies with current equity gains were paid for in lower output (or growth) later.

It would be foolhardy to claim that there is no truth whatsoever to this argument. We know that any form of taxation, other than the elusive lump-sum variety, affects behaviour. Any form of tax on the returns to an investment - which is what virtually any tax on incomes is - will certainly reduce the incentives to undertake that investment, on the margin. Nevertheless, one of the byproducts of the asymmetric information revolution of the 1970s - which shifted the focus of the profession away from further refinements of general

equilibrium with perfect markets, towards tractable manners of studying imperfect ones - was an understanding of the implications of imperfect credit markets for the *ability*, as opposed to the *incentives*, to invest.

A simple form of the argument can be summarized as follows: if some investments which lead to greater productivity are "lumpy" - that is, they require a minimum fixed investment - and if along the distribution of wealth there is, at any time, a group of people with less wealth than that minimum lumpy investment available, then the only way they would be able to undertake that productive investment would be to borrow the necessary difference. If, however, credit markets are imperfect, so that credit is either entirely unavailable to them (as in Banerjee and Newman, 1993, or Aghion and Bolton, 1997), or available only at excessively high risk premia (as in Galor and Zeira, 1993), then they may be unable to choose the most efficient manner to use their other assets - such as labour - which may have to be employed in an alternative, privately and socially inefficient activity. In a static setting, the credit market imperfection, which is generally due to asymmetric information and the attendant moral hazard or adverse selection problems, leads to lower output and persistent inequality.⁶ In a dynamic setting, it may lead to lower growth and persistent inequality.⁷

After a brief summary of these ideas, this section of the Report could summarize the current state of the empirical debate. An initial set of studies based on cross-country regressions found unambiguous evidence that higher "initial" inequality seemed to be negatively associated with subsequent growth, after controlling for the relevant variables. These are summarized in Bénabou (1996). More recent work, based on a larger data-set (due to Deininger and Squire, and then further expanded by WIDER researchers) has been more cautious. Some have found a weak negative association between inequality and growth (e.g. Deininger and Squire, 1998). Others, like Forbes (2000), found a positive association between the two.

⁶ For an argument that does not rely on a fixed cost of investment, see Piketty (1997).

⁷ This paragraph can obviously not do justice to this large literature. Good surveys have been written by Aghion et.al (1999), and Bertola (2000).

Both the conflicting nature of results in this recent empirical literature and the (accurate) perception that the theoretical models being tested would be better served by investigating the impact of wealth, rather than income, inequality have led to a gradual shift in focus towards the effects of "initial" land and educational inequality on subsequent growth. See, for example, Birdsall and Londoño (1997) and Deininger and Olinto (2000). These results, like the earlier ones summarized in Bénabou (1996) would seem broadly supportive of the claim that asset inequality is, on average, associated with lower growth, all other things equal.

The preceding evidence is essentially based on cross-country comparisons. It is fragile because these cross-sectional regression results may have other causes, of an unobserved nature, which affect both economic growth and observed inequality. Additionally, not enough exogenous time variation in income and asset distributions is observed to allow for panel data analysis. As argued in Bourguignon (forthcoming), however, this is not a reason for excessive skepticism. Evidence is also to be sought at the micro-economic level. If the economic argument about the role of market imperfection is right, then one should observe differences in the rates of return of investment projects undertaken in the formal sector or by the poor in the informal sector.

The remainder of this section will discuss this kind of evidence for Brazil, the discussion being more or less formal depending on the information at hand. For instance, what is known of micro-credit initiatives allows us to get some idea of the extent of credit rationing for micro-enterprises in Brazil. Likewise, simple calibration assumptions permit us to understand the role played by credit market imperfections in limiting the demand for schooling and the expansion of education.⁸ More formally, this section also intends to give some measure of the inefficiency that arises from credit market imperfections in micro-enterprises, based on data from Brazil's Pesquisa da Economia Informal Urbana 1997 (ENSIF, 1997). The analysis we intend to undertake is as follows.

⁸ The first analysis will rely on a background paper by André Urani. The second will simply attempt to relate observed rates of return to education and estimates of the opportunity cost of investment in the informal business sector.

We first compute estimates of real rates of return on the sample of informal businesses, by calculating $\mathbf{p} = \frac{R - C}{A + WK}$, where R are total monthly revenues, C are total monthly costs⁹, A is total assets declared by the respondent and WK:= mC is an estimate of working capital ("capital de giro") as a fraction of total costs, where m is a sector-specific parameter obtained from formal sector surveys. We then look at the position of the borrowing rates for formal sector businesses {r}, with respect to the distribution of π . If most rates r rank very low in that distribution, this is taken as suggestive that rates of return in the informal, small-business sector are indeed higher than in the formal sector. Next we ask what proportion of those businesses considered above with $\pi > \sup \{r\}$, has any outstanding debt. Absence of debt for such profitable firms is taken as suggestive of binding credit constraints and overall economic inefficiency. Comparing these firms to those with positive levels of debt is expected to reveal that equity and income levels are lower for those without debt.

