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ABBREVIATIONS AND ACRONYMS

CEA  Centro de Estudos Agrícolas
CPMF  Contribuição Provisória sobre Movimentação Financeira
CPS  Current Population Survey
DELTA  Département et Laboratoire d’Economie Théorique et Appliquée, Ecole
Normale Supérieure, Paris
DITAR  Dalton Improving Tax Reforms
ENDEF  Estado Nacional da Despesa Familiar
ENIGH  Encuesta Nacional de Ingresos y Gastos de Hogares
FAO  Food and Agriculture Organization of the United Nations
FGTS  Fundo de Garantia do Tempo de Serviço
FGV  Fundação Getulio Vargas
FUNDEF  Fund for Development and Maintenance of Elementary Teaching and
Teacher Development
GDP  Gross domestic product
GIE  Gini income elasticity
IADB  Inter-American Development Bank
IBGE  Instituto Brasileiro de Geografia e Estatística
IBRE  Instituto Brasileiro de Economia
ICMS  Imposto sobre Circulação de Mercadorias e Serviços
IFPRI  International Food Policy Research Institute
INCRA  Instituto Nacional de Colonização e Reforma Agrária
IPEA  Instituto de Pesquisas Econômicas Aplicadas
IPI  Imposto sobre Produtos Industriais
ITR  Imposto Territorial Rural
LAC  Latin America and the Caribbean
LSMS  Living Standard Measurement Survey
MECF  marginal efficiency cost of funds
Mercosur  Mercado Comum del Sur
OLS  ordinary least squares
PIS  Contribuição para o Programa de Integração Social
PNAD  Pesquisa Nacional por Amostra de Domicílios
POF  Pesquisa de Orçamentos Familiares do IBGE
PPP  Purchasing Power Parity
PPV  Pesquisa sobre Padrões de Vida
PRONAP  Programa Nacional de Fortalecimento da Agricultura Familiar
PSE  public social expenditure
PUC-Rio  Pontifícia Universidade Católica do Rio de Janeiro
RGPS  Public Pensions System for Private Sector Workers
RJU  Federal Government Pensions programme (Regime Jurídico Único)
SAEB  Sistema Nacional de Avaliação da Educação Básica
VAT  value added tax

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1. “Poverty and Inequality in Brazil: New Estimates from Combined PPV-PNAD Data”
   C. Elbers, J. Lanjouw, P. Lanjouw, and P. Leite

2. “Beyond Oaxaca-Blinder: Accounting for Differences in Household Income Distributions across Countries”
   F. Bourguignon, F. Ferreira, and P. Leite

3. “Inequality of Outcomes, Inequality of Opportunities, and Intergenerational Education Mobility in Brazil”
   F. Bourguignon, F. Ferreira, and M. Menendez

4. “Indirect Taxation Reform: Searching for Dalton-Improvements in Brazil”
   C. E. Vélez, S. Vianna, F. G. Silveira, and C. Magalhães

5. “Schooling Expansion In Demographic Transition: A Transient Opportunity For Inequality Reduction In Brazil”
   C. E. Vélez, M. Medeiros, and S. Soare

6. “Ex Ante Evaluation of Conditional Cash Transfer Programs: The Case of Bolsa Escola”
   F. Bourguignon, F. Ferreira, and P. Leite

7. “The Dynamics of the Skill-Premium in Brazil: Growing Demand and Insufficient Supply?”
   A. Blom and C. E. Vélez

8. “Distribuição De Terra E As Políticas Públicas Voltadas Ao Meio Rural Brasileiro”
   J. Assunção
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The report was prepared under the overall guidance of Roberto Martins (president until 2002, IPEA), Gobind Nankani and Vinod Thomas (country directors, 2000-02), Ernesto May (sector director), Norman Hicks (sector manager), and Suman Bery and Joachim von Amsberg (lead economists, 2000-02).


Volume II contains the background papers commissioned for the report, which diagnose income inequality in Brazil, present relevant international experience, and discuss the policy implications. The authors of the papers are Juliano Assunção (PUC-Rio de Janeiro), Andreas Blom (World Bank), François Bourguignon (DELTA and World Bank), Chris Elbers (Vrije Universiteit, Amsterdam), Jean Olson Lanjouw (Yale University), Francisco H.G. Ferreira (PUC-Rio), Peter Lanjouw (World Bank), Phillippe G. Leite (PUC-Rio), Marcelo Medeiros (IPEA), Luis Carlos Magalhães (IPEA), Marta Menendez (DELTA, Paris), Serguei Soares (IPEA), Fernando Gaiger Silveira (IPEA), Carlos Eduardo Vélez (World Bank), and Salvador Vianna (IPEA).

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EXECUTIVE SUMMARY

Brazil is a continent-sized nation, marked by profound contrasts and diversity. Some of these are geographic or climactic in nature, others are racial or ethnic. Brazil’s population draws on Native American, African, and European roots, and successive waves of immigrants, principally from Asia and Europe, have added to the mix. Yet other contrasts are social in nature and generally less welcome. Living conditions for Brazil’s 170 million people vary dramatically, and income disparities in Brazil are significant—not only across regions but also between metropolitan centers, nonmetropolitan urban centers, and rural areas.

This report is motivated by the coming together of three widespread perceptions about inequality, two somewhat newer and one long-standing. The two newer ones are that inequality may matter for the country’s economic development, poverty reduction, and social progress, and that public policy and reforms, for example in the areas of social security and taxes, can and should do something about it. The old perception, which is well borne out by the facts, is that Brazil occupies a position of very high inequality in the international community.

WHY DO INEQUALITIES MATTER FOR BRAZIL?

Excessive Income Inequality Is Unfair and Could Be Inefficient

Income inequality matters because high inequality means that there will be more poor people at a given average level of income. It also means that the poor will benefit relatively less from economic growth than in a more equal society. Also, inequality matters beyond its impact on poverty. There is increasing evidence that high inequality adversely affects growth and health outcomes, undermines social cohesion, and increases crime. Besides, dynamic growth modeling shows that weak social mobility and excessively unequal initial conditions are likely to lead to its persistence or even more inequality. This perverse cycle is more likely in countries—like Brazil—where fertility
differentials between educated and uneducated parents are much stronger. Finally, many consider that the inequality of opportunities—social mobility determinants that are outside the control of the individual—, which explains one third and one half of the Brazilian income inequality—is unfair and undesirable on ethical grounds.

**WHY IS BRAZIL SO UNEQUAL?**

*Brazil’s Income Inequality Is Very High and Persistent over Time*

Brazil’s income inequality is very high and persistent over time, and it has deep historic and regional roots. With an income share of the richest 20 percent of the population equal to 33 times the corresponding share of the poorest 20 percent, Brazil has one of the highest levels of income inequality in the world. The Gini coefficient for the distribution of household incomes per capita is 0.59; that is, the expected difference in income per capita between any two Brazilians chosen at random is nearly 1.2 times the average income per capita.

High inequality remains a fundamental characteristic of Brazil despite some important qualifications:

- New analysis shows that Brazil’s income inequality has likely been overestimated as a result of limitations in the household survey data. Previous analysis also suggests an overestimation of inequality to the extent that cost-of-living differences are not fully reflected. But even with better data, income inequality would still be high.

- Even though aggregate measures in income inequality do not show much change over time, there have been important income improvements for the poorest, especially since stabilization in 1993, and possibly some further improvements in the last three years.

- Brazil has achieved major improvements in social indicators, particularly health and education. Although these were not immediately translated into less income inequality, they improve the quality of life of the poor and create the conditions for reduction of inequality in the future.

Income differences among the Brazilian population by gender and skin color account for an important part of overall income inequality, and this is due to disadvantages in wages, schooling, or both. Some 12 percent of income inequality in Brazil is accounted for by income differences by skin color. The same figure for the United States is 2.4 percent. Educational attainment is also widely unequal; by years of schooling, blacks fare only two thirds as well as whites. Earnings of women are on average 29 percent lower than earnings of men, even though Brazilian females entering the labor force get nearly one more year of education than males. Although, the current gender gap has the same magnitude as that of the 1920s, this time it is against men. In summary, whereas skin color gaps are cumulative, gender gaps are asymmetric.
Regressive public transfers, inequitable distribution of education and high skill wage differentials

The excessive income inequality of Brazil is due to three factors: more regressive public transfers, less equitable distribution of education, and higher wage differentials. One approach to better understanding Brazil's high income inequality is to analyze what accounts for the excess inequality of Brazil compared with other countries. The 14 percentage point difference between the Gini coefficient for Brazil and the United States (a country that also has relatively high income inequality in international comparison) can be decomposed as follows:

- Public transfers are less progressive in Brazil, accounting for 39 percent of the excess inequality. Although most social programs are progressive, retirement pensions, especially pensions for public sector employees, consume the largest share of social spending (above 50 percent) and are heavily biased in favor of higher-income groups. In fact, the share of pensions to the richest 20 percent in Brazil is more than twice the corresponding share in the United States—61 versus 26 percent. Moreover, despite having nearly half the percentage of beneficiaries than the United States, Brazil devotes a much higher share of its resources (5 percentage points above) to these entitlements.

- The unequal distribution of education in Brazil accounts for 29 percent of excess inequality. Brazil has a considerable skill gap in the labor force when compared with the United States, but also compared with Mexico and Colombia. The percentage of high school graduates—not to mention workers with postsecondary education—is only 35 percent. In the United States, it is 94 percent, and in Mexico, 52 percent. This reflects a long-standing neglect of and inequity in education that has been addressed only recently through substantial education system improvements.

- Finally, higher skills premiums (wage differentials by skill level) in Brazil account for 32 percent of excess inequality. The Brazilian differential has been increasing during the 1990s and is 50 percent greater than the differential in the United States and also well above Mexico's. This means that the unequal asset distribution is projected into an even more unequal distribution of labor market incomes. Besides, these two factors are mutually dependent. The skill premium—the relative price by skill—is partially determined by the distribution of education (the supply of skills). In fact, this premium has increased over time as a result of both technological change and a relative shortage of highly skilled workers.
Partially counterbalanced by the progressive effect of other social expenditure programs and direct taxation, and the moderate but regressive impact of indirect taxation

Fortunately, despite the regressive incidence of pensions described above, the distribution of the other half of public social expenditures is egalitarian and unambiguously progressive and contributes substantially to the reduction of inequality. Although most of the social programs (excluding pensions) are not in cash but in kind and do not enter the household income as such, they represent an important contribution to current nonmonetary household welfare. In particular, these are the best-targeted programs directed to infants and children and to basic infrastructure *favela* (shanty town) upgrading. Overall, the subsidies, which are implicit in social programs, contribute to income equalization. Once public social expenditure (PSE) subsidies are added to income, inequality is considerably smaller relative to inequality of income alone the Gini coefficient is 5.6 percentage point slower. However, although the share of the poorest income groups in total PSE subsidies is relatively low—12 percent for the poorest 20 percent of the population, the welfare of the poor is quite sensitive to social policy targeting. In fact, in 1997 the average household in the first quintile received as much from income as it did from government subsidies in cash or in kind.

Contrary to the progressive quality of PSE, overall household taxation has a moderate regressive impact on income distribution: 0.7 percentage points of the Gini. The magnitude of taxation on households is considerable in magnitude, and the incidence of direct and indirect taxation operates in opposite directions—that is, progressive and regressive, respectively. In fact, the tax burden on the economy increased by nearly 3.5 percent of gross domestic product during the 1990s (more than 1.5 percent was via indirect taxation), and current indirect tax revenue triples the revenue from direct taxation. Henceforth, currently indirect taxation revenue is approximately three times as large as direct taxation and displays very heterogeneous tax rates across goods and services. The burden of direct income taxation is mostly (96 percent) concentrated on households that belong to the richest 20 percent in Brazil, but the opposite occurs with indirect taxation. Out of total indirect taxation, 16 percent is paid by the poorest 40 percent, although their share of income is well below 10 percent.

Despite progressive social public expenditure, access to education remains quite regressive and deficient

Despite the magnitude and progressive nature of social expenditure, access to education remains quite deficient and regressive across income groups and regions. The burden of educational inefficiencies—chronic repetition and dropout—falls mostly on the poor and, consequently, they experience many more difficulties going through the education system. While average grade 9 completion is below 10 percent for the poorest 50 percent, it was 79 percent for the 10th income decile in 1999.

In summary, Brazil’s excessive income inequality is associated to both market and nonmarket forces, which operate in opposite directions and compensate partially. First,
insufficient and unequally distributed education endowments and excessive wage skill premiums contribute in similar proportions to excess inequality when compared with the United States and jointly explain 60 percent of income inequality. Second, the regressive nature of Brazilian retirement pension transfers provides the largest contribution to excess inequality: 40 percent. Third, this situation is marginally worsened by the regressive impact of indirect taxation (nearly half of the endowment effect, 1.6 percentage points of the Gini). Fortunately, some compensatory and progressive effects follow from direct taxation and PSE—that is, nonpensions. This is moderate in the case of former (1 percentage point of the Gini) and clearly progressive and substantial for the latter (−3.8 Gini points), similar in magnitude and opposite in sign to the endowment effect in the U.S.-Brazil comparison.

WHAT SHOULD PUBLIC POLICY DO ABOUT INCOME INEQUALITY?

This report recommends that, among possible strategies for fighting inequality, Brazil should focus on those policies that are good for reducing inequality, good for reducing poverty, and good for increasing efficiency, competitiveness, and growth. In the key areas recommended for action, there are thus no tradeoffs between equity and efficiency or between the reduction of inequality and the reduction of poverty. This does not mean that these policies benefit everyone. They do involve political choices, and they do involve the dismantling of privileges such as those implied in excessive public sector pensions.

The Long-Term, Aggressive Expansion of Education to Narrow the Gap with the Rest of the World

The most important area for action is education. Over the last two decades, each age cohort has achieved higher average educational attainment with less inequality within the cohort. The rate of progress has been much faster in the last decade than during the 1980s and strong compared to most other countries. Yet compared to international and Latin American standards, educational attainment in Brazil is still lagging behind. Two decades ago, Brazil’s educational attainment for young cohorts was close to Ecuador’s and better than Mexico’s, but cohorts born two decades later are on average 1.5 years of schooling behind Mexico and more than 2 years behind Ecuador. Moreover, when compared with South Africa, Brazil shows rather slow progress in education and a persistent educational gap against nonwhites.

Expansion of Education Is Desirable for Both Equity and Efficiency

Educational expansion is also unambiguously desirable because it is likely to lead to faster and better quality growth by correcting the inefficiencies induced by inequality (in particular, insufficient human capital investment of the poor). This would reduce the underlying inequality of human capital endowments and, finally, save the economy from converging toward even more unequal equilibriums in the future—as it is moving toward more a level field of opportunities.
Before the Demographic Window of Opportunity Expires

Given that Brazil is in the middle of the demographic transition, time is running short for Brazil to reduce inequality through education. After experiencing a monotonic ascent during the 20th century up to 1970, the population share of the youngest cohorts entering the labor force started to fall and is expected to converge to a stable minimum—half of the maximal demographic weight—by the end of the 2010s. The current generation of students is coming from a relatively large age cohort, but 10 years from now, new graduates will represent a 25 percent smaller share of the population. Hence, demographic opportunities to raise the level of schooling of the whole labor force by improving education of younger cohorts are fading away as they are gradually losing share in the population of working age.

A Patient, Long-Term Perspective in Educational Policy

Educational policies are necessary to address the structural determinants of inequality and poverty, but they only render their benefits in the long term. It is frustrating to report that, according to our demographic models, even the most important policies for reduction of inequality—the expansion of the quantity and quality of education—will not reduce income inequality in the short term. Even very strong improvements above the current trend of schooling attainment take more than two decades to show up as higher educational endowments for the whole working age population. This is because demographic transition forces in Brazil determine the time lag required to extend the educational improvements enjoyed by the younger cohorts to the whole labor force (the stock-to-cohort time lag). Under these circumstances, policymakers’ faith in education should go together with patience, taking demographic inertia into account and monitoring educational policy with a clear long-term perspective.

Additional Benefits of Educational Expansion: Faster Extension of the Benefits of Education to the Whole Population and Reduction of Long-Term Inequality

Taking advantage of the window of opportunity of demographic transition to expand education not only would accelerate the achievement of educational attainment goals for the whole population, but also reduce the long-term inequality of educational attainment and, consequently, labor income. If the educational expansion of the 1990s had occurred one decade earlier—before the demographic transition started—then that temporary acceleration would have permanently reduced the stock-to-cohort time lag from 25 to 20 years and cut long-term inequalities of schooling and labor income. Two decades later, the simulated variance of schooling would have become 7 percent smaller than expected, with obvious implications for labor income inequality. Furthermore, additional reduction of inequality will follow from the induced decline in the wage skill premium.
The Medium Term: A More Educated Labor Force Will Help to Lower the Wage Skill Premium

Unless high wage differentials by skill are reduced, efforts to bring higher and more equitable access to education will not produce substantial reductions of income inequality in the medium term. Although, large shifts toward a more skilled labor force have taken place in the last two decades, they have been insufficient relative to the demand shift. According to this report, around 60 percent of the increase of the skill premium to tertiary education can be attributed to supply shortage. The remaining 40 percent is due to a shift in labor demand toward highly skilled labor. Brazil needs to vigorously expand the supply of postsecondary education with the help of the private sector and increased cost recovery linked with credit programs. This strategy would permit the necessary expansion of postsecondary education without requiring additional public spending. Also, at this time, the massive expansion of secondary education is still a critical precondition for the equitable and efficient expansion of postsecondary education.

More Cost-Efficient Public Education Requires Multilevel Interventions

To achieve higher and more equitable educational attainment, the education system in Brazil has to become more efficient for the poor (reduce the repetition and dropout rates). This basically means taking all actions that reduce the cost of helping the children from poor families complete high school and enter postsecondary education. This also implies taking action at multiple levels in the education system: schools, households, and subnational governments: This could be achieved within school programs to reduce chronic repetition, alternative supply programs aimed at expanding school availability for the poor, extension of Fund for Development and Maintenance of Elementary Teaching and Teacher Development (FUNDEF) (the subnational public finance incentives to promote efficient expansion of basic education in the poorer states) to secondary education, and family-focused social assistance programs, such as Bolsa Scola, linked to school attendance and subsidies of school supplies for the poor. Finally, addressing persistent inequality of opportunities should include raising access to childcare and preschool education where the poor experience a considerable consumption gap relative to the middle- and high-income households.

The Short Term: Cutting Excessive Retirement Benefits to Free Public Resources for Better-Targeted Social Policies

After education improvements, further deep reform of Brazil’s social security system, in particular substantial reduction of currently excessive retirement benefits for civil servants, would address an important source of income inequality, contribute to fiscal sustainability, and eventually free resources for targeted social policies. The current social security reform and its follow-up provides an important opportunity. Although programs such as the Old Age Program are well targeted—mostly to rural and female-headed households—and the Public Pensions System for Private Sector Workers (RGPS) improved after the recent reform, the Federal Government Pensions program (RJU)
remains the most problematic. The RJU absorbs excessive funds and violates basic principles of fairness of public expenditure—namely, vertical, horizontal, and intergenerational equity.

