What factors contribute to income inequality in India and Brazil?

Alessia Bongiorno
Erasmus Universiteit Rotterdam

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International Public Management and Public Policy

Student

Alessia Bongiorno

Student number: 376953

University

Erasmus Universiteit Rotterdam

Faculty of Social Sciences

Supervisors

Supervisor: Anna Jüngen MSc

Second supervisor: Dr. Menno Fenger

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0. Abstract

This thesis studies the main factors that influence income inequality in two emerging economies, namely India and Brazil. The four main drivers identified are spatial inequality, large and persistent informal economy, wide gaps in educational level among individuals and government re distributive policies. They all prove to be shaping the level of income inequality. In particular, government redistributive policies have contributed very much to the decrease of inequality in Brazil, while regional imbalances represent the principal cause for the increase in income inequality in India.

1. Introduction

Nowadays, emerging economies (EEs) are playing an increasingly larger role in the world economy. Their GDP is continuously growing and their economic relevance is reflected in their progressive importance in the G20 (Conway, Dougherty & Radziwill, 2010: 5). The largest EEs are located in Latin America, Asia, and Africa, in countries such as Brazil, Argentina, China, Indonesia, India, the Russian Federation, and South Africa (Förster, n.d.). They represent about one fifth of global GDP, as well as almost half the global population (OECD, 2011 a: 48).

The above mentioned emerging economies have different economic and population sizes, level of development and per capita income growth (ibid.; Conway et al., 2010); however, they all share an important characteristic: they face massive within-country income inequality. Nevertheless, income inequality's trends differ among these countries. In the last two decades, China, India, the Russian Federation and South Africa have experienced an increase in them, whereas Brazil and Indonesia were confronted with a decline (OECD, 2011 a: 51; de Holanda Barbosa Filho, 2012; Ravallion, 2011; Neri, de Melo, dos Reis Sacramento, Harris, de Carvalho, Bastos, ... & Andari: 2006).

In light of these findings, the aim of this thesis is to understand the drivers of income inequality by comparing two of these countries, India and Brazil. The thesis will therefore answer the following research question:

What factors contribute to income inequality in India and Brazil?

Several factors prove to be important in shaping the existence of income inequality. For instance, management of policies concerning the social and labor market; education and taxation fields influence the rise or decline of income inequality and the related redistribution of resources (OECD, 2011; Cooper, 1998). Cooper (1998: 20-21) argues that intergenerational persistent income inequalities depend on community income. Empirical data show that inequalities' persistence is higher in either high or low income communities than in middle income communities. This leads to fear that income inequalities in one generation would eventually be the cause for uneven opportunities for people in the next generation. In her paper, Kaasa (2005) makes a complete and comprehensive list of income inequality

drivers and she summarizes them into five categories: economic development; demographic factors; political factors; cultural and environmental factors; and macro-economic factors.

Income inequality is influenced by many factors, which involve many aspects of society. Tackling income inequality requires government policies that enhance "equal access to opportunities and social mobility" in terms of education, gender-related treatments, and labor market conditions (Olinto & Saavedra, 2012: 4).

The list of factors presented in the previous paragraph is comprehensive; nonetheless it does not provide a specific focus on emerging countries. In effect, the drivers of income inequalities vary depending on whether a country is a developing or a developed one. Moreover, Kaasa (2005) found out in her paper that there are tens of factors that have an impact on income inequality. The analysis of every possible driver of the dependent variable would go beyond the scope of this thesis. The four factors chosen here are also the most recurrent ones in the literature studied for India and Brazil. Therefore, this thesis analyzes only the key factors shaping income inequality specifically in emerging economies. From their analysis, it can be asserted whether these drivers shape income inequality precisely in India and Brazil.

The OECD (2011 a: 53) presents a list of key drivers precisely in EEs, and so a number of hypotheses will be tested:

Hypothesis 1: The higher the spatial inequality, the higher the income inequalities.

Hypothesis 2: A large and persistent informal sector contributes to the increase in income inequalities.

Hypothesis 3: Wide gaps in access to education across the population lead to a rise in income inequality.

Hypothesis 4: An improvement of government redistributive policies causes a decrease in income inequality.

In this thesis India and Brazil are compared as these two countries show opposite trends of income inequalities. In effect, in the last fifteen or twenty years they have both experienced a large increase in GDP and the two nations have both become richer. India, however, has been confronted with a rise in within-country income inequalities while Brazil has borne witness

to their decline[1] (Ravallion, 2011: 72; López-Calva, 2012; de Holanda Barbosa Filho, 2012; Soares, Guerreiro Osório, Veras Soares, Medeiros & Zepeda, 2009; Thomas, 2009). Hence, it is interesting to understand whether the factors pointed out in the hypotheses actually have a large impact in these two emerging economies. Because Indian and Brazilian inequality patterns have, in the past decades, shown opposite trends, their direction should differ.

In contrast to some South Asian states, Indian shows an increase in inequalities, especially between urban and rural income and identified as "pro-rich" (Olinto & Savedra, 2012). This observation is also supported by Mehta and Sarkar (2010: 55), who observed that the Gini coefficient for India, which is the measure of inequality in the country, indicates that inequality is greater than in the past decades. This rise in income is again especially prevalent in the upper income group, thus exacerbating the disparity between wealthy and non-affluent citizens. The rich gained at the expense of the poor; hence the poor have become more vulnerable. These results have been detected as a consequence of the lack of employment opportunities in the formal economy, which would guarantee more stability in the system and equal chances for all.

Brazil followed the opposite trend in the last fifteen years as it managed to reduce inequalities. Although inequality levels are above world standards, millions of Brazilians are considered to not live in poverty anymore. In addition, the income gap between the rich and poor has been reduced. The inequality decline has favored the decrease in poverty since growth has been "pro-poor" (López-Calva, 2012: 6; Ravallion, 2011). The main source of income inequalities was the educational difference between the upper and lower classes in Brazilian society, which brought about significant wage dissimilarities and an unstable macroeconomic environment (Antunes, Cavalcanti & Guimarães, 2012).

The following graph displays the Gini coefficient trend in India and Brazil. Data are taken from the World Development Indicators in the World DataBank from 1993 to 2010; however some of them are missing[2].

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[1] India experienced a fast GDP growth and an increase in income inequality, while Brazil saw a lower GDP growth rate and lower income inequality and poverty level (Ravallion, 2011).
[2] On the one hand, only three values of the Indian Gini index are available and they are calculated for the years 1994, 2005 and 2010. On the other hand, all the values are presented for Brazil except for the years 1994, 2000 and from 2010 onwards.

Graph 1. Gini Index, India and Brazil
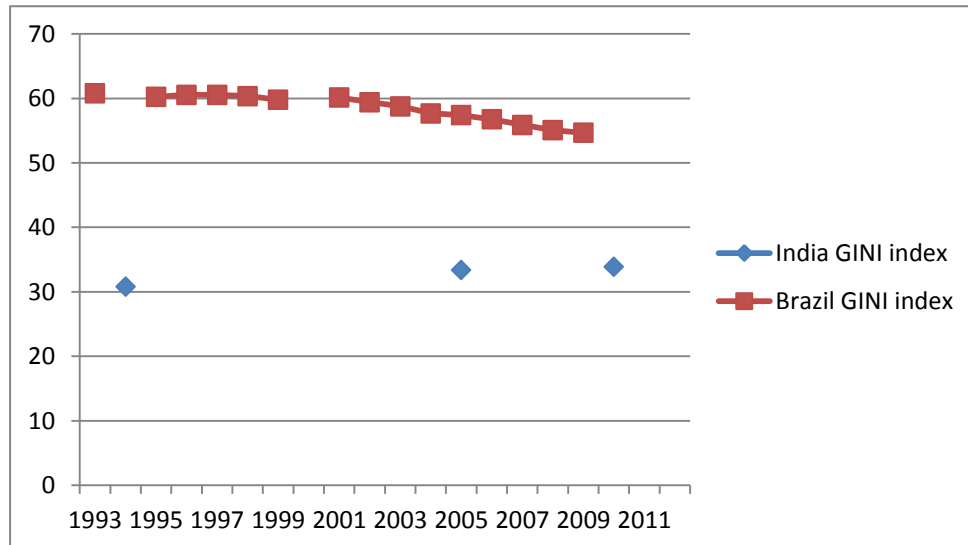
Source: The World Bank (2013 e). World Development Indicators.[3]

The trends in income inequality in India and Brazil are taken into consideration, but the aim of this thesis is not analyzing the trends of the dependent variable over time. These trends, which are shown by Graph 1, are considered as a starting point in this study. The focus is on the main drivers of income inequality, which are analyzed in order to understand whether they are in effect relevant in India and Brazil (i.e. the case studies).

The study of the drivers of income inequalities in these two emerging countries is significant at both theoretical and societal level. This is theoretically relevant because the analysis of Brazil and India concerning income inequality is a current topic of research. These emerging economies are becoming increasingly influential on the international scene. A copious literature about income inequality trends exists[4], its effects on countries' growth and economic development, and government policies that are designed to try to address the disproportion[5]. Nevertheless, there is a lack of comprehensive research on all the possible causes of income inequality and the interaction between each other which amplify their effects (Kaasa, 2005: 5). In addition, a direct comparison between India and Brazil is absent, because researchers have usually focused their attention on countries that are similar to each other in terms of inequality patterns. Hence, this thesis aims at analyzing the crucial drivers of income inequality precisely in India and Brazil that show opposite inequality trends.

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[3] http://databank.worldbank.org/data/views/reports/tableview.aspx
[4] See Olinto and Saavedra (2012) for additional literature review.
[5] See Förster (n.d.); Ravallion (2011) for further discussion.

The societal relevance lies in understanding what the sources of these inequalities are in order to reduce them by being addressed with sound government policies. Deeply understanding the main causes of such inequalities is a thorough tool in order to enhance growth at regional and country level, because growth is longer term in countries where there is a more equal income distribution (Berg & Ostry, 2011). Additionally, comparisons among emerging economies are important to comprehend the current situation by learning from each other (Ravallion, 2011: 72). The mechanism of diffusion of policy ideas is called 'policy diffusion', which maintains that countries facing problems, for instance in the labor market or social policy making, turn to other countries which have already faced and successfully solved those issues (Champion & Bonoli, 2011: 331). Governments study and learn from other countries' experiences and draw inspiration from them (ibid.; Ravallion 2011). India could learn from Brazil to develop more pro-poor social policies by targeting benefits more specifically to them. In addition, Brazilian government's income support and human capital development successes can be considered as positive examples in the long-term (Ravillion, 2011: 90). Therefore, policy learning would prove helpful in order for EEs to improve their internal circumstances and in turn to enhance living conditions.

2. Theoretical definitions

The units of analysis in this thesis are countries, namely India and Brazil. The aim of this work is to understand what are the key drivers of income inequalities in these two states; hence, the objects of this study are precisely India and Brazil. The factors influencing income inequalities therefore represent the independent variables, while income inequality is the dependent variable. Changes in the independent variable, for instance informal economy, cause variations in the dependent variable, namely income inequality. The four factors chosen in the thesis are also the most recurrent ones in the literature studied for emerging countries. From their analysis, it can be asserted whether they shape income inequality in India and Brazil.

First of all, a definition of the dependent variable must be provided. Income inequality can be defined as the unequal distribution of household disposable income in a certain year. "It consists of earnings, self-employment and capital income and public cash transfers; income taxes and social security contributions paid by households are deducted" (OECD, 2011: 80). The Business Dictionary (2013) describes income inequality as "a measurement of the distribution of income that highlights the gap between individuals or households making most of the income in a given country and those making very little". Thus, income inequality represents a clear expression of the differences in living standards within countries (OECD, 2011 c: 80).

The first independent variable considered here is an economic factor: spatial inequality (OECD, 2011 a: 53) in living standards. This is a complex driver because it is composed and affected by a few sub factors. The main components are the regional and urban spatial inequalities (Kim, 2008). They encompass regional imbalances in economic performance within countries, which are caused by the different resource endowments and remoteness from the markets; power imbalances between developed and falling behind regions; weak institutions; and ethnic drawbacks (OECD, 2011 a: 53).

The second independent variable is informal economy and it can also be referred to as black, shadow, hidden, underground and unofficial economy (Chaudhuri, Schneider, & Chattopadhyay, 2006). There are different definitions of this phenomenon. For instance, KILM (ILO, 2012) defines it as "all economic activities by workers or economic units that are

– in law or practice – not covered or sufficiently covered by formal arrangements (based on ILC 2002)". The bottom line of every definition is that shadow economy typically refers to economic transactions and businesses that are not possible to be gauged or taxed since they are secreted enough (Andrews, Caldera Sánchez & Johansson, 2011: 7).

One may argue that income inequality causes informal economy. However, in this thesis the position maintaining that the informal economy causes changes in the level of income inequality is followed. The choice is made because a high degree of informality in Indian and Brazilian labor market affects the less privileged more severely and thus contributes to the persistence of income inequality (OECD, 2011: 49; 2010: 28-29 & de Holanda Barbosa Filho, 2012: 2).

The third independent variable is represented by the access to education.
In 2000, world leaders set eight key objectives to be reached by 2015, the so-called Millennium Development Goals (MDGs). They follow the principles of freedom, solidarity, equity, tolerance, shared responsibility and respect for nature (United Nations General Assembly, 2000: 2). The second Millennium Goal aims at achieving "universal primary education" around the world (United Nations, 2012: 16). This thesis considers access to education as the completion of "one full course of primary schooling" for both girls and boys all over the world (Millennium Development Goals Indicators, n.d.).

People having different access to education imply that the more advantaged ones have a better chance to go to school and also to achieve a higher level of educational attainment. These discrepancies lead to educational inequality among individuals, which is defined as "the ratio of the average wage or salary of workers with more years of schooling to the average wage or salary of workers with fewer years of schooling" (Azuma and Grossman, 2003: 1-2).

The fourth independent variable is characterized by government social policies[6].
Social policies are government's instruments designed to correct market failures and complement market institutions and social structures (Ortiz, 2007). Social policies are defined as providing social services, like health care, job creation, schooling, and social security. They also; however, entail redistribution and social fairness (ibid.: 6). Among social policies, redistributive policies concern the allocation of resources and tax revenues to citizens. These

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[6] For instance, social assistance towards citizens, redistributive policies, etc.

policies are necessary because not all individuals manage to attain the benefits of economic growth. As a consequence, if properly planned and carried out, social policies can boost employment, social cohesion and development in general (ibid.).

It may be contended that income inequality causes policy makers' realization of the need for better government social policies and more redistributive. Nevertheless, empirical evidence shows that improved social assistance, cash transfers to poorer people, and public work programs actually help decrease income inequality (OECD, 2011 a: 78). In this thesis the position in which government social and redistributive policies are considered the independent variable is therefore supported.

3. Indicators

In order to operationalize the concept of income inequality, indicators are needed. A few indicators for every variable, either dependent or independent, will be discussed hereafter; however, only the most reliable and valid indicators will then be used to test the hypotheses.

Income inequality:

For the dependent variable, the Gini coefficient is used, which "measures the extent to which the distribution of income or consumption expenditure among individuals or households within an economy deviates from a perfectly equal distribution" (The World Bank, 2013 h). It is the key indicator to measure income distribution and it derives from the Lorenz curve graph of distribution of income. The Lorenz curve plots the "cumulative income share" on the y-axis and the population distribution on the x- axis (The World Bank, 2013 g). The Gini coefficient represents the area between the Lorenz curve and the line of equality (i.e. an hypothetical 45- degree line) (ibid.). The Gini values vary in the range between 0, which means "perfect equality", and 1, which reflects "perfect inequality"[7] (OECD, 2011 c: 66). Perfect equality indicates that every person earns the same income, while perfect inequality means that all income goes to the portion of citizens with the highest income (ibid.).