Finally, we test a very simple model of interest-rate determination in an imperfect capital market which seems to be a reasonable description of the Brazilian credit market to the informal sector. We consider a competitive financial intermediation sector with free entry, with identical banks borrowing at a given rate r, lending at a loan-specific rate i_j , and incurring administrative costs $B = a(L, T)$, with $a'(L) > 0$; $a'(T) < 0$, where L is loan size and T is the value of total collateral or collateralizable assets. Free-entry and the resulting zero profits condition imply that $(1 + i_j)L = (1 + r)L + a(L, C)$ and thus $i_j = r + \frac{a(L, T)}{L}$. If $a(L, T)$ were linear in both arguments, $a(L, T) = dL + eT$, and if we were prepared to assume that borrowing agents borrow until the rate of return equals the interest rate, and that all assets A are collateralizable ($\pi_j = i_j; A = T$), we have the testable model: $\pi_j = r + d + eA_j$ or:

$$(1) \quad \pi_j = \alpha + \beta A_j$$

⁹ R and C are only computed for firms which declare that the survey month was a "normal" month for their business.

for all micro-entrepreneurs with outstanding debt, where $H_a: \alpha > 0; \beta < 0$. Additional controls can be added, and a stochastic term can be included to take unobservables into account. (1) can be econometrically estimated by OLS on the ENSIF.

The effects of inequality on the management of shocks and cycles

A negative effect on growth, and a separate additional effect on the poverty reduction elasticity with respect to growth are powerful motivations to seek to understand and perhaps even to combat inequality. But they are not the only ones. A related strand of the 1990s literature on income distribution focused on its effects on the political economy, through the different incentives facing voters, or more generally political actors, in societies with different degrees of economic differences. Initially, this literature proposed an alternative mechanism through which inequality might reduce growth, by causing the median voter or decisive political actor to choose a more redistributive policy, which in turn had a more pronounced effect on discouraging investment (à la Becker). See Alesina and Rodrik (1994) and Persson and Tabellini (1994). Although empirical support for the positive link between inequality and redistribution and then the negative link between redistribution and growth was not forthcoming, thinking about the political economy consequences of inequality should be a fruitful research direction. This paper could try to shed light on some of these consequences by reviewing the lessons to be drawn from some selected episodes in the recent economic history of Brazil.

The various inflationary episodes or the debt crisis of the 1980s could be the subject of such an analysis. The argument could follow Rodrik (1997) who suggested that greater inequality might increase the share of resources in a political system which are dedicated to bargaining over the distribution of rents (or of the burdens of a negative shock), thus reducing its effectiveness in terms of agreeing a rapid response to those shocks. He suggested that this may have been one reason why East Asian economies adjusted to the Debt Crisis of the 1980s so much more rapidly and effectively than Latin America. The magnitude of the external shocks hitting 'representative' countries in both regions was broadly similar, but Latin America was substantially more unequal.

The effects of inequality on crime and violence

But social conflict does not affect economic performance only by increasing political instability and unrest, thereby reducing investment levels (Alesina and Perotti, 1996), or by crippling the ability of political systems to respond effectively to external shocks (Rodrik, 1997). It may also have high opportunity costs caused by violence. Violence levels, as measured by recorded homicide rates, have recently increased sharply in both of the most unequal regions in the world (Latin America and sub-Saharan Africa), and in the one where the growth of inequality has been fastest (Eastern Europe, Russia and Central Asia). Fajnzylber et. al. (1998) document these global trends, and find evidence to suggest that income inequality is significantly associated with violence levels, across countries. Bourguignon (2000c) and others have documented the growing importance of the social and economic burden imposed on society by this rising violence, both in terms of the direct costs in lives and medical resources, and in terms of the opportunity costs of (both public and private) resources diverted from other activities towards preventing and fighting crime.

Brazilian crime rates and the incidence of violence are unusually high, by international standards. And there is a wide public perception, which may or may not be borne out by careful investigation, that this is, at least in part, associated with the country's high level of inequality. Once again, within the internationally comparative approach adopted by the Report, some data on homicides - and other types of violence for which statistics are not entirely incredible - might be reported for a group of countries. This may draw both on the aforementioned work by Fajnzylber et. al. and on more recent updates. Within Brazil, Lisboa and Viegas Andrade (2000) have carefully documented the costs of homicide in the state of Minas Gerais. Similar studies have been carried out by researchers linked to Universidade Cândido Mendes, in Rio de Janeiro, and should be the object of study to prepare this part of the report.