**Indirect Tax Reform Could Be Both Efficient and Equitable**

Finally, there are possible budget-neutral reforms to the indirect tax system that could increase efficiency and potentially improve welfare. The current structure of indirect taxation—heterogeneity of tax rates, excessive burden, and regressive incidence—could be improved to reduce the efficiency cost of taxation, reduce tax heterogeneity (lowering collection and enforcement costs), and reduce inequity. Also important would be not to give special privileges and exemptions to physical and financial capital, which would stack incentives in favor of capital relative to labor and contribute to a worsening of the income distribution. The tax reform agenda is an opportunity to address these issues. A relatively larger reliance on direct taxes would merit consideration, given the progressive impact of such change.

* * *

In summary, to reduce inequality, public policy must be active in four areas. First, raising the level and reducing the inequities of educational attainment, which would involve making the education system more efficient for the poor (reduce the repetition and dropout rates) and taking advantage of transient demographic opportunities to cut the educational gap between Brazil and middle-income countries. Second, reducing the wage skill premium of postsecondary education by promoting its expansion and increasing their availability in the labor market. Third, reallocating public expenditure away from excessive and regressive transfers, such as the implicit subsidies imbedded in the Federal pensions regime. And finally, taking advantage of the opportunity to implement an indirect tax reform that can reduce the inequity of indirect taxation avoiding any additional efficiency costs.
INTRODUCTION

1. Brazil is a continent-sized nation marked by profound contrasts. Some of these are geographic or climactic in nature, and they add to the variety of settings and scenes of which Brazilians are proud. Others are racial or ethnic: Brazil’s population draws on Native American, African, and European roots, and successive waves of immigrants, principally from Asia and Europe, have added to the mix. Such a combination of races and cultures, spread over more than 8 million square kilometres, inevitably makes for enormous diversity.

2. Yet other contrasts are social in nature and generally less welcome. Living conditions for Brazil’s 170 million people vary dramatically, both across the country’s regions and states and within them. Spatial variations can be marked. Life expectancy at birth ranges from 63.2 years in Alagoas to 71.6 years in Rio Grande do Sul.\(^1\) Adult literacy ranges from under 70 percent in Alagoas and Piauí to almost 95 percent in the Federal District.\(^2\) Poverty incidence rates range from 3.1 percent in metropolitan São Paulo to more than 50 percent in the rural northeast. Income disparities in Brazil are significant not only across regions but also between metropolitan areas, nonmetropolitan urban centers, and rural areas. Moreover, inequality across gender and racial groups is also important.

3. The present Report is motivated by the coming together of three widespread perceptions about inequality, two somewhat newer and one long-standing. The two newer ones are; (i) that inequality may matter for the country’s economic development, and (ii) that public policy can and should do something about it. The old perception, which is well borne out by the facts, is that Brazil occupies a position of very high inequality in the international community. Therefore, this report tries to explain what makes Brazil so unequal and to what extent the interaction of labor market forces and public policies—or the lack of them—contribute to this undesirable outcome. For instance, in what measure is social mobility becoming more independent of family background thanks to progressive public policies in basic education, health and nutrition.

4. Accordingly, the report is organized around three basic questions. The first section asks why inequality might matter for the country’s economic development. Why it matters for poverty reduction, for social justice equality of opportunities and social mobility, and for economic and political efficiency. The second section asks why Brazil is so unequal. It seeks a deeper understanding of what lies behind Brazil’s position as one of the most unequal countries in the world, as shown in typical international comparisons, the dynamics of income inequality, and the magnitude of inequality across regions, racial

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\(^1\) Life expectancy at birth statistics are based on the 2000 census and are still treated by the IBGE as preliminary.

\(^2\) IBGE 2000
groups, and gender. Then, it attempts to shed light on why this may be so. It investigates the causes of Brazil's excess inequality in four dimensions: the distribution of assets – human and nonhuman-, the price of those assets, the behavioral difference in the labor market and fertility, and, finally, the distribution of state transfers and entitlements – public expenditure and taxation-. The third section asks whether there is a role for public action aimed at reducing inequalities, and considers some lessons from theory and evidence on the relative effectiveness of alternative approaches. First, it considers how the provision of education might affect not only the distribution of human assets in the long run but the relative prices of human capital for different levels of skill. Second it examines how public policy toward rural land use must take into account inefficiencies that are closely linked to inequities of land distribution. Finally, it investigates how taxation and public expenditure policies reduce income inequality and inequality of access to basic social services. The fourth section concludes.
1. **WHY DO INEQUALITIES MATTER FOR BRAZIL?**

5. Why does the fact that Brazil is a highly unequal society, along various dimensions to be discussed below, matter for the quality of life and for economic development in the country? In order to find out whether inequality matters for Brazil, the following questions must be answered: Is the current situation fair and opportunities equally available? Does family background account too much, and effort too little for the standard of living available to a typical Brazilian—or vice-versa. Secondly, is this state of affairs economically efficient? Or has inequality become a burden for the economy, because investments of low income households is insufficient and sub-optimal, and it is pulling GDP below its maximum potential. Finally, to what extent do growth dividends for poverty reduction, get weakened by excessive inequality.

6. In this Chapter we draw on some economic theory—old and new—as well as on some recent empirical findings, to try and shed some light on this question. We consider three broad areas: those related to links between inequality and poverty reduction; those related to social justice, equality of opportunities, and social mobility; and those related to the likely impacts of inequality on both narrow productive efficiency and the external costs of inequality (and hence to a broader concept of efficiency) and; those related to links between inequality and poverty reduction.

**Social Justice, Inequality of Opportunities and Persistent Inequality**

7. The concept of social justice is inherently normative, which means that departing from different views about what constitutes fairness could very well lead to radically different perceptions of whether the Brazilian society, unequal as it is, is or is not fair. Two rather different approaches have been influential. The first is utilitarianism, which views social welfare as a weighted sum of individual levels of well-being. Most advocates of this view consider that the weights should decline with individual wealth or income, possibly as a result of supposing that the marginal utility of income falls as people become richer. Because this implies that, all else equal, overall social welfare should rise as a result of a progressive transfer, many have interpreted the prescriptions of utilitarianism as requiring egalitarian outcomes.

8. However, economists know that all else seldom is equal. If a transfer is made from a richer man to a poorer one, and the former anticipates this, he might very well feel less inclined to work as hard. As a result, the overall level of output available to be

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3 It goes beyond the remit of this report to attempt a review of this literature. See Atkinson and Stiglitz (1980) for an excellent summary.
shared in the first place might decline. Similarly, if the transfer is made to the poorer man independently from his own efforts, he too might have less incentive to produce, thereby adding a separate source of reduction in aggregate wealth. Because such incentive effects must be internalized when deciding which feasible allocation is best for society as a whole, unequal outcomes are in general perfectly consistent with a utilitarian view of social welfare.

9. What utilitarianism does imply, however, is that choosing the best allocation for a society will, in general, entail a tradeoff between equity and efficiency. In other words, although a utilitarian voter will take the effect of incentives into account when choosing her optimum, she will also bear in mind that a dollar gained by a poorer man is "worth more" to society than a dollar lost by a rich man. This implies that the socially optimal amount of efficiency forgone for the sake of greater equity is in general positive.

10. Making a leap from such abstract concepts to the complex reality of the policymaker is usually a difficult thing to do. It is quite plain, however, that a distributionally neutral—or even regressive—state in a country as unequal as Brazil is unlikely to correspond to the optimal amount of redistribution, unless the rich are exceedingly more potentially productive than the poor. As we will see below, there are many reasons why this is unlikely to be the case.

11. The second influential approach is based on the concept of equality of opportunities. This approach departs from the view that fairness consists not of ensuring that all persons enjoy the same outcomes, regardless of ability or effort, but instead ensuring that, to the maximum extent possible, they all have the same chances in life. In an influential treatment of this issue, John Roemer (1998) suggested that relevant outcomes (such as income, consumption, wages, etc.) may be seen as determined by two large sets of variables. Those that, to various extents, are within their individual control are called effort variables. And those that help determine outcomes but are beyond the control of the individuals concerned, are called circumstance variables. In Roemer's framework, opportunities are equalized if the circumstances that can be modified—not predetermined—do not produce systematic differences in individual outcomes. Only differences in outcomes that arise from differences in individual efforts are regarded as fair.

12. Any empirical implementation of this framework is fraught with difficulties. In the first place, no known data set contains all the circumstance and effort variables that really play a role in determining individual outcomes. Second, even among the variables that existing data sets do contain, there are some whose classification between effort and circumstance is inevitably somewhat arbitrary. Nevertheless, if one were prepared to take a data set such as the PNAD and classify the characteristics of the households and individuals recorded there as either efforts or circumstances, it would be possible to simulate an equalization of circumstances and decompose overall observed inequality into a “minimum” component, due to opportunities, and a residual, which is at least in part associated with efforts (but also with luck, transitory variations, etc.).
13. This is what Bourguignon, Ferreira and Menendez (2002), whose work is included in volume II of this report, do. They consider one's own educational level and one's decision to migrate as efforts, and they take the set of circumstances to include parental schooling and occupation, gender, race, and region of birth. They into account the fact that the efforts are themselves influenced by the circumstances, estimating separate models for them. They find that between 8 and 12 points of the Gini coefficient (of 0.55) for the distribution of male earnings, and between 8 and 14 points of the Gini coefficient (of 0.57) for the distribution of female earnings, are accounted for by inequality of opportunities. If one bears in mind that all omitted characteristics are being treated as efforts, and that the $R^2$ (of 0.42) of the earnings regression places an absolute upper bound in the share of inequality that can be attributed to circumstances, this 14-25 percent share of overall inequality that can be ascribed only to those circumstances identified with parental education and occupation, region of birth, race and gender, is quite high.

14. When each of these circumstances is equalized separately, it turns out that the one with by far the greatest impact on reducing inequality is the mean education of the individual's parents. As we saw above, this works through both an impact on the child's educational attainment and an additional direct impact on her income. Equalizing race came second.\(^4\)

15. Furthermore, in a dynamic context, weak social mobility could lead to a perverse cycle of increasing inequality in Brazil. Cross-country evidence shows that the fertility differentials between educated and uneducated parents are stronger in more unequal countries like Brazil.\(^5\) If children of uneducated parents are less likely to become educated, the fertility differential will induce an increasing proportion of unskilled workers in the next generation, which in turn tends to depress their wages and increase their chances of having more children and so on.\(^6\) Based on a dynamic framework of fertility and education inequality across generations, Kremer and Chen (2002) show that depending on the initial inequality conditions, the economy is more likely to converge to high or low inequality scenarios: "If the initial proportion of skilled workers is too low, inequality will be self-reinforcing and the economy may approach a steady state with a low proportion of skilled workers and greater inequality between the skilled and unskilled (p. 77)."

16. Auspiciously, Kremer and Chen also find that the timely enhancement of educational opportunities for the children of the poor is critical in putting the economy on a path leading to a more egalitarian equilibrium, with a more balanced distribution of skilled and unskilled workers. According to their findings, even a temporary increase in schooling opportunities for the children of the poor that raises the share of skilled workers above a certain critical value would induce a virtuous dynamics of education

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\(^{4}\) See Bourguignon, Ferreira and Menendez (2002) for details.

\(^{5}\) See Kremer and Chen (2002). They also show that for most Latin American countries fertility are very high differentials, well above the predicted level conditional on inequality.

\(^{6}\) Assuming the substitution effect dominates the income effect.
equalization across generations. Moreover, they also show that if fertility is endogenous to skill wage differentials, temporary policy interventions can have even larger multiplier effects.

17. However, the window of opportunity for this policy intervention is expiring: As time passes the economy moves away from the desired qualification of the labor force, hence the effort required to reach the critical share of skilled workers becomes larger. Velez, Medeiros and Soares (2002) -included in volume II of this report- show that the otherwise welcome trend of decreasing average fertility in Brazil has been reducing demographic weight of younger cohorts, thus constraining the leverage of current educational policies to modify the distribution of schooling for the whole labor force. In Chapter 3 this report explores in detail the relationship between the expansion of education, demographics transition and income inequality.

Inequality as Efficiency Burden: Insufficient Investment by the Poor, Inefficient Political Outcomes and Induced Crime

18. And this situation might be both unfair and inefficient. Social justice considerations, based on the idea that people somehow value equity for its own sake, whether in the space of outcomes or of opportunities, are not the only reasons why inequality would be undesirable. Economists are no longer convinced that most economies operate in a range where every concession to equity comes at some positive cost in efficiency. Although tradeoffs certainly do operate at the level of the individual tax or transfer instrument, economists have, in the past decade or so, identified a number of reasons why inequality and/or poverty may lead to aggregate economic inefficiencies.

19. Chief among these reasons is the simple fact that capital markets—notably, the market for loans to small producers—are imperfect. Informational asymmetries between lenders and borrowers mean that many credits are made only if collateral can be provided or, alternatively, are supplied only at interest rates that are higher than those charged to more established borrowers. Both of these rationing mechanisms, whether by price or quantity, result in a flow of lending to poor entrepreneurs that is below the socially optimal level, in the sense that profitable loans are not made to finance profitable projects, which are therefore not implemented.

20. The market failure that lies at the origin of this inefficiency is either the informational asymmetry between lenders and borrowers or the inability to enforce contracts in certain markets. But a key implication of these types of credit market imperfection is that the larger the number of people in poverty—or at least, excluded from these markets—the farther the economy is from its output potential. And given a mean income that is not too low relative to the lending threshold, it can be shown that

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7 As a corollary, Kremer and Chen (2002) show that any effort to reduce the unit cost of helping the children of the poor to reach high educational attainment has the same consequences. Hence a whole range of handles can contribute to the goal, namely improvements in nutrition and childcare and public finance incentives to reduce unit cost and improve the allocation efficiency of public funds for education.

8 Or Pareto frontier.
higher inequality means more poverty. Similar arguments can be made for failures in the insurance markets, which imply an undersupply of insurance contracts (to the rich or the poor, depending on the model), and thus a suboptimal amount of investment under uncertainty.

21. And there are other reasons. It has been suggested that excessive inequality might lead to political equilibria in which the chosen amount of efficiency-augmenting redistributions—such as investing in better public education—is inefficient or suboptimal. The basic mechanism at work is that if political power is somehow related to wealth, the dominant coalition in society might be a group that prefers to underfund basic public services, so as to pay less tax, even though total output might have been higher if those productive public services had been produced, so that the poorer beneficiaries would have been able to compensate the richer taxpayers for the extra tax paid.

*Inequality Weakens the Benefits of Growth for the Poor*

22. A third set of arguments is that, quite apart from whether inequality leads to inefficiencies and thus may lower the rate of economic growth, there is plenty of evidence that it weakens the link between growth—at whatever rate—and poverty reduction. This link is the poverty reduction elasticity of growth, and Ravallion (1997) has shown that this elasticity is negatively related to inequality in a cross-country sample. These arguments deserve attention in Brazil, where the combination of sluggish growth and high inequality has prevented poverty from declining in a substantive way during the last two decades (see Barros, Henriques, and Mendonça 2000).

23. Not surprisingly, despite its level of development, the excessive level of income inequality prevalent in Brazil induces excessive poverty. According to Barros (2002) in income per capita (PPP) Brazil occupies the 82\(^{nd}\) percentile among all countries in the *World Development Indicators* (2002) in the 1990’s, but at the same time is in the 40\(^{th}\) percentile when those same countries are ranked in decreasing level of poverty according to the $1 a day poverty line. As Figure 1 shows, the excess inequality of Brazil relative to other world countries explains nearly 18 percentage point of its “excessive” poverty.

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9 See Galor and Zeira (1993) and Banerjee and Newman (1993) for two different formal treatments of this idea, and Banerjee and others (2001) for empirical evidence in the context of sugar cooperatives in India.

10 Suboptimal allocations in the sense that Kaldor and Lorenz-dominant equilibria. That is, allocations with both higher overall output and less inequality, (i.e.) exist. See, for example Bénabou (2000) and Ferreira (2001).

11 This is an application of the well-known Kaldor-criterion.
24. Moving on from narrowly defined economic efficiency in terms of output, growth, and poverty reduction, there is also substantial international evidence that high levels of inequality are associated—perhaps causally—to a number of other costs for the functioning of the economy and of the society. Chief among these is the evidence that crime and violence levels are statistically significantly associated with inequality (see Fajnzylber, Lederman and Loayza (1998)). In Brazil, recent research has estimated that the direct cost of violent crime in terms of life and health may be very large (see Lisboa and Viegas 2000). And these costs are those that are easiest to quantify. In addition, there are likely to be significant indirect costs in terms of resources devoted to (public and private) security provision. More tentatively, some have hypothesized that the dilution of the perception of common ownership or stake in society, which is associated with very high inequality, may contribute to some erosion of society-wide social capital, such as respect for rules, trust in institutions or in strangers, and so on.

*Rural Land Inequality and Low Agricultural Productivity Induced by Missing Markets for Credit and Insurance*

25. Brazil is a highly urbanized country where the gap between the living conditions in rural and urban areas is persistent, and where overall agricultural productivity remains low and heterogeneous across landholdings. Small farms generate the largest share of employment in rural areas with the smallest share of land. Only one-third of the total area available has been used by family-based farms, which employ 77 percent of the rural labor force. Most of the agricultural land is in large landholdings, with a much lower performance per hectare—less than half the average land productivity of family-based farms—despite having similar levels of investment per hectare.

26. Brazilian land distribution is found to be not only unequal but inefficient. Based on an equilibrium model of the land market—where land has an alternative
nonagricultural use as collateral, induced by imperfections in the markets for credit or insurance—Assunção (2002) finds three necessary conditions for inefficiency of land distribution hold in Brazil. Namely: (1) heterogeneity in access to agricultural technologies across landholding types; (2) nonagricultural benefits derived from land property; and (3) malfunctioning land rental market. These conditions generate the inverse relationship between farm size and productivity, observed by Barros and others (2000). As a result, both inequity and inefficiency in land use will tend to persist as long as the structural determinants to demand land for nonagricultural use remain.

* * *

27. In summary this chapter has shown why excessive inequality is undesirable for economic development. Current inequality will be perceived as a lack of social justice and unfair if differences between individuals are weakly dependant on effort and strongly dependent upon unequal distribution of avoidable circumstances. Besides, excessive inequality not only restrain economic growth by inducing inefficient levels on investment among the poor but also as it provokes political outcomes with excessive taxation and compensatory expenditures. Finally, excessive inequality also obstructs poverty reduction efforts as it hampers the benefits of growth that the poor derive from it. Consequently, the following chapter seeks to understand what lies behind Brazil’s inequality.

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12 He draws on the ideas of Stiglitz e Weiss (1981); Feldstein (1980); Brandão e Rezende (1992), among others.
2. WHY IS BRAZIL SUCH AN UNEQUAL SOCIETY?

28. This chapter tries to understand why Brazil is such an unequal society. Is inequality being driven mainly by disparities in the distribution of human assets or in their relative prices? Does nonlabor income and entitlements matter for income inequality today? Does public policy and social programs help to reduce inequality today and tomorrow? In view of those questions this chapter explores two main issues: identifying the main inequalities in Brazil and appraising alternative explanation of Brazil's excessive inequality. Moreover, it provides separate assessments of the incidence of labor market forces vis a vis social policy programs.