An indicator is said to be reliable if it precisely represents the concept that it is supposed to assess (Kellstedt & Whitten, 2009: 94). One must be careful; however, when reliability is measured. "An indicator is said to be reliable to the extent that it is repeatable or consistent; that is, applying the same measurement rules to the same case or observation will produce identical results" (Kellstedt & Whitten, 2009: 92). In general, the Gini coefficient is reliable. It is also a valid measure of the dependent variable, because it truly depicts the intended conception (i.e. precisely the calculation of income inequality) (Carmines & Zeller, 1979: 13). This indicator may turn out to be biased downwards when the sample is small. This was studied by Deltas (2003: 234) and it occurs mainly when analyzing industrial concentrations. Studies of income inequality take adequately large sample sizes, thus any small sample size effects can be disregarded. Hence, a large sample size must be taken; otherwise there would be errors in the measurements.

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[7] The values of the Gini Index can also be expressed in numbers from 0 to 100, where 0 means perfect equality and 100 represents perfect inequality (The World Bank, 2013 g).

Another indicator for income inequality would be the Robin Hood Index. "The value of the index approximates the share of total income that has to be transferred from households above the (income) mean to those below the mean to achieve equality in the distribution of incomes" (Kawachi, 2000), though this would be difficult to measure because of the widespread informal economy in India and Brazil for which data are not available.

Consequently, the Gini coefficient represents a sounder measure of income inequalities.

The level of measurement of the Gini coefficient is ordinal since its values are rank-ordered on one measurement scale. Plus, it is a ratio measurement, as there exists a true zero point and its values can be expressed as ratios.

Together with income inequality, also the independent variables need to be operationalized. The most appropriate indicator for each variable will be discussed.

Regional imbalances:

Regarding regional imbalances, especially rural- urban discrepancies, the Gini coefficient per capita income can be used as an indicator (OECD, 2011 a: 54). It captures the degree of variation in income distribution or consumption expenses from an equal distribution. This indicator measures inequality at the individual level instead of measuring it at country level as in the case of the Gini coefficient for the dependent variable.

In order to test the expectations as well (they will be discussed after the presentation of the research design), two other indicators are needed.

The first expectation concerns migration, which can be assessed by the level of migration or the trends in rural or urban population growth. The last two represent the percentage of urban and rural population out of the total population and the data can be downloaded by the World Bank Indicators Database. The years that are taken into consideration range between 1990 and 2011.

Level of informal economy:

One indicator which measures the level of informal economy is urban informal sector employment. KILM (ILO, 2012) has provided a series of indicators. Its website states that

"the KILM 8 indicator is a measure of employment in the informal economy as a percentage of total non-agricultural employment."

This indicator is valid since it manages to measure the right concept; however, it is based on national preferred reporting methods instead of international guidelines. This makes it difficult to make cross-country comparisons using this indicator, and data is not always available.

Another indicator of this variable is the unreported labor activity (Alderslade, Freeman, and Talmage, 2006). This can be associated with the Multiple Indicators Multiple Causes (MIMIC) method, which considers multiple causes for the growth of hidden economy and then uses multiple indicators in order to assess it (Bajada & Schneider, 2005: 386). Within this model, "the size of the informal economy can be modeled as a latent variable. Even though this variable is unobservable, its causes (e.g. an increase in the tax and regulatory burden) and effects (e.g. an increase in demand for cash or electricity) can be observed" (Andrews, Caldera Sánchez and Johansson, 2011: 10). The MIMIC model is therefore based on concurrent equations and after their estimation; the proportion of the hidden economy is attained from the values of the latent variable (ibid.). For instance, inflation rate, tax revenue, amount of regulation in the economy can be considered independent variables in the system of equations, while "change in the labour force participation rate and cash- money supply ration" can be employed as indicator variables (Bajada & Schneider, 2005: 388).

This method is both valid and reliable to the extent that it reflects real and available data. This method is empirically employed to understand the drivers of informality in the economy. There is a drawback; however, using this indicator, because it produces an index that requires a benchmark taken from other indicators in order to be able to estimate the absolute dimension of informal economy (ibid.: 390). The initial index is an ordinal measure that is then converted to a cardinal measure using other indicators (Chaudhuri, et al., 2006: 433).

The MIMIC model is more valid than the KILM 8 indicator, because it better evaluates the size of the shadow economy since it takes into consideration multiple causes and multiple indicators. It is an interval measurement, because the distance between the observations is meaningful.

Access to education:

In this thesis access to education is assessed by employing the Millennium Development Goals Indicators. One of the goals' targets is to ensure the completion of one full course of schooling for girls and boys around the world by 2015. The indicator that can be therefore used to measure access to education is precisely the "Net enrolment ratio in primary education" (Millennium Development Goals Indicators, 2013). It represents the percentage of children who are in the official primary school age and are enrolled in school. The number is calculated out of the total population in the official primary school age (ibid.).

The maximum value of this indicator is 100 %, so the values between the actual percentage of net enrollment and 100 % represent the percentage of primary school- aged children who are out of school.

The other indicators that can be used to examine the access to education are part of the OECD (2013 a) key indicators on education: the Enrolment rates by age (2008) or the Trends in enrolment rates (1995- 2008). Nevertheless, the related data regarding India are missing from the OECD database, so it is not be possible to make a direct comparison between the two countries.

As a result, the Net enrollment ratio in primary school will therefore be used in order to analyze the access to education in India and Brazil. Data for both countries are available for this indicator, thus making a direct comparison between the two nations possible.

Redistributive effect of government policies:

In order to analyze the effects of government social policies and the target of social assistance, the size of public expenditure can be used. Kurian (2000: 542) and Pattnaik, Bose, Bhattacharyya and Chander (2005: 606) pointed out that public expenditure can be divided into "developmental and non-developmental". The former comprises social services like education, health care, employment, housing, water and sewerage system, etc. The latter includes administration costs, pensions, interest payments, sustainment of state bodies, etc. For the purpose of this thesis, developmental public spending is taken into consideration. There is no common database for India and Brazil concerning this indicator, hence two separate databases are considered. As a consequence, with the aim of evaluating the developmental public expenditure in India, central and state Developmental Expenditure will

be used. Data are taken from the Reserve Bank of India, specifically in the database on Indian economy. Regarding Brazil, the social public expenditure as percentage of the Gross Domestic Product (GDP) by sector (Percentage) will be used. This indicator is part of the Economic Commission for Latin America and the Caribbean (ECLAC) Database.

The size of public spending is analyzed in order to study the enhancement of social and economic progress in a country.

Alesina and Rodrik (1994: 479) argue that making a cross- country comparison relating income inequality measures to redistributive policies measures is complex because countries carry out social policies at different times and by diverse means. Since India and Brazil have designed and implemented diverse government social policies, this thesis will not test hypothesis four with only one indicator. In particular, public work programs are used in India, while Conditional Cash Transfers (CCTs) are utilized in Brazil.

Although they are not the same program, these government social policies share a few characteristics and their objective is twofold. First of all, they both provide income support to needy and poor families. Secondly, they stimulate social and economic development through the enhancement of education and health and the construction of infrastructures. Studying them, therefore, is useful in order to understand how the two countries have attempted to reduce income inequality.

In India, the government has put in place public works programs (PWPs), which provide income sustenance to unemployed workers who are not subject to receiving an unemployment compensation (OECD, 2011 a: 73). Public works programs are designed and carried out to achieve two goals: they make available "labor-intensive public works" to poor families who need minimum income sustainment; and they invest in the construction of infrastructures in order to boost the development of lagging behind regions.

In Brazil, Conditional Cash transfers are money grants given to the poor and the very poor families as supplement to their (very low) income (Doetinchem, Xu & Carrin, 2008). Income support is given to these families with conditionalities attached and, if they are not complied with, families risk the suspension of the benefits (OECD, 2011: 71). The most common conditionalies are characterized by the obligation of children to remain in school and attain basic health treatments. As a result, CCTs are means to stimulate school enrollment, enhance

healthcare for youngsters, and reduce child labor and infant mortality (ibid.: 50; Soares et al., 2009: 208).

The OECD (2011: 71) points out that the major drawback of Brazilian conditional cash transfers is the beneficiaries' selection process. Evidence shows that "social control councils" are often directed as beneficiaries of Conditional Cash Transfers (Hall, 2008: 809). However, they are in charge of monitoring the implementation of the program to guarantee accountability and transparency, thereby creating a large conflict of interest. Furthermore, there have been cases of corruption and falsification of data.

The main advantage of analyzing conditional cash transfers is that families have to meet some conditions[8] to receive them, so CCTs are directly targeted to the poor people without a big waste of resources. Moreover, CCTs prove to work well in the reduction of income inequality and in the alleviation of poverty, because they involve income provision and the stimulation of human development[9] at the same time (OECD, 2011: 50).

Although CCTs may be subject to some disadvantages, they have proved to be effective in the reduction of inequality and poverty levels and fostering human capital development. Thus, they are deemed to be useful in the test of the fourth hypothesis.

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[8] The potential candidature and the amount of the grant are based on an income self-declaration (OCED, 2011 a: 71).

[9] As mentioned before, CCTs are means to stimulate school enrolment, enhance healthcare for youngsters and reduce child labor and infant mortality. As a consequence, they work as human capital stimulators as well as economic sustainment to needy families (ibid.: 50; Soares et al., 2009: 208).

4. Research design

In order to test the hypotheses, several research designs exist. Three of them will be discussed and applied here, taking into account also their degree of internal and external validity.

The first one discussed is the observational design, specifically the Cross-sectional design. Kellsted and Whitten (2009: 81) state that a cross-sectional observational study analyzes a segment of social life. It addresses the differences between separate sections (i.e. countries in this thesis) and it explains the deviation of the dependent variable across them. This design therefore would measure income inequality across Brazil and India but not across time (ibid.: 25). This is a quantitative design and implies a large N, thereby implying the analysis of several cases. Spatial units, such as income inequalities in different countries, would be analyzed at the same point in time, leading to a comparison between observations.

Reality is merely observed, so participants are not randomly assigned, and it is not possible to have control over the independent variables' values (they naturally occur) (Kellsted & Whitten, 2009: 78). Indeed, this design relies highly on statistical control, since to show if effects of the independent variable are present and significant, statistics will be employed.

Regarding internal validity, in this design, one cannot rule out that Y proceeds X (i.e. income inequalities cause a large informal economy) and this represents a threat for the understanding of causal relationship between the variables. Moreover, everything identified as possible cause of Y must be included in the model, turning it into a multivariate analysis in which the effect of one independent variable is controlled for the others (holding them constant). It is, however, complicated to include all possible independent variables in the model with the risk of exclusion of relevant variables or the inclusion of irrelevant ones.

The previously mentioned problems are threats to internal validity, which are combined with the possibility of not having enough cases to analyze.

Regarding external validity, it can be stated that it is high if the sample taken is representative of the population; so that it is a random sample and the observation are obtained from reality. If the sample is representative of the population, then the results driven from it can be extended to the whole population.

The cross-sectional observational design implies the study of several cases, thereby the analysis of many countries. Nevertheless, I chose to study only two cases, India and Brazil,

because of their high theoretical and societal relevance. Their role in the global scenario is increasingly important and they show different trends of income inequalities. Therefore, India and Brazil are considered as 'participants', and their situations regarding income inequalities (spatial units) would be analyzed at the same point in time, leading to a comparison between observations.

Together with regional imbalances in economic performance and a large informal economy, dissimilarities in education, gender-related treatments and labor market conditions all cause a rise in income inequalities, thus they would have to be included in the model. This research design is difficult to be applied in this thesis, since my two-case analysis does not fit a large-N design. Moreover, the previously stated causes may not be the only ones, leading to the existence of omitted but relevant variables. Nevertheless, this could be overcome by using statistical control.

The second type of design is the quasi-experimental design, in particular the Interrupted time-series. The interrupted time series is used "in a situation where a series of observations has been recorded for periods of time both prior and subsequent to the experience" of a specific event occurred in reality, which causes a change in the independent variable (Campbell & Ross, 1968: 110).

Since the units of analysis of this thesis are countries, India and Brazil are considered as the 'participants'.

In this design, there is a "pretest", an "experimental treatment", and a "posttest" (Campbell & Ross, 1968: 113). For instance, it may be used for evaluating the effectiveness of a policy, which would be considered the "experimental treatment". More precisely, "in the Interrupted Time-Series, the 'causal' variable is examined as an event or change occurring at a single time, specified independently of inspection of the data." (Campbell & Ross, 1968: 116).

Regarding internal validity, even though several threats are present, one of them cannot be ruled out by this design. Indeed maturation (i.e. long-term trend), testing (i.e. whether the pretest affected the result of the posttest), instrumentation (i.e. change in measurement method), statistical regression (i.e. pretest values are considerably high or low), and mortality (i.e. whether someone dropped out the experiment) are all threats to internal validity which are discarded. The only threat not ruled out is history, which "furnishes a "rival hypothesis" to the experimental hypothesis […]" (Campbell & Ross, 1968: 113).

External validity is high in this large-N design, because its results can also be extended to other cases.

The participants to the design in this thesis are India and Brazil. Only two cases are studied so the degree of external validity is low since these results cannot be generalized to other cases. Internal validity is high since almost all the threats to it are controlled for. Indeed, maturation is not a threat since there is no maturational change in the participation of economic policies. Testing can be controlled for since the pre-reform results do not influence the post-reforms ones, as well as mortality because people cannot drop out from the data collection process. History could constitute a threat since there are other factors such as the size of informal economy and different levels of education which could turn the association into a spurious one.
Eventually, this research design cannot be considered appropriate for the aim of this thesis, since it would not be consistent with the question and the goal of this research as well as analyze several cases.

The third type of design is the so-called case study design and here the congruence analysis proper is presented.
The case study approach concentrates on the analysis of the dynamics existing within an individual setting (Eisenhardt, 1989: 534). It is a theory-oriented small-N design in which the researcher compares what she expects in a case study and what she finds as empirical observations. Therefore, the core is to understand the relationship between empirical observations and theoretical notions (Blatter, 2012: 4). There exist various methods of data collection, for instance observations, surveys and archives. Findings can be quantitative, qualitative or both (Eisenhardt, 1989: 534- 535). After the data analysis, ex ante predictions on the 'likeliness' of the cases are deemed to be either congruent or not with the expectation derived from multiple theories (Blatter, 2012: 6). If these two elements are congruent, then the theory and explanation in question is considered sound. "She achieves this by deducing sets of specific propositions and observable implications from abstract theories in a first step and then comparing a broad set of empirical observations with these implications drawn from diverse theories, […] we formulate specific and concrete expectations prior to the empirical investigation […] for connecting abstract propositions and concrete observations" (Blatter & Haverland, 2012: 144, 146).

A case study design is chosen in this thesis because it is the one that better focuses on the individual factors that influence the dependent variable (i.e. income inequality). Moreover, it offers a deep understanding of the drivers through the study of empirical results. A congruence analysis is a particular type of case study, and it is chosen when one aims at studying the relationship between empirical outcomes and the abstract concept taken from the theories (Blatter, 2012: 4). It is used here because it goes in depth in the analysis of the causal factors.

To ensure high internal validity, 'vertical and 'horizontal' elements of control are employed. The former "consists of deducing specific propositions and concrete predictions from abstract theories; and comparing these deduced expectation with empirical observations. The latter arises because a theory must show not only that its implications correspond to empirical observations but also that it has a higher level of empirical congruence than other theories [...]" (Blatter & Haverland, 2012: 146).