One simple but possibly illuminating exercise which we propose to undertake so as to investigate the costs of crime in Brazil is to re-estimate a hedonic rent regression with

municipal crime rates as an explanatory variable. If the coefficient on crime level is negative and significant, as expected, this would confirm that crime lowers welfare, and is thus reflected in the value associated with living in an area. But it would also allow us to estimate the welfare costs of crime, through proxying it by the total impact of crime on property values. Note that there are two crucial empirical hurdles for this exercise: the first is to find reliable crime data for as much of the country as possible, and the second is to have a representative sample of households at small enough a spatial unit so that aggregate crime rates are meaningful figures.¹⁰ These two challenges pull in different directions. Depending on the availability of the necessary types of data, this exercise will either be conducted across self-representative PNAD municipalities, or across 52 Rio "favelas" for which a "census" was carried out in 1999/9.

Our prior is that there is sufficient evidence of the kinds briefly outlined above for this section of the Report to conclude that, although not all inequality is bad, and indeed some is probably inherently necessary in a well-functioning, dynamic market economy, excessive inequality, such as that observed in Brazil, has a number of pernicious economic effects. This is in addition to being possibly intrinsically objectionable to those who place social welfare value on equity. Those additional economic inefficiencies operate through a variety of channels, which include imperfect capital markets, political institutions, and an increase in directly destructive activities, characterized by the use of violence against both property and persons. This motivates a Report that focuses on the determinants, nature and remedies for Brazilian inequality, in a comparative perspective.

4. Which Inequality Matters Most?

Since "inequality" is merely a general term for various measures of dispersion in a distribution¹¹, there are at least as many useful concepts of inequality as there are interesting distributions. Analysts usually rely on an indicator that captures current welfare,

¹⁰ E.g. the municipality of Rio de Janeiro is unlikely to be a sensible unit of observation for the impact of average crime on property values.

¹¹ Provided the measure satisfies a few desirable properties such as, for example, the Pigou-Dalton Transfer Axiom and scale invariance. See Cowell, 1995.

such as consumption expenditures or income. See Deaton (1997) and his references for discussions on the relative merits of these.

When the focus of study is the effect of dispersion on economic performance, researchers have begun to use asset distributions, whenever these are available, so as to better approximate the wealth distributions which matter in theory. There has, however, been great difficulty compiling approximations to wealth distributions, given the paucity of reliable data on this variable. (Agricultural) land distributions have been used (and are available for Brazil), but their relevance declines as the shares of agriculture and its workers decline in GDP and population.¹² Distributions of education (measured in years of schooling) were used by Birdsall and Londoño, for instance, to proxy for human capital. Again, the obvious shortcomings are the importance of physical capital and land, as well as the measurement errors deriving from the difficulties with adjusting years of schooling by quality. Combining distributions across asset types is made difficult both by simple logistics (are the same household indicators available across different survey instruments?) and deeper economic issues (what are the appropriate shadow prices for these different types of capital?).

However important these issues are, we suggest a simple econometric approach to bypass them in this report. Conceptually, we argue that the distribution that should really matter the most to policy-makers is the distribution of opportunity. This is for two reasons. For equity purposes, it may be unreasonable to take the assumptions of identical preferences too far. If people care about income and leisure in different ways, it may be more reasonable for us to aim to equalize their opportunities to pursue each objective in accordance with their own preferences, rather than simply to equalize incomes.

Similarly, from the viewpoint of efficiency, it seems that the most convincing models about the negative impact of inequality on economic performance operate through the combined effects of non-convex production sets and credit constraints on the opportunities available

¹² There are additional problems relating to differences between owned- and cultivated-land distributions, as well as quality adjustments.

to poorer agents. Once again, if one were able to measure 'opportunity', one might be spared the considerable trouble involved in properly capturing wealth.

Formally, the concept of opportunity we propose to employ draws on Roemer (1998), which in turn builds on earlier work by John Rawls, Amartya Sen and others. Roemer postulates that the factors which contribute to the determination of incomes can be divided into two groups: those which fall within the control of the individual being considered (which we will simplistically call *effort* e), and those which do not (which he calls the individual's *circumstances* c). Simplifying Roemer's thinking once again, it can be claimed that equality of opportunity is attained when all differences in incomes are due to *effort*, and none to *circumstances*. In other words, if $y_i(c_i, e_i)$ denotes the income of individual $i \in P$; then $F(y)$ is the distribution of such incomes over the population P and $I(y)$ is the conventional outcome inequality measure, defined over $F(y)$.

Define $\mu(c)$ as the j -dimensional vector of mean values (over $i \in P$) for the j -dimensional vector c . For each i , define $y^*(\mu(c), e_i)$. According to this simple version of Roemer's concept of equality of opportunity, $I(y^*)$ would then be an estimate of the level of outcome inequality consistent with equal opportunities. It is important to emphasize that this is only one estimate consistent with equal opportunities, since it implicitly assumes that the matrix $\frac{\partial e_i}{\partial c_j} = 0$. Although this is a very strong assumption, it may be a reasonable starting point. If

we are prepared to adopt it, $I_O = I(y) - I(y^*)$ is then one measure of "excess" inequality, due exclusively to inequality of opportunity.¹³ Another justification for using this measure is

that if $\frac{\partial y}{\partial e_i} \frac{\partial e_i}{\partial c_j} > 0, \forall i, j$, then I_O is strictly a lower-bound measure of inequality of opportunity.