29. The first section describes the key dimensions of income inequality in Brazil and provides an considers the accuracy of those measures when compared to more precise consumption aggregates. The second section explores the cause of inequality in relation to asset distribution –human and non-human-, asset price differentials and entitlements to estate transfers –mainly retirement pensions. In this case, the method used to appraise the alternative explanations of Brazil excess inequality is to use cross country comparison with the United Sates and Mexico. Finally, the third section studies the impact of public policy on equity. In particular, measuring to what extent transfer –in kind and monetary- implicit in the public provision of social services are able to produce a more equitable distribution of welfare among Brazilians.

2.1 Inequality in Brazil

High and Persistent Inequality

30. With a Gini coefficient of 0.59 in the distribution of household incomes per capita, Brazil has one of the highest levels of income inequality in the world. Although the Gini coefficient can, by construction, range from zero (for perfect equality) to one (for distributions in which all income is in the hands of a single unit), in practice, Gini indexes for income distributions range from just under 0.3 to just over 0.6. Figure 2 presents the cumulative distribution of Gini coefficients for all 108 countries for which the World Bank judges it has reasonably reliable data, with each country given a weight proportional to its population. Comparability problems abound across the surveys on which these data are based. In the case of Brazil, some upward inequality bias is due to incomplete measures of income -in particular in poor rural areas. Hence, holding any other inequality determinants the same, Brazil will appear more unequal when compared to other countries where rural household data is not collected –only urban- and/or income

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1 Values for distributions of consumption expenditures are generally lower, because some of the dispersion arising from transitory income components is smoothed away through the consumption behaviour of households.

14 Some of these are further discussed below.
inequality estimates are unavailable and, use—typically lower—consumption inequality measures. Finally, Brazil has arguably an extensive set of programs that provide basic services to the poor, with the result that income inequality overestimates inequality of a broader welfare measure. Based on these concerns, one can question, Brazil’s relative position—99th percentile of the world’s population. However, the fact remains that Brazil has extremely high inequality.

Figure 2. Brazil’s Inequality in the International Context, 1999

![Graph showing Brazil's inequality in the international context](image)

Note: Includes 108 countries. Data from 1993–1999.

31. Brazil has the fifth largest population (170 million) and the eighth largest gross national product (GNP) in the world. Brazil is not only unequal in terms of income and social indicators, but also unequal given its level of economic activity. Figure 3 compares the inequality and GDP per capita of Brazil’s with other low and middle-income countries. Although most unequal societies (e.g., Sierra Leone, Nicaragua, the Central African Republic, Paraguay, and Guatemala) tend to be countries with a lower level of development, Brazil’s level of inequality appears more prominent when compared with other middle-income countries (figure 3), and indicates that such levels of inequality become even more prominent when Brazil’s size is taken into account.

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15 World Development Indicators, 2001 (figures correspond to 1999).
32. In addition, these high levels of inequality have been remarkably stable in Brazil. As Figure 4 (Bourguignon, Ferreira and Leite (2002a)) indicates, during the entire period for which we have reasonably reliable survey information (1977–99), the Gini coefficient has never strayed outside the 0.58–0.62 range, except for an unexplained upward blip to 0.64 in 1989. This striking persistence is part of what the authors refer to as “the unacceptable stability” of Brazil’s inequality.

33. Despite the persistence of inequality in the long term, there is some evidence that the mid- to late 1990s represented a period of inequality reduction in Brazil. Figure 5 shows that during that period income growth was nearly homogeneous across income groups except for the top and lowest deciles of the population. For the first decile, income grew 25 percent below average from 1981 to 1992, but it was 10 percent above average from 1993 to 1999. Something similar happened for the second decile but in a smaller order of magnitude. Somewhat symmetrically, income growth for the top decile was 5 percent above average in the first period and 5 percent below during the second.
Figure 4 Time Series of Inequality in Brazil

Figure 5 Income Growth by Decile, Brazil 1981–99

34. Income disparities in Brazil are also significant across regions and between metropolitan areas, nonmetropolitan urban centers, and rural areas, as well. Figure 6 shows the mean household per capita income by region and by area (rural and urban) for Brazil in 1999. Across areas, there is a uniform trend across the country: Metropolitan areas have substantially higher income per capita than nonmetropolitan areas, and between nonmetropolitan areas, urban areas have higher income than rural ones. As figure 6 shows, this trend is particularly acute in the center-west region, where the difference between the income per capita in the metropolitan area (Brasília) and the income in other urban areas is of some R$250. The difference between metropolitan and rural areas in terms of income is R$353. Across regions, income disparities are
considerable as well, and they increase for all the areas as one moves from the northeast region toward the southeast. An early study pointed out the large extent of these regional and urban-rural inequalities and also how the nominal differences are reduced when price differences are accounted for (Thomas 1987). A recent study of Ceará found how much difference the accounting for educational transfers makes to the poverty estimates and their trends (World Bank 2003).

Figure 6 Mean Household per Capita Income by Region and Area (Rural-Urban)—Brazil, 1999

Source: PNAD 1999.

35. The reduction in mean-income differences across regions appears to be significant for poverty, than the reduction of regional differences on income inequality. In fact simulations of poverty changes associated to elimination of regional differences in inequality and income reveal strong discrepancies (Table 1). While eliminating regional mean income differences can reduce poverty and extreme poverty by 4 and 3 percentage points, eliminating regional differences of inequality has negligible effects on poverty. Moreover standardizing by mean income in the Sudeste region reduces poverty and extreme poverty by 12 and 7 percentage points, while doing the same for inequality

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16 For example, the Sudeste regions is not only richer but a bit less unequal than the other Brazilian regions —Gini coefficient equal to 0.58 versus 0.60 for the whole country.
reduces poverty by 5 and 1 percentage points, respectively. Even though these unconditional comparisons are true, they should be interpreted as a puzzle of determinants of regional differences in mean income and to as a simple policy prescription. For instance, are regional differences mostly associated to lack of human capital or infrastructure, or to labor markets segmentation or discrimination. The answer to this question would provide a framework for the most appropriate Federal policies to address regional inequality.

Table 1: Effect of regional differences on poverty: Brazil

<table>
<thead>
<tr>
<th>Simulations</th>
<th>Poverty rate</th>
<th>Extreme Poverty rate</th>
<th>Mean income</th>
<th>Income inequality</th>
</tr>
</thead>
<tbody>
<tr>
<td>Observed</td>
<td>35</td>
<td>15</td>
<td>298</td>
<td>0.60</td>
</tr>
<tr>
<td>Elimination of regional differences of</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mean income</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>standardizing for the mean</td>
<td>31</td>
<td>12</td>
<td>298</td>
<td>0.58</td>
</tr>
<tr>
<td>standardizing for the Sudeste</td>
<td>23</td>
<td>8</td>
<td>376</td>
<td>0.58</td>
</tr>
<tr>
<td>Income Inequality</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>standardizing for the mean</td>
<td>35</td>
<td>14</td>
<td>298</td>
<td>0.60</td>
</tr>
<tr>
<td>standardizing for the Sudeste</td>
<td>30</td>
<td>11</td>
<td>298</td>
<td>0.58</td>
</tr>
</tbody>
</table>

Source: Barros (2002)

36. But the regional dimension is by no means the only one. However well-integrated within neighborhoods and households, living conditions still vary dramatically across Brazil’s racial groups. Mean earnings for whites are R$585 per month, whereas they are only R$279 per month for blacks. Those of Asian origin earn R$1,155 per month. In terms of household income per capita, some 12 percent of all inequality in Brazil is accounted for by inequality between races. The comparable figure for the United States is 2.4 percent. And incomes do not differ that much by color. Educational attainment is also widely unequal; by one measure, completed years of schooling, blacks fare only two-thirds as well as whites: 4.43 years for the former compared with 6.54 years for the latter.

37. Gender inequalities are also important. Although the gender gap in wages has been diminishing steadily over time, unconditional differences are still very large. Figure 7 shows that mean earnings for women in 1999 were 29 percent lower than those of men. Remarkably, this differential actually rises to 34 percent after controlling for age, education, and hours worked, reflecting the fact that women in younger cohorts are on average more educated than men. And women are at a disadvantage not only in the labor market: Female representation at top decision making positions is still tiny in both the private and public sectors.

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15 Comparison based on main occupation.
18 Where inequality is measured by the Theil-L or by the Theil-T indices. See Bourguignon, Ferreira and Menendez (2002).
19 Source: Lam (1999).
20 Note, however, that, as elsewhere in the world, the actual work experience of each worker is not observed. Because women are, on average, likely to have been out of the labor force for longer periods than men (as a result of childbirth and childcare duties), these differences are likely to reflect errors in the measurement of actual experience and therefore cannot be ascribed only to discrimination.
There are also some newer, and perhaps less common, gender inequalities that also present policy challenges. Figure 8 shows the educational attainment by gender for Brazilian cohorts born since 1920. The educational gender gap against women that existed since 1920 in Brazil was systematically reduced until it disappeared in the 1950s, when girls started to study longer than boys. Today, the gender gap has broadened, again reaching the 1920s magnitude, but this time it is against men. Male-specific difficulties in the learning process are as serious a problem as female-specific ones, and they may be related to increasing exposure to violence among young men in many of the country’s metropolitan regions.
Accuracy of Measurement: Caution Is Needed when Interpreting Brazilian Data

39. Before the data analysis proceeds, it should be recognized that current knowledge about the distribution of living standards—however and wherever measured—is intrinsically imprecise. At its best, it is based on answers provided by a sample of households to interviewers. Measurement errors arise from the nature and design of the samples, from the ways questions are asked and understood, from the manner in which answers are recorded, and even during the process of transcoding replies from questionnaires onto electronic storage.

40. Most of the (abundant) existing work on poverty and inequality in Brazil has been based on the data sets of the Pesquisa Nacional por Amostra de Domicílios (PNAD) household survey, which is conducted annually by the Instituto Brasileiro de Geografia e Estatística (Brazilian Statistical Institute [IBGE]) and is representative of the whole country, except for rural areas in the northern region. Recently, however, as researchers learned more about the way in which respondents may misreport incomes depending on certain characteristics of the questionnaire, doubts have emerged about whether the information drawn from the PNAD was reliable, particularly as regarded incomes in rural areas, the informal sector, and capital incomes.21

41. The IBGE has responded quickly and aptly by radically redesigning the Pesquisa de Orçamentos Familiares (POF), which is currently in the field. This survey is planned to be nationally representative, and it will provide detailed income and consumption expenditure data from the same survey instrument, with that level of representativeness for the first time since the Estudo Nacional da Despesa Familiar (National Study of Family Expenses [ENDEF]) study of 1975. Although it is likely that future measurement and analysis of poverty and income distribution in Brazil will draw heavily on the new POF, in the meantime, it was still necessary to form a judgment on the reliability of the estimates, poverty profiles, and inequality decompositions based on a time series of a quarter-century of PNADs.

42. This was done for this report by relying on yet another IBGE survey, the Pesquisa de Padrões de Vida (PPV), fielded in 1996. The PPV contains detailed information on household consumption expenditures, as well as incomes. It has been used for national analysis less often, because of its incomplete geographic coverage and small sample size. However, recent developments in statistical techniques have allowed researchers to rely on common variables surveyed in both PPV and PNAD samples, and to estimate models that allow consumption estimates from the PPV to be imputed into the PNAD sample.22 Elbers, Lanjouw, and Leite (2002), whose work is included in volume II of this report, describe the methodology in detail and present results for Brazil as a whole, for its individual states, and for other spatial disaggregations.

43. Although their findings are rich in detail, two main results arise that are fundamental for the analysis in this report:

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21 See e.g. Ferreira, Lanjouw and Neri (2000).
22 See Elbers, Lanjouw and Lanjouw (2001) for the pioneering description of this methodology.
1. *Consumption-based poverty and inequality levels are much lower than those measured for income,* in accordance with the international evidence. Nevertheless, when compared with other countries that measure consumption inequality, Brazil is still very unequal.

2. *Qualitatively and in relative terms, however, income-based poverty and inequality profiles in the country are remarkably robust in terms of poverty ranking between regions of Brazil.* Figures 9 and 10 show that the rankings of states and regions by poverty incidence change little as we move from the original PNAD income distributions to those based on imputed income. The graphs for inequality, which are broadly similar, can be found in volume II of this report.

44. This suggests that although we should be careful about attaching excessive value to the absolute levels that have been reported in some previous work, it is reassuring to know that the main conclusions about the nature and incidence of poverty across regions, areas, occupations, and educational levels are generally robust. These “poverty profiles” are generally of greater importance in guiding policy decisions than the absolute value of specific poverty or inequality measures. Insofar as one guards against paying too much attention to specific levels, it would seem that the existing time series of PNAD data, and the excellent work that has been built on it, can still teach us a great deal about the patterns of distributional behavior in Brazil over the 1976–2000 period.

*Figure 9 Headcount Poverty Measures by Region for Different Data Series*

![Figure 9 Headcount Poverty Measures by Region for Different Data Series](image)


Notes: Poverty line of R$65.07 in 1996 São Paulo (see Ferreira, Lanjouw, and Neri [2000]). PNAD per capita income, PPV per capita consumption, and PNAD-imputed per capita consumption have been adjusted for spatial price variation (see Ferreira, Lanjouw, and Neri [2000]).
45. The distribution of imputed consumption constructed by Elbers, Lanjouw, and Leite (2002), is most valuable in providing guidance about the strengths and weaknesses of the PNAD data, and would also allow for detailed poverty mapping at a much greater level of disaggregation than the PPV and with less bias than the PNAD, but it is not intended for statistical analysis at the individual level. In the discussion that follows of the determinants of Brazilian inequality, we therefore rely on the urban-only PNAD income data.

2.2 The Causes of Inequality

46. Having established that Brazil is indeed among the world’s highest in terms of inequality, whether it is measured in terms of household incomes or consumption expenditures, and that the basic structure of inequality within the country known from previous studies is reasonably robust, we now turn to the main purpose of this section of the report, namely to investigate the causes of Brazil’s excess inequality. Why is it that Brazil lies so far along the top tail of the distribution of Gini coefficients in the world, as shown earlier in figure 2.

47. There are four main candidate explanations:

1. The underlying distributions of assets across the population might be more unequal than in other countries. Important assets are educational attainment, land, and capital.
2. Price differentials of these assets - notably education - might be steeper in Brazil than elsewhere. If the wage differences for each extra year of schooling in Brazil are much higher than in comparable countries, then more income inequality would be generated from the same underlying distribution of education.
3. It could be that Brazil’s excess inequality arises neither from unequal distributions of assets nor excessive wage differentials by skill, but from behavioral differences or differential patterns of use of these assets. Labor force participation, occupational choice, and fertility decisions could account for very substantial differences in the distribution of household per capita incomes.

4. The distribution of claims and entitlements to state transfers might be less progressive than in other countries. Particular interest should be paid to retirement pension programs.

48. The evidence presented below shows that all of those explanatory factors are present in the case of Brazil, albeit to different extents. This subsection is divided into four components. We look first at the evidence on the magnitude and importance of inequality in the distribution of assets—mostly years of education and land. We then turn to an international comparison of wage differentials by education and other features of the labor market. In particular, we provide a cross-country appraisal of alternative explanations of Brazil excessive urban inequality, both market and non-market determinants. Finally, we divide our discussion of the role of the state into evidence on the incidence of its expenditure and evidence on the incidence of its tax revenue-raising efforts.

Asset Distributions: Brazil in an International Perspective

49. The distribution of school attainment among the population of working age is more unequally distributed than in the United States, Mexico or Colombia, to name a few. One explanatory factor behind wage differentials in Brazil is, therefore, simply the skill gap in the Brazilian labor force. Compared with the United States, Brazil has a much wider gap of labor force skills. As figure 11 shows, in Brazil, 35 percent of the working-age population finished secondary education, but in the United States, this 94 percent finished secondary school—and in Mexico, 52 percent, and in Colombia, 41 percent. The gap is even larger, in relative terms, for the postsecondary level. In the United States, almost half of the working-age population has postsecondary education, but in Brazil, this number is below 10 percent—and in Mexico and Colombia, 14 and 13 percent, respectively.

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23 Since it is a cross-country comparison of urban income inequality, this report does not provide a measure of the impact of rural land distribution on income inequality.
Figure 11 School Attainment of the Working-Age Population: Brazil, Colombia, Mexico, and the United States, 1999

Source: Bourguignon, Ferreira, and Leite [2002a] and Velez and others [2002b].

50. Another asset that has historically been of the utmost importance, and remains crucial to the one-fifth of Brazil’s population who still dwell in rural areas, is agricultural land. Although this asset also is distributed very unequally in Brazil, the country is not as much of an international outlier in terms of the distribution of land as it is in terms of income. This can be seen from Table 2 below, which lists Gini coefficients for land distributions obtained for a sample of seventeen countries.

Table 2. Gini Coefficient for Land Distribution; Selected Countries

<table>
<thead>
<tr>
<th>Country</th>
<th>Year</th>
<th>Gini Coefficient</th>
</tr>
</thead>
<tbody>
<tr>
<td>Peru</td>
<td>1972</td>
<td>0.911</td>
</tr>
<tr>
<td>Venezuela</td>
<td>1971</td>
<td>0.910</td>
</tr>
<tr>
<td>Australia</td>
<td>1990</td>
<td>0.903</td>
</tr>
<tr>
<td>Spain</td>
<td>1989</td>
<td>0.858</td>
</tr>
<tr>
<td>Brazil</td>
<td>1995</td>
<td>0.856</td>
</tr>
<tr>
<td>Argentina</td>
<td>1988</td>
<td>0.850</td>
</tr>
<tr>
<td>Uruguay</td>
<td>1980</td>
<td>0.803</td>
</tr>
<tr>
<td>Paraguay</td>
<td>1991</td>
<td>0.784</td>
</tr>
<tr>
<td>Colombia</td>
<td>1990</td>
<td>0.774</td>
</tr>
<tr>
<td>Bolivia</td>
<td>1989</td>
<td>0.768</td>
</tr>
<tr>
<td>United States</td>
<td>1987</td>
<td>0.754</td>
</tr>
<tr>
<td>Italy</td>
<td>1990</td>
<td>0.739</td>
</tr>
<tr>
<td>Germany</td>
<td>1990</td>
<td>0.667</td>
</tr>
<tr>
<td>United Kingdom</td>
<td>1990</td>
<td>0.621</td>
</tr>
<tr>
<td>India</td>
<td>1985</td>
<td>0.592</td>
</tr>
<tr>
<td>Bangladesh</td>
<td>1977</td>
<td>0.419</td>
</tr>
<tr>
<td>Japan</td>
<td>1990</td>
<td>0.382</td>
</tr>
</tbody>
</table>

51. Table 2 above, drawn from Assunção (2002) reveals an enormous dispersion across land inequality measures, ranging from a Gini index of 0.38 in Japan to 0.91 in Peru. Brazil’s Gini of 0.86 is certainly at the high end of this distribution, alongside some other land-abundant countries like Argentina, Australia, and Venezuela, but also nations with very different patterns of agricultural ownership, such as Spain or Peru.