Regarding external validity of the population, one can state that it is basically absent here since the congruence analysis results in the study of one or few cases. It is focused on the causal mechanisms, instead of on the generalization of them. Nevertheless, external validity can become high in case of the generalization towards a theory because it spans from the least likely to the most likely case.

Internal validity is high, since predictions from abstract theories and observations are congruent.

5. Expectations per country

As discussed in the previous chapters, the aim of this thesis is to study the main factors that influence income inequality. Starting from the fact that India and Brazil show opposite trends of income inequality, the drivers of income inequality are studied. In particular, expectations are drawn from abstract theories and then they are compared to empirical data and results. A conclusion is achieved by understanding whether the factors have the expected outcomes in the two countries.

Blatter and Haverland (2012) assert that the congruence analysis research design involves the formulation of expectations from abstract theories regarding the hypotheses. These predictions are then compared to empirical results.

In order to see whether expectations hold, figures from on line databases[10] and from papers of other researchers will be used. Other authors' data are employed as supplement for my research and in case there are no directly available records. For instance, in Hypothesis II regarding informal economy, figures from academics will be used because they conduct a quantitative analysis and their calculation goes beyond the core of this thesis.

In this section separate predictions are drawn for both India and Brazil. Then in the next chapters hypotheses will be tested against these expectations by analyzing empirical observations in order to assess whether expectations and observations are congruent or not.

India:

One of the main factors that shape income inequalities can be identified as regional imbalances in economic performance. This creates gaps amongst regions thereby leading to an increase in income disparity. Based on the hypothesis that regional imbalances leads to an increase in income inequality, one can test the following sub expectations:

- An increase regional imbalances in economic performance;
- A rise in migration from rural to urban areas (Arnal & Förster, 2010);

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[10]On line databases are consulted on the websites of the Reserve Bank of India, The World Bank, Millennium Development Goals Indicators and the Economic Commission for Latin America and the Caribbean.

The second factor analyzed is informal economy. A large and persistent informal economy also contributes to the increase in income inequalities. Building on this hypothesis, one can expect (Jutting & Laiglesia, 2009; Becker, 2004):

- A lower wealth redistribution among informal workers than the ones working in the formal economy;

- Less insurance and protection for informal workers leads to an increase in poverty and inequalities.

The third hypothesis to be tested states that wide gaps in access to education across the population cause a rise in income inequality. One can predict that (OECD, 2011 a: 56):

- The lower the level of people's education, the lower their average earnings;

An improvement of government redistributive policies causes a decrease in income inequality. The following can be forecasted:

- The less wealth redistribution among citizens, the higher the income inequality

- The less the benefits are targeted to the poor, the higher the income inequality.

Brazil:

As in India, predictions will be drawn for every independent variable. The first one is regional imbalances in economic performance. This creates a gap amongst regions thereby leading to an increase in income disparity.

From this the following can be predicted:

- A decrease in regional imbalances in economic performance;

- A rise in migration from rural to urban areas (Arnal & Förster, 2010);

Large informal economy also contributes to the increase in income inequalities.

One can expect (Jutting & Laiglesia, 2009; Becker, 2004):

- A lower wealth redistribution among informal workers than the ones working in the formal economy;

- Less insurance and protection for informal workers leads to an increase in poverty and inequalities

Wide gaps in access to education across the population increase income inequality.

It can be predicted that (OECD, 2011 a: 56):

- The lower the level of people's education, the lower their average earnings;

An improvement of government redistributive policies causes a decrease in income inequality. The following can be forecasted (Ravallion, 2011; Soares, Guerreiro Osório, Veras Soares, Medeiros & Zepeda, 2009):

- The more wealth redistribution among citizens, the lower the income inequality
- The more the benefits are targeted to the poor, the lower the income inequality.

6. CASE STUDY I: INDIA

The first case to be studied in this thesis is India. First of all, an overview of the country will be provided, afterwards hypothesis will be tested, and then the results will be analyzed.

The World Bank (2013 a) website provides a general idea of India in terms of population, economic size and historic and social transformations. India's population is slightly greater than 1.2 billion people and the country's economy is the fourth largest in the world. Over the past decades, this nation state has experienced a tremendous economic growth, particularly after it gained independence. India had been ruled by the British Empire for around 200 years until it gained independence in 1947 (The British Library Board, 2013). This country had always been largely dependent on grain imports; nonetheless, it has undergone an agricultural revolution which has led India to be a net exporter of food. Moreover, the country has experienced a great process of industrialization and urbanization, which have caused major changes in the state's architecture. For instance, it is now a worldwide net exporter of food and it has a global reputation regarding steel, space and information technologies, and pharmaceuticals. In the near future the county will have the youngest and biggest labor force the world has ever witnessed. In addition, the nation is experiencing a strong urbanization process and around ten million people each year leave the rural areas to seek opportunities in the cities. It represents the greatest rural- urban migration of this era. Moreover, India also witnessed substantial social changes and improvements besides its huge economic growth: life expectancy, health conditions and literacy rates have risen substantially.

All these progresses and its great future potential have brought India to be recognized as a very significant player on the international scene (The World Bank, 2013).

Despite the incredible growth in GDP, India faces a very high level of income inequality which creates challenges for future developments. Unlike some South Asian countries, data show an increase in income inequality in India in the past decades, especially between urban and rural income. Urban growth has been identified to be "pro-rich", thus widening within-country inequalities (Olinto & Savedra, 2012: 2- 3).

This argument is supported by Mehta and Sarkar (2010: 55) and Arnal and Förster (2010), who argue that the Gini coefficient for India, which is the measure of inequality in the country, indicates that inequality is greater than in the past decades. As indicated in Graph *, the Gini Index increased from 30.8 % in 1993 to 33.9 % in 2010 (World Development Indicators, 2013). Ravallion (2011: 78), Carnoy (2011) and Pieters (2011) highlight the fact

that one needs to be careful when comparing inequality values for India with other countries, because Indian figures are based on consumption and not on income. Inequality measure is calculated using data from Indian National Sample Survey (NSS), which are based on consumption. Nevertheless, consumption inequality is most likely to be lower than inequality calculated using income values. This is caused by the so-called "consumption smoothing", which argues that low incomes are enhanced by borrowings or savings, while high incomes prove to be the supplement to wealth or to debt repayments (ibid.: 98). It translates into a possible underestimation of the overall income inequality level India and even of the rate of growth of such inequality in India. Moreover, other key dimensions underlying income inequality are usually not part of the Gini coefficient. They include, for instance, caste, gender and access to education and healthcare.

Despite this consideration and looking at Graph 1 (pag. 4), income inequality has indeed increased in the last decades in this country. The rise is especially prevalent in the upper income group, thus exacerbating the disparity between wealthy and non-affluent citizens. The rich have gained at the expense of the poor; hence the poor have become even more vulnerable. These results have been detected as a consequence of the lack of employment opportunities in the formal economy, which would guarantee more stability in the system and equal chances for all. Furthermore, among the emerging economies such as China, Argentina, Indonesia, Brazil, India, South Africa and the Russian Federation, India has the highest rate of headcount poverty. Indeed, about 42 % of the population still lives with less than $ 1.25 (US Dollars) per day (OECD, 2011 a: 48).

As previously mentioned in the introduction, there are several factors that influence the increase or decline of income inequality. However, in this thesis only the key drivers will be analyzed. Hypotheses will be tested in order to investigate whether each factor (i.e. the independent variables) leads to the rise or fall of the inequalities (i.e. the dependent variable).

6.1 Hypothesis I

The first hypothesis states that:

*The higher the spatial inequality, the higher the income inequality.*

India has experienced high economic growth and the increase in per capita income from the 1980s. Nevertheless, these economic improvements were mainly concentrated in certain regions, which have been able to attract more investments compared to poorer states (Asian Development Bank, 2007). These improvements in economic performance partially led to a reduction in the level of poverty; however it was combined with a rise in income inequality (Kurian, 2000: 538; Thomas, 2009: 76).

The government of India designed and implemented important economic reforms in 1990- 91. After the liberalization policies were carried out, the income of the top 1 % of the income earners increased by 50 % (Pal & Ghosh, 2007: 5). The post- reform period was characterized by a rise in income inequality and disparities among Indian states.

Kurian (2000) conducted an analysis on inter- regional inequalities among Indian states with respect to key indicators regarding social and economic development using data from the 1990s. The unit of analysis of the study comprised fifteen Indian states, which accounted for 96 percent of the Indian population. The remaining four per cent of inhabitants was left out of the study because it was distributed in ten smaller states and seven union territories, including Delhi (ibid.: 539). The author divided the fifteen states into two subgroups: a 'group of forward' states and a 'group of backward' states. The first set was composed by Gujarat, Andhra Pradesh, Karataka, Haryana, Kerala, Maharashtra, Tamil Nadu and Punjab. The second group of states was constituted by Assam, Bihar, Uttar Pradesh, Madhya Pradesh, Rajasthan, Orissa and West Bengal. One the one hand, the most advanced regions are geographically located in the Southern and Western side of India, with six out of eight states which look out to sea. On the other hand, only two out of seven backward states face the sea and they are all situated in the North and East part of the country.

Graph 2 plots the gross State Domestic Product values of Indian states in Lakh rupees current prices. The values are drawn from the Reserve Bank of India and concern the years from 2004- 05 to 2011- 12. In 2004- 05 the average gross SDP was equal to 8,683,450 rupees and it grew to 24,369,705 rupees in 2011-12.

Graph 2. Gross State Domestic Product
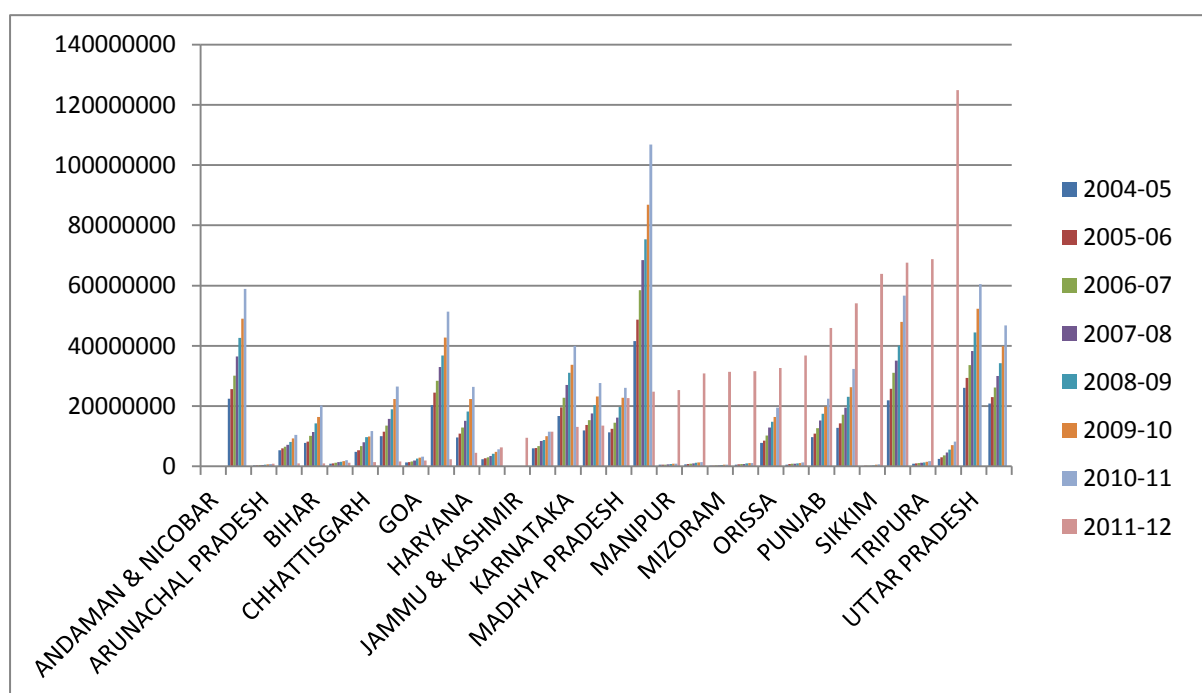
Source: Reserve Bank of India (2013). Database on Indian economy.[11]

It is clear from the graph that even if some of the states faced an incredible increase in gross state domestic product in 2011- 12, states' level of SDP is still largely different. The highest gross SDP is registered in Uttaranchal, Tripura and Tamil Nadu, while the lowest was recorded in Andaman & Nicobar, Andhra Pradesh and Arunachal Pradesh[12].

Shankar and Anwar Shah (2001) and Thomas (2009) found evidence of an increase in regional disparity since 1997 as well and they make reference to other authors[13] who came to the same conclusion. Moreover, Gaur (2010, August) conducted a study on inter-state inequalities using State Domestic Product and per capita State Domestic Product from 1980 to 2002. As the other authors, he maintains that regional imbalances have widened, because the State Domestic Product of Indian states has grown disproportionally. This is also confirmed by Graph 2 which shows the very large variances among states. In last decade, the richer states were able to increase their wealth even more than in the past, while poorer regions were not able to catch up on them (ibid.: 3).

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[11] http://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics
[12] Gross State Domestic Product values of West Bengal and Uttar Pradesh for the year 2011-12 are not available.
[13] Bajpai and Sachs (1996), Cashin and Sahay (1996), Nagaraj, Varoudakis and Veganzones (2000).

One component of regional imbalances in economic performance is the trend in migration from rural to urban areas. This phenomenon has an impact on the level of income inequality within the country as well.

In 1991, the urban population accounted for 25.7 per cent of the total population (Kurian, 2000: 540). As it can be expected, the forward states had a higher share of urban population than all- Indian level (except for Haryana), while backward states had a lower share of urban population (apart from West Bengal) (ibid.).

The following graph displays data taken by the World Bank Indicators website regarding the trends of urban and rural population as a percentage of the total population. On the one hand, the percentage of urban population has gone up since the beginning of the 1990s and it reached 31.3 % of the total in 2011. On the other hand, rural population has decreased from 74.5 % in 1990 to 68.71 % in 2011 (World Bank Indicators, 2013).

Graph 3. Urban and rural population (% of total population)
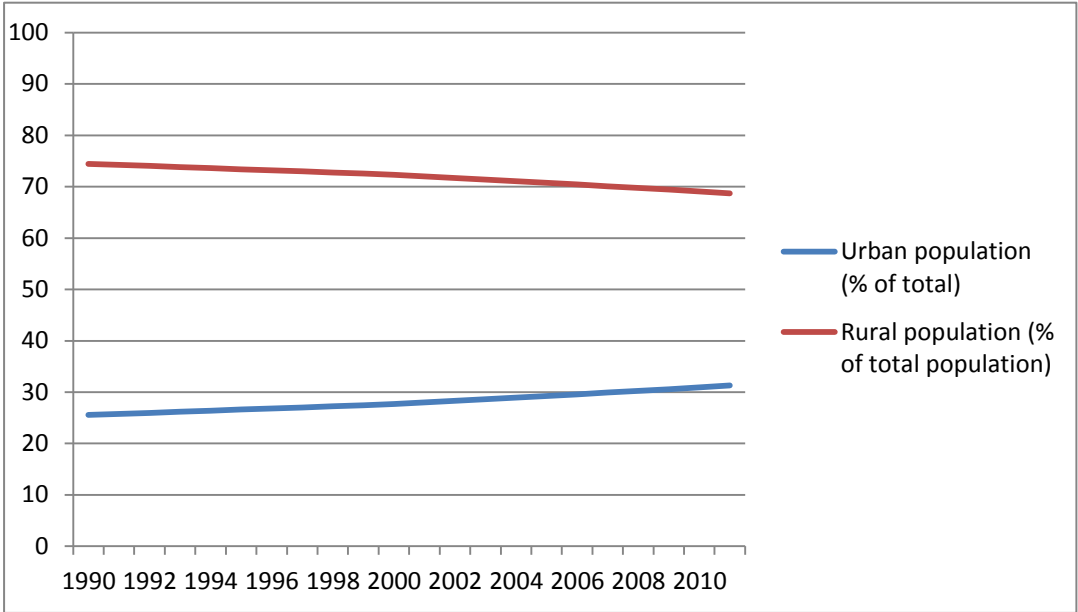
Source: The World Bank (2013 d). World Development Indicators.[14]

From the 1990s, the country has been subject to some rise in income inequality within both rural and urban regions. Despite some government policies designed to foster the

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[14] http://databank.worldbank.org/data/views/reports/tableview.aspx#

development of lagging regions, social and economic intra- states differences have risen (ibid.). The country also faced lower growth in their per capita rural incomes compared to urban incomes, thus leading to an increase of inequality to the benefit of urban dwellers (OECD, 2011 a: 53).