If the true model $y_i(c_i, e_i)$ is known, and both sets of explanatory variables are observed, this could be econometrically estimated. If we are prepared to make the usual assumption

that the conditional expectation function of y on (c, e) is linear in the parameters, then the relationship can be estimated by OLS, using PNAD (1996) data, according to the following classification. *Circumstance* indicators would include variables clearly beyond the control of the agents, such as mother's education¹⁴, region of the country where the person is born, race, gender, nature of primary school (public or private)¹⁵, and a child labour dummy¹⁶. Among the effort indicators would be variables which - while clearly influenced by initial circumstances - do reflect, to various degrees, individual effort, such as education, labour market experience, and migration (municipality where living different from where born).

This framework should not be interpreted too literally. While the classification of explanatory variables into circumstance and effort is helpful in designing and estimating the model, one must explicitly recognize that an individual's actions - such as how long she stays at school - is strongly influenced by her circumstances. Below, we propose a formulation that attempts to capture the more direct and observed channels. But both because a number of unobserved circumstances are also at play, and because effort is measured with error, one should guard against interpreting the results with too much rigidity. The exercise may be reinterpreted as a standard decomposition of inequality between factors related to returns and factors related to the distribution of endowments, where the inherited nature of the latter is explicitly introduced, through the importance of parental education.

Estimating such a model allows us to do more than simply to decompose total inequality into a fraction due to opportunity and one due to characteristics within the individual's own control. It effectively allows us to simulate the effect of changes in the distribution of endowments - some of which may be affected by policy - on the overall distribution of welfare and on poverty.

¹³ We say "one measure" because analogous constructs would have been feasible for any j -dimensional constant vector in place of $\mu(c)$, and these would in general have differed. Similarly, alternative measures readily come to mind, such as $I(y\#)$, where $y\# = y(c_i, \mu(e))$. Again, in general, $I(y^*) + I(y\#) \neq I(y)$.

¹⁴ Or some combination with father's education, also available. If seeking to estimate individual parameters precisely, mind the multicollinearity. If only interested in overall fit, include both.

¹⁵ Unfortunately, it may be that this discrimination is only available for persons currently enrolled. In this case, it will have to be omitted.

¹⁶ Based on age of first job question: say 0 if >14 , 1 if <14 .

To do so, however, the assumption that $\frac{\partial e_i}{\partial c_j} = 0$ must be relaxed. One's own education, which we are treating as an effort variable, since it is clearly not entirely exogenous to the person, is known to depend strongly on her parents' educational attainment. Effort responds to circumstances, and any simulation of the effects of a different distribution of circumstances, defined using the variables listed above, on the final distribution must take into account at least three important channels through which it does so: the effect of circumstances on one's own effective demand for schooling, the effect of circumstances on one's decision to migrate; and the effect of circumstances on one's labour force participation decisions.

As we move from a conceptual discussion to the actual estimation strategy, two important issues arise. First, since we are interested in a distribution that most closely captures individual welfare, and since people live and share in households, the welfare indicator of choice should be household per capita income. Second, there are really two different concepts of household per capita income which are relevant to this analysis. One is simply measured monetary income, which corresponds to the commonly analyzed distribution. The other seeks to measure full income, which attaches a value to leisure and is conceptually closer to the opportunity (or endowment) framework we have adopted. Full incomes attribute a monetary value to adult household members who have chosen not to participate in the labor force, based on their personal characteristics. Women who are not participating in the labor force, for instance, are generating welfare in other ways. They had the opportunity to choose paid employment, and revealed preference indicates that an alternative occupation was more profitable for them.

Household full income is simply the sum of full incomes for all individuals in the household:

$$(2) \quad y_h^* = \frac{1}{n_h} \sum_{i \in h} x_i^*$$

The task at hand is then to estimate x^* for all individuals, as a function of their *circumstances* and *effort* choices. The model is basically as follows. Let C be the matrix of observations on the following *circumstance* variables: {1, mother's education, region of the country where the person is born, race, and a child labor dummy}. Let E be the matrix of observations on the following *effort* variables: {own education and migration (municipality where living different from where born)}. The usual labor market experience variable might have been included on this list, but we propose instead that the estimation be carried out for different age cohorts, so as to allow for all coefficients and for the variance of residuals to vary across them. Similarly, gender is excluded from C because the earnings regressions are estimated separately for men and women in each cohort. The motivation is that such an approach allows for greater insight into the evolution over time of the relationship between income and each of the individual explanatory variables.