52. As in many other countries, Brazil’s distribution displays clear regional differences. At the risk of oversimplifying, one might distinguish a more unequal pattern of land ownership in the northeast of the country, as well as in the “newer” agricultural regions of the center-west and the north, whereas the south and the southeast show somewhat lower Gini indexes, at levels close to those of the national land distributions in the United States or Colombia. These regional patterns and their temporal evolution can be seen in figure 12, also drawn from Assunção (2002).

Figure 12 Inequality of Land Distribution by Region—Brazil, 1950–95

53. The overall picture that emerges, then, is one of a country with deep inequalities in the underlying distributions of the assets that determine how productive people are, such as human capital and land, which lead to correspondingly unequal distributions of primary income.

Wage differentials by Skills are a Also Part of the Picture

54. An unequal distribution in the endowments of land and education is, however, only part of the story. It turns out that the market wage differentials to additional schooling are also higher in Brazil than in a number of other countries, at least over part of the range of years of education. This means that an already unequal asset distribution is projected into an even more unequal distribution of market incomes. Returning to the country comparisons we made in the previous subsection, we find that the wage-skill premium in Brazil is also higher when compared with the United States and Mexico, but less than in Colombia. Figure 13 shows that, on average, individuals with postsecondary education earn 3.7 times the labor earnings of individuals with incomplete primary education. The Brazilian differential is 50 percent greater than the differential in the United States (2.5) and also well above that in Mexico (3.3). It is, however, slightly below that of Colombia (4.3). Differences are also pronounced when high school graduates are compared with individuals who have incomplete primary education. In this case, Brazil leads with 2.4, followed by Colombia (2.0), Mexico (1.9), and the United States (1.6).

Figure 13 Labor Earnings by Skill Level: Brazil Compared with the United States, Mexico, and Colombia

Source: Bourguignon, Ferreira, and Leite [2002a] and Velez and others [2002b].

55. Moreover, the dynamics of wage-skill premia during the 1990s have also been detrimental to income inequality. Blom and Vélez (2002) in Volume 2 show that if the marginal returns to tertiary education had remained at the 1988 level (i.e., 19 instead of
24 percent), the total reduction of wage inequality wage differentials by education would have been two more percentage points of the Gini. Moreover, if wage differentials by education would have fallen to US levels (13%), the additional reduction in wage inequality due to changes in these differentials would have been twice as large and would have reduced wage-inequality from 0.575 to 0.530. Similar simulations for changes in wage differentials by education at lower levels of schooling show that they have much smaller influence on wage-inequality.

56. These simulations reveal the potential of reduction in the skill premium to attain more equitable income distributions. That is, hypothetical increase in supply (or reduction in demand) for workers with postsecondary education that causes schooling wage differentials might bring important reductions in wage income inequality. This finding motivates inquiring about how far policymakers can influence the skill premium and thereby reduce wage inequality. Chapter 3, below, examines whether increasing skill premium in Brazil has been associated to insufficient supply or increasing demand or both.

Unequally Unequal: Segmentation and Discrimination

57. The labor market affects the distribution of incomes primarily through the projection of differences in levels of human capital, but not exclusively so. Although the generation and reproduction of Brazil’s inequality can be understood, in economic terms, through the continuing interplay of unequal distribution of assets, amplified by considerable price differentials to these assets (chief among them, education) the importance of historical, political, and cultural factors cannot be understated. The role of history is of obvious importance. The present distribution of land cannot be understood without reference to the history of colonization, just as present racial inequalities originate in slavery.24 To this day, segmentation and discrimination in the labor markets appear to play an important role in the persistence of inequality.

24 Although we do not see it as this report’s comparative advantage to further the analysis of this historical background, that does not mean that it is any less important.
Table 3. Labor Market and Schooling Contribution to Income Inequality in Brazil

<table>
<thead>
<tr>
<th>Sources of inequality</th>
<th>Inequality from changes in labor earnings</th>
<th>Inequality generated and revealed by labor market</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inequality in labor earnings</td>
<td>100</td>
<td>42</td>
</tr>
<tr>
<td>Inequality generated and revealed by labor market</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Generated by labor market</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Discrimination</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Racial discrimination</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Gender discrimination</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Segmentation</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Sectoral</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Regional</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Formal / informal sector</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Revealed by labor market</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Experience</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Schooling</td>
<td></td>
<td>63</td>
</tr>
<tr>
<td>Unidentifiable sources of labor earnings inequality</td>
<td>28</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td></td>
<td>52</td>
</tr>
</tbody>
</table>

Source: Barros [2002], PNAD

58. Table 3 drawn from Barros (2002), indicates the relative importance of segmentation and discrimination effects as compared, for instance, with the effect of projecting educational inequality into the labor income distribution. The role of spatial and formal or informal segmentation, in particular, clearly cannot be ignored. And the evidence of discrimination, although quantitatively less important, is sufficiently substantial to warrant attention as well. Table 3 shows that 72 percent of total inequality in Brazil is either revealed or generated by the labor market 52 percent reveals the inequality of education among employed, 6 percent the variability in experience and the rest is generated by the labor market as segmentation -35 percent- and discrimination -6 percent-. Therefore, although more than half of the labor earning differentials are coming from differences of schooling, the impact of segmentation and discrimination has the same order of magnitude. Notably, regional differences still account for almost half of inequality generated by labor market segmentation. Which confirms that the substantial income differentials across regions –mentioned above- are not only based upon human capital endowments but also on some other determinants of productivity such as infrastructure and the quality of government services –among others.
59. Our international comparisons across countries were not restricted only to market determinants of incomes. Brazilian public transfers—chiefly retirement pensions—are also highly regressive when compared with those of the United States. Figure 14 shows clearly that in Brazil the incidence of public pensions increases monotonically with income for the top two quintiles relative to the rest of the population. On the contrary, in the United States, retirement pensions are progressive: Incidence decreases monotonically with income as meant. The share of pensions on total income is the highest for the poorest 10 percent, but for the top 5 percent, the share is approximately one-third. As a result, the share of pensions to the top 20 percent in Brazil is more than twice the corresponding share in the United States—61 and 26 percent, respectively. Moreover, a similar comparison for the poorest 40 percent shows a disproportionate 1:3 ratio—9 and 29 percent, respectively. Notwithstanding, despite having only half the number of pensioners that the United States has, Brazil devotes a much higher share of resources to cover that population.\footnote{Pension transfers represent 12 percent of household income in Brazil, and only 7.2 percent in the United States.}

60. The relative importance of alternative explanations of excess inequality was measured by cross-country simulations. To investigate the importance of each of these candidate explanations (or indeed, whether there are others) Bourguignon, Ferreira, and Leite (2002a) compared the structure of Brazil's urban income distribution with those of two other large countries in the Western Hemisphere, the United States and Mexico. The importance of wage differentials by skill was investigated by estimating wage regressions.
in both countries and then simulating the distribution that would result if, say, Brazil had the U.S. or Mexican structure of wage differentials. The importance of assets was investigated with respect to two broad asset types: education and entitlements to public transfers. For education, discrete educational choice models were estimated to allow for the conditional distribution of educational attainment on other characteristics. Once these were estimated for both countries, the authors simulated the income distribution that would result if, say, Brazil had the U.S. or Mexican educational choice parameters.

61. For public transfers, we simply replaced the observed distribution of transfers in Brazil by the mean normalized distribution of transfers in, say, the United States, preserving the rank by the distribution of earned incomes of the receiving households. The importance of preferences, regarding labor supply, occupational choice, and fertility, was investigated by estimating discrete choice models for these decisions and replacing the observed Brazilian parameters with those estimated for other countries. Details of the data used for each country, and of the methodology, are available from Bourguignon, Ferreira, and Leite (2002a) in volume 2 of this report.

62. In essence, it appears that three factors account for most of Brazil’s extreme levels of inequality relative to the United States: unequally distributed endowments of human capital, substantial wage differentials by education, and, last but not least, the highly regressive nature of public transfers, chiefly retirement pensions. Table 4 summarizes the results from Bourguignon, Ferreira, and Leite (2002a).

<table>
<thead>
<tr>
<th>Distribution</th>
<th>Gini coefficient</th>
<th>% of total difference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil, observed</td>
<td>0.569</td>
<td></td>
</tr>
<tr>
<td>Brazil, with U.S. wage differentials</td>
<td>0.530</td>
<td>32</td>
</tr>
<tr>
<td>Brazil, with wage differentials and educational endowments</td>
<td>0.495</td>
<td>28</td>
</tr>
<tr>
<td>Brazil, with wage differentials educational endowments, and labor incomes</td>
<td>0.448</td>
<td>39</td>
</tr>
<tr>
<td>United States, observed</td>
<td>0.445</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 4. Accounting for Brazil’s Excess Inequality Relative to the United States: Microsimulations

- The Gini coefficient is for the distribution of household per capita incomes, in the urban areas only.
- Educational endowments working directly as well as through effects on fertility and participation decisions. See Bourguignon, Ferreira, and Leite (2002a) for details and disaggregated results, as well as for other measures of inequality, poverty measures, and simulations for male and female earnings distributions.


63. Take the underlying distribution of education first. If Brazil’s conditional distribution of education were replaced by those of Mexico or the United States and nothing else changed, overall income inequality would be substantially reduced. In the U.S. comparison, this effect alone accounts for some six Gini points, 28 percent of the

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26 More will be said about land distributions later. The distribution of nonland physical and financial assets is essentially unknown in Brazil, and estimates for other countries are also regarded as very unreliable.
12.5-point difference. This effect becomes even more pronounced when one allows for the additional indirect effects of a higher educational endowment on fertility and participation behaviors. The combination of U.S. educational, fertility, and participation behaviors contributes a nearly one more Gini point decline.

64. But it is not only an unequal distribution of years of schooling that explains Brazil’s high levels of inequality: The fact that wage differentials by skill are steeper in Brazil than in the two comparator countries constitutes another source of excess inequality. In particular, adopting the U.S. structure of wages would subtract some further four points of the Gini—32 percent of the total difference between Brazil and the United States. In summary, education contributes to Brazil’s excess inequality through both quantities and prices.

65. In table 4, we report first the effects of adopting the U.S. structure of wage differentials by schooling. It lowers the Gini from 0.57 to 0.53. Importing educational-choice behaviour—and its consequences on fertility and participation as well as wage differentials by schooling—lowers the Gini further to approximately 0.50. The remaining five points of the Gini (39 percent) turn out to be accounted for by imposing on Brazil the distribution of U.S. nonlabor incomes, principally that of pensions. Once this effect is added, we move to the result of the complete simulation, in the penultimate row of table 4. The Gini of this simulated distribution, at 0.448, is remarkably close to the observed U.S. Gini in 1999, attesting to the power of the decomposition in accounting for the actual sources of differences between the U.S. and Brazilian distributions.

66. The large role of nonlabor incomes, identified in the last step of the decomposition, led us to investigate in greater detail the effects of each of the various sources of unearned income. Although the PNAD measures for capital income are more suspect than those for other sources, the decompositions by source reported by Bourguignon, Ferreira, and Leite (2002a) leave little room for doubt that the bulk of the effect is caused by importing into Brazil the incidence of U.S. retirement pensions. In other words, replacing the regressive nature of Brazilian pensions by the incidence pattern observed in the United States accounts for almost 5 full points of the 12.5-point difference observed between the Gini coefficients of both countries.

67. Moreover, retirement pensions are associated with strong inequities along the life cycle—specifically against younger cohorts-. Figure 15 shows how the probability of being poor is “U” shaped and peaks at both extremes of the life cycle. While for the older population beyond 75 years of age, the probability of being poor when income excludes pension transfers is above 65%, for the cohorts between 25 and 55 years old is between 30 and 40 percent, and for the 0 to 15 years old is close to 55 percent. However, once state retirement pensions (“aposentadorias”) are included they are quite effective in reducing poverty for older individuals. In fact, poverty falls below 20 percent for all individuals aged 65 or older. Obviously, one should consider that other programs directed towards the young population are progressive, hence poverty reducing as well. However,

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27 The decomposition into endowment and wage-differentials effects is not perfectly additive in nature, so that the combination of these two effects accounts for 7.5, rather than 10.0, points of the Gini.
the fact that all programs directed to the young population (up to 17 years old) are one fourth of the total pension subsidies, while their relative population size is three times larger than the population 55 years and older shows clearly the magnitude of the inter-generational inequities of public policy.\textsuperscript{28}

\textbf{Figure 15: Poverty along the life cycle: before and after pension transfers}

![Poverty along the life cycle: before and after pension transfers](image)


Note: Poverty defined by Brazilian domestic poverty line.

68. The striking importance of the regressive incidence of pensions as a determinant of Brazil's excess inequality relative to a country such as the United States shows that, in this case, the potential equalizing role of the Brazilian state is scarce. Approximately two-thirds of Brazil's federal expenditures, which amount to some 20 percent of gross domestic product (GDP), are grouped under the general heading of social expenditures. Retirement pensions, the incidence of which we have just considered, account for nearly half of that.

2.3 Public Policy and Equity

\textit{Public Social Expenditure and Targeting: Excluding Pensions, Incidence is Progressive}

69. The previous section has shown to what extent three different determinants of income generation—that affect both labor and non-labor components—explain excess inequality in Brazil, relative to two large economies like the US and Mexico. Despite this fact, the actual distribution of welfare across households also depends upon other very important determinants: in particular public social policy programs. In other words, household's welfare not only depends upon monetary income per capita as such but on in-kind transfers implicit in the public provision of social services, as well. For instance,

\textsuperscript{28} Assuming universal coverage of both population the disproportion of subsidies per capita would be close to 1 to 12 in against the younger population.
government programs in education, health care, urban investment in water, sewerage, housing and *favela* upgrading, nutrition, childcare and labor programs—including unemployment subsidies-. Most of these services are in-kind transfers of assets and therefore—together with other subsidies in cash—affect welfare distribution in the short run to the extent that they substitute household expenses in social services or constitute a net increase in consumption. On the other hand, public social policy also affects income distribution in the long run to the extent that it shapes the distribution of human and non-human assets of the next generation of workers, a major determinant of tomorrow's income distribution. However, this section we concentrate only on the distributional impact in the short run and, for that purpose, examine briefly the incidence patterns of the key publicly provided programs across the Brazilian distribution of household income.

70. **Public Social Expenditure** (PSE)—including pensions—in Brazil reduces inequality. In 1997, public social expenditure represented approximately 17 percent of income per capita for the average Brazilian, and its distribution is moderately regressive (figure 16 and table 5). That is to say, PSE benefits the poor less than proportionally. The share of the top quintile of the distribution in public social expenditure is 38 percent, but the share of the two poorest quintiles is just 25 percent. Nevertheless, because PSE is distributed less regressively than household income, inequality of income after PSE subsidies is well below the inequality of income alone. The Gini coefficient of household income plus subsidies is almost six percentage points—5.6—smaller than the Gini coefficient of household income.

71. Although the share of the poorest income groups in total PSE subsidies is relatively low, the poor's welfare is quite sensitive to social policy targeting. In fact the incidence ratios for the first and second quintiles of the distribution are 101 and 44 percent. Which means that the average household in the first quintile receives as much from income as it does from government subsidies in cash or in kind. Obviously, that proportions tends to fall for higher quintiles where poverty is less severe, but its magnitude remains is still sizeable—32% for the average household of the third quintile. Moreover, this numbers tend to underestimate the incidence of subsidies on the typical beneficiary of social programs, because many other households in the same income group are excluded from access to those services. Consequently, any policy changes that modify targeting and access to social services will induce significant gains or losses in the welfare of the poor.

72. Fortunately, despite the regressive targeting of pensions described in the previous section, the distribution of the other half of these public social expenditures is egalitarian, with clearly progressive impact on the distribution of household welfare. Table 5 shows how non-pensions PSE subsidies are distributed in almost equal proportions among income quintiles. Non-pensions PSE subsidies have an unambiguous progressive impact on income inequality, reducing the Gini coefficient by 3.76 percentage points. It is also

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[^29]: Therefore its Concentration Coefficient or quasi-Gini is nearly zero—0.06—and, much smaller that in the case of pension—0.39-.
worth noting that in spite of their smaller expenditure share relative to pensions—44 vs. 56 percent—they explain 67 percent of the redistributive effect of PSE as a whole.

Figure 16 Concentration Curves of Income per Capita and Public Social Expenditure—Brazil, 1997

Table 5. Summary of Results of Analysis of Distributional Incidence of Public Social Expenditure—Northeast and Southeast Brazil, 1997

<table>
<thead>
<tr>
<th>Subsidy Size</th>
<th>Targeting</th>
<th>Share by quintile (%)</th>
<th>Concentr. Coefficient</th>
<th>Gini² Income Elasticity</th>
<th>Change in Gini</th>
<th>%</th>
<th>RRE⁴</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
<td>Q4</td>
<td>Q5</td>
<td></td>
</tr>
<tr>
<td>PSE categories</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pensions</td>
<td>68</td>
<td>56%</td>
<td>7%</td>
<td>8%</td>
<td>15%</td>
<td>19%</td>
<td>51%</td>
</tr>
<tr>
<td>Non-pensions PSE</td>
<td>54</td>
<td>44%</td>
<td>18%</td>
<td>20%</td>
<td>20%</td>
<td>21%</td>
<td>22%</td>
</tr>
<tr>
<td>Non pensions PSE without higher education</td>
<td>49</td>
<td>40%</td>
<td>19%</td>
<td>22%</td>
<td>22%</td>
<td>21%</td>
<td>16%</td>
</tr>
<tr>
<td>Total</td>
<td>121</td>
<td>100%</td>
<td>12%</td>
<td>13%</td>
<td>17%</td>
<td>20%</td>
<td>38%</td>
</tr>
</tbody>
</table>

Incidence by quintile ⁶

<table>
<thead>
<tr>
<th>Subsidy Size</th>
<th>Incidence by quintile (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Non-pensions PSE</td>
<td>66% 29% 16% 10% 3%</td>
</tr>
<tr>
<td>Non-pensions PSE without higher education</td>
<td>66% 29% 16% 9% 2%</td>
</tr>
<tr>
<td>Total</td>
<td>101% 44% 32% 20% 10%</td>
</tr>
</tbody>
</table>

Notes: (1) Concentration Coefficient for subsidy x, CCx = 2COV(x, F(qquintile of income)) / mean(x). (2) Gini Income Elasticity for subsidy x, GIE x = CCx / Gini (income). (3) Change in Gini (x): Sector x's contribution to redistribution as change in Gini Coefficient. (4) RRE(x): Relative Redistributive Effectiveness of sector x, reductive power per unit of expenditure. RRE(x) is equal to the ratio of the sector x's share in contribution to Gini change to the sector x's share in total expenditure. Note that RRE(x) = [GIE(x) - 1]/[GIE (total subsidies)-1]. (5) Incidence by quintile subsidy as a share of income. Source: "Attacking Brazil's Poverty" (World Bank, 2000). Authors' calculations.