The following figure shows the Gini coefficient of per capita household consumption in India (ibid.: 54). The graph clearly shows that the Gini coefficient of per capita household consumption increased in both Indian rural and urban areas between the early 1990s and the late 2000s. From the rise of the Gini index more in urban than rural areas, it can be deduced that the increase in per capita consumption occurred to the advantage of urban residents. This translates into a rise of income inequality among individuals living in different regions.
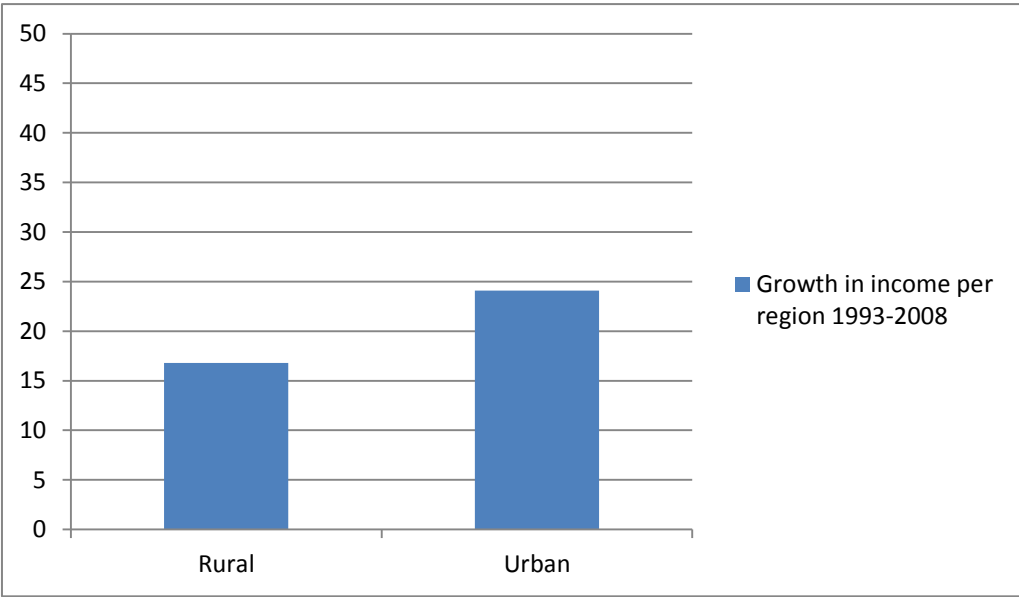
Graph 4. Gini coefficient of per capita consumption
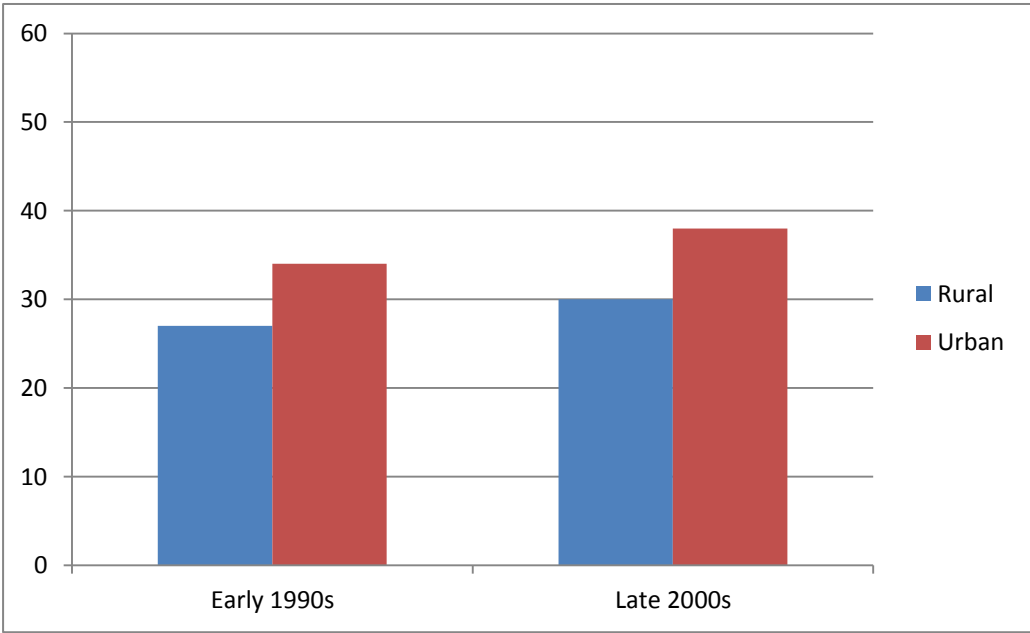
Source: OECD (2011 a). OECD-EU Database on Emerging Economies and World Bank Development Indicators Database.

The next graph displays the percentage growth in income for urban and rural areas from the beginning of the 1990s to the late 2000s. Data for India refer to real incomes[15]. Urban incomes increased by 24.1 %, while incomes in rural regions have grown by 16.8 %. This translates into a rise in income for urban inhabitants at the disadvantage of rural population, who saw their earnings rising by a smaller percentage. The result confirms that the regional imbalances in the distribution of income in India have risen even more in the past decades (Arnal & Förster, 2010).

Graph 5. Growth in income for urban and rural areas 1993-2008

Source: OECD (2011 a). OECD-EU Database on Emerging Economies and World Bank Development Indicators Database.

With regard to migration, Golgher (2007: 2) points out that regional poverty is influenced by the degree of migration waves and on their composition[16]. This happens because there are personal characteristics that impact a person's probability to migrate. Making reference to Kundu and Mohanan (2009), Arnal and Förster (2010: 28) highlight the fact that in India even

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[15] The OECD (2013 c) defines real income as the income from which inflation is subtracted by a price index. This is done in order to measure the purchasing power of an item over a basket of goods and services.

[16] Golgher (2007: 2) relates the composition of migration waves to migration selectivity, which comprises the individuals' characteristics that might affect the likelihood of one person to be a migrant.

if poorer households have more motivation and need to migrate to urban areas to seek for better opportunities, they actually cannot afford to migrate. Consequently, this leads to a higher rate of migration among richer households compared to poorer ones. Since wealthier individuals have more chances to find a better paid job in big cities, then the spatial inequality would increase.

Summary

The expectations for Hypothesis I are defined in section 5 and they are as follows:
Expectation 1: Increase regional imbalances in economic performance.
Expectation 2: Rise in migration from rural to urban areas.

Regarding expectation 1, the State Domestic Product of Indian states has grown disproportionally in the past decades and regional imbalances have thereby become larger. This is also confirmed by Graph 2 which shows the very large variances among states in terms of SDP. The richer states have been able to increase their wealth even more, while poorer regions were not able to get closer to their level. As a result, income differential between forward and backward are has risen in the past years.

As far as expectation 2 is concerned, evidence shows that most of the rural- urban migrants are relatively wealthy, because underprivileged households cannot afford moving away; consequently, this leads to a higher rate of migration among richer households compared to poorer ones. Migrants to urban areas have more chances to seek better job opportunities thereby further increasing income inequality.

If we compare the expectations with the empirical evidence, we can conclude that the increase regional imbalances in economic performance and the rise in migration from rural to urban areas (Arnal and Förster, 2010) indeed cause a rise in income inequality levels. Therefore, the expectations are met.

In sum, India suffers from high regional disparities in economic performance, where the forward states are economically and socially more advanced. Inter-states' imbalances have evolved in favor of forward regions, because they are characterized by higher social and demographic development, grater economy and level of per capita income, better

infrastructures and more favorable government policies and concessions[17] (ibid.: 549). Kurian (2000: 541) highlights that the forward states have income per capita above all-India average, while backward states suffer from below average per capita income. This issue is reflected in the gross and net state domestic product (NSDP and GSDP), which are considerably higher in the most advanced regions. Moreover, migration from rural to urban areas have increased income inequality due to better and more highly paid jobs for urban inhabitants.

6.2 Hypothesis II

The second hypothesis is:

A large and persistent informal sector contributes to the increase in income inequality.

India is characterized by a large and persistent informal economy, which mainly comprises women, street vendors, home-based workers and workers with subcontracts from the formal sector (OECD, 2011 a: 55). In particular, the majority of people involved in the shadow economy are self- employed workers.

People working in the shadow economy receive, on average, inferior wages than workers in the official economy. Jutting and Laiglesia (2009) maintain that informal workers, on average, do not earn an adequate income as other formal workers would receive for the same job and skill level. In addition, since informal workers are more likely to evade or at least avoid paying taxes, high persistent informality lessens fiscal revenues. This, in turn, leads the state to have less resources and capability to improve social security schemes for a more universal coverage (ibid.: 12; Bajada & Schneider, 2005). In times of crisis or recession and when the unemployment and layoff rates are high, developing countries are not able to guarantee sufficient unemployment benefits and grants to their citizens. This creates the need for people to look for any kind of job as source of income in order to survive.

Studying the informal economy is very complex for three reasons: there is no clear definition of it; there are almost no data available since it is not observable and there are nearly no records of it (Bajada & Schneider, 2005). Authors use different definitions and different methods to calculate the size of the shadow economy, therefore leading to the existence of

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[17] Government policies will be discussed in Hypothesis IV part.

diverse results. Two approaches will be presented here: outcomes using the Multiple Indicators Multiple Causes (MIMIC) model; and the size of informal economy expressed as a percentage of 'official' GDP.

Graph 6. Size of informal economy (% of 'official' GDP)
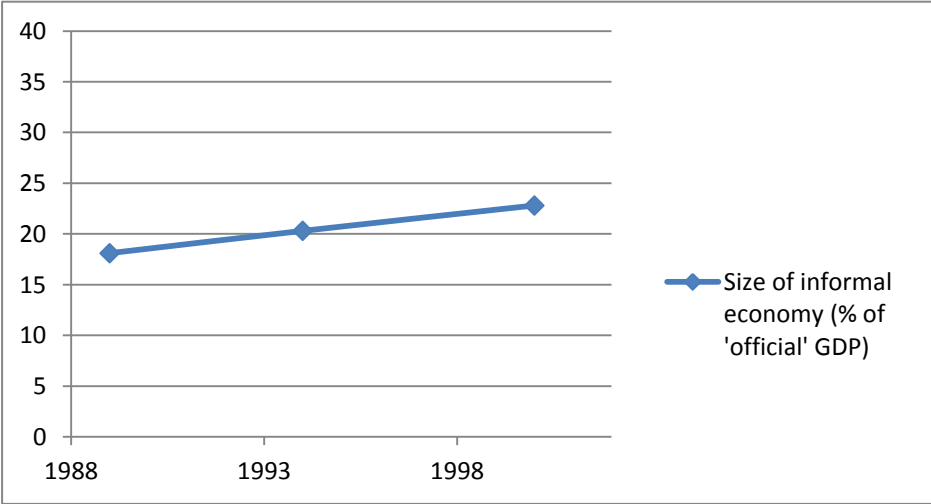
Source: Bajada & Schneider (2005).

In their studies, Bajada and Schneider (2005) estimated the size of the shadow economy as expressed in % of "official" GDP. They took the average percentages for the years 1989/90, 1994/95 and 2000/2001, which were equal to 18.1 %, 20.3 % and 22.8 % respectively. As a result, the size of the informal economy with respect to the official GDP rose by 4.7 % in the decade from 1990 to the beginning of the new millennium.

Chaudhuri et al. (2006) conducted another study on the size of the Indian informal economy by analyzing data at state level from 1974 to 1996. They used the MIMIC method and they concluded that, on average, the size of the hidden economy grew from 13.1 % in 1974-75 to 26.3 %[18] in 1995-1996 (ibid.: 440). The magnitude of the shadow economy varies across Indian states; however its average increased considerably during time.

More recent data from 1999 to 2007 were assessed by Schneider et al. (2010), who also used the MIMIC method. The causal variables used in the analysis are the burdens of taxes and

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[18] Percentages are derived from the equations in the MIMIC model.

social security contribution, regulations intensity, public sector services and official economy; while monetary and labor indicators and the state of the official economy represent the informal economy indicators (ibid.: 5-9). After having constructed a system of equations and estimating the MIMIC model, the authors found out that the size of the hidden economy was equal to 23.3 % in 1999 and it decreased to 21.4 % in 2006, but it rose again to 22.4 % in 2007 (ibid.: 19). Graph 7 shows the trend in informal economy from 1999 to 2007 using the MIMIC model.

Graph 7. Size of informal economy
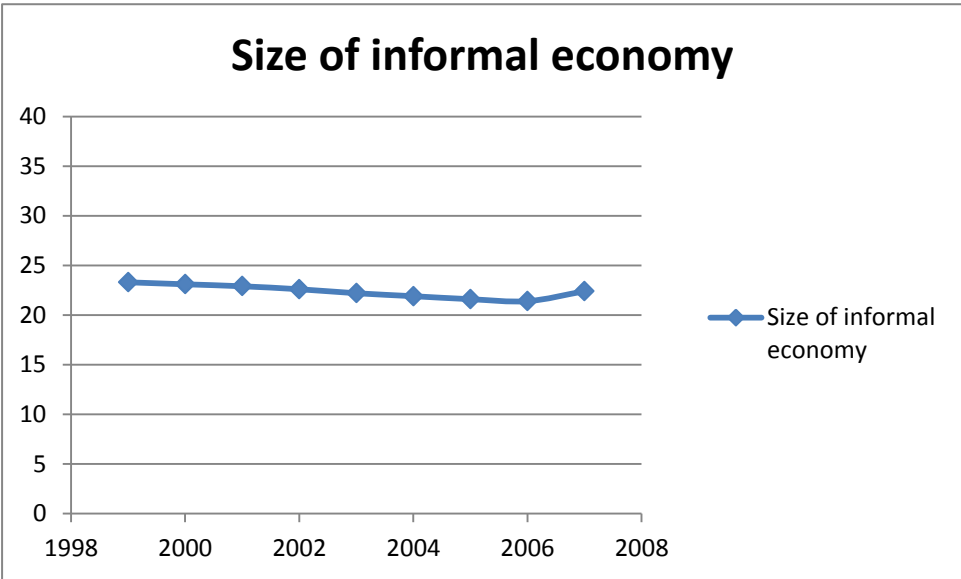
Source: Schneider, Buehn & Montenegro (2010).