For each active individual within a cohort¹⁷, we estimate:

$$(3) \quad x_i = C_i \mathbf{b}_c + E_i \mathbf{b}_e + M_i \mathbf{I} + u_i$$

where x_i is observed earnings, and M_i is the Mill's Ratio derived from a standard Heckman sample selection correction procedure. Individual full incomes x^* are assumed to be equal to observed earnings for active people.¹⁸ For inactive people, full incomes are generated by:

$$(4) \quad x_i^* = C_i \mathbf{b}_c + E_i \mathbf{b}_e + M_i^* \mathbf{I} + u_i$$

where M_i^* is complement Mill's ratio¹⁹ and u is drawn from a normal distribution with mean 0 and the variance of the residual term in (2).

Additionally, the indirect effects of C on y through E are taken into account by the joint estimation of :

$$(5) \quad E = C\mathbf{g} + \mathbf{e}$$

where E includes education and migration status.

¹⁷ To simplify notation, we omit cohort and gender subscripts in this note.

¹⁸ Issues of part-time employment will be addressed in the paper.

Simulations using this four equation model proceed basically by replacing the rows of C with alternative "distributions of circumstances". These might be constants, so as to simulate the impact of eliminating all inequality of opportunity (defined in this manner) on the distribution. Or they might be the real distributions of parents education in relevant comparison countries, such as Mexico, Indonesia, Spain or the US. The γ s and δ s capture indirect effects, through the impact on effort levels. The β s capture net direct effects on earnings. In addition to estimating endowment effects by simulating the changes in the relevant rows of C, one can also simulate 'price' or return effects, by replacing the estimated parameters with those for other countries. Or indeed to simulate the impact on overall poverty of replacing returns estimated (and endowments measured) for the younger cohorts on the older ones.

The statistical methodology outlined above is a simple variant of the micro-simulations used in Bourguignon et. al. (1998), applied to a slightly different context. The range of exercises that it enables is considerable, and the simulations can shed light on a number of interesting issues, as well as providing a basis for the specific policy simulations proposed in the next section.

The preceding model is based on the concept of the full income of the household. This seems the right concept to use in studying the distribution of opportunities or assets. However, this corresponds to a non-conventional definition of inequality. Thus an alternative to the preceding model focuses on monetary income. Clearly, the main difference lies in the fact that studying household monetary income requires modeling explicitly the participation behavior of the various members of the family. This may be one direction of research but it is also possible to bypass the explicit modeling of participation behavior by considering a reduced form model of household monetary income. Then a simple comparison of that model with the full income model will allow us to measure the

¹⁹ Whereas the Mill's ratio $M_i = \frac{f(z)}{F(z)}$, the complement Mill's ratio is given by $M^*_i = \frac{-f(z)}{1-F(z)}$. Z is the criterion in the participation probit.

extent to which participation behavior, or the main dimension of 'effort', depends itself on endowments or family background.

The reduced form household monetary income model consists of regressing monetary income, y , directly on C_h and E_h , which are now defined so as to include the parents' characteristics, regions of origin, educational levels and migration status of the household head and his/her spouse :

$$(6) \quad y_h = C_h \mathbf{d}_C + E_h \mathbf{d}_E + v$$

The estimated coefficients of the reduced form model, δ , now capture not only the effects of endowments and 'efforts' of the main members of the household and the returns to them but also the participation effects. As before the indirect effects of endowments on income may be taken into account by running a regression of type (5) on the various components of the vector E_h .

The advantage of model (6) is its simplicity. However, one may also want to explicitly account for the role of participation behavior in the way monetary income depends on endowments and the set of effort variables in (6), possibly through implicit intermediate variables like fertility. This is simply made by comparing the reduced form of model (2)-(4) above and model (6). If y^* and y are expressed in logarithms, then the difference between the coefficients of C_h and E_h in the two models stand for the way average participation in the household depends on these two sets of variables.

The preceding models bear very much resemblance with the micro-simulation models used in Bourguignon et al. (1999) and for Brazil in Ferreira and Paes de Barros (1999). There are two differences though. On the one hand, the present model incorporates the equality of opportunities or social background dimension, which was absent in previous work. On the other hand, the present models are less precise about occupational choices and sectors of activity of household members at working age. These models clearly permit to go beyond previous analysis by making a distinction between income inequality determinants that

might possibly be modified in the medium-run, i.e. the E variables, and those which are more likely to be affected only in the long-run through intergenerational mechanisms, i.e. the C variables. However, the Report may also consider using previous available models as a benchmark to measure the importance and relevance of the additional variables introduced in the analysis. It may also consider applying the same international comparison methodology alluded to above to previous models in order to characterize better the causes of the Brazilian singularity in the field of income inequality when using a more conventional description of income generating behavior.