73. Across social sectors, incidence is far from homogeneous. The impact of PSE subsidies by sector on inequality depends on both their targeting (the share of the poor) and their magnitude. After controlling by their size, the ones that have the largest redistribution impact are those where the share of the poor tends to be the largest—namely, kindergarten, children's services, maternal nutrition, basic education, childcare
“crèche”, and school lunches (see figure 17). For that reason, their contribution to income redistribution is above their share in expenditure: twice the average or more for all the sectors mentioned (see table A2.2). Just the opposite happens with tertiary education, pensions, sewerage connections, and housing (carta de crédito). In those sectors, the share of the poor tends to be less than proportional and correspondingly their redistribution impact is below their share on expenditure. The remaining sectors—universal public health care, unemployment insurance, water connection, urban public transport, and secondary education—are moderately progressive and their corresponding redistribution impact is just above their expenditure share.

74. One way to understand the implications of heterogeneous targeting across social sectors for income distribution is to ask the following hypothetical question: What is the redistributive potential of changing benefits per household across programs, maintaining total expenses constant? For example by expanding subsidies for best targeted programs and reducing them for the worst shows that redistributive potential is higher for kindergarten, favela upgrading, maternal nutrition and basic education programs. Marginal incidence calculations based on Table A2.2 show that in order to obtain an effect on inequality equivalent to an additional subsidy of R$100 per individual in kindergarten, the required subsidy rise in other sectors should be much similar for Favela Upgrading (R$106), Maternal Nutrition (Milk Programs) and basic education (R$108). But much larger for pensions ($422), Housing (Carta de crédito) ($332), and nearly two fold in Unemployment Insurance, Water Connection and Urban Public transport. Therefore, considering the fact that pensions and tertiary education represent 56 and 4.5 percent of total PSE, the reduction excessive benefits in pensions and tertiary education, in order to apply it in almost any other sector—with better targeting—would bring produce reductions in welfare inequality.

30 Those same sectors have the most negative concentration coefficients, given the negative covariance of their subsidies with income per capita. They are −0.33 for kindergarten and child assistance services, −0.28 for favela upgrading, −0.26 for maternal nutrition programs, and −0.19 for primary education.
31 RRE parameter tends to be below unity (0.6 for pensions, 0.8 for housing, 0.6 for sewerage, and—worst of all—0.2 for tertiary education. It is negative for tertiary education because its distribution is more regressive than the distribution of income.
32 RRE parameters have values from 1.1 to 1.5. The two highest values, 1.5 and 1.4, correspond to two key social insurance programs: health care and unemployment insurance.
Despite Progressive Social Expenditure, Access to Education Remains Quite Regressive

Due to internal efficiency problems, considerable differentials in access to education persist across both income groups and regions. The recent World Bank report on secondary education in Brazil (Rodriguez and Herran [2000]) showed that in 1996, out of 100 18-year-olds only 66 completed fourth grade, 43 completed eighth grade, and 25 finished secondary education. Nevertheless, these numbers show clear improvements relative to 1981, when the corresponding completion rates were 43, 31, and 18 percent. See table 2.1 in Rodriguez and Herran (2000).
percentage of students in grades much lower than they should be, given their age. For instance, high school graduates remain in school 14 years on average, and eighth grade survivors remain in school 10.3 years. These deficiencies affect mostly the children of the poor.

76. Educational inequities are significantly correlated to income and region differences. Table 6 shows the difficulties that children from low income households experience going through the basic education system. The household per capita income of 10 to 15 years old children out of school is approximately 40% of the level corresponding to full time students. Moreover, those children who are entirely devoted to study, have on average 4.1 years of schooling, while those who do not—but work—have barely 2.9 years. It is also worth mentioning the strong correlation between the parents' educational attainment and the children's school attendance. On average, most educated parents of full time students have 3.2 years of schooling more than parents of children who are not studying at all. Regional inequities are also quite significant, while only 6.0 percent of children between 10 and 15 years old exclusively attends school in the poor states in the North, 43.5 percent of children are exclusively studying in the more developed states of the Southeast. The next chapter shows to what extent conditional cash transfers might raise school enrolment of poor children.35

| Table 6: School attendance and household characteristics (10-15 years old) |
|----------------------------------|-----------------|-----------------|-----------------|
| Population share                 | Not Studying    | Working and Studying | Studying | Total |
| Household per capita income      | 6.1%            | 16.8%            | 77.1%     | 100%  |
| Household per capita income      | 80.9            | 104.5            | 202.0     | 178.3 |
| Years of schooling               | 2.9             | 3.9              | 4.1       | 4.0   |
| Years of schooling of the most educated parent | 3.2 | 4.0 | 6.4 | 5.8 |
| Region                           |                 |                 |           |
| North                            | 6.1%            | 5.6%            | 6.0%      | 5.9%  |
| Northeast                        | 40.4%           | 43.6%           | 29.9%     | 33.2% |
| Southeast                        | 32.8%           | 26.1%           | 43.5%     | 39.9% |
| South                            | 14.1%           | 15.9%           | 13.7%     | 14.1% |
| Center-West                      | 6.0%            | 6.7%            | 6.9%      | 6.9%  |


Regressive Tax Incidence: Regressive Indirect Taxation Dominates Progressive Direct Taxation

77. Public policy also affects household income through taxation and similarly to the case of social expenditures, taxation does not play a neutral role on income distribution. The magnitude of taxation on households income is not only considerable, but the incidence of direct and direct taxation operate in opposite directions. This subsection explores the evolution of total tax burden and decomposes the incidence by key components.

35 An ex-ante evaluation of Bolsa Scola transfers. For detailed explanations see Chapter 3, volume 2. Bourguignon, Ferreira and Leite (2002b)
78. Tax burden on the economy increased during the 1990s by nearly 3.5 percent of GDP, and more than 1.5 percent of the increase occurred via the creation or modification of indirect taxes. Currently, indirect taxation revenue is approximately three times as large as direct taxation and enforces very heterogeneous tax rates across goods and services. The main motivation behind this trend was increasing public revenues to correct public sector imbalance, especially at the federal level—mostly by the creation of new taxes, preferably those that could generate revenues with the lowest administrative costs. Hence efficiency and equity concerns were not the main concern of public administrators (e.g., the financial transaction tax). Additional difficulties in the design of efficient and equitable taxes come from the fact that some Brazilian states are in the middle of a “fiscal war” to attract investors and stimulate job creation.

79. Total taxation has a regressive effect on income distribution, despite direct taxation being mildly progressive. The burden of income taxation (96 percent) is mostly concentrated on households that belong to the richest 20 percent in Brazil and is greater than their share of income (between 60 and 70 percent). However, relative to the share of income, the burden of direct taxation falls more than proportionally on poor households: Although the poorest 40 percent pay 16 percent of total indirect taxes, their share of income is well below 10 percent. For this reason the Gini coefficient of after tax is not very different from pre-tax income —0.7 percentage points of the Gini-. The end product of a reduction of 1 percentage point due to direct taxation plus the increase of 1.6 percentage points due to indirect taxation

Table 7. Redistributive Impact of Direct and Indirect Taxation by Components: Brazil, Metropolitan Areas, 1999

<table>
<thead>
<tr>
<th>Percentage of GDP</th>
<th>Share</th>
<th>Taxing</th>
<th>Targeting</th>
<th>Redistributive Effect Delta</th>
<th>Relative Redistributive Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Indirect Taxation</td>
<td>22.0</td>
<td>70%</td>
<td>0.417</td>
<td>50% 15.5%</td>
<td>1.6% 3.5</td>
</tr>
<tr>
<td>ICMS Goods and Services</td>
<td>14.3</td>
<td>45%</td>
<td>0.424</td>
<td>49% 16.7%</td>
<td>1.0% 3.4</td>
</tr>
<tr>
<td>PIS</td>
<td>3.4</td>
<td>11%</td>
<td>0.402</td>
<td>49% 16.3%</td>
<td>0.3% 3.8</td>
</tr>
<tr>
<td>IPI</td>
<td>4.4</td>
<td>14%</td>
<td>0.406</td>
<td>50% 15.8%</td>
<td>0.4% 3.8</td>
</tr>
<tr>
<td>Direct Taxation</td>
<td>9.5</td>
<td>30%</td>
<td>0.735</td>
<td>95% 0.2%</td>
<td>-1.0% -4.8</td>
</tr>
<tr>
<td>Income tax</td>
<td>6.8</td>
<td>22%</td>
<td>0.853</td>
<td>67% 7.0%</td>
<td>-0.9% -6.0</td>
</tr>
<tr>
<td>Urban Real State tax</td>
<td>1.6</td>
<td>5%</td>
<td>0.608</td>
<td>80% 2.1%</td>
<td>0.0% -0.7</td>
</tr>
<tr>
<td>State private vehicle tax</td>
<td>1.1</td>
<td>3%</td>
<td>0.735</td>
<td>89% 1.6%</td>
<td>-0.1% -3.4</td>
</tr>
<tr>
<td>Total</td>
<td>31.6</td>
<td>100%</td>
<td>0.798</td>
<td>62% 12%</td>
<td>0.7% 1</td>
</tr>
</tbody>
</table>

Total redistributive after re-ranking by after-tax income 0.7%.

a. Relative redistributive efficiency is equal to the ratio of the redistributive effect of each tax relative to its share of aggregate tax revenue. Positive is regressive and negative is progressive.

b. Imposto sobre Circulação de Mercadorias e Serviços: state value added tax (VAT), tax on goods and services.

c. Contribuição para o Programa de Integração Social: contributions to social funds.

d. Imposto sobre Produtos Industrializados: tax on industrial products


* * *
This chapter has shown that Brazil’s excessive income inequality is associated with both market and nonmarket forces, which sometimes operate in opposite directions. The main findings can be summarized in two groups. First, when Brazil is compared to the United States and México, excessive inequality is explained by three factors: insufficient and unequally distributed education endowments and excessive wage-skill premia, that contribute in similar proportions to excess inequality relative to the United States—and jointly explain 60 percent of the difference. But also by the regressivity of retirement pension transfers contributes in the largest proportion to raise inequality—40 percent of the difference.

Second, overall public policy instruments have a progressive impact on income inequality, but some of those instruments have a detrimental effect. In fact, In addition to the regressive factors identified by cross country comparisons, the situation is worsened by the regressive impact of indirect taxation –1.6 percentage points of the Gini, which is nearly half of the impact of importing to Brazil the United States human asset distribution. Fortunately, considerable compensatory and progressive effects follow from direct taxation and social public expenditure excluding pensions. These are moderate in the case of direct taxation –1 percentage point of the Gini- and clearly progressive and substantial for public social expenditure –minus 3.8 Gini points-. The magnitude of the latter is similar to the human asset distribution effect in the US-Brazil comparison. Finally there is a notable contrast between pensions and non-pensions PSE in relation to equity, while the former constitute 56 percent of PSE they only account for half of the redistributive impact obtained with a smaller amount of resources devoted to non-pensions PSE —which includes education, health, nutrition programs and others.
3. WHAT CAN AND SHOULD PUBLIC POLICY DO ABOUT INEQUALITY IN BRAZIL?

82. The arguments presented in the last section do not establish scientifically that Brazil suffers from too much inequality, because this will always ultimately remain a value judgment. However, they do suggest that excessively high inequality can have substantial costs for a country, be it in terms of social justice and economic and political efficiency, or erosion of social capital. And as the second chapter established, Brazil does suffer from very high inequality—of both outcomes and opportunities—overall, across its regions, between men and women, and across its racial groups.

83. This still would not imply that government policies should be used to try and reduce this inequality. The benefits from so doing would have to be weighed against the costs. However, in the context of a government that already spends very large sums seeking to achieve “social objectives”, it would appear that there is scope for reforming and redirecting its existing programs so as to actually achieve some reduction in inequality. In this section, we consider some key policy instruments the government has been using, as well as possible effective reforms that the preceding analysis might point to. Throughout, we take the view that the only sensible way to reduce inequality is to seek to improve the lot of the poor—today and tomorrow. And, in addition to improving the effectiveness of public social expenditure, this objective might include making the tax burden more equitable, without raising the efficiency costs that price distortions induce on the Brazilian economy. In other words, good inequality reduction is inextricable from poverty reduction.

84. Our diagnosis was basically that Brazil’s egregious levels of inequality arise from persistent inequalities in assets, notably education, land, and access to public transfers and services. This was compounded by price differentials for some of these assets, in particular wage differentials by education. We do not, however, advocate an income policy aimed at forcing the price of skills to deviate from its equilibrium schedule. Neither do we advise attempts to forcibly alter the pattern of technological change so as to reduce the demand for skills or increase the demand for unskilled work.

85. Separately from changes in supply, this leaves only one plausible tool to address wage differentials by skill: reductions in the state-driven indirect costs of employing unskilled workers. The “Brazil Jobs Report” (World Bank 2002c) has shown that binding minimum wages and mandated benefit legislation price out low-skilled workers of formal sector jobs, which in turn creates significant inequities of access to formal safety-net mechanisms. Consequently, increasing flexibility of labor contracts would help to boost safety-net access for poor households. Other costs arise from the existence of a number of fiscal wedges associated with high payroll taxes and social security obligations, including
the severance payment system known as *Fundo de Garantia do Tempo de Serviço* (FGTS).

3.1 Human Assets and Land: Endowments and Prices

*Despite Rapid Expansion of Education in the Last Decade, Education Attainment Remains Stubbornly Low.*

86. The fundamental way in which economies achieve a reduction in the skilled-to-unskilled wage ratio is by raising the skilled-to-unskilled balance in the supply of workers. This is most convenient, because it can basically be achieved through an educational expansion, which also contributes to a reduction in the inequality of human capital and adds to the aggregate stock of this important asset. The expansion of education—understood as both more years in school for all, and better schools in which to spend those years—is unambiguously good because it (a) is desirable in human terms quite apart from other economic consequences, (b) is likely to lead to faster and “better” growth, (c) is ultimately likely to reduce the underlying inequality of human capital endowments and thereby is also likely to reduce the wage differentials by skills, and, finally, (d) could save the economy from converging to even more unequal distribution of income in the long term—as Kremer and Chen 2002 explain.

87. Nevertheless, one facts bear highlighting in the face of such unusual certainty in recommending a policy. First, although Brazil has, over the last six to eight years, been engaged in a period of greater investment in education, this has simply not been long enough to bring the country’s aggregate educational stocks into line with other countries with similar levels of GDP per capita. Let us consider both the good news and the bad as they relate to the long-term dynamics of educational attainment in Brazil.

88. Long-term improvements in educational attainment show that successive cohorts have achieved ever higher average schooling, with less internal inequality. Figure 19 shows average school attainment for successive Brazilian cohorts from 1908 to 1992, and each successive cohort attains a final educational level superior to that of its predecessors. Cohorts born from 1908 to 1928 (who where attending school as 12-year-olds from 1920 to 1940, as displayed in the graph in the cohort year + 12 axis) displayed a rather small improvement in school attainment over the period—approximately one year of schooling in two decades. Clear improvement was visible for cohorts born between 1938 and 1958 (see figure 19, 1950–70 in the cohort year + 12 scale), with 2.5 additional years of school attainment in two decades. The following decade showed very little progress. Finally, cohorts born after 1973 (who were attending school as 12-year-olds after 1985) saw an acceleration in the pace of growth of school attainment up to the 1990s—nearly two additional years of school attainment in the last 15 calendar years. Symmetrically, the inequality of the distribution of education showed a monotonously decreasing trend, with a higher slope in the earlier decades of the 20th century.
Figure 19 Average Schooling and Inequality of Educational Attainment by Cohort—Brazil, 1908–92

Note: CV stands for Coefficient of Variation

Nevertheless, a long term comparison with other Latin American countries shows how education in Brazil is still lagging behind. Figure 20 compares average education in Brazil with that in a set of Latin American countries by cohorts older than age 25. The reader should be aware of the limitations of this comparison, as it excludes the cohorts born after 1970, which have benefited the most from the mid and late 1990’s expansion in education in Brazil (see details below).

Four decades ago, Brazil (black line) was close to Ecuador (pink line) and better off than Mexico (coral line), but Brazilian cohorts born two decades later (in the 1970s) are on average 1.5 years of schooling behind Mexico and more than 2 years behind Ecuador. It is evident from figure 20 that Brazilian schooling lags relative to the selected countries and improvement is insufficient: Cohorts born in the 1970s in Brazil are behind those born in Colombia, Costa Rica, Ecuador, Mexico, Panama, Paraguay, and Venezuela. Moreover, whereas Brazilian cohorts born in the 1950s had on average 1.3 years of schooling more than their counterparts in Honduras (which has the lowest number of years of schooling among these countries), cohorts born in 1970 have the same schooling.
Moreover, when put side by side with South Africa, Brazil shows rather slow progress in education and a persistent educational gap against nonwhites. Figure 21 illustrates average years of schooling by age for white and nonwhite populations in Brazil and South Africa. According to figure 21, in South Africa, the educational gap against nonwhites has decreased substantially, though it is still significant. For individuals who are 50 years old, the educational gap is on average 5.8 years, but for individuals who are 25 years old, it has been reduced to 3.2 years. On the contrary, in Brazil, the gap remains unchanged: The educational gap against nonwhites for individuals who are 25 years old is on average 2.5 years, and it is similar for individuals who are 45 years old. Even in comparing schooling of white individuals in Brazil with white individuals in South Africa, Brazilians show slow progress. On average, 25-year-old white South Africans do better than their Brazilian peers by 3.2 years, and nonwhite South Africans of the same age outperform Brazilians by almost the same amount, 3.3 years.