Jutting and Laiglesia (2009: 12) argue that informal workers are more vulnerable than those working in the official economy. This is not only a consequence of the lower average informal wages, but it is also linked to insufficient protection from risks such as illnesses and poor and dangerous working environments. In addition, emerging countries' governments are not able to provide workers with adequate employment guarantees and unemployment benefits. As a result, individuals look for any source of income engaging themselves in low paid jobs, which increase their chances of becoming poor (ibid.: 18). Becker (2004: 22- 23) argues that enterprises involved in the hidden economy face several obstacles to which they are more vulnerable than workers in the official economy. The issues can be categorized as infrastructure, institutional and economic problems. An institutional issue is the deficiency of

access to formal security system, while an economic problem is represented by the low or occasional income

Summary

Expectation 1: lower wealth redistribution among informal workers than the ones working in the formal economy

Expectation 2: less insurance and protection for informal workers leads to an increase in poverty and inequalities.

Individuals working in the shadow economy usually earn less than their counterpart in terms of job and skills in the formal economy. Additionally, since informal workers are more likely to evade or at least avoid paying taxes, high persistent informality lessens fiscal revenues. This in turn leads the state to have less resources and capability to improve social security schemes for a more universal coverage. Informal workers are more vulnerable than those working in the official economy. This is a consequence of mainly two mechanisms. First of all, workers in the hidden economy earn less, on average. Second of all, they are subject to insufficient protection from risks such as illnesses and poor and dangerous working environments. As a result, both Expectation 1 and 2 are met.

In summary, it is argued that, at first strike, informal inequality seems not to lead automatically to an in increase in income inequality: household income from shadow activities would increase mainly among low income households (OECD, 2011 a: 56). Nonetheless, Jutting and Laigesia (2009), Bajada and Schneider (2005) and Becker (2004) show that the persistence of informal activities does lead to larger income inequality. This happens because in the informal economy wages are usually lower than in the formal one, jobs are less constant and employment in shadow activities prevents workers' future access to the official economy. This process thereby limits low-skilled workers into informal activities enhancing the perseverance of income inequality (ibid.).

6.3 Hypothesis III:

The third hypothesis claims that:

Wide gaps in access to education across the population lead to a rise in income inequality.

The level of literacy is one of the most relevant indexes that show a society's development (Kurian, 2000). India performs poorly in terms of educational attainment, especially in regards to secondary and tertiary education. Many children from poor families drop out after a short period time (Pal & Ghosh, 2007).

Hill and Chalaux (2011) point out that India's education sector has experienced changes and expansion in the past years. Government at central and state level share the accountability for the work of education system and they both have increased public spending to boost individuals' school enrolment and attendance (ibid.: 5- 7). In April 2010, the Indian government enforced the Right of Children to Free and Compulsory Education (RTE) Act. The act stipulated for the first time the right for all Indian kids between 6 and 14 years old to mandatory and free education. Consequently, this act aimed at achieving a universal coverage of primary schooling for the first time in the history of this country. Moreover, the government had also the objective of guaranteeing the access to an elementary school in every district throughout India (ibid.). The states are responsible for all indirect and direct costs that families would have incurred if the primary education was not free[19]. The central and states' governments are in charge of ensuring children attendance and conclusion of their studies (ibid.: 6).

The following table shows the "state-level enrolment rates, literacy rates and incomes" (Hill & Chalaux, 2011: 11). The Gross Enrolment Rates for elementary, secondary and tertiary school are presented together with the Literacy Rates and GSP per capita (% national average) (ibid.). The data refer to the years 2007 and 2008 except for the Literacy Rates for which they are taken from the 2011 Census. Although the enrollment and literacy rates have improved in the last decades, there are still considerable disparities across Indian states. Indeed, Southern and Western states show above average income levels and literacy rates, which are higher compared to the Northern and Eastern regions (ibid.: 10).

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[19] Direct and indirect costs include transportation, uniforms, textbooks and tuition expenses (Hill and Chalaux, 2011: 6).

Table 1. Enrolment rates, Literacy rates, and incomes at state-level

In 2007-08

| | Gross Enrolment Rates | | | | | | Literacy rate | GSP per capita (% national average) |
| | Elementary (grade 1 to 8) | | Secondary (grade 9 to 12) | | Tertiary | | | |
	Males	Females	Males	Females	Males	Females		
Andhra Pradesh	99	94	76	66	20	12	68	100
Arunachal Pradesh	109	101	102	80	10	9	67	82
Assam	111	114	80	67	10	8	73	61
Bihar	93	85	54	36	9	4	64	31
Chandigarh	99	96	87	73	47	44	86	298
Chhattisgarh	108	99	56	51	7	3	71	85
Delhi	110	103	74	79	16	20	86	216
Goa	98	104	80	69	18	13	87	275
Gujarat	103	96	62	47	11	9	79	135
Haryana	111	104	85	66	15	16	77	161
Himachal Pradesh	113	110	98	91	12	11	84	118
Jammu & Kashmir	116	116	100	77	15	17	69	71
Jharkhand	102	101	65	46	13	9	68	58
Karnataka	102	96	72	65	17	9	76	105
Kerala	101	98	100	104	21	29	94	123
Madhya Pradesh	106	102	55	40	12	9	71	55
Maharashtra	101	100	80	67	17	16	83	142
Manipur	108	108	100	88	7	8	80	56
Meghalaya	109	119	64	51	12	9	75	84
Mizoram	109	107	71	85	16	12	92	81
Nagaland	112	107	101	98	11	12	80	57
Orissa	98	97	57	47	11	7	73	75
Puducherry	102	104	90	96	27	23	87	234
Punjab	104	102	64	69	11	12	77	132
Rajasthan	106	94	70	45	14	7	67	69
Sikkim	120	122	56	46	9	7	82	98
Tamil Nadu	100	102	82	83	18	15	80	116
Uttarakhand	104	99	84	78	11	9	80	96
Uttar Pradesh	100	94	58	46	14	15	70	47
West Bengal	102	103	51	47	14	8	77	89
India	**102**	**97**	**67**	**56**	**14**	**12**	**74**	-

Source: Hill and Chalaux (2011)

Access to education can be assessed by employing the Millennium Development Goals Indicators. In order to analyze the trend in enrolment in all-India, the "Total net enrolment ratio in primary education, both sexes" is used. It considers access to education as the completion of "one full course of primary schooling" for both girls and boys around the world (Millennium Development Goals Indicators, 2013).

Graph 8. Total net enrolment ratio (%) in primary education, male and female
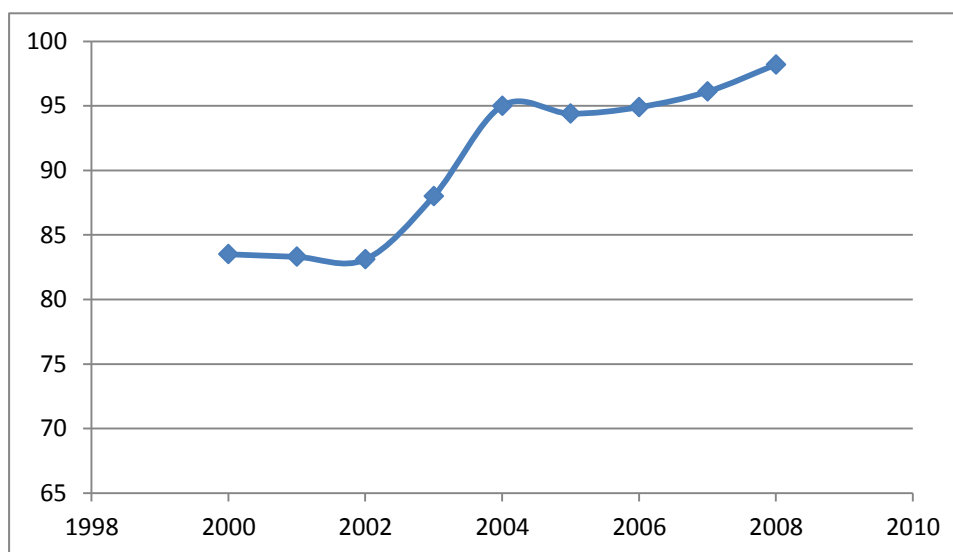
Source: Millennium Development Goals Indicators Database. [20]

As Graph 8 shows, the Total net enrolment ratio in primary education for both sexes fell from 83.5 % in 2000 to 83.1 % in 2002. However, it saw a significant rise from 2002 onwards going from 83.1 % to 98.2 % in 2008[21].

As the previous graph shows, the primary school enrollment rate has grown very much since the early 2000s. Nevertheless, Hill and Chalaux (2011: 10) and OECD (2011 a) maintain that regional disparities in access to education are high across Indian states. The Northern and Eastern poor regions retain lower than average enrolment rates, while the Southern and Western richer states perform better. Indeed, Southern states for instance Tamil Nadu and Kerala vary from states like Bihar and Uttar Pradesh in individuals' educational level (Asadullah & Yalonetzky, 2012: 1160). On top of spatial inequalities, lower castes such as Scheduled Castes (SC), Scheduled Tribes (ST)[22] and Other Backward Castes (OBCS) suffer from below national average literacy rate and income levels (ibid.). There is also a big disparity between the educational level of women and men, the latter having, on average, the highest level (Pal & Ghosh, 2007).

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[20] http://mdgs.un.org/unsd/mdg/Data.aspx

[21] The constant growth of this indicator was undermined only in the year 2004- 05 where its value decreased by 0.6 %.

[22] Scheduled Caste and Schedule Tribe are the lowest groups in the social hierarchy. Some of them are also called the "untouchable" and they are not even considered as part of the caste system (Desai and Kulkarni, 2008: 246- 247).

An aspect to take into consideration is that educational expansion does not necessarily translate into educational equality. Educational inequality represents the difference in average wage between workers with more years of education and those with fewer years (Azuma & Grossman, 2003: 1-2). Evidence suggests that educational inequality remains steady or even worsens when education grows[23] (Desai & Kulkarni, 2008: 245; Pieters, 2011). The demand for highly skilled workers has been increasing due to worldwide trade and technical improvements. This in turn has raised the proceeds of education thereby widening the gaps between low and high educated individuals (ibid.).

Pieters (2011: 1909) conducted a study on the impact of education on household inequality in India from 1993 to 2004. Data regarding the distribution of incomes take into consideration only "wage workers" due to information unavailability for other sectors (ibid.: 1912). This, however, represents a limit to the study, since about 50 % of Indian workers are self-employed and thus not included in the statistics. As one can expect, educational attainment is much lower in rural than urban regions and also lower among women than man. He concluded that education disparity caused inequality to grow both directly and indirectly. The direct influence takes place because "rising educational attainment increased household inequality because the inequality of education itself increased" (ibid.: 1922). Inequality rose indirectly partially because the fertility rate fell more slowly among illiterate or less educated people in general.

Support to this argument comes from the Asian Development Bank (2007: 12), which claims that most of the rise in income inequality is due to people's different educational attainments. In 2004, workers having completed tertiary education or college earned almost 25 % more income compared to those who only completed primary education[24]. Earnings of more educated individuals also rise faster than those of lower educated ones, because they are more likely to chase the best opportunities and jobs that the market offers (ibid.: 14).

India experienced a rise in the educational level of its citizens at all levels. Despite the government's focus on primary education, secondary and tertiary education enrollment rates have improved as well in the past decade (ibid.). This was due to the government's greater investments through higher public expenses. Nonetheless, the main problem of the Indian

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[23] See Halsey, Heath, and Ridge (1980); Hauser and Featherman (1976) for further discussion.
[24] Data refer to average Weekly Real Wage by Level of Education, Urban Full-time Employees (2002 US$ prices) in 2004 (Asian Development Bank, 2007: 12).

education system is the poor quality of schools. According to a national survey, only half of the fifth graders was able to read properly a text for children in second graders (ibid.: 13).

Summary

The expectation for Hypothesis III is defined in section 5 and it is as follows:
Expectation 1: the lower the level of people's education, the lower their average earnings.

As already discussed, educational inequality represents the difference in average wage between workers with more years of education and those with fewer years. Workers having completed only primary education courses earned almost 25 % less income than people with a tertiary education or college degree in 2004. Earnings of less educated individuals also rise more slowly than those of higher educated ones, because they are less likely to chase the best opportunities and jobs that the market offers.

Having analyzed empirical data, it can be concluded that the expectation is met. People with a lower level of education do earn, on average, a lower income compared to higher educated workers. Moreover, education disparity caused inequality to rise both directly and indirectly. These phenomena have contributed to an increase in income inequality.

The access to education in India has improved in the past 15 years and it is approaching the level of more advanced countries. This was due to higher central and states' government expenditure devoted to the education system. The number of children who completed a full course of primary school has grown, but also the enrolment rate in secondary and tertiary education has enhanced. The process of improvement is, however, slow and individuals' educational attainments vary considerably across Indian states. As in the case of economic performance, the states in the South outperform the ones in the North in terms of school enrolment and literacy rate. Another hurdle in access to education is represented by exogenous[25] characteristics of the individual. In effect, evidence shows that people belonging to lower castes have difficulties in obtaining a proper education. Despite these improvements, education disparity caused income inequality to grow.

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[25] For instance gender, caste, state of birth and race (Asian Development Bank, 2007).

6.4 Hypothesis IV:

The fourth hypothesis maintains that:

An improvement of government redistributive policies causes a decrease in income inequality.

The size of public expenditure can be analyzed in order to study the enhancement of social and economic progress in a country. Since India has a federal system, both the central and state expenditure should be considered.

In their studies, Kurian (2000: 542) and Pattnaik et al. (2005: 606) pointed out that public expenditure can be divided into "developmental and non-developmental". The former comprises social services like health, education, housing, employment etc. The latter includes for instance administration costs, interest payments, sustainment of state bodies, pensions etc.

Graph 9. Central and State Developmental Expenditure
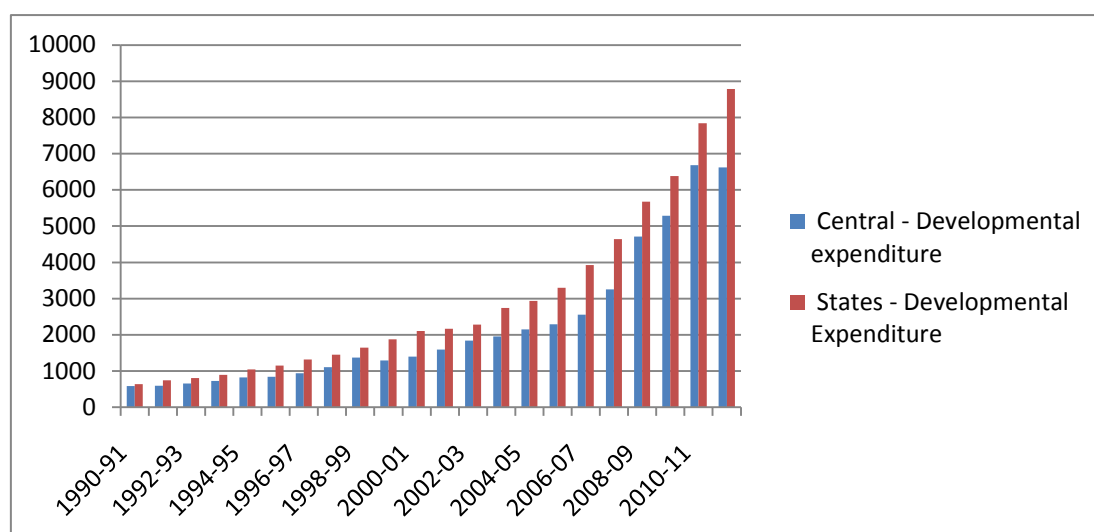
Source: Reserve Bank of India (2013). Database on Indian economy[26].