5. Policies and Instruments for Redistribution

Simulations alluded to in the preceding paper will have permitted measuring the scope for possible changes in the Brazilian distribution of income and assets. As just mentioned, replacing some coefficients of the models being estimated by those observed in another country, at another point of time or possibly corresponding to some hypothetical situation allows us to estimate the effects of changes in the production side of the economy leading to variations in the structure of the rate of return to assets, such as human capital. Other coefficient changes should permit representing the possible effect of an arbitrary change in social mobility patterns or in the influence of social origin on earnings. Finally, introducing sensible variations within the structure of the population with respect to some specific characteristics like education, social origin or family size should give some indication about the potential of effective educational reforms or policies affecting marriage and fertility behavior on the distribution of income.

But exploring actual redistribution policies that can affect, whether temporarily or permanently, the distribution of income and assets, requires going further. It requires introducing explicitly the policy instruments available for performing such a redistribution. Several orientations would be possible at this stage. Determining the distributional effect of policies oriented toward the production side of the economy necessitates some kind of applied general equilibrium model mapping these policies into the structure of individual earnings. Analyzing the effect of taxes and public expenditures on the distribution of

current income should rely on the familiar micro-economic tax/expenditure incidence analysis framework. Both research directions have been explored in some depth in Brazil.

But CGE modeling or partial micro-economic incidence analysis miss important parts of micro-oriented redistribution policies. The former generally deals with macro-economic policy instruments like tariffs or taxes rather than policies directed towards specific households or individuals in the population, which may appear as more natural instruments for redistribution. The latter generally ignores behavioral responses of those households who benefit from public expenditures. On the other hand, both approaches are static and miss the potential for *permanent* distributional change, which goes through the distribution of productive assets, in particular human capital or education.

In order to analyze this fundamental part of redistribution policy, this project will focus on the effect of various possible *direct redistribution* instruments on the demand for schooling, and other dimensions of household behavior. This focus will in turn lead to considering the possible indirect effects of redistribution policies on the distribution of current monetary incomes in the population of households and on the distribution of education, or 'potential' earnings, in the youngest cohorts when they will all be out of the education system. By doing so, we are extending traditional incidence analysis to take into account : (a) the endogeneity of schooling demand and some other dimensions of household behavior; and (b) the intergenerational dimension of public and private decisions in the field of education. At the same time, we shall provide a unified framework allowing the systematic study of a family of new redistribution instruments in the line of Bolsa Escola, in Brazil, or PROGRESA in Mexico. These instruments are *means-tested conditional cash transfers (MTCCT)*, conditionality being related to school attendance or compulsory medical examination of children. Indeed, it turns out that the analytical framework to represent the functioning of Bolsa Escola also permits representing significant extensions of the original scheme. From that point of view this project should provide a valuable general instrument for policy analysis of all targeted '*means-tested conditional cash transfer*' programs.

The methodology to simulate the functioning of a generalized Bolsa Escola system relies on a standard micro-simulation framework and may be taken as a natural complement of the methodology used in the third part of this project. The big difference is that it now explicitly relies on the estimation of some behavioral model of the household, that should permit to evaluate how a specific MTCCT is likely to affect various dimensions of household behavior. We give some detail in what follows on the modeling of various household decisions and characteristics linked to a program of the Bolsa Escola type, starting, of course, with demand for schooling.

A MTCCT program like Bolsa Escola functions as follows. Households below some standard of living defined by several permanent attributes – housing, family composition, education of household head, ...- are offered some cash, conditionally on their children attending school. The amount transferred depends on the grade attended. Thus, the program affects households who qualify and accept to be in the program in various ways. First it provides more income to households who would have sent their children to school even in the absence of the program. In turn, this additional income may modify the behavior of the household in other dimensions – consumption in general, nutrition, labor supply, etc.. Second, the program will induce some households to send their children to school, a decision they would not have taken in the absence of the program. In that case, the cash transfer may compensate the household for the additional cost of sending the child to school, including foregone income or earnings. The effects of the program are thus directly linked to the labor force participation decision on children. In any case, the income effect is smaller than in the previous case – and the schooling effect larger. Finally, some households may decide not to enter in the program because they will find the cash transfer does not compensate them for the total cost of sending a child to school.

Modeling all these aspects at the same time would require estimating a comprehensive model of household behavior where the set of endogenous variables would comprise the labor force participation of the various household members, including children, the schooling of children, and possibly the demand for various consumption goods. Estimating such a model is a rather cumbersome exercise, the results of which are likely not to be very

robust. We propose instead to estimate a set of partial models : (a) a model of choice of activity for children; (b) a model of labor-force participation for adults; (c) a model of consumption behavior for a restricted number of goods; and (d) a model of health outcomes. We discuss below the structure of the first model and give only some indications on the others.

