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**ESSAYS ON POVERTY, INEQUALITY AND  
WELL-BEING IN BRAZIL**

Coordinatore: Ch.mo Prof. Maurizio BAUSSOLA

Tesi di Dottorato di Paola Salardi

Matricola: 3280100

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## Introduction

This thesis is a collection of three essays on poverty, inequality and well-being for Brazil.

Brazil is a continent-sized nation with profound contrasts and remarkable diversity and is well-known for its very high level of inequality. In 2002 Brazil was the eighth most unequal country in the world, based on a Gini value equal to 59.1 (UNDP, 2002). Inequality in Brazil has been high and stable during a period that covers more than twenty years. On average one out of every three persons was considered poor according to the international US\$1 a day poverty line by the end of the twentieth century (Wodon, 2000). It is for these reasons we argue that for the analysis and measurement of income distribution and poverty trends Brazil presents an interesting case, particularly in order to understand more deeply the determinants of its current situation by applying decomposition techniques.

The first chapter aims at understanding the key determinants of the Brazilian inequality. In order to reach this purpose, the chapter firstly sketches a poverty and inequality analysis for Brazil and then investigates the main determinants of inequality by applying several decomposition techniques. The study has been conducted by employing the annual Brazilian household survey for 2002.

The decomposition techniques applied in this study split into two approaches: inequality decomposition by indexes and regression-based inequality decomposition. Using the first methodology, a decomposable class of inequality measures is analysed by considering households characteristics such as geographic location, gender, age and ethnicity (Cowell and Jenkins, 1995). For regression-based decomposition analysis, due to the large number of such methodologies, we limit the analysis to only a few. In particular, the first technique we apply was developed by Field and aims to capture the main determinants of income variability. This decomposition estimates the factor shares that mainly contribute to determine income inequality (Fields, 2002). After providing a general overview on the main causes of income inequality we

focus on racial heterogeneity and spatial differences by adopting the first and the second moment decomposition techniques. The Oaxaca decomposition method (also called the first moment decomposition) splits income differential between given groups into two effects: endowment effect, which accounts for differences in characteristics, and treatment effect, which computes differences in structure (Oaxaca, 1973). The second moment decomposition method enriches the study by analysing variance differentials, following the Dolton and Makepeace formula (Dolton and Makepeace, 1985; Callan and Reilly, 1993).

According to our results, in 2002 one third of the Brazilian population was considered poor and the Gini index was equal to 58.1 with an income distribution sharply skewed on the right. While Brazil is experiencing an improvement of its macroeconomic situation, the country is failing in the fight against inequality. We confirm the findings of several well-know studies developed by Ferreira and Paes de Barros (1999), Ferreira and Litchfield (2001), Bourguignon et al (2002), Elbers et al (2004), Rocha (2004). Brazilian inequality is primarily rooted in the differences across regions, educational levels and races.

Going deeper into inequality analysis by race and region, the application of regression-based decomposition techniques offers some clarity. Both first and second moment decompositions reveal that income inequality among race is mainly due to differences in characteristics: income discrimination between black and white people seems to be caused not by a “direct” discrimination against black. Indeed it is mainly caused by differences in assets, which might reflect more structural and hence long-standing features. The decomposition by region is conducted by comparing the poorest region, the North-East with each of the other regions. Comparing the North-East region to the North, the differential seems to be due to different and less favourable endowments for the North-East. By contrast, differentials between the North-East and the other three wealthier regions reveal that differences in structure, and not in the assets, are the key determinants. In other words, the North-East region has lower returns than the other three regions, holding

characteristics constant. As understanding of the determinants of inequality deepens, it becomes a matter for the policy-makers to define possible interventions.

If by applying income differentials decomposition techniques we aim to deepen the understanding of the determinants of inequality, the employment of a methodology to decompose poverty measures can help in deducing what lie beyond poverty level differentials.

Indeed the second chapter investigates Brazilian poverty by exploiting geographical differences and questions whether the standard approach in measuring poverty is informative enough taking into consideration that the population is clearly heterogeneous. To do so, we apply the reformulation of the FGT class of poverty measures proposed by Chiappero and Civardi (2006). This poverty decomposition technique aims at computing poverty within groups, using group-specific poverty lines, and poverty between groups by adopting a community-wide poverty line.

This alternative conceptual and analytical approach to poverty measurement has potentially remarkable implications especially where the differentiation among poverty lines is very significant. Since geographical location is one of the most relevant determinants of Brazilian heterogeneity, the study exploits this criterion to establish geographically homogenous groups and assign to each of them their related poverty lines provided by Rocha (Rocha, 2003).