Graph 9 displays the developmental expenditure of the Indian central and state governments in billion Rupees from 1990- 1991 to 2011- 2012. Data are taken from the Database on Indian economy of the Reserve Bank of India. As it is clear from the graph, both state and central governments' development expenditure has grown significantly from 1990- 91, especially at state level. One the one hand, in 1990- 91 central government's developmental expenditure

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[26] http://dbie.rbi.org.in/DBIE/dbie.rbi?site=statistics

was equal to 586.45 bln Rupees and it reached 6622.56 bln in 2011-2012. On the other hand, developmental expenses at states level was 633.7 bln Rupees in 1990- 91 and it skyrocketed to 8783.62 bln in 2011- 12. The values indicate that state governments' developmental expenditure grew faster than expenses at the central level. Indeed, the expenditure at the state level is almost 33 % more than that at central level. In addition, Kurian (2000) examined per capita expenditure by Indian states, which were divided into a forward group and a backward group[27]. He considered data covering the years 1980-81 and 1995-1996, which were taken from the Ninth Five-Year Plan (1997-2002) issued by the Government of India. The analysis shows that the per capita development expense in the forwards states was higher than the all-India average but Tamil Nadu, while it was lower for the states in the second group except for Orissa where it was greater (ibid.: 542).

Although state governments' developmental expenditure has significantly grown since 1990, there are considerable differences across Indian states where backward states perform more poorly than in the forward regions.

One of the most important social policies introduced in India is the National Rural Employment Guarantee Program[28] (NREGP), which was implemented in 2006 after the Act issued in the prior year (Jha, Bhattacharyya, Gaiha & Shankar, 2009: 457; Chhibber, Ghosh & Palanivel, 2009). It is part of the so-called public works programs (PWPs), which supply income support to unemployed people who are not subject to receive unemployment benefits (OECD, 2011 a: 73). Public works programs have two objectives: they ensure a minimum income source to the poorest by employing them in "labor- intensive public works"; and they invest in the development of backward areas by building infrastructures[29] (ibid.).

The National Rural Employment Guarantee Program is the largest public work program in India and one of the biggest in the world. It reached 10 % coverage of the total Indian labor force in 2008- 09 and it was applied to the entire country by the end of 2009 (ibid.: 74). NREGP guarantees up to 100 days of unskilled work to all rural families at farmers' minimum wage (Jha et al., 2009). In case workers apply for the job but do not obtain it in 15 days, they are granted an unemployment compensation ranging between 30 % and 50 % of

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[27] See discussion in Hypothesis I part.

[28] Ravallion (2011) claim that NREGP was significantly influenced by the Employment Guarantee Scheme (EGS), which was implemented in the Indian state of Maharashtra in the early 1970s.

[29] For instance, PWPs regard the construction of roads, bridges, sewerage systems, the maintenance of public buildings, water conservation, etc. (ibid.).

the minimum wage they would have earned by working (OECD, 2011 a: 74). The National Rural Employment Guarantee Program is carried out by local governments not by the Indian central administration. Ravallion (2011), OECD (2011 a) and Chhibber et al. (2009) argue that NREGP is self-targeting, since these very low paid jobs would not be appealing to non-poor households. The program is therefore exploited by marginalized groups such as women and people belonging to some tribes and lower castes[30]. Nevertheless, evidence suggests that this program has not achieved its full potential and also suffers from funding design problems (ibid.). The allocation of funds is not decided in advance based on states' income levels, but it is instead decided from the "Annual Work Plan and Budget Proposal" that each state submits as proposal to the central government (OECD, 2011 a: 74). Chakraborty (2007: 14) draws attention on the fact that Indian backward states, which are characterized by low managerial and planning expertise on labor demand, receive on average a lower amount of funds compared to richer states.

Summary

The expectations for Hypothesis IV are defined in section 5 and they are as follows:

Expectation 1: the less wealth redistribution among citizens, the higher the income inequality
Expectation 2: the less the benefits are targeted to the poor, the higher the income inequality.

With respect to Expectation 1, per capita development expense in almost every forward state was higher than the all-India average. It was lower for the states in the second group except for Orissa where it was greater (Kurian, 2000: 542). Although state governments' developmental expenditure has significantly grown in the last decades, there are significant disparities across Indian states where backward states perform more poorly than in the forward regions. The analysis of this expectation parallels the inquiry of Hypothesis II (i.e. informal economy), because states' capacity to redistribute wealth depends on their tax revenue base.

As far as Expectation 2 is concerned, the National Rural Employment Guarantee Program (NREGP) is self-targeting, since these very low paid jobs would not be appealing to wealthier households. Therefore, the program is exploited by marginalized groups such as women and

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[30] Chhibber et al. (2009: 93) report the biggest marginalized groups that are attracted by the NREGP: Scheduled Castes (30 %), Scheduled Tribes (22 %), and women (52 %).

people belonging to some tribes and lower castes. After the analysis of empirical results, one can conclude that Expectation 2 is met, however its effects on income inequality is unclear.

Graph 9 on page 40 shows that state governments' developmental expenditure grew faster than expenses at the central level. Although state governments' developmental expenditure has significantly grown since 1990, there are considerable differences across Indian states where backward states perform more poorly than in the forward regions.

The NREGP is the largest public works program in India. It is mainly used by marginalized groups such as women and people belonging to some tribes and lower castes. It ensures a minimum income source to the poorest by employing them in "labor- intensive public works". It invests in the development of backward areas by building infrastructures. Although it has contributed to poverty reduction in India, it has not reached its great potential yet. Evidence of its impact on income inequality is therefore not clear.

6.5 Conclusion – India

In the first hypothesis, spatial inequality is analyzed. An increase in income inequality is tested taking two expectations into consideration: a rise in regional imbalances in economic performance; and an increase in migration from rural to urban areas. The second hypothesis concerns the persistence of informal economy and two expectations: lower wealth redistribution among informal workers than the ones working in the formal economy; and less insurance and protection for informal workers leads to an increase in poverty and inequalities. The third hypothesis deals with access to education across the population and its expectation states that the lower the level of people's education, the lower their average earnings. Hypothesis four pertains to government redistributive policies and it has two expectations: the less wealth redistribution among citizens, the higher the income inequality; and the less the benefits are targeted to the poor, the higher the income inequality.

The following table represents a summary of the already discussed conclusions regarding each hypothesis.

Table 2. Hypotheses, expectations and effects on income inequality - India

Hypotheses		Expectations	Are expectations met?	Effect on income inequality
Hypothesis I	Spatial inequality	Expectation 1	Yes	↑
		Expectation 2	Yes	↑
Hypothesis II	Informal economy	Expectation 1	Yes	↑
		Expectation 2	Yes	↑
Hypothesis III	Access to education	Expectation 1	Yes	↑
Hypothesis IV	Government policies	Expectation 1	Yes	↑
		Expectation 2	Yes	?

In the Indian case, all the expectations are met and they are supported by empirical evidence. First, the rise in regional imbalances in economic performance and the increase in migration

from rural to urban areas have caused income inequality to grow. Second, lower wealth redistribution among informal workers than the ones working in the formal economy and less insurance and protection for informal workers leads to an increase in poverty and inequalities. Third, access to education is influenced by states' development and usually poorer individuals live in poorer states than more educated ones. A lower educational level leads to lower average earnings and this exacerbates income inequality between individuals. Fourth, less wealth redistribution among citizens causes income inequality to rise. If benefits are not targeted to the poor, income inequality tends to rise. However, there is not enough empirical evidence supporting the latter casual relation for India. The public work program National Rural Employment Guarantee Program is self-targeting, since these very low paid jobs would not be appealing to non- poor households. The program is, therefore, mainly used by marginalized groups. In principle, this should lead to a decrease in income inequality among citizens, but its effect is not clear on income inequality yet.

7. CASE STUDY II: BRAZIL

The second case to be studied in this thesis is Brazil. First of all, an overview of the country will be provided, afterwards hypotheses will be tested, and then the results will be analyzed. The World Bank (2013 b) website presents an overview of the country. Brazil is the largest state in South America and the Caribbean in terms of population and economic size. The total population was equal to 196.7 million in 2011 and Brazilian Gross Domestic Product was equal to US$ 2,223 trillion in 2012, which made Brazil the seventh most prosperous economy in the world. However, Brazilian economic growth has slowed down in the past three years. Its growth in GDP declined from 7.5 % to 2.7% in 2011 and approached 0.9% in 2012 (ibid.). Despite the deceleration in economic expansion, Brazilian internal market seems to be recovering well due to the sound responses from the financial market, banking system, economic stability and the good social wellbeing (ibid.).

Brazil is subject to much diversity for many aspects across its states. It is dependent on large climatic and geographical variations and its population is made up of indigenous tribes, European and Asian immigrants and black people who arrived during the slavery era (Salardi, 2005: 2). These differences can create the basis for prosperity; however, Brazil suffers from large regional imbalances particularly regarding social indexes. The Southern and Southeastern regions are richer and enjoy better social conditions, while the Northern and Northeastern areas are poorer and are socially worse off (Stiftung, 2012). Extreme poverty has decreased over time and people living under the US $ 1.25 per day threshold fell from 10 % in 2004 to 2.2 % in 2009. In addition, income inequality across the population is very high. Brazil's unequal distribution of income is among the largest in the world (ibid.). Yet it has consistently declined over the past two decades. The Gini coefficient was equivalent to 0.61 in the early 1990s, while it was equal to 0.52 in 2011 (The World Bank, 2013). Although the level of disparity in income distribution is still impressive, Brazil is experiencing a positive trend in the reduction of inequalities (ibid.; Arnal & Förster, 2010).

Hereafter, the four hypotheses presented in the introduction of the thesis will be tested. A comparison between the expectations predicted from abstract theories and empirical results for each hypothesis and expectation will be analyzed.

7.1 Hypothesis I

The first hypothesis states that:

The higher the spatial inequality, the higher the income inequality.

As in the case of India, Brazil suffers from large regional disparities in both economic and social terms (Silveira-Neto & Azzoni, 2006). Silveira-Neto and Azzoni (2006) conducted a study on Brazilian income growth and apportionment across the population. They use data that represents income per capita in 25 Brazilian states from 1985 to 2001 and the figures are taken from IBGE (Brazilian Institute of Geography and Statistics). Empirical results have shown that per capita income is indeed distributed unevenly across states. Silveira-Neto and Azzoni divide Brazilian states into two clusters: the first one composed by Northeastern regions and the second one comprising Southeast states. The former group is faced with lower income levels, while the latter cluster is characterized by higher levels of income per capita. The authors point out that the area of Sao Paulo is the richest in Brazil and its per capita income is about six times higher than that of Maranhão, the poorer Brazilian state (ibid.: 603). In 2000, 46 % of all Brazilian income was gathered in Rio de Janeiro and Sao Paulo, while the income held by the sixteen Northern and Northeastern states reflected only 19.3 % of the total (Amaral, Lemos, Simões & Chein, 2010: 473).

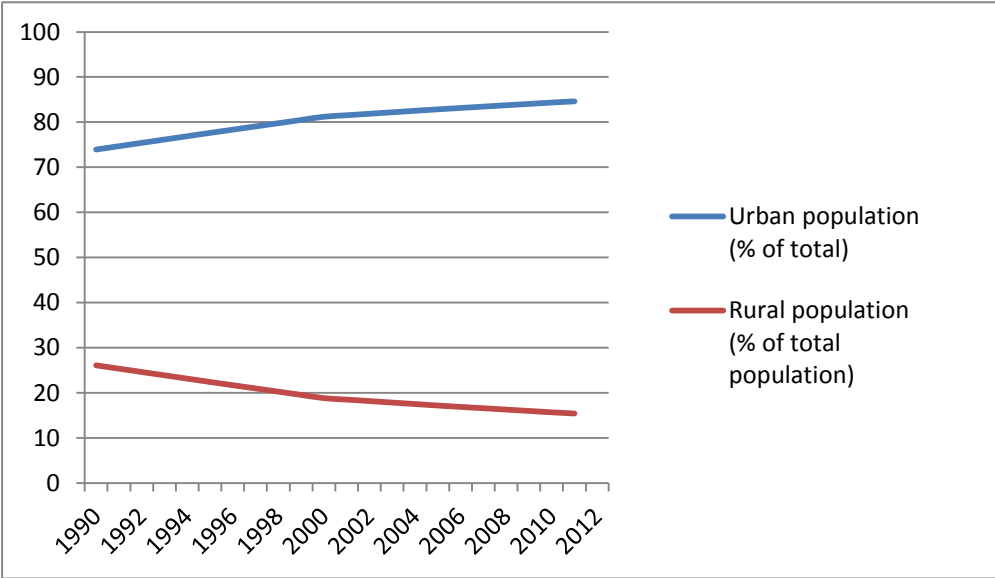Graph 10. Gini coefficient of per capita consumption
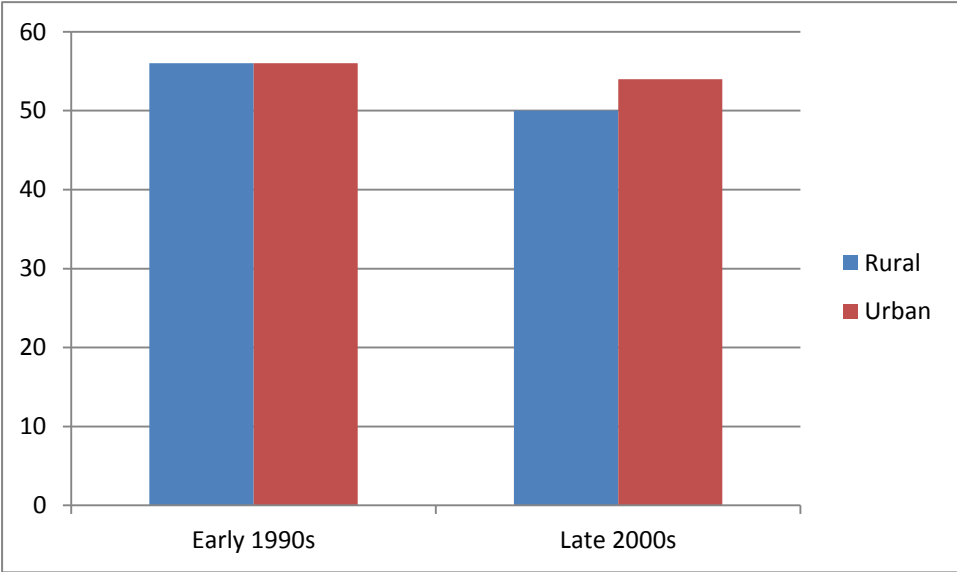
Source: OECD (2011 a). OECD-EU Database on Emerging Economies and World Bank Development Indicators Database.

In addition, a large "spatial rigidity" in per capita income distribution can be observed in Brazil, because only two states out of the second group (i.e. low income states) managed to move to the rich-states cluster (Silveira-Neto & Azzoni, 2006: 605). The opportunity to change a state's status quo is low, thus the enhancement of income per capita distribution proves to be hard.

The uneven distribution of income across regions is also clear from the Gini coefficient levels across states. In Graph 10 on the preceding page, the Gini Index of per capita consumption in Brazil is displayed (OECD, 2011 a). On the one hand, the Gini in rural regions was equal to 55.6 % in the early 1990s, while it decreased to 50 % in the late 2000s. On the other hand, the Gini coefficient in urban areas was 56 % in the early 1990s and it fell only to 54 % in the late 2000s (ibid.). Therefore, it can be deduced that income inequality declined more across the rural population than across urban inhabitants.

One component of regional imbalances in economic performance is the trend in migration from rural to urban areas. This phenomenon has an impact on the level of income inequality within the country as well.

Graph 11. Urban and rural population (% of total population)

Source: The World Bank (2013 d). World Development Indicators. [31]

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[31] http://databank.worldbank.org/data/views/reports/tableview.aspx#

Graph 11 shows the trend of growth and decline in rural and urban population as a percentage of total population from 1990 to 2011. On the one hand, the number of rural inhabitants fell by almost 11 % as it was equal to 26 % in 1990 and 15.40 % in 2011. On the other hand, the urban population rose as well by 11 percentage points, since it was 73.92 % in 1990 and 84.60 % in 2011.