However is worth to mention that at the cohort level Brazil performance has shown important improvements during the last decade. While the average education for cohorts born between 1972 and 1983 grew 1.8 percent per year, the average schooling of cohorts born between 1960 and 1970 grew at a much smaller pace -0.5 percent per year. The former cohorts corresponds approximately to the policy period between 1985 to the late nineties, when those cohorts of students became teenagers.
92. So, despite some progress in education of the younger cohorts in Brazil, the average level of education of the whole labor force (individuals aged 16-70) remains stubbornly low (and its inequality stubbornly high). Average schooling for the whole labor force lags approximately four years behind average schooling for the most recent cohorts. That is, although average schooling was approximately 9 years for the new cohorts entering the labor force in 1996, average schooling for the whole labor force remained close to 5.2 years. Analogously average inequality for the whole labor force was nearly four times larger the corresponding value for the youngest cohort.\footnote{See Velez, Soares and Medeiros (2002) in Volume 2.}

93. The relatively inelastic behavior of the educational attainment of the whole labor force relative to the much larger investment in education for younger cohorts -in recent years- is linked to strong demographic forces. Empirical evidence suggests that it takes more than two decades to see the benefits of increasing educational attainment for the younger cohorts reflected on the whole labor force.\footnote{Ibidem.} One way of looking at how contemporary educational policy affects the distribution of educational endowments of the whole labor force is to measure how many years it takes for the whole labor force to reach the level of educational attainment of one cohort—the stock-to-cohort time lag. Our observations show that the labor force of 1970s had the same number of years of education as the cohort born in 1940, which on average was finishing school in 1951 (entering school at seven years of age and attaining nearly four years of schooling). This resulted in a time lag of 19 years between 1951 and 1970. That time lag grew over time to a maximum of 25 years at the end of the century.\footnote{See figure 23 below for an illustration. The increase in the stock-to-cohort time lag is represented by the difference between the two segments BB' and AA'.} That is, the labor force of 1998 had 6.5 years of schooling, which was the same educational attainment obtained by the cohort born in 1960 (which on average was leaving school in 1973-74).
Further Aggressive Expansion of Education Should Happen before Demographic Opportunities Expire

94. What should be the impact of a substantial expansion of education on the stock-to-cohort time lag? It depends on the timing relative to the demographic transition. During the last quarter of the 20th century the gap between the cohort and the whole labor force grew more than the marginal increase in schooling. That is, while the gap became 6 years larger, mean school attainment increased by 2.5 years. And this phenomenon is linked with the demographic transition of Brazil: the decreasing demographic weight of the youngest cohort of the labor force—16-20 year olds— that started in the 1990s. Figure 22 shows the demographic share of the youngest cohorts on the whole labor force every 10 years from 1950 to 2000, and provides some forecast for the period 2010 to 2040. It is notable that for the labor force of 1970, the demographic share of the youngest cohorts peaks (19.6 percent) and then falls significantly for the labor force in 1990 and 2000 (close to 16 percent). Therefore, as younger and relatively more educated cohorts lose share within the labor force, the time gap between the youngest cohorts and the whole labor force grew in size. Thus, although the consequences of educational push of the 1990’s were positive they are becoming weaker, because as the demographic transition gets deeper the time lag becomes larger.

Figure 22: Diminishing share of 16-20 years olds on Working Age Population

![Graph showing diminishing share of 16-20 years olds on Working Age Population]

Source: Vélez, Soares and Medeiros (2002)

95. Then, what would have happened if the educational expansion of the 1990s had occurred one decade earlier, coinciding with the peak of demographic “replacement” and before the demographic transition had started. Simulations by Vélez, Soares, and Medeiros (2002) show that a temporary acceleration of improvements in education during a period of highest demographic growth permanently accelerates the extension of educational benefits from cohorts to the whole labor force. More specifically, this alternative policy path would have reduced the stock-to-cohort time lag from 25 to 20
years and cuts long-term inequalities of schooling and labor income. Figure 23 shows the alternative policy as a temporary deviations in the cohort path that anticipates by nearly one decade the improvements of the educational system enjoyed by younger cohorts during the 1990s (the light blue line versus the yellow line, between points A and B).\footnote{The cohorts born after the mid 1970s, which benefited the most of the 1990’s expansion of education.} For example, the simulated average education of the individual born in 1970 (who was leaving school in 1984) was nearly seven years of schooling, the same as the value observed for the person born in 1980 (who was leaving school by 1994). An alternative interpretation of the alternative cohort path would be as sustaining the rate of growth of educational attainment enjoyed by the previous cohorts born in the 1940 and 1950s, for the generations born in the 1960s and early 1970s.\footnote{A feasible rate of growth for Brazil -disregarding public finance constraints.} The consequence of the alternative policy for the school attainment of the whole labor force is a permanent gain or northwest shift (from \(A'B'\) to \(A''B''\) or from the blue line to the orange line ). The magnitude of the shift is considerable, 5 years to the left (represented by \(B'B''\) in figure 23) and 0.6 year upward for the year 2002, which means that the time gap falls from 25 to 20 years.\footnote{Note that the number of years represents by \(BB''\) is nearly four decades. And it is equal to the stock-to-cohort time lag plus the number of years of educational attainment of the 1984’s cohort, plus the number of years before entering first grade (approximately 7 years).}

\begin{figure}[h]
\centering
\includegraphics[width=\textwidth]{Figure23.png}
\caption{Schooling by Cohort and for the Whole Labor Force, Observed and Simulated—Brazil, 1940–2015}
\end{figure}


This result and the fact that the demographic transition has not yet been completed in Brazil, provides a rationale for raising educational investment in the first decade of the 21st century. Raising the level of schooling of the whole labor force by
improving education of younger cohorts. Taking advantage of the demographic opportunities that are fading away as the younger cohorts are gradually losing share in the population of working age.

97. Furthermore, the policy simulation shows that taking advantage of the window of opportunity of demographic transition to expand education also reduces long-term inequality of educational attainment and labor income. Figure 24 shows the observed and simulated paths of educational attainment for the whole labor force (mean and variance schedule) for Brazil in the period 1969–2013. By the year 2013, a relatively short period of time, the simulated variance of schooling becomes approximately 7 percent smaller than expected —without policy change. This is particularly significant if we take into account that the inequality of individual labor income is proportional to the variance of educational endowments of employed workers.

98. Indirect equalizing effects induced by this educational policy might be important as well. The equalizing impact of supply changes—expansion of schooling—will be amplified by the expected reduction in the skill premium (see wage-skill premium subsection below). Moreover, as Kremer Chen (2002) pointed out, the multiplier effect of this type of temporary educational policy interventions for social mobility and inequality reduction can be even larger if fertility is endogenous to skill-wage differentials. Consequently, long-term reductions in labor income inequality, induced by educational expansion contemporary to a pre-demographic-transition period, should be of a magnitude similar or larger than the reductions in the variance of educational attainment.

99. Nevertheless, in the short run the consequences of this type of policy could be the opposite of the long term equalizing effect. Somewhat unexpectedly, once the aggressive equalizing expansion of education (simulated) takes place, both the variance and the inequality of schooling overshoot temporarily. Figure 24 shows that in the range of mean educational attainment (5.2 to 7.4 years of schooling) in figure 24, the simulated schedule is above the observed one. And when mean educational attainment is close to 6.5 years of schooling, the increase in variance reaches a maximum —approximately 0.4—. But in the long run the variance is smaller. This short-run effect dies down once the initial burst of inequality between cohorts is erased by the diminishing weight of less educated generations.

43 Notice that this is a temporary deviation from the cohort path. Putting more effort earlier—in the 1970s and 1980s—implies doing less than was observed in the 1990s.

44 This is the case when the inequality of labor income is measured by \( \text{var} (\log y) \). Then \( \text{var} (\log y) = \beta^2 \text{var} (E) + \text{var} (\mu) \), where \( \beta \) is the return to education in a simplified linear Mincerian equation and \( \mu \) is the error term.

45 Decreasing inequality within cohorts is dominated by increasing inequality between cohorts.
100. In summary, the level of schooling of the labor force in Brazil is clearly insufficient, and efforts to make educational attainment higher and more equitable should be vigorously emphasized when demographic opportunities are available. Nevertheless, policymakers and policy observers should be aware that any expected impact of education on inequality of income at the household level must be evaluated with a long-term perspective. Delaying a vigorous educational push beyond demographic opportunities would have a significant permanent cost in terms of extending the benefits of current educational policy to the whole population and catching up with the rest of the world.

Improvement of Educational Attainment Requires Simultaneous Policy Programs Applied at Multiple Levels: Households, Schools, and Subnational Governments

101. The recent World Bank and Inter American Development Bank (2000) report on education in Brazil shows that to improve the equity of educational attainment, policy efforts must be applied in multiple fronts. Programs should attend to three types of stakeholders:

1. within-school programs to reduce chronic repetition by offering alternative options to fulfill the graduation requirements, such as *Classes de Aceleração* and *Escolas Nas Férias* (summer school), academic credit systems, internal reorganization to facilitate transition to middle and upper secondary school, accreditation exams (*supletivo*) for the terminal grades, alternative delivery options (*telesalas noturnas*), and so forth;
2. alternative supply programs that expand school availability for the poor by offering alternative delivery options in rural areas—such as distance learning and extending FUNDEF, the subnational public finance incentives to promote efficient expansion of basic education in the poorer states to secondary education; and
3. family incentive programs subsidizing school supplies for the poor in addition
to cash transfers for the poor, which are more affordable for rich states. This
battery of interventions would address the findings of the model of
educational attainment that shows clear links between school attendance and
within-school organization, school availability, and the opportunity cost of
studying (income sacrificed).46

102. Policies aimed at improving the efficacy of schools are fundamental to addressing
Brazil’s shortcomings in the supply of education. They should contribute to increasing
the value of attendance for those already in school by ensuring that time spent at school
actually translates into learning. As a number of studies indicate, the optimal policies for
bettering the quality of schools are not always gender- and race-blind. Albernaz, Ferreira,
and Franco (forthcoming) find that nonwhite children perform less well at standardized
tests in Brazil than whites do, even after controlling for their socioeconomic level and for
school characteristics. Another worrying finding is that although girls leave school later
than boys, on average, they appear to perform worse at standardized tests in most
subjects. The implication is that teacher training programs and curriculum development
cannot ignore racial and gender issues.

103. Another policy that contributes to the overall rate of human capital accumulation,
while simultaneously reducing inequalities in educational attainment, is the targeted
school attendance subsidy known as Bolsa Escola. Following the success of pilot
programs in Campinas and Brasilia in 1995, Bolsa Escola was expanded into a federal
program by a law passed in April 2001. The federal program is designed to transfer R$15
per child,57 aged 6 to 15 living in a household with per capita monthly income below
R$90, provided the child is enrolled in school and attends at least 85 percent of classes.
The federal program is too recent to have been evaluated after the fact, but an ex ante
simulation of its impact found encouraging results regarding impact on enrollment.
Bourguignon, Ferreira, and Leite (2002b) estimated that under its present design, the
program could induce between one-quarter and one-third of all 10- to 15-year-olds
currently out of school to enroll. Among poor households, the figure was between one-
third and one-half of all children not currently enrolled.

104. The study was less optimistic regarding the impact of Bolsa Escola on current
poverty and inequality. Because of the small size of the transfers, even if the program
were perfectly targeted and covered the whole country, it would only reduce the
incidence of poverty by one to two percentage points. This turned out to depend much
more on the size of the transfer (R$15 per child) than on the level of the means test
(R$90). Simulating the impact of a larger transfer program, Camargo and Ferreira (2001)
found that it would in principle be possible to reduce the incidence of poverty by some 20
percentage points of the population. However, this would require substantially expanding

46 The importance of the quality of a school’s physical infrastructure, as well as of its teachers, for standardized test
scores in Brazil was documented by Albernaz, Ferreira, and Franco (forthcoming). In a study that controls for
individual and family characteristics, the authors found a statistically significant link between physical conditions at
schools, the schooling level of teachers, staff evaluation of the financial constraints faced by the school, and student
performance at the Sistema de Avaliação do Ensino Básico (SAEB) 1999 exams.
57 Up to a ceiling of R$45.
the coverage of the program and having access to a budget of some 1.2 percent of GDP, net of administrative costs.

High Wage Differentials by Skill Create Additional Difficulties in Reducing Labor Income Inequality while Education Expands Significantly

105. It is important to note, however, that both theory and evidence suggest that the short- and medium-term impact of an educational expansion on income inequality would be small. It is frustrating to have to report that (a) most of Brazil's inequality is, in some way or other, ultimately related to the distribution of education, and, at the same time, (b) the one thing that one should therefore be certain to do—expand education—will not have a great impact in terms of reducing income inequality in the short run. Yet this appears to be the case.

106. Nonetheless there are multiple ways to explain this effect, the central mechanism is that individual labor income increase exponentially with educational attainment, so that the increasing dispersion of income is consistent with a higher mean of education, even when the dispersion of the latter is falling. Consider figure 25, where the distribution of education is uniform (or a truncated normal) between A and B. This maps onto an income distribution of some shape between E and F. Now consider an expansion in education, so that the underlying distribution of education has the same shape and dispersion as before, but now between C and D. This leads to a distribution of income with the same class of functional form as before, but a greater dispersion, between G and H.

107. Because the distribution of years of schooling behaves as if it were bounded above, this process is not infinite. Eventually, the evidence suggests that educational expansions lead to a compression of the distribution of years of schooling (as if C eventually grew faster than D, compressing the distribution at high levels). See Bourguignon, et. al. (2001a) for some evidence that this has already happened in the United States. Because of this, researchers sometimes postulate a Kuznets-like curve for the relationship between the mean of the distribution of education and income inequality.

Figure 25 Skill-Wage Differentials, Labor Income Inequality, and Educational Expansion

See Lam (1999), Barros et.al. (2002), and Vélez et al (2002).
108. Some empirical backing for this conjecture was recently provided by Ferreira and Leite (2002), who simulated different educational expansion policies for the state of Ceará, in the Brazilian Northeast (using PNAD microdata), under different scenarios for the evolution of wage differentials by skill. They found that even substantial increases in mean years of schooling had a relatively muted impact on measures of income inequality. The main result, however, was that the impact on poverty was much more substantial and was due as much to induced changes in fertility and labor force participation behavior (both responding largely to more education for women) as it was to greater endowments of human capital to sell in the labor market.

109. As it was drawn, figure 25 assumes a stable structure of wage differentials. The effect on inequality might be more favorable if the expansion in supply leads to a flatter wage-schooling schedule. It is unsafe to assume so, however, since this structure is also being affected by the demand for skills. The continuing tension between the supply side dynamics (e.g. more education tends to lead to a flatter earnings-education profile) and the demand dynamics (e.g. skill-biased technological progress tends to lead to a steeper curve) has long been known, and is usually referred to as Tinbergen's Race.49 Whether demand or supply is winning this race is an empirical issue.

Increasing Skill Premium: Excess Demand and Insufficient Supply

110. As we saw in the previous chapter, in explaining Brazilian inequality the joint effect of unequal endowments of education and excessive wage differentials by skill was even more fundamental than state transfers. Recent evidence suggests that the pattern of increasing wage skill premium in Brazil has responded to a shift of supply of workers towards middling ranges of the skill distribution (6-10 years), while the demand for skills at the upper reaches continued to outpace supply. This effect appears to have led to the intensification of a "kink" in the earnings-education profile, with wages for medium-skilled workers falling relative to those of both unskilled and highly skilled workers.

111. How has the educational policy affecting the composition of the labor force affected the skill-wage differential and overall wage inequality in Brazil? In the 90's a number of countries in the region have, to different extents, experienced rising wage differentials by schooling, especially with respect to tertiary education with regressive effects on wage and household income inequality.50 The most often cited factors behind alterations in skill-wage differentials are labor demand shifts toward higher skills via technological progress, trade liberalization, and sectoral shifts in the economy toward production of more skill-intensive goods. Apart from important demand factors, recent research has shown that supply factors—namely, changes in the educational composition of the labor force—are also an important factor behind the observed changes.

112. In Brazil, large shifts in the educational composition have taken place in the last two decades. The primary and secondary education system expanded substantially. Consequently, the workforce gained in schooling and the distribution of schooling

49 See Tinbergen, 1975.
50 These include the four largest countries Brazil, Mexico, Colombia and Argentina. For evidence see Blom, Verner, Holm-Nielsen (2001), Cragg and Epelbaum (1996), Santamaria (2000) and Galiani and Sanguinetti (2000).
became more equitable. The average years of schooling increased from 4.8 in 1981 to 6.9 in 1999. In the same period, the Gini coefficient of years of schooling dropped from 0.49 to 0.37. However, the tertiary education system lagged behind. This asymmetric push in education altered remuneration of education in the labor market in two ways. First, as illustrated in figure 26, it increased the relative supply of medium-skilled workers compared with workers without schooling, and consequently the wages of the latter experienced a relative increase. Second, as depicted in the same figure, the relative supply of highly skilled to medium-skilled workers is falling, and, as a result, the wages of the former increased noticeably throughout the last two decades. In 1999, a worker with tertiary education earned on average 270 percent of the wages of a worker with an upper secondary education.\footnote{These trends also hold when controlling for the changes in demographic composition of the labor force, such as female participation and age.}

![Figure 26 Relative Wages and Relative Net Supply of Tertiary to High School Graduates](image)

Source: PNAD. Calculations by Bloom and Vélez (2002)

113. Blom and Vélez (2002) estimate that around 60 percent of the increase of the skill premium to tertiary education can be attributed to supply shortage. The remaining 40 percent is due to a shift in labor demand toward highly skilled labor. The shift in labor demand exhibited no structural breaks during the last two decades and therefore appears not to have been caused by the trade liberalization process of the early 1990s.

114. What is the impact of those changes in wage differentials for highly skilled workers on labor income inequality? The overall impact of wage differential across skills is reducing labor income inequality by approximately 2 Gini percentage points, between 1976 and 1996. In fact, the reduction of wage differentials of medium skilled to completely unskilled workers dominates the opposite effect produced by the increase in wage premium for the highly skilled. However, if the returns to tertiary education had remained at the 1976 level (i.e. 19% instead of 23.9%) the total reduction of wage
inequality due to changes in wage differentials by skill would have been another two percentage points of the Gini. In order to maintain the wage differentials prevalent in 1976 the supply of workers with post-secondary education should have grown much faster—5 percentage points above the observed annual rate-. Finally, the equalizing effect of larger and more equally distributed endowments of education should be added.52

*Rural Land Use: Equity May Not Improve without Improving Efficiency*

115. As explained in the previous section, inefficiency and inequity of land use are both associated to missing markets of credit and insurance. For example, land prices remain too high, reflecting agricultural and nonagricultural benefits from land titles, in addition to uncovered property risks in land-leasing contracts. Therefore, because market imperfections have been producing an unequal distribution of land and relative inefficiency in the agricultural use of large landholdings, a land reform might not be fully effective. Even after reform, the structural mechanism creating demand for nonagricultural use of land would still subsist, and if the rental market does not work efficiently, there more large landholdings will be idle.53

116. In view of these results, Assunção (2002) analyzed the potential impact of four major federal government programs on land use and land inequality—the land tax (*Imposto Territorial Rural* [ITR]), the National Program of Land Reform, the Land Bank, and the National Program to Strengthen Family Farming (*Programa Nacional de Fortalecimento da Agricultura Familiar* [PRONAF]). First, although these programs constitute alternative ways to combat causes and effects of agricultural inefficiency, many issues of implementation still appear to compromise their effectiveness. Second, policy priorities should privilege and target reduction of inefficiencies in land use and the land rental market: (a) reformulate the ITR scheme to create disincentives for the nonagricultural use of land, (b) expand access to land via improvements in the land rental market, and (c) create incentives for cooperative formation, strengthening small farms, improving their competitiveness in the land market, and facilitating the implementation of group liability programs such as the Land Bank and microlending. The latter approaches are being pursued through a Bank-financed program “Credito Fundiario.”

**3.2 Public Social Expenditure and Taxation**

117. If an expansion of educational endowments is necessary for both long-term development and poverty reduction, but it is not sufficient for short- or medium-term reductions in inequality, the implications are twofold: (1) Such an educational reform must be pursued with determination. The exact manner in which it is pursued; the balance of spending across primary, secondary, and tertiary levels; the balance of finance between the private and public sectors; and the allocation of resources across educational inputs, so as to generate the most learning, all matter tremendously. (2) This is not enough to reduce inequality in the short and medium terms. What is required in the immediate

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52 Although simulated estimates are not available for Brazil, Vélez and others. (2002) have shown that this effect is substantial in the case of Colombia

53 Nevertheless, those incentives for non-agricultural land holdings have been partially weakened with the end of inflation and the phase out of many agricultural subsidies.
future are profound reforms to improve both the effectiveness and the incidence of public social spending.