By employing the same data of the first chapter, we run two empirical exercises: for the entire country and for each Brazilian region. The North and the Central-West reveal a dominance of the within component. The North-East shows the highest level of poverty, even higher than the North and the Central-West, but the high within-group component is counterbalanced by a higher between-group component, attributable to the high level of inequality of the North-East. The South and the South-East have between-group components that dominate over within group ones. These empirical findings suggest that the analysis of poverty between- and within-groups is more

exhaustive than the standard methodology when differentiated poverty lines are exploited.

This is particularly important with regard to policy implications. When a rise in inequality is detected, policy makers should be more focused on redistributive policies and particularly on policies related to social mobility that could improve income distribution in the long run. By contrast, increase in poverty may demand more immediate intervention to combat destitution and to increase access to basic needs and income. Behind our analysis of the dominance of the between- or the within-components of poverty lies a deep understanding of the complex relationship between poverty levels, income distribution and the robustness of poverty lines.

The first two chapters of this work apply techniques able to measure and decompose both poverty and inequality within the context of the standard monetary approach. In fact, well-being is conceptualized only in terms of income without taking into consideration possible other dimensions. The purpose of the last chapter is to enlarge the perspective of our analysis by adopting the capability approach developed by Sen (1985). The capability approach is an intrinsically complex framework, not only because it pays attention to a plurality of well-being dimensions in a similar fashion as other approaches, but also takes into account a multiplicity of personal, social and institutional contexts crucially important in the process of well-being. Individual well-being is not described as a static and materialistic condition defined by the possession of material resources but can be viewed as a process in which resources available are instruments to obtain well-being.

Under a capability perspective the well-being of a person can indeed be defined by a set of a person's functionings. From our point of view, the concept of functionings is a more comprehensive way of identifying personal well-being. Functionings is defined by what a person manages to do or to be with a given package of assets. It thus embodies the state of a person not as a mere possessor of goods or utility. Focusing on functionings allows us to observe what a person succeeds in doing or being with the resources that she or he is able to command.



The third chapter aims to model and estimate the health functioning production function as a relation that conveys to what extent people are able to convert private and public resources into the achievement of the specific functioning “being healthy”. Hence, in our model the achievement of the health functioning is determined by private resources, given by an indicator of wealth, as well as public resources, identified by an index of public services, and controlled for a set of internal and external conversion factors.

The first conceptualization of the conversion process as a tool for assessing individual well-being is given by Sen (1985). This conversion process is affected by a set of internal and external conversion factors identified by given individual, social and environmental characteristics. The construction of the model is based on the conceptual analysis for modelling individual well-being provided by Chiappero-Martinetti et al (2007).

The estimation of the health functioning production function has been made by employing Brazilian data, in particular the households survey for 2003. The choice of this year is due to the fact that the 2003 version of the same dataset exploited in previous chapters contains a special section on health that is functional for our investigation. The econometric methodologies applied depend on the nature of the variables that identifies the health functioning. We estimate the health functioning production function by applying both probit and ordered probit regression models due to the categorical nature of the dependent variables that identify functionings achievement. The computations have been made for the entire Brazilian sample and by gender and race, recognizing the relevance of our empirical findings in terms of policy implications.

According to our findings, when the health functioning is identified by the self-reported morbidity index, public resources are more relevant in the health functioning achievement process. On the other hand, when a health status indicator identifies the health functioning, private resources become predominant.

Looking at our empirical results disaggregating by gender and race, Brazilian black people might be considered one of the most vulnerable groups. The

Brazilian policy maker should protect this part of the population that records the lower ability to convert their private resources and a good efficiency in using public resources. Another interesting result is the fact that women record a greater impact of public resources while for men private resources are more relevant. The Brazilian policy maker should protect these weaker sub-groups of the population. Possible directions of policy intervention might be to promote black-targeted public provision of medical assistance and prevention. Moreover, the public health services should be aware of the fact that the highest portion of its policyholders is female. We conclude that our empirical findings might be relevant for policy making, for example in the health public sector, once a more comprehensive approach of assessing individual well-being is accepted.

We conclude by listing some fundamental remarks that need to be solved in order to further the applied methodologies.

The analysis of inequality decomposition needs to employ more refined econometric techniques that are able to deal with some of the limits of the first and second moment decomposition techniques, such as selection bias and error measurement among others. Moreover, we would like to extend the income differential analysis by decomposing it into its sources and then applying decomposition techniques to each of the income sources in order to understand in which income source creates the greatest "discrimination effect" and, hence, ultimately causes most income inequality.

In the context of the operationalization of the capability approach, we would like to estimate conversion rates for more than one functioning as well as employ more data and more appropriate econometric techniques to deal with problems such as endogeneity and omitted variables. Finally, we believe that not only the assessment of more than one functioning is necessary, but also the investigation of the possible interrelations existing among functionings is a key priority for a more comprehensive view of individual well-being.