As already mentioned in the analysis of Indian migration from rural to urban areas, regional poverty is influenced by the degree of migration waves and on their composition. This happens because there are personal characteristics that impact a person's probability to migrate (Golgher, 2007). In Brazil, people with a lower income tend to migrate less than individuals with a higher income. It happens especially in the case of long distance trips and rural-urban movements. Individuals with a higher income are more likely to be able to afford the travel costs and accommodation expenses that long distance trips require. Moreover, richer and more educated individuals have more chances to find a job once they arrive in richer cities or states.

Graph 12. Growth in income by region 1993-2008
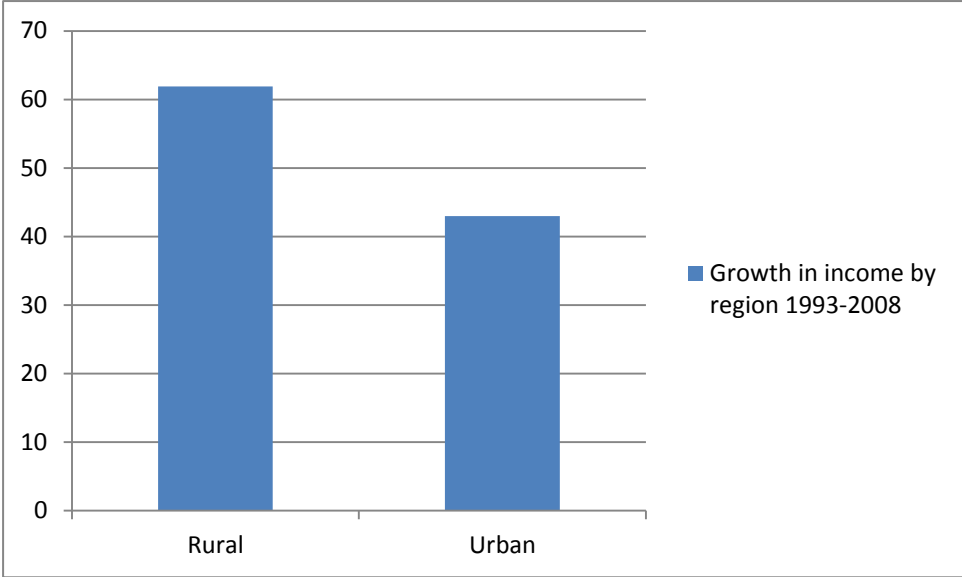
Source: OECD (2011 a). OECD-EU Database on Emerging Economies and World Bank Development Indicators Database.

It is also interesting to see how income in different regions grew over time. Data are taken from the OECD and World Bank Development Indicators databases from 1993 to 2008

(OECD, 2011 a). In fifteen years, both rural and urban inhabitants experienced a great rise in their per capita real income: rural incomes increased by 61,9 % and urban incomes rose by 43 percentage points (ibid).

Since the growth in income was higher in rural areas than in urban areas, it means that rural dwellers saw their incomes improving more than people living in urban areas during this period. Consequently, this has led to shrinkage in the per capita income gap between rural and urban regions.

Summary

The expectations for Hypothesis I are defined in section 5 and they are as follows:

Expectation 1: Decrease regional imbalances in economic performance.

Expectation 2: Rise in migration from rural to urban areas.

With respect to Expectation 1, since the growth in income was lower in urban areas than in rural regions, it means that rural dwellers saw their incomes improving more than people living in urban areas during this period. Therefore, this has led to shrinkage in the per capita income gap between urban and rural regions. This trend translates into a decrease in regional imbalances across Brazil. It can thus conclude that Expectation 1 is met.

Taking Expectation 2 into consideration, migration from rural to urban areas had indeed increased in the last years. Individuals with a higher income are more likely to be able to afford the travel costs and accommodation expenses that long distance trips require. It happens especially in the case of long distance trips and rural-urban movements. However, this wave of migration has not led to a rise in income inequality, because rural incomes have grown more than elsewhere. Therefore, Expectation 2 is met but its effect on income inequality is unclear.

In summary, Brazil suffers from very large spatial inequalities and income inequality is so high that, in the early 2000s, the areas of Sao Paulo and Rio de Janeiro gathered almost half of all Brazilian income. Indeed, the South and Southeastern regions enjoy better conditions, higher incomes per capita and higher living standards. Nevertheless, the Gini coefficient in rural regions decreased by 4.5 % in the period from the beginning of the 1990s to the late 2000s. Also, in the same period of time, the Gini Index in urban areas fell only by 2 %. As a

consequence, this leads to the conclusion that income inequality declined more across the rural population than across urban inhabitants. This conclusion is supported by the fact that rural incomes increased by 61,9 %, while urban incomes rose by 43 percentage points in the past 20 years. In Brazil, people with a lower income tend to migrate less than individuals with a higher income. It happens especially in the case of long distance trips and rural-urban movements. All in all, it can be concluded that the income gap between rural and urban areas has narrowed.

7.2 Hypothesis II

A large and persistent informal sector contributes to the increase in income inequality.

Shadow economy is very much widespread in Brazil and it is even larger than in India (Arnal & Förster, 2010). Arnal and Förster (2010: 29) define informal workers as those who are not documented as having an "employer-employee relationship", so they do not have a "registered labour card". There is usually a negative correlation between the education level and the rate of informality. Workers involved in shadow activities and jobs are generally less educated than those in the formal economy and the number of low-educated people is three times higher than the high-educated ones (ibid.). Moreover, informal workers typically include ethnic minorities and women. It is also interesting to note that the majority of workers in the hidden economy are usually either young or old. On the one hand, younger people start working in the shadow economy in order to gain a first job experience; to wait and open their own business or turn to the formal sector. On the other hand, older people have difficulties in accruing enough years to obtain a substantial pension, so they get involved into informal activities to supplement their household income. Arnal and Förster provide evidence for a decline in labor force participation in the informal economy. There have been 34 million less informal workers in the period from the early 2000s to 2008, which was caused in particular by 3.5 million jobs created in the formal sector in 2007 (ibid). Neri (2010: 84) reached the same conclusion after having analyzed Brazilian labor market. The number of self- employed workers and temporary jobs have also decreased.

As already mentioned in the chapter regarding India, informal workers, on average, do not earn an adequate income as other formal workers would receive for the same job and skill level (Jutting & Laiglesia, 2009). Moreover, high persistent informality diminishes fiscal revenues because workers in the hidden economy are more likely to evade or avoid paying taxes. This in turn has a negative effect on the state's budget. The government has less resources and capability to improve social security schemes for a more universal coverage (ibid.: 12; Bajada & Schneider, 2005).

Another negative aspect of the presence of a large hidden economy is that informal workers are more vulnerable than those working in the official economy (Jutting & Laiglesia, 2009: 12). They earn on average lower wages and they are subject to insufficient protection from risks such as illnesses and poor and dangerous working environments. Furthermore, governments of developing countries are not able to provide workers with adequate employment guarantees and unemployment benefits. Consequently, individuals look for any source of income engaging in low paid jobs in order to survive. This raises their chances of becoming poor (ibid.: 18).

Differences in wages between formal and informal workers[32] are large and were equal to 83 % at the advantage of formal employees at the beginning of the 2000s. The degree of difference between employers' and self-employed workers reach 284 % (Neri, 2002: 3).

Vuletin (2008) conducts a cross-sectional study including 32 countries, mainly South American and the Caribbean states. He estimates the size of informal economy and the impact of each underlying causal variables using the Multiple Indicators Multiple Cause approach. Data refer to the early 2000s, in particular to 2002 and 2003. On the one hand, the author considers the tax burden, labor rigidities, importance of agriculture, inflation rate and strength of enforcement system as causal variables. On the other hand, workers contributing to social security, gross enrollment ratio for secondary school and degree of unionization represent the informal economy indicators (ibid.: 9-11). He concludes that the absolute value as percentage of GDP that estimates the size of shadow economy was equal to 28.4 % in the early 2000s in Brazil. In addition, the relative influence of tax burden, labor rigidities, importance of agriculture, inflation rate and strength of enforcement system on the size of the hidden economy account for 31.1 %, 19.6 %, 27.5% and 21.8 % respectively.

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[32] Formal and informal workers can be distinguished by the ownership of the labor card.

Summary

Expectation 1: Lower wealth redistribution among informal workers than among the ones working in the formal economy.

Expectation 2: less insurance and protection for informal workers leads to an increase in poverty and inequalities.

Informal workers are more likely to evade or at least avoid paying taxes, so high persistent informality lessens fiscal revenues. This causes the state to have less resources and capability to improve social security schemes for a more universal coverage. Therefore, they are not covered and insured like formal workers are. Informal workers are more vulnerable than those working in the official economy, because workers in the hidden economy earn on average a lower income. Plus, they are subject to insufficient protection from risks such as illnesses and poor and dangerous working environments. Informal jobs are hence less constant and employment in shadow activities prevents workers' future access to the official economy. As a result, both Expectation 1 and 2 are met.

Jutting & Laigesia (2009), Bajada & Schneider (2005) and Becker (2004) show that the persistence of informal activities does lead to larger income inequality. Nevertheless, Brazilian degree of informality is decreasing over time, consequently diminishing income inequality among individuals.

7.3 Hypothesis III

The third hypothesis claims that:

Wide gaps in access to education across the population lead to a rise in income inequality.

Brazil suffers from different kinds of inequalities in particular income and social disparities. UNESCO (2013) website points out that inequality in access to education and educational outputs are very much affected by individuals' social conditions. These initial conditions entail mainly some racial and ethnic groups thereby hampering their opportunity to enter the educational system. Those particularly affected are rural residents and the poor; adults and youngsters who did not complete mandatory schooling at the right time. Descendants of

African Immigrants, the "quilombolas"[33], indigenous people and rural dwellers make up most of the disadvantaged ethnic and racial groups (ibid.).

Access to education can be assessed by analyzing the rate of completion of one full course of schooling for girls and boys in Brazil. The indicator that can be used to measure access to education is the "Total net enrolment ratio in primary education, both sexes". Data are taken from the Millennium Development Goals Database and they cover the years 1999-2005. The values for some years are missing and the last year taken into consideration is 2005 due to the lack of more recent records.

Although the initial net enrolment ratio was higher compared to most emerging countries, its growth rate had not been impressive. In 1999 the net enrolment ratio in primary education for boys and girls was equal to 92.3 % and it reached 95.6 % in 2005.

Graph 13. Total net enrolment ratio in primary education, male and female
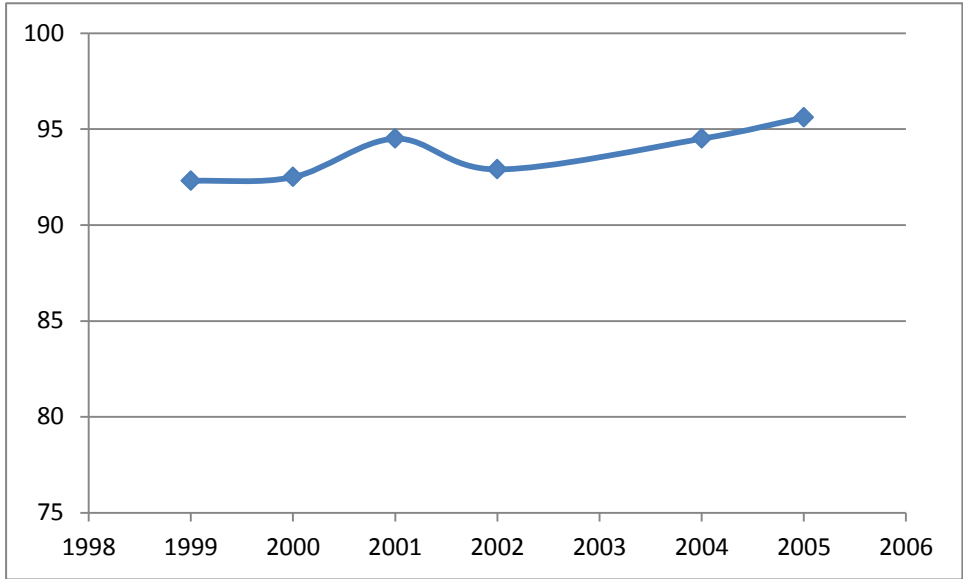
Source: Millennium Development Goals Indicators Database. [34]

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[33] "Quilombolas" or "remanescentes de quilombos" represent a community and ethnic group with specific historical and cultural characteristics. They descend from black slaves who escaped from the sufferings of oppression (Kenny, 2011: 93; Oliveira, Leitão, Vieira, Castro & Leitão, 2012). They have always lived isolated from other communities and in close connection with nature. This has led them to build a sound knowledge of medical plants.
[34] http://mdgs.un.org/unsd/mdg/Data.aspx

It is important to take the returns to education into consideration in order to understand the effects of higher education on income inequality. Carnoy (2011: 42) maintains the investment in tertiary education is valued by Brazilian market environment more than investment in primary and secondary schooling. This leads to higher returns to higher educated individuals. Returns to education in Brazil are among the most elevated of developing countries. In their paper, Cogneau and Gignoux (2005) analyzed the effect educational opportunities on Brazilian labor market imbalances from 1976 to 1996. More precisely, the authors take into consideration the earnings of men in their forties in order to assess the progression of inequalities. They conclude that the variations in the distribution of schooling levels had initially an uneven effect on workers, but then after the 1980s it had an equalizing outcome (ibid.: 18). In addition, returns to education fell in the past years, hence reducing inequalities. In effect, only children belonging to the upper classes could afford the enrollment to secondary or tertiary education and this in turn led to an increase in income inequality. Now that access to primary education has been expanded, poorer households' children have the possibility to obtain a higher education (ibid.: 25). This has played a relevant role in the decline of income inequality. Although the two effects combined lead to income inequality reductions, Brazilian inequality remains persistently and inter generationally high.

Neri (2010) analyzed the educational and policies effects' on within- country income inequality in Brazil. He decomposes income inequality into its causes[35] in order to find which factors contribute to inequality variation. The years compared are 2008 and 2001. The author claims that the number of years of attained education represents a good predictor of earnings and income. Evidence shows that inequality in terms of completion of years of schooling has decreased substantially in the last decades and this led to a decline in income inequality. The contribution of education declined from 31.3 % in 2001 to 25 % in 2008 (ibid.: 80). In spite of this drop, education has the highest gross percentage contribution to per capita income inequality in this country. The fall of the explanatory power of education may be due to the expansion of educational supply and further labor market conditions (ibid.).

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[35] Neri (2010: 80) takes into consideration the variables that affect per capita household income inequality and he decomposes the total into each causal variable's percentage. The author creates a regression called "Gross contribution to income inequality in Brazil" combining the percentages of each independent variable.

Summary

Expectation 1: the lower the level of people's education, the lower their average earnings;

Regarding Expectation 1, higher educated Brazilian workers earn, on average, more than lower educated ones. This leads to higher returns to higher educated individuals. The differences in the distribution of schooling levels had initially an unequal effect on workers, but then after the 1980s it had an equalizing outcome (ibid.: 18). In addition, returns to education fell in the past years, hence reducing inequalities. Expectation 1 is thereby met.

The net enrolment ratio in primary education for boys and girls has been growing steadily in the past years and it reached 95.6 % in 2005. This level is approaching the one of more advanced countries and it is a sign of social and economic development. The literature shows that the number of years of accomplished education represents a good forecaster of earnings and income. Consequently, since inequality in terms of completion of years of schooling has decreased substantially in the last decades, it has led to a decline in income inequality.