Public Social Expenditure: Sufficient but Misallocated across Sectors

118. Brazil devotes more resources to pension provision than would appear to be warranted either by its GDP or its demographic structure. Figure 27 illustrates the sectoral disaggregation of public social expenditure (PSE) across a group of comparison countries. The pattern of social expenditure in Brazil is typical of that for the Mercado Común del Sur (Mercosur) countries; in that social security accounts for a very high proportion of total expenditure at 68 percent, a level exceeded only by Uruguay. Among other Latin American countries (outside Mercosur), the share of social security and welfare expenditure is closer to 30 percent (see, for example, Bolivia, Colombia, Costa Rica, and Panama in figure 27), and in the newly industrializing Far Eastern economies, it is as low as 20 percent. Conditional comparisons by Vélez and Foster (2000), controlling for both the level of development and the demographic structure (the proportion of the population older than 65 years), show that public pension overspending is about 35 to 78 percent.

Figure 27. PSE Composition Biased toward Social Security

Source: Vélez and Foster (1999)

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54 An important reason for this is probably the fact that many beneficiaries of Brazilian public pensions are younger than retirement age. Indeed, about 10 percent of the population receive state pensions, although fewer than 5 percent of the population is older than 65. As noted by the World Bank (2001), it is particularly striking that “in a country as young as Brazil with five times as many people below 20 years of age as there are above 60 years of age,” public expenditure on pensions should exceed that on education.
119. Within the federal educational budget, Brazil’s public social expenditure has been heavily skewed toward the tertiary tier. A similar comparison of the allocation of education spending between the basic level (primary and secondary) and the tertiary level (figure 28) shows that Brazil assigns a relatively low proportion of its social budget to basic education (primary and secondary levels)—55 percent—and a correspondingly high proportion—43 percent—to tertiary education. No other country in the study set allocates so much of its educational expenditure to the tertiary level. Given that access to tertiary education tends to be confined to the higher-income classes, these results provide some preliminary indication that education expenditure in Brazil may not be very equitably distributed.

55 The reader must be aware that this comparison is complicated by the fact that a considerable proportion of public expenditure in education is non-federal (subnational) and comparator countries do not display the same degree of decentralization.
120. According to international comparisons, targeting of expenditures in secondary and tertiary education toward the poor could certainly be improved to reach Latin America and the Caribbean (LAC) regional average levels. According to Vélez and Foster (2000), comparing Brazil with other developing countries shows that Brazil has the lowest ranking in the targeting of secondary education expenditure toward low-income groups (figure 29). Barely 5 percent of expenditure benefits the first income quintile, compared with more than 20 percent in countries such as Uruguay. As noted by the World Bank and the Inter-American Development Bank (2000) report, these figures reflect the extremely high levels of repetition in Brazilian primary education, which mean that many young people do not succeed in graduating from primary school until they have reached adulthood. Despite having high gross enrollment in primary education—significantly above the Latin American average of 110, secondary school gross enrollment in Brazil drops to a mere 45 percent, well below the regional average of 61 percent. The situation is even more extreme in tertiary education. Figure 30 illustrates the situation particularly clearly: 95 percent of expenditure on tertiary education in Brazil goes to benefit only the top two income quintiles. No other country comes close to this position. In the next worst case—Argentina—the proportion of expenditure devoted to the top two income quintiles falls to 70 percent, and in Jamaica, it is as low as 45 percent.

121. Despite rapid recent progress, Brazil’s performance on basic social indicators, such as infant mortality, average schooling, and youth literacy, is still not commensurate with its level of economic development. Potential explanations of this outcome could be insufficient resources, inappropriate intersectoral allocation of funds, poor targeting across income strata, and/or global inefficiency of social programs. Vélez and Foster (2000) show that underspending on PSE is certainly not the root of the problem. Rather, the most plausible explanations are misallocation of PSE across program areas: overspending on social security (specifically state pensions) and tertiary education at the expense of basic education and health; and deficiencies in the targeting of PSE in both pension and education across income deciles.

122. The high level of resources dedicated to social security is becoming an increasing constraint to what is left over for more progressive PSE, namely education and health. This situation is particularly worrisome if one takes into account the likelihood of it worsening over. A World Bank report on Brazil’s pensions (2001) found that the accounting deficit associated with Brazil’s state pension system is set to double in the next five years and triple in the next decade, leading to substantial expenditures to finance the associated public debt. This suggests that other, already underfunded areas of PSE, such as health and education, could come under increasing budgetary pressure over time.

*Public Pension Subsidies: RJU Contravenes Vertical and Horizontal Equity Principles*

123. The World Bank report on social security in Brazil (2000b) has already examined the fairness of the different pension programs and has indicated significant differences be
among them. Although programs such as the Old Age Program are well targeted to mostly rural and female-headed households, and the RGPS improved after the reform of 1997, the Federal Government Pensions program (RJU) remains the most problematic. According to the Bank’s report, the RJU absorbs excessive funds and violates basic principles of fairness of public expenditure, namely vertical, horizontal, and intergenerational equity. Vertical inequity is evident because benefits to federal employees are disproportionately concentrated in the high-income group: Half of the benefits go to the wealthiest 10 percent. Horizontal inequity follows from the fact that the average federal judiciary retiree receives 26 times more subsidy per beneficiary than the RGPS’s beneficiaries. Not surprisingly, RJU concentrates benefits in a rather small population—3 million versus 19 million retirees receiving benefits from the RGPS. (Intergenerational inequity was discussed in a previous subsection.)

124. Other undesirable properties of the RJU program are high opportunity cost public funds, higher efficiency cost of taxation, and induced labor market inefficiencies. Public funds demanded for inequitable and inefficient (excessive) pensions could be used for public investment in human assets—mainly education for the younger Brazilian population—with higher economic productivity. Additional taxes necessary to finance excessive pensions raise the tax burden on the Brazilian economy. Because federal employees are better paid and have a more stable source of income, the RJU pension does not play any compensatory role. Therefore, RJU pensions distort labor mobility between the public and the private sector.

125. According to the social security report (World Bank (2000b)), it seems imperative to implement reforms of the RJU. First, to reduce replacement rates by increasing time of contribution and the minimum retirement age, and modifying benefit indexation to maintain purchasing power—allowing more flexibility in wage negotiations with current employees. Second step would be to enlarge the reference period for pension calculation to abate excessive inequities of retirement pensions.

Social Sector Priorities: Education, Housing, and Health with Some Rural-Urban Discrepancies

126. Given the current levels of poverty and inequality in Brazil, too many households are unable to obtain basic social services through market means. Hence, for both equity and efficiency purposes, public provision of social services will inevitably continue to be significant in the decades to come. In the absence of market signals, the government policy should search for sector priority indicators to achieve an efficient intersectoral allocation of social expenditure—that is, expand services in sectors that generate the highest utility for the poor per unit of expenditure. As discussed above, incidence

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56 Previous comparisons showed a considerable disproportion of 1 to 12 in the benefits of the young—up to 17 years old—relative to those received by the population beyond 55—a total of 12 million people. However intergenerational inequities would look much worst if the comparison was to be made with beneficiaries of RJU—with only 3 million people.
analysis of social expenditure is useful in estimating potential impacts on inequality of changes in specific benefits per beneficiary.57

127. Obviously, sectors where welfare gains would be the greatest should be given priority to expand. The marginal welfare gains of expansion of services for a specific social sector depend particularly on two aspects: the share of the poor—who are presumed to be more deserving—among that population not currently served by the public or the private sector and the sector in which there is more urgency for additional supply—that is, where the relative value of marginal provision is higher. Vélez (1998) has shown that the government might use the consumption behavior of middle- and high-income households to assess the relative value of marginal provision in one of two sectors. Because private provision is more prevalent among the nonpoor, their intersectoral allocation of consumption of (or investment in) social services is closer to economic efficiency than the allocation of poor households, which are subject to liquidity constraints and credit market imperfections.58 To identify sectors where the welfare gain of marginal provision is the largest, the key criterion is the magnitude of the gap in probability of access between poor and middle-income households, which is a proxy for the income elasticity and the marginal utility of income.

128. Vélez and Paes de Barros (2002) establish sector priorities for a set of basic goods and social services, including housing and urban facilities, health services, prenatal care and nutrition, education (access, quality of education, quality inputs at school), and access to credit. Appendix table A.1 shows the priorities for rural and urban Brazil, according to the ranking-based on access gaps of the poor relative to middle-income households (the fourth quintile). According to that criterion, the top priorities for coverage expansion have the following characteristics:59 In basic education, the problem appears to be more of quality than quantity, namely a need for policies to reduce the attainment lag of students from low-income households who suffer an increasing differential lag of educational attainment (longer than two years).60 This is the case among the students aged 11 to 17. In access to education, priorities are kindergarten and childcare. Increasing access to postsecondary education also seems to be a new demand among the poorest 40 percent of urban households (but not for rural households). This means that although current targeting of tertiary education has been deficient in the past, the rising rate of high school completion among the poor is increasing the chances that marginal expansion could better benefit them.

57 See, for example, Lerman and Yitzhaki (1985) and Wodon and Yitzhaki (2002). Moreover, methods of marginal incidence, as discussed by Ravallion and Lanjouw (1998) and Wodon (2000a), provide positive, but not normative, instruments about the most likely outcome of marginal incidence. However, when public services are poorly targeted, governments have the option of attempting selective cost recovery to reduce the expenditure item bill and improve targeting at the same time.

58 For example, in their choices of access to secondary education and/or health, middle-income households incorporate relative price information and the expected wage skill premium of each of those investments in human capital. Hence, their behavior provides a consumption-efficiency signal for the intersectoral allocation of social services among lower-income groups. Obviously, if relative prices vary across regions, sector priority analysis should remain within a region, and that could imply different priorities between the urban and the rural sectors.

59 15 sectors and subsectors’ out of a total 59.

60 This is consistent with the findings of the paper on inequality of opportunity by Bourguignon, Ferreira, and Menendez (2002).
While education seems to be a higher priority in urban areas, housing and infrastructure improvements are the most urgent needs in rural areas, both inside and outside the dwellings. In urban areas, expansion of access to telephones is high priority, but in rural areas piped water, sewerage, and garbage collection also appear to be vital. Improvements within dwellings are especially important in terms of improving quality of floors and walls, as well as increasing the number of rooms to lessen the excessive number of households in which three or more people are crowded into a single room. Health services for the chronically ill, infant and child diarrhea treatment, and prenatal care programs also seem to be a higher priorities in rural areas. Finally, extending fringe benefits in terms of daily transportation subsidies to poor urban workers and offering more access to credit in the rural areas are other sectors where actions seem to be promising.

Not all of the sectors that are priorities for the poor are necessarily ideal for direct public provision. Certainly, in the case of childcare and improvement of sewerage and piped water access for the poor, public provision or subsidies would be appropriate. However, in cases such as telephone access or credit in rural areas, the key response seems to be regulatory changes to remove obstacles to enlarging the sphere of action of the private sector. In the case of tertiary education, the excessive unit cost of public universities makes such expansion financially difficult to achieve. Hence, a mixture of financial support to poor students (for example, credit programs with minimal subsidy) and gradually starting cost recovery among middle- and high-income students in public universities should be considered. Moreover, expanding secondary education is key requirement for reducing regressivity of tertiary, as is enlarges the share of high school graduates from poor households demanding post-secondary education.

**Indirect Tax Reform: Clear Opportunities for Welfare Improvements**

The impact of the actions of the state on people's lives comes not only from what it spends on, but also from how it chooses to raise the revenue it uses to finance those expenditures. Should Brazil reform indirect taxation? The considerable magnitude of the burden of Brazilian indirect taxation (three times that of direct taxation), its dominant regressive effect on income inequality, and the inefficiency generated by the heterogeneity of tax rates across goods and services justify the examination of the best options for indirect tax reform. If both equity and efficiency criteria guide tax reform, the best candidates for tax increase (reduction) are those goods and services that the poor tend to consume less (more) than is proportional and that show low (high) efficiency cost. In Brazil, tax incidence is also quite heterogeneous across goods and services. Table 8 lists the concentration coefficients for consumption expenses on all goods and shows that although taxes on tobacco and food are the most regressive (the lowest value on the concentration coefficient the higher expenditure shares for the poor), tax on vehicles is clearly progressive because expenditure shares for the rich are larger than for income, and consequently Gini income elasticity for vehicles is greater than unity.\(^{61}\) Taxes on public

\(^{61}\) Goods with a larger share of consumption for the rich correspond to larger concentration coefficients and Gini income elasticities.
transportation, leisure, and clothing are intermediate cases: moderately progressive because their Gini income elasticities are some of the largest, but still below unity.

At the same time, the heterogeneity of indirect tax rates in Brazil generates strong variability in efficiency costs or the so-called marginal efficiency cost of funds (MECF) across alternative revenue sources. Table 8 shows how tax rates go from a minimum of 4 percent on housing to 26 percent on clothing and 30 percent on leisure activities, up to 88 percent on tobacco. The MECF always exceeds unity because it measures the cost of taxing one dollar plus the welfare loss—or excess burden—induced by price distortions. Not surprisingly, the MECF tends to be larger for higher tax rates. However, excess burden of taxation tends to be larger for goods with larger price elasticities, as well. For example, the MECF is larger for vehicles than for food, despite the two types of goods being taxed at the same rate. The least inefficient taxes seem to be those on housing, vehicles, and transportation, and the most inefficient are on tobacco, personal expenses, and medications. One of the most inefficient taxes is the one on the group of Personal Expense goods. The 33 percent tax induces a R$1.5 for every R$1 of tax collection, hence the excess burden of taxation is of 50 cents.

Table 8. Equity and Efficiency of Indirect Taxation

<table>
<thead>
<tr>
<th></th>
<th>Equity</th>
<th></th>
<th>Efficiency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Concentration coefficient</td>
<td>Gini income elasticity</td>
<td>Tax rates</td>
</tr>
<tr>
<td>Vehicle</td>
<td>0.719</td>
<td>1.25</td>
<td>18%</td>
</tr>
<tr>
<td>Leisure</td>
<td>0.544</td>
<td>0.94</td>
<td>30%</td>
</tr>
<tr>
<td>Transportation</td>
<td>0.440</td>
<td>0.76</td>
<td>17%</td>
</tr>
<tr>
<td>Clothing</td>
<td>0.418</td>
<td>0.72</td>
<td>26%</td>
</tr>
<tr>
<td>Housing</td>
<td>0.400</td>
<td>0.69</td>
<td>4%</td>
</tr>
<tr>
<td>Pers. Expenses</td>
<td>0.367</td>
<td>0.63</td>
<td>33%</td>
</tr>
<tr>
<td>Medications</td>
<td>0.331</td>
<td>0.57</td>
<td>22%</td>
</tr>
<tr>
<td>Food</td>
<td>0.311</td>
<td>0.54</td>
<td>18%</td>
</tr>
<tr>
<td>Tobacco</td>
<td>0.186</td>
<td>0.32</td>
<td>88%</td>
</tr>
</tbody>
</table>

Notes: 1/ Indirect taxation includes: Imposto sobre Circulação de Mercadorias e Serviços (ICMS), Imposto sobre Produtos Industrializados (IPI) and Contribuição para o Programa do Integração Social (PIS). 2/ MECF: Marginal efficiency cost of funds.

Source: Pesquisa de Orçamentos Familiares, POF 1995/96. (Income-Expenditure Survey) IBGE, Authors’ calculations Vélez and others [2002a]
133. Figure 31 simultaneously displays the efficiency and equity criteria for each good and service: Efficiency increases toward the top of the vertical axis as the MECF falls, and equity increases to the right along the horizontal axis. The three curves in the graph represent different combinations of tax efficiency and tax equity that produce the same tax burden. Because tax burden increases toward the origin—more inefficiency and less equity—the red curve represents the combinations that produce the higher tax burden (10 percent above average), the green curve plots combinations that produce the average marginal tax burden, and the blue curve represents combinations that bring 10 percent additional tax burden. Goods below the red line (e.g., personal expenses, medications, and food) are associated with the highest tax burden and, consequently, are the candidates for tax reduction. On the contrary, goods above the blue line (housing and vehicles) produce the lowest tax burden and are the candidates for raising taxes.

134. Vélez and others (2002a) determined the set indirect tax changes that can improve Brazilians' welfare and found multiple opportunities for improvement. Out of a total of 21 potential pairs of tax reform, 6 benefit every income percentiles and 13 are welfare improvements to the Brazilian society as a whole relative to the status quo—provided some minimal and widely acceptable value judgements on equity, so called Dalton Improvements. Table 9 displays those reforms in terms of tax rise and tax reduction pairs: housing—personal expenses, transport—personal expenses, and so forth.

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62 The iso-welfare combinations are constructed for a Sen Welfare Index, equal to mean income times the difference between one and the Gini coefficient.

63 According to this criterion tobacco tax would be an obvious candidate for reduction because it satisfies both criteria, however there are other cost in terms of individual and public health that justify their very high level of taxation despite the regressive effects on income distribution.


65 Twenty-one is the total number of pair combinations of seven taxes: personal expenses, housing, transport, vehicles, medications, food, and clothing. 6 reforms are “First-Order Dominant” and 13 are Dalton Improvements (Second-Order Dominant) relative to the status quo.
Accordingly, taxes should be *increased* for housing, vehicles, and transport and *reduced* for personal expenses and food. For a total shift of 1 percent of total tax revenue, the magnitude of those changes varies across goods—increased by 0.6 percent for housing, 1.1 percent for vehicles, and 1.2 percent for transport—and tax should be reduced by 6.4 percent for personal expenses and 0.5 percent for food. The bigger increase is for transport (1.2 percent), and the bigger reduction is for personal expenses (6.4 percent).

### Table 9. Tax Rates Change and Welfare Effects for Alternative Pairs of Dalton-Improving Indirect Tax Reforms, Brazil

<table>
<thead>
<tr>
<th>Tax reform pair</th>
<th>Tax rate changes by goods and services</th>
<th>Efficiency gain</th>
<th>Winners</th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Food</td>
<td>Personal expenses</td>
<td>Medication</td>
<td>Housing</td>
<td>Clothing</td>
</tr>
<tr>
<td>Housing vs. personal expenses</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Transport vs. personal expenses</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Vehicle vs. personal expenses</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Housing vs. medications</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Housing vs. clothing</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Vehicle vs. medications</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Clothing vs. personal expenses</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Transport vs. food</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Medication vs. personal expenses</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Transport vs. medications</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
<tr>
<td>Medication vs. medications</td>
<td>-6.4%</td>
<td>0.6%</td>
<td>1.2%</td>
<td>-1.8%</td>
<td>-5.5%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Direction of tax change</th>
<th>D</th>
<th>D</th>
<th>D/U</th>
<th>U</th>
<th>U/D</th>
<th>U/D</th>
<th>U</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial conditions</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tax rate</td>
<td>18%</td>
<td>33%</td>
<td>22%</td>
<td>4%</td>
<td>26%</td>
<td>17%</td>
<td>20%</td>
</tr>
<tr>
<td>Tax revenue (RS billion)</td>
<td>6.3</td>
<td>0.9</td>
<td>1.2</td>
<td>1.2</td>
<td>2.7</td>
<td>2.7</td>
<td>3.5</td>
</tr>
</tbody>
</table>

Note: Maximum change in revenue of any indirect tax was limited to 1% of total tax revenue; 100% means the first-order stochastic dominance relative to the status quo. a. As percentage of the revenue shift (1% of total indirect tax revenue). D = Decrease in tax rate from the initial level. U = Increase in tax rate from the initial level. U/D = Increase or decrease in the tax rate. Source: Velez and others [2002a].