Let S_i be a qualitative variable indicating whether child i goes to school ($S_i = 1$) is inactive ($S_i = 0$) or is economically active ($S_i = -1$). To explain that variable, we use a standard multinomial Logit framework:

$$S_i = k \text{ iff } S_k(A_i, X_i, H_i; Y_{-i}) + v_{ki} > S_j(A_i, X_i, H_i; Y_{-i}) + v_{ji} \text{ for } j \neq k \quad (6)$$

where $S_k(\)$ is a latent function reflecting the net utility of choosing alternative k for deciders in the household. A_i is the age of the child i , X_i its characteristics – in particular the schooling level already reached - H_i , the characteristics of the household he/she belongs to - size, age of parents, education of parents, presence of other children at school age... - and Y_{-i} the monetary income of household members other than the child.²⁰ Finally, v_{ik} is a random normal variable that stands for the unobserved heterogeneity of observed schooling/participation behavior.

For the model to be complete, we may also need to explain the earnings of the child in case he/she works – or possibly the income of the household head if the child works as a family worker. In the first case, child earnings are determined by the variables X_i through :

$$\text{Log } w_i = X_i \cdot \beta + u_i \quad (7)$$

where u_i is a random terms that stands for unobserved earning determinants.

²⁰ Most probably, $S(\)$ will include interactions between the various groups of variables so as to reflect the effect of income or family size on continuing school may not be the same at different grades.

Suppose that models (6) and (7) have been estimated for all children in a household data base like PNAD, or PPV, and that values for the residual terms u_i and v_{ki} have also been estimated, or drawn randomly but consistently with observed choices.²¹ We can then define the 'critical' income levels $Y^*(A_i, X_i, H_i, v_i)$ and $Y^\circ(A_i, X_i, H_i, v_i)$ which are such that:

$$S_1(A_i, X_i, H_i; Y^*) + v_{1i} = \text{Max}(S_0(A_i, X_i, H_i; Y^*) + v_{0i}, S_{-1}(A_i, X_i, H_i; Y^*) + v_{-1i}) \quad (8)$$

$$S_{-1}(A_i, X_i, H_i; Y^\circ) + v_{-1i} = \text{Max}(S_0(A_i, X_i, H_i; Y^\circ) + v_{0i}, S_1(A_i, X_i, H_i; Y^\circ) + v_{1i}) \quad (9)$$

It seems natural to expect that the solutions of these two equations are such that : $Y^\circ(A_i, X_i, H_i, v_i) < Y^*(A_i, X_i, H_i, v_i)$, so that the decision taken about the child's activity is as follows. The child goes to school if the actual income Y_{-i} is above the critical level Y^* and goes to work if it is below Y° . The child remains inactive in the intermediate case.

The Bolsa Escola program consists of two parts. The first one is a means test that we denote $BE(A_i, X_i, H_i; Y_{-i}) < 0$. The second is the benefit given to the family in the case it is selected in the program and it decides to send the children at school age to school. In general the benefit may depend on the same set of variables. Let $T(A_i, X_i, H_i; Y_{-i})$ be that benefit. In order to simulate the program, we now have the following simple decision rule by households who qualify for the program :

Enroll if :

$$BE(A_i, X_i, H_i; Y_{-i}) < 0 \text{ and } Y_{-i} + T(A_i, X_i, H_i; Y_{-i}) > Y^*(A_i, X_i, H_i, v_i) \quad (10)$$

Do not enroll if :

$$BE(A_i, X_i, H_i; Y_{-i}) < 0 \text{ and } Y_{-i} + T(A_i, X_i, H_i; Y_{-i}) \leq Y^*(A_i, X_i, H_i, v_i)$$

The actual benefit received by the household is equal to T in the first case and to 0 in the second. There is no change in the schooling or labor force participation of the child in the second case, nor in the income of the household. For households who qualify and enroll in the program, the following changes are observed :

²¹ For drawing residual terms in the multilogit model that are consistent with observed choices, see Bourguignon et al. (1999).

- (i) The child keeps going to school and the household's income increases by $T(\cdot)$ if $Y_{-i} > Y^*(A_i, X_i, H_i, v_i)$.
- (ii) The child goes from inactive to attending school and the household's income increases by $T(\cdot)$ minus direct school expenditures if : $Y^*(A_i, X_i, H_i, v_i) > Y_{-i} > Y^\circ(A_i, X_i, H_i, v_i)$
- (iii) The child shifts from the labor market to school if $Y^\circ(A_i, X_i, H_i, v_i) > Y_{-i}$. In that case the household's income increases by $T(\cdot) - w_i$ minus direct school expenditures.

It may be seen with the preceding conditions that the effect of the program on household incomes is not simple. It may be still less simple if one takes into account that the increase in the income of those households that qualify and enroll may be reduced by a change in the labor force participation of another household member – for instance, the transfer $T(\cdot)$ permits the housewife to supply less labor on the market. We do not discuss here the labor force participation models for adult household members. They are similar to model (6)-(7) above, except that the schooling option may not apply beyond some age threshold.

When the new total income of households has been computed using the simulation technique above, it is then possible to derive changes in other dimensions of household behavior which may be thought to be satisfactorily explained by the income level, family composition and characteristics, and labor supply behavior. Child nutrition for instance is a dimension with very much importance for the future stock and distribution of human capital in the economy. Individual bio-metric characteristics or mortality could be studied in the same way, but we do not get into the detail of the underlying model here.