7.4 Hypothesis IV

The fourth hypothesis maintains that:

An improvement of government redistributive policies causes a decrease in income inequality.

The size of public expenditure can be analyzed in order to study the enhancement of social and economic progress in a country. The OECD (2013 b) defines social public expenditure as the delivery of benefits and financial grants to individuals and families as support in situations where their welfare is compromised[36]. In the case of Brazil, social public expenditure as percentage of the Gross Domestic Product (GDP) by sector is considered[37]. Data are taken from the Economic Commission for Latin America and the Caribbean (ECLAC) Database from 1990 to 2009 and they are shown in Graph 14. The value of social public expenditure for the year 2000 is missing and the last available data is for the year 2009.

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[36] Such contributions can be cash transfers or the delivery of services and goods.

[37] This indicator estimates public resources' allocation to the social sectors. It thus includes health, education, social security, housing, employment, social welfare, water and drainage system (United Nations, 2013)

Social public expenditure was equal to 17.63 % of GDP in 1990, it declined to 14.7 % in 1992 and it rose to 20.31 % in 1995. Its other decrease was recorded in 1996 and 1997 where it was equivalent to 19.59 % and 19.29 % respectively. From 1997, it kept growing reaching 27.06 % in 2009. The increase in social public expenditure reflects Brazil's commitment to enhance its citizens' well- being and living standards.

Graph 14. Social public expenditure as percentage of the Gross Domestic Product (GDP) by sector (Percentage)
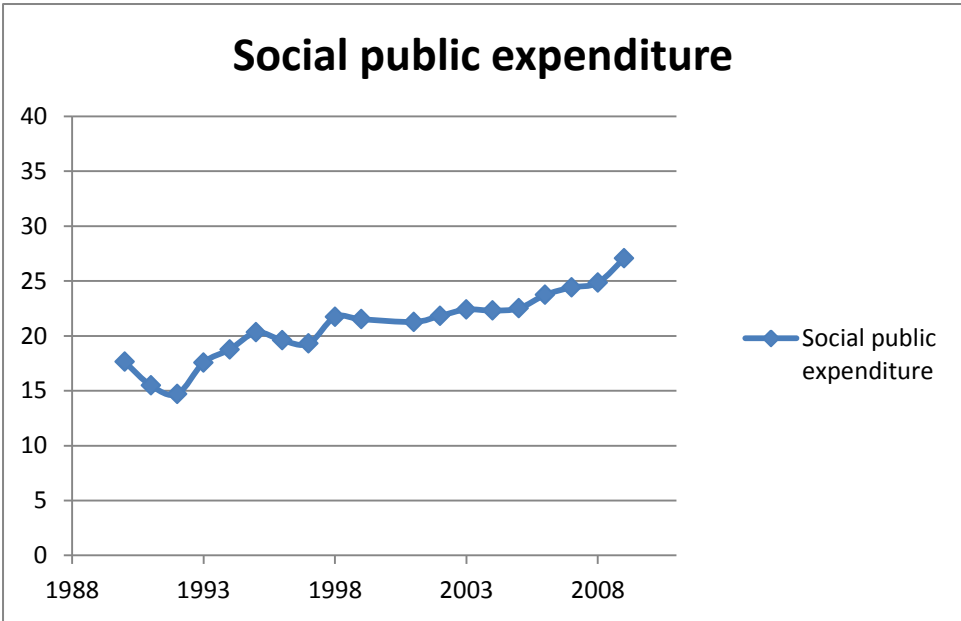
Source: ECLAC: Economic Commission for Latin America and the Caribbean: Social Development Division. Social Expenditure Database.[38]

From the 1990s onwards, Brazilian government designed and implemented many structural and social reforms in order to foster economic and human development. In particular, cash transfer programs have helped reduce poverty and income inequality levels (Ravallion, 2011; Soares, Guerreiro Osório, Veras Soares, Medeiros & Zepeda, 2009). They proved to be highly important in the reduction of poverty through redistribution. They included "noncontributory, unconditional as well as Conditional Cash Transfers (CCTs)" (ibid.: 85). Poor families were the targets of CCTs provided that (i.e. conditional on) their children would remain in school and attain basic health treatments. These conditional cash transfers bring not only income support to

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[38] http://interwp.cepal.org/sisgen/ConsultaIntegrada.asp?idIndicador=134&idioma=i

poor families, but they also stimulate school enrolment, enhance healthcare for youngsters, reduce child labor and infant mortality (OECD, 2011: 50; Soares et al., 2009: 208). As a consequence, cash transfers stimulate the economy and human development, which lead to long-term societal benefits.

Brazil had four conditional cash transfers before 2003 such as Programa de Erradicação do Trabalho Infantil, Cartão Alimentação, Bolsa Escola Federal and Bolsa Alimentação (Soares et al., 2009: 208). Although they were run at the federal level, they had different conditionalities attached, implementation rules, and financing and information systems (ibid.). As a consequence of diverse information systems and no exchange of data, there were families benefiting from all four CCTs, while other households, just as in need, were receiving no grants. To overcome this problem, the Cadastro Único was put into effect in 2001 and it united the conditional cash transfers' information systems. Cash transfers programs were then combined and organized into the Bolsa Família program by Lula's government in 2003 (ibid.). De Holanda Barbosa Filho (2012: 3) points out that Brazilian government has managed to keep the administrative costs of such CCT low (i.e. 0.5 % of the GDP), while specifically targeting the poorest families. Moreover, the coverage of the Bolsa Família has expanded over the last decade, since already in 2004 the number of claimants was higher than the available benefits. The numbers of beneficiary families was equal to 6.5 million in 2004 and it reached 13.3 million in 2011 (ibid.). Such program targets the poor and the severely poor based on an income self-declaration. A maximum of $91 PPP[39] (i.e. Purchasing Power Parity) is granted each month to families in "extreme poverty"[40], while "moderately poor" families receive a maximum monthly grant of $39 PPP (Soares et al., 2009: 209). The conditionalities attached to the transfers require 85 % school attendance for children in school age, systematic doctor appointments for pregnant women and mandatory vaccinations for kids under seven years old (ibid.). Soares et al. (2009) argue that although the conditional cash transfers are run at the federal level, states and municipalities still retain some responsibilities. It is their duty to monitor and check compliance to conditionalities and municipal workers are the ones in charge of selecting the prospective recipient families. Non-

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[39] The World Bank (2013 f) defines PPP as the rate which offers a standard measure of real prices that allow for a cross-country comparison. One dollar purchases the same basket of goods everywhere.
[40] Extremely poor families are considered those having a monthly income equal to or less than $42 PPP per capita (Soares et al., 2009).

compliance implies up to three warnings after which the benefits are suspended and there are social workers' interventions (OECD, 2011 a: 71).

Conditional cash transfers are a very important source of income in Brazil and they are targeted directly to the poor and severely poor. They bring long term benefits at the economic level, because they increase incomes of targeted families thus fostering consumption; and at the societal level, since they enhance school attendance and health care (ibid.). Moreover, data show that CCTs, especially Bolsa Família, have led to a reduction of approximately 21 % in income inequality in Bazil (Soares et al. 2009: 219). Neri et al. (2006) also supports this argument, because the extension of the Bolsa Familia occurred in 2003 and 2005 led to a drop in income gaps between the rich and poor and a decline of the poverty level.

Summary

Expectation 1: the more wealth redistribution among citizens, the lower the income inequality.

Expectation 2: the more the benefits are targeted to the poor, the lower the income inequality.

The growth in public expenditure and cash transfer programs have helped reduce poverty and income inequality levels (Ravallion, 2011; Soares et al., 2009). They proved to be highly important in the reduction of poverty through redistribution. In particular, Bolsa Família conditional cash transfer is designed for and implemented specifically to poor families. This is the main reason why millions of Brazilians have managed to move out of poverty since the running of the program. The program provides income support to families and this has led to a decline in income inequality. Both expectation and 1 and 2 is therefore met.

From 1990, Brazil's commitment to improve its citizens' well- being and living standards is reflected in the level of social public expenditure. In nineteen years this indicator grew by almost ten percentage points[41]. The rise in social public expenditure was combined with the employment of conditional cash transfers (CCTs) in order to decrease poverty and income inequality. The main advantage of CCTs is that their objective is twofold: they offer income support to poor families, but they also stimulate school enrolment, enhance healthcare for youngsters, and reduce child labor and infant mortality. The biggest and most effective

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[41] See Graph 14.

conditional cash transfer program put in place by Brazilian government is Bolsa Família. Its coverage has expanded to a higher number of needy families over the last decade. This program resulted to be efficient, since its administrative costs are kept low, and effective, as it is specifically targeted to the poorest households.

Conditional cash transfers bring long term benefits at the economic level, because they increase incomes of targeted families thus in turn fostering consumption; and at the societal level, since they boost school attendance and health care.

7.5 Conclusion – Brazil

In the first hypothesis, spatial inequality is analyzed. A decline in income inequality is tested taking two expectations into consideration: a decrease in regional imbalances in economic performance; and an increase in migration from rural to urban areas. The second hypothesis concerns the persistence of informal economy and two expectations: lower wealth redistribution among informal workers than the ones working in the formal economy; and less insurance and protection for informal workers leads to an increase in poverty and inequalities. The third hypothesis deals with access to education across the population and its expectation states that the lower the level of people's education, the lower their average earnings. Hypothesis four pertains to government redistributive policies and it has two expectations: the more wealth redistribution among citizens, the lower the income inequality; and the more the benefits are targeted to the poor, the lower the income inequality.

The table hereafter represents a summary of the already discussed conclusions regarding each hypothesis.

Table 3. Hypotheses, expectations and effects on income inequality – Brazil

Hypotheses		Expectations	Are expectations met?	Effect on income inequality
Hypothesis I	Spatial inequality	Expectation 1	Yes	↓
		Expectation 2	Yes	?
Hypothesis II	Informal economy	Expectation 1	Yes	↓
		Expectation 2	Yes	↓
Hypothesis III	Access to education	Expectation 1	Yes	↓
hypothesis IV	Government policies	Expectation 1	Yes	↓
		Expectation 2	Yes	↓

In the Brazilian case, all expectations are met, but in two cases their effect on income disparity is uncertain. First, a decrease in regional imbalances in economic performance has had an equalizing effect causing income inequality to decline. Although the country experienced a

growth in migration from rural to urban areas, it is not clear whether this wave of migration has led to a rise or decline in income disparity. Second, lower wealth redistribution among informal workers than the ones working in the formal economy and less insurance and protection for informal workers have in principle a negative effect on income inequality. However, the informal sector has declined in last decade, thus leading to a drop in poverty and inequalities. Third, a lower the level of education leads to lower their average earnings. Yet the magnitude of this effect is narrowing thereby producing an equalizing effect among individuals. Fourth, a more wealth redistribution among citizens and benefits specifically targeted to the poor cause a lower level of the income inequality.

8. Connections between the factors of income inequality

In the previous chapters, the factors that influence income inequality are analyzed separately. However, in reality regional imbalances, informal economy, education and government policies represent factors that interplay one with the other in their effect on income inequality. Some of the connections between the variables will be mentioned hereafter. Nevertheless, the list does not constitute a comprehensive analysis of the interactions, since it is not purpose of this thesis.

Conditional cash transfers and public work programs have a positive impact on the reduction of regional imbalances. It is due to the fact that these programs are targeted directly to the poor, who usually live in lagging behind regions (OECD, 2001 a: 75). Regional imbalances thus lower as a result of government policies. Public work programs improve infrastructures reducing some risks faced by both formal and informal enterprises (Becker, 2004: 22). Ravallion (2011: 88) claims that human development inequalities have a negative impact on the fall of poverty level. Therefore, conditional cash transfers are a good instrument that boosts human development through health care and schooling promotion. The process of declining regional inequalities is also helped by the dropping probability of not having access to education in backward regions. The educational attainments rise so the returns to higher education decline[42]. Average earnings hence increase across the labor force (OECD, 2001 a: 75).

The level of educational attainment not only has an impact on workers' potential earnings, but it also influences the degree of informal economy. Arnal and Förster (2010: 31) and Neri (2010: 84) maintain that there exists a negative correlation between the degree informality and educational accomplishment. Indeed, the higher educated individuals have a lower informality rate than those with an inferior degree of schooling. Consequently, if people's educational attainment increases, then informality rate would fall and it would lead to a decrease of income inequality. Despite educational accomplishment per se, access to training is yet difficult for informal enterprises' workers resulting in the lack of economic and managerial skills. This, in turn, creates "vicious circles of poverty and risk" (Becker, 2004: 22- 23).

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[42] When educational achievements are shared more widely across the population and foster the "upgrading" of workers' skills, then the returns to higher education drop (OECD, 2001 a: 75).

9. Final conclusion

This thesis aims at analyzing the key factors that influence income inequality in two emerging economies. The two countries studied are India and Brazil, because they show opposite trends in income disparities. Indeed, India is characterized by a rise in income inequality, while Brazil is experiencing a decline. The research question is: What factors contribute to income inequality in India and Brazil?

The number of factors that potentially have an impact on income inequality is high. In the thesis, only the four that are most recurrent in the literature are considered which generate some hypotheses. This thesis analyzes only the key factors shaping income inequality specifically in emerging economies. From their study, it can be asserted whether the drivers taken into consideration shape income inequality precisely in India and Brazil. It represents the ultimate aim of this study. Four hypotheses are thus tested regarding spatial inequality, the degree of informal economy, access to education and government policies. Each hypothesis comprises one or two expectations[43] in order to see the congruence between the literature and empirical results in these two countries.

It can be concluded also as answer to the research question that the key factors contributing to income inequality in India and Brazil are indeed spatial inequality, the size of informal sector, access to education and sound government policies. They all exert a significant influence on the level and trend of income inequality. However, factors do not have the same degree of effect on the dependent variable in the two countries.

First, the influence of spatial inequality on income disparities is larger in India than in Brazil, especially as regards regional imbalances in economic performance. Indian richer states are becoming increasingly wealthier and poorer states do not have the ability and conditions to catch up and close the gap with them. Second, the size of the informal economy is very big in both countries, yet there are positive signs in Brazil where it is decreasing. This results in safer and more stable jobs and it implies a greater redistribution of resources among individuals through a greater tax base. Third, access to education is growing in both countries. Returns to education are very much biased toward higher educated people causing a disadvantage to only primary educated individuals. Fourth, government policies focused on rising social expenditures and offering income support to poor households have contributed to

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[43] Expectations for India are summarized on page 43 and expectations for Brazil are recapped on page 59.

the improvement of citizens' social and economic conditions. Nevertheless, Indian public work program called National Rural Employment Guarantee Program has not reached its full potential yet. Plus, due to its funding system and its design, it has not been able to a have a positive impact on income disparities reductions.

As a result the factors analyzed have diverse impacts on income inequality. To sum up, on the one hand, government policies, in particular the implementation of the Bolsa Família [44], proved to be the main cause for the drop in income disparity in Brazil. On the other hand, the increasing imbalances among states have hampered the ability of India of controlling the level of income inequality. Large disproportions across regions are the core of rising income inequality in India.

Future research should concentrate on the rise of potentially new drivers of income inequality or on a deeper consideration of them at the same time. Most of the present literature covers just one or two in the same paper. Moreover, as discussed in section 8, the drivers taken into consideration in this thesis are highly interconnected. Their interplay causes the magnitude of their effects on income inequality levels to vary. Therefore, future research on emerging economies should not only focus on the factors that influence the level of income inequality separately, but also on the interaction among these factors.

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[44] Conditional Cash Transfers in general.

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