135. These ex-ante evaluation of pair-wise indirect tax reforms should not be interpreted as specific policy proposals. They are useful to show that in the current situation of Brazil there is room for a tax reform can improve efficiency and equity without reducing revenues. Indirect tax reforms can produce significant efficiency gains relative to the status quo. However, their rankings vary with the distribution of those gains. From the average Brazilian household’s point of view (table 9), the four largest gains happen with the tax reform involving housing and personal expenses (46 percent), followed closely by a second group of four reforms that includes vehicle-medications (35 percent), transport-personal expenses (32 percent), vehicle-personal expenses (29 percent), and housing-clothing (29 percent). However, from the point of view of the poorest 50 percent, priorities are different. Their maximum benefits (32 percent) are produced by the vehicle-personal expenses tax reform. Best tax reforms for the poor...

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66 Tax changes for medications and clothing are irrelevant because they increase for some reforms and decrease for others.

67 The efficiency gain as a percentage of the revenue shift, 1 percent.
should involve raising taxes on vehicles in exchange for tax reductions on personal expenses, medications, or clothing.

136. In summary, the considerable magnitude and the pro-poor distribution of the potential gains of possible indirect tax reforms suggests that Brazil should give serious consideration to this issue. Although different distributional perspectives make a difference in choosing the preferred goods to tax more, they do not make a difference in picking the preferred goods to tax less: Personal expenses are unambiguously the best candidate for tax reduction.

* * *

137. This section has shown that to reduce inequality, public policy must be active on four fronts. First, inequities must be reduced and the level of educational attainment must be raised—that is, it is necessary to take advantage of temporary demographic opportunities to push up the level of education of the whole Brazilian labor force and diminish the educational gap of Brazil relative to middle-income countries. Measures of the gap in access to basic services for the urban poor relative to the nonpoor showed two clear priorities in this area for education: reducing repetition and dropout rates in basic education among the poor and raising their access to childcare and preschool education. Second, the wage-skill premium of post-secondary education should be reduced by promoting its expansion. Expanding access to credit markets in order to stimulate demand for higher education should be preferred to more subsidies of education at public universities with excessive unit costs. Additional benefits in terms of social mobility—breaking persistent inequality—would follow from raising promotion rates of poor students to help them complete high school and reach postsecondary education. Third, reallocating taxes and monetary transfers would improve equity and reduce inefficiency—for example, this would involve reallocating public expenditure away from excessive and regressive transfers, such as RJU pensions. It is important to take advantage of the opportunity to implement a welfare improving reform of taxation that can reduce the inequity of indirect taxation without additional efficiency costs. Fourth, PSE should be reallocated to sectors where demand is more urgent and equitable, reducing inequality of secondary income. Finally, an integral approach to the reduction of rural land inequality is needed, taking into account the imbedded market inefficiencies that induce nonagricultural use of large landholdings.
4. CONCLUSIONS

138. This report has drawn on a range of preexisting published research, as well as on some original work, to document some features of inequality in Brazil, register some of its consequences for Brazilian society, and investigate policy alternatives to address it.

139. The distribution of income in Brazil is one of the world’s most unequal, and this has been remarkably persistent over time. The Gini coefficient of household per capita income has hovered just under 0.6 for the quarter-century or so for which comparable data have been available. Although problems with the measurement of incomes—particularly in rural areas—appear to have led to overestimates of the absolute levels of inequality in Brazil, the country remains very unequal in terms of its (imputed) distribution of household expenditures as well. Also, the spatial profile of the distribution appears to have been reasonably robust to the adjustments undertaken for this report.

140. Brazil’s inequality is not restricted to income. It extends to—or originates from—the distributions of educational attainment, agricultural land, health status, and political influence. Although we had less to say about the last two of these, we did provide some comparative evidence on the former two. In international terms, both for years of schooling and for agricultural land, Brazil is also characterized by high levels of inequality.

141. Along the income dimension, on which we focused, Brazil’s inequality has an important color and gender dimension. Brazilian blacks (those recorded in surveys as pretos or pardos) earn salaries that are on average about half of those earned by people of other races. Eighty percent of this difference appears to be due to differences in other personal characteristics. Most of this relates to an educational gap of more than two years of schooling between blacks and whites, which has shown little tendency to decline over time—in contrast, for instance, to South Africa. Indigenous populations, which are smaller in number, have not been surveyed to an extent that permits reliable statistical analysis, but the indications are that they fare no better than blacks. Asian descendents are generally considerably better off than people from other races, including the average white.

142. Brazilian women earn much less than men, even when their greater endowments of education are taken into account. However, evidence on job market experience in Brazil is not sufficiently detailed to enable us to ascertain whether that is due to differences in actual experience (presumably due to time taken off for childbirth and childcare) or due to discrimination. It is not possible to rule either of these out.
143. But discrimination and labor market segmentation, which are both inefficient and undesirable in themselves, are not the primary causes of Brazil’s egregious inequalities. These originate primarily in very unequal distributions of assets, broadly defined, and in the fact that price differentials—notably wage differentials by skill—are excessive. We investigated three types of assets in particular: agricultural land, years of schooling, and entitlements to public transfers. In the case of agricultural land, the evidence we found suggests that imbedded inefficiencies in the markets of credit and insurance explain the existence of a substantial sector of very large, low-productivity farms lowers the country’s overall aggregate land productivity.

144. In the case of education, this report found that levels of years of schooling were low in absolute terms, that dispersion was high, and that up to the early 1990’s the speed of improvement was slower than in most other Latin American countries. Despite the significant acceleration in the pace of improvements in educational attainment in the mid and late 1990’s, Brazil remains behind in the level of education of its citizens and workers in both global and in regional terms. As a result, income distribution simulations indicate that if Brazil’s distribution of education was replaced by that of other countries, this would contribute substantially to a closure of the inequality gap between Brazil and those countries. This was true, for instance, of countries as different as Mexico and the United States.

145. Finally, public transfers in Brazil, although less unequally distributed in that country than primary incomes, are still positively correlated with household income and do not contribute to a reduction in inequality. We found, for instance, that the greater inequality in the distribution of retirement pensions in Brazil than in the United States was responsible on its own for more than a third of the difference in the overall level of inequality between the two countries.

146. Brazil’s high levels of inequality do have costs in terms of poverty. Most obviously, the unequal nature of claims on income flows implies that a given rate of growth in GNP reduces poverty more slowly than it otherwise would. The cumulative effect of this is that Brazil has an incidence of extreme poverty (with respect to a daily per capita line of US$1) that is some 17 percentage points greater than the average country with the same level of GDP per capita. This corresponds to some 29 million people added to the extreme poor.

147. Other costs refer to problems of social justice. Many Brazilians would place value on equality of opportunities for the country’s children. We have found quantitative evidence that opportunities are not equal in this country. They differ with one’s place of birth, with the color of one’s skin, and first and foremost, with the educational attainment of one’s parents. This evidence merely confirms features that have long been described in a more qualitative manner. Finally, there is evidence—that rising crime rates are associated with the persistence of high levels of inequality, even when low income levels or the incidence of poverty are controlled for.

148. The implications of this for policy fall into three broad categories: land policies, education policies, and the design of public finances and expenditures more generally.
Chapter 3 showed that the extent of inequality in the size of landholdings in Brazil is suboptimally high, probably because macroeconomic instability in the past had created a portfolio motive for the demand of land which distorts the ownership pattern from the technically efficient. In consequence, a redistribution of land from very large to medium and small holdings could contribute to greater productivity, and hence to rural output and incomes. Policy priorities should include: (a) reduction of any remaining inefficiencies that lead to excessive demand for non-agricultural use of land, (b) efficient approaches to improve access to land for small farmers, (c) reduction of inefficiencies in land use and land rental markets using the land tax and other regulatory instruments, and (d) other measures to stimulate the activities of the subset of medium and small efficient farmers.

Education is probably the key area for public action in Brazil—and not only for reducing poverty and inequality. We do not think that Brazil needs to spend more on social policies, but we do think that it needs to spend more on education. In particular, it needs to redirect public resources toward preschool (public crèches and kindergartens) and primary schools, which are best targeted to the poor among public education sectors. An additional effort should also be undertaken to expand the supply and improve the quality of secondary schooling, which is the phase in which evasion is highest. In view of the finding that education inequality is quite persistent across generations (or “inherited”), particular attention should be given to establishing mechanisms that allocate more than proportional teaching resources to students coming from poor households, who tend to lag behind and drop out more often. Recent studies of the determinants of learning, based on standardized test scores across Brazil, are available to guide the government’s efforts in allocating resources to the right inputs.

Complementarily, smart transfer instruments such as Bolsa Escola are effective in reducing the opportunity costs of schooling for poor children and adolescents, and can thus play an important role in quality improvements on the supply side. There is some evidence, however, that the transfer amounts currently being planned under the Alvorada program are too low to achieve the desired poverty reduction impact.68

Pensions and tertiary education are the sectors of public spending that have the worst targeting record, and from which public funds should be redirected toward education and targeted conditional cash transfers.

Although changes to the pattern of public expenditure are probably the most crucial step the Brazilian government could take to reduce poverty and inequality, there is also evidence that equity and efficiency would both benefit from tax reforms. In particular, the predominantly regressive nature of the country’s indirect taxes could be vastly ameliorated by a number of specific reforms outlined in this report.

The short-term political costs of attempting a reallocation of public resources from well-off pensioners and public university students to poor farm and city dwellers

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68 The Alvorada’s program supports social sector and infrastructure initiatives to reduce poverty and to improve the quality of life in extremely poor municipalities with Human Development Index below 0.5. The program started in 2000 and is administered by the Secretariat of Social Assistance -linked to the Ministry of Welfare-. For a detailed description see http://www.presidencia.gov.br/projetoalvorada.
and their children are likely to be considerable. The long-term benefits, however, are likely to be faster growth, less poverty, less crime, and a fairer society.
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Background Papers (in volume II)


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Ferreira, F. H. G., P. Lanjouw, and M. Neri. 2002. “A Robust Poverty Profile for Brazil Using Multiple Data Sources.” Revista Brasileira de Economia. 44:1-


PNAD, “*Pesquisa Nacional por Amostra de Domicílios*”. Instituto Brasileiro de Geografia e Estatística, Brazil, IBGE.


### Table A.1: Social sector priorities according to access gaps of the poor relative to the fourth quintile. Brazil, Urban and Rural, 1997.

<table>
<thead>
<tr>
<th>Basic goods and services (15 highest ranking out of 59)</th>
<th>Relative access gap*</th>
<th>Ranking by access gap</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Brazil Urban</td>
<td>Rural</td>
</tr>
<tr>
<td><strong>Housing and Urban Facilities.</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Water</td>
<td>222%</td>
<td></td>
</tr>
<tr>
<td>Sewage</td>
<td>387%</td>
<td></td>
</tr>
<tr>
<td>Garbage collection</td>
<td>197%</td>
<td></td>
</tr>
<tr>
<td>Durable construction materials</td>
<td>111%</td>
<td></td>
</tr>
<tr>
<td>Room crowding /1</td>
<td>78%</td>
<td></td>
</tr>
<tr>
<td>Electricity</td>
<td>65%</td>
<td></td>
</tr>
<tr>
<td>Telephone</td>
<td>225%</td>
<td></td>
</tr>
<tr>
<td><strong>Health Service</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suffers chronic illness</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Periodical exams</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td><strong>Education</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Daycare and preschool (Individuals 0-6 yrs)</td>
<td>68%</td>
<td></td>
</tr>
<tr>
<td>Higher education (19-25 yrs with complete secondary)</td>
<td>418%</td>
<td></td>
</tr>
<tr>
<td>Attainment lag ** (Students 11-14 yrs)</td>
<td>88%</td>
<td></td>
</tr>
<tr>
<td>Attainment lag ** (Students 15-17 yrs)</td>
<td>152%</td>
<td></td>
</tr>
<tr>
<td>Attainment lag ** (Students 17-17 yrs)</td>
<td>52%</td>
<td></td>
</tr>
<tr>
<td><strong>Quality-Inputs at school</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Computer (1st-4th grade)</td>
<td>382%</td>
<td></td>
</tr>
<tr>
<td>Computer (5th-8th grade)</td>
<td>259%</td>
<td></td>
</tr>
<tr>
<td>Computer (Secondary)</td>
<td>124%</td>
<td></td>
</tr>
<tr>
<td>Lab (All grades)</td>
<td>61%</td>
<td></td>
</tr>
<tr>
<td>Textbooks (5th-8th grade)</td>
<td>58%</td>
<td></td>
</tr>
<tr>
<td><strong>Pregnancy, Fertility and Nutrition</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Suffered diarrhea</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Medical attention in diarrhea case</td>
<td>59%</td>
<td></td>
</tr>
<tr>
<td>Took oral re-hydration in diarrhea case</td>
<td>72%</td>
<td></td>
</tr>
<tr>
<td>Prenatal are</td>
<td>56%</td>
<td></td>
</tr>
<tr>
<td><strong>Quality of Employment and Exposure to Risk</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>If employed, receives fringe transport benefits</td>
<td>68%</td>
<td></td>
</tr>
<tr>
<td><strong>Credit</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Access to productive credit</td>
<td>213%</td>
<td></td>
</tr>
<tr>
<td>Access to consumer durable credit</td>
<td>17%</td>
<td></td>
</tr>
<tr>
<td>Obtaining credit (Credit Solicitors)</td>
<td>213%</td>
<td></td>
</tr>
</tbody>
</table>

Note: *Relative access gap is the shortage of the average coverage rate for all the population with income below the target quintile relative to the coverage of that quintile. 1/ Defined as rooms with three or more persons per room. ** Two years or more.
Table A.2: Results from analysis of distributional incidence of public social expenditure, Brazil NE and SE 1997

<table>
<thead>
<tr>
<th>Subsidy Size</th>
<th>Targeting</th>
<th>Subsidy Redistributive Effect</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value (R$ billions)</td>
<td>Share by quintile (%)</td>
<td>Concent. ' Coefficient</td>
</tr>
<tr>
<td>Q1</td>
<td>Q2</td>
<td>Q3</td>
</tr>
<tr>
<td>Education 19.6 15.3%</td>
<td>24% 33% 14% 23% 7%</td>
<td>-0.17</td>
</tr>
<tr>
<td>Kindergarten 1.0 0.8%</td>
<td>42% 24% 18% 12% 6%</td>
<td>-0.33</td>
</tr>
<tr>
<td>Basic (Primary) Education 11.6 9.6%</td>
<td>29% 27% 23% 17% 8%</td>
<td>-0.19</td>
</tr>
<tr>
<td>Secondary Education 1.7 1.4%</td>
<td>7% 12% 28% 35% 19%</td>
<td>0.18</td>
</tr>
<tr>
<td>University Education 5.1 4.2%</td>
<td>3% 9% 3% 22% 76%</td>
<td>0.69</td>
</tr>
<tr>
<td>Adult Education/training 0.4 0.3%</td>
<td>5% 15% 30% 23% 28%</td>
<td>0.22</td>
</tr>
<tr>
<td>Health Care 21.8 18.0%</td>
<td>16% 20% 22% 23% 19%</td>
<td>0.03</td>
</tr>
<tr>
<td>Universal Public Health care 21.8 18.0%</td>
<td>16% 20% 22% 23% 19%</td>
<td>0.03</td>
</tr>
<tr>
<td>Urban Investments 8.1 6.7%</td>
<td>12% 17% 21% 24% 26%</td>
<td>0.14</td>
</tr>
<tr>
<td>Water Connection 0.4 0.3%</td>
<td>4% 14% 22% 26% 32%</td>
<td>0.08</td>
</tr>
<tr>
<td>Sewer Connection 1.1 0.9%</td>
<td>9% 15% 25% 28% 24%</td>
<td>0.17</td>
</tr>
<tr>
<td>Urban Public transport 2.6 2.1%</td>
<td>0% 0% 26% 32% 9%</td>
<td>0.33</td>
</tr>
<tr>
<td>Housing (Carta de credito) 0.4 0.3%</td>
<td>34% 27% 17% 18% 4%</td>
<td>-0.28</td>
</tr>
<tr>
<td>Feveia Upgrading 3.7 3.0%</td>
<td>15% 29% 18% 18% 4%</td>
<td>-0.28</td>
</tr>
<tr>
<td>Pension and related Programs 67.5 55.7%</td>
<td>7% 8% 15% 19% 51%</td>
<td>0.39</td>
</tr>
<tr>
<td>Pensions 19.9 16.0%</td>
<td>7% 8% 15% 19% 51%</td>
<td>0.39</td>
</tr>
<tr>
<td>Social Assistance Services 0.2 0.2%</td>
<td>42% 24% 18% 12% 6%</td>
<td>-0.03</td>
</tr>
<tr>
<td>Child Services 0.2 0.2%</td>
<td>42% 24% 18% 12% 6%</td>
<td>-0.03</td>
</tr>
<tr>
<td>Nutrition Programs 2.5 2.0%</td>
<td>25% 24% 24% 18% 9%</td>
<td>-0.15</td>
</tr>
<tr>
<td>School Lunches 0.7 0.6%</td>
<td>29% 33% 18% 13% 7%</td>
<td>-0.26</td>
</tr>
<tr>
<td>Maternal Nutrition (Milk Programs) 0.1 0.1%</td>
<td>29% 33% 18% 13% 7%</td>
<td>-0.26</td>
</tr>
<tr>
<td>Labor Programs 3.0 2.5%</td>
<td>13% 30% 15% 5% 36%</td>
<td>0.09</td>
</tr>
<tr>
<td>Unemployment Insurance 3.0 2.5%</td>
<td>13% 30% 15% 5% 36%</td>
<td>0.09</td>
</tr>
</tbody>
</table>

Notes: (1)Concentration Coefficient for subsidy x, CCx = 2COV (x, F(quintile of income)) / mean (x). (2)Gini Income Elasticity for subsidy x, GIE x = CCx / Gini (income). (3) Change in Gini (x): Sector x's contribution to redistribution as change in Gini Coefficient. (4) RRE (x): Relative Redistributive Effectiveness of sector x, redistributive power per Unit of expenditure. RRE(x) is equal to the ratio of the sector x's share in contribution to Gini change to the sector x's share in total expenditure. Note that RRE(x) = (GIE(x) -1)/GIE (total subsidies)-1. Source: "Attacking Brazil's Poverty" (World Bank, 2000). Authors calculations.