In this rather comprehensive framework, studying the impact of a transfer system of the type of Bolsa Escola is essentially simulating changes in the function $BE(\cdot)$ and the function $T(\cdot)$ on the current income of all households - taking into account that the additional benefit may change the participation behavior of some people in the household, including children - as well as on some other dimensions of household welfare or health capital. . This calculation also yields the total cost of the program – that is the sum of transfers $T(\cdot)$ as well as the additional educational costs brought about by a higher rate of

schooling in the population. In conformity with the analysis in the previous section, the simulation also gives indication on the intergenerational transmission of inequality by showing the distribution of human capital, education and health, in the cohort of children at various ages, and by extrapolation when they will all be adults.

It is surprising that such an ex-ante evaluation instrument of redistribution policies in developing countries does not exist. The reason must essentially be found in the absence of large scale cash transfer programs of the Bolsa Escola and PROGRESA type in these countries until a few years ago. Given the development that is anticipated for these programs in several parts of the world, it seems urgent that convincing and comprehensive ex-ante evaluation instruments become available. This part of the project represents a very significant step in that direction.

It must be clear that the preceding analysis cannot be a substitute to a direct ex-post evaluation of a program of the type of Bolsa Escola. with data collected on recipients and non-recipients as a control group. Differences are most likely to arise for several reasons. First, the means test formula actually used – i.e. the $BE(\)$ function – involves characteristics that may not be applicable to the data base used to estimate the demand for schooling function because of missing variables. Some approximation will then be necessary in the ex-ante exercise. Second, actual take-up rates may be below unity. Because of this, the profile of actual recipients may not correspond to what will result from the simulation of the qualification criterion. Third, the behavioral response of households may differ from what will be predicted by a model based on cross-sectional differences. Some “calibration” is probably possible on the basis of the little that is known of the present results of the program. At the same time, however, it must be realized that ex-post evaluations – which may take a very long time before being available – will not necessarily permit answering all the questions that may be analyzed within the preceding ex-ante framework. In particular it will be difficult to simulate on an ex-post basis the effect of alternative means testing formulas, of pure targeted cash transfers without schooling or other types of conditionality, etc.. Actually, both types of evaluation must thus be considered as complementary, rather than substitutes for each other.

6. Concluding Remarks

The conclusions of the Report would follow from the assessment of the existing literature and from the original empirical work undertaken specially for its production, as outlined above. Naturally, it would be premature to attempt to preview them here. It may be worth restating, however, the four main generic contributions which we think this set of background papers would have made to the Report, and to the Brazilian debate on these issues. First, it would have presented a solid empirical analysis of what is so different about Brazil's income distribution, analyzing the causes of its high inequality in that context. It would then have discussed the consequences of inequality, and of its impact on both long- and short-run aggregate economic performance, as well as the evidence concerning its links with violence, a central social preoccupation according to any poll, in this country and in the continent at large.

Second, it would have presented the most comprehensive attempt to date, as far as we are aware, at estimating the degree of inequality of opportunity - as opposed to outcomes - in the country²². We argued that this concept is particularly relevant for both economic efficiency and equity judgements. Finally, it would have investigated the relative merits of an array of actual policy choices currently on the government's menu, at an unprecedented level of disaggregation, and in terms of their impact of conventional measures of poverty and inequality, as well as in terms of the distribution of opportunity.

In closing, we would like to use this final section of the note to raise a few practical questions which the management of the task may wish to consider at an early stage. The first crucial issue is the choice of data set. In particular, the Report is likely to be based on the PNAD- 1996 and 1999 because some parental characteristics are available there. But the PPV offers other advantages, in particular for the incidence analysis of public expenditures and possibly the Bolsa Escola simulation. A more detailed discussion of the advantages and inconveniences of both data sets can be found in Ferreira et. al. (2000). It

must be kept in mind in particular that the coverage and sample size of the PNAD would seem to outweigh many other problems.²³

Second, this note has proposed a four-part structure for the Report. However, several original empirical exercises were contemplated for the last two parts. Some of them may be considered as straight extensions of existing models or methodology. Those on which we insisted are much more original and should represent a significant contribution to knowledge and policy-making in the field of income inequality in Brazil, and probably other Latin American countries. There essentially is one such paper for each section of this note. It seems unnecessary to spell out in detail the remit of each of these papers, since they are basically those outlined in the short sections above.

²² Lam (1999) handles similar issues but is restricted to the intergenerational mobility implicit in the demand for schooling of the cohort currently in school, only.

²³ Particularly if sufficient progress has been made in the current process of imputing the PPV consumption aggregate to the PNADs. See Elbers et. al. (2000) for a discussion of the methodology currently being employed by a joint Bank-IPEA team in this project.

7. References

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