



TESIS DOCTORAL

**Growth, Inequality and the Rise of the
Middle Class, Brazil**

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ABSTRACT

This thesis investigates the connection between economic growth, inequality and the rise of the middle class from a historical perspective using Brazil as a case study. While the thesis mainly focuses on the period 1839-1950, it also extends the analysis to the most recent decades for comparative purposes. It shows that between 1839 and 1950, even though Brazil experienced episodes of rapid economic growth, the uneven distribution of this growth, reflected by dramatic increases in inequality and bipolarisation, prevented the consolidation of the middle class and the reduction of absolute poverty. Meanwhile, in the most recent period economic growth accompanied by decreasing inequality succeeded in increasing the middle class and reducing poverty. In this vein, this thesis highlights the relevance of the reduction of inequality in order to start a virtuous circle in which economic success goes hand in hand with the rise of the middle class which, in turn, acts as the promoter of economic and social development.

The dissertation contributes to the literature in the fields of Economic History and Development. Firstly, it fills the existing gap on Brazil's income distribution before the mid-twentieth century, offering continual time series on inequality and polarisation for 1839-1930, 1940 and 1950. Notably, the estimations are based on self-constructed social tables involving real wages for different professional categories (in both rural and urban areas). Secondly, the thesis contributes to the literature on the measurement of the middle class by proposing a new middle class indicator (the MC index) that permits the study of the evolution of this social group over time and across countries. Finally, while it serves to shed new light on the connection between economic growth, inequality and the middle class, it opens new gates for future research on this relationship across countries with relevant social policy implications.

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“Now in all states there are three elements: one class is very rich, another very poor, and a third in a mean. It is admitted that moderation and the mean are best, and therefore it will clearly be best to possess the gifts of fortune in moderation.” Aristotle (350 BC).¹

Chapter 1. Introduction

1. Motivation, research questions and objectives

The middle class has become a major topic of interest in the recent literature (Birdsall, 2010; Ravallion, 2010; Solimano, 2008). The reasons for this interest are twofold. To begin with, there is evidence to suggest that the middle class is indispensable for economic and social development (Banerjee & Duflo, 2008; Easterly, 2001). This is because members of the middle class are considered more economically and politically active while they represent an important source of demand, investment and modernisation as well as a strong political voice demanding institutional reforms. Additionally, interest in the topic has been fuelled by the significant expansion of this social group during the last decade in Latin America (Ferreira, et al., 2013, p. 1). In particular, the Brazilian case has attracted a great deal of attention due to the country’s recent economic growth accompanied by decreasing inequality, the reduction of absolute poverty and the rise of the middle class (Côrtes Neri, 2010, p. 31). Between 2001 and 2010, GDP per head recorded an average annual growth of 2.4 per cent (IBGE-Instituto Brasileiro de Geografia e Estatística, marzo 2011). Meanwhile, from 2002 to 2012, 35 million (previously poor) people in Brazil entered the middle class,

¹ *Politics Government by the Middle Class*, Book 3, part XI

moving the size of this class from 38 per cent of the population in 2002 to 53 per cent in 2012 (SAE- Secretaría de Assuntos Estratégicos, 2012, p. 7).

However, this is not the first time that Brazil has experienced such rapid economic growth. Table 1-1 shows that comparable episodes of rapid economic growth took place in Brazil during the late nineteenth and the mid-twentieth century (Goldsmith, 1986, p. 82), due mainly to the coffee export boom and subsequent development of transport and local industry (Furtado, 1965, p. 11; Goldsmith, 1986; Leff, 1982a, p. 62). For example, GDP grew 5.3 per cent annually between 1921 and 1929, fuelled by the agriculture and commerce sectors which accounted respectively for 37.8 per cent and 26 per cent of GDP, while the industry and transport sectors grew more rapidly during the period (5.3 per cent and 10.7 per cent respectively). Yet, little is known about the evolution of inequality and the presence of the Brazilian middle class over longer periods of time, as most studies have only focused on relatively short and recent periods (Côrtes Neri, 2010; Cruces, López-Calva, & Battistón, 2011; Ferreira, et al., 2013; López-Calva & Ortiz-Juárez, 2011).

Table 1-1. Brazil's main economic statistics according to Goldsmith, 1851-1955.

Period	GDP growth (%)		Main sectors growth (%)				Average Sectorial contribution to GDP (%)				
	Agregate	Per head	Agric.	Indus.	Com.	Trans.	Agric.	Indus.	Com.	Trans.	State
1851-1889	2.0	0.3	n.a	n.a	n.a	n.a	56.6	12	19.5	3.3	8.5
1890-1913	3.0	0.7	n.a	n.a	n.a	n.a	41.5	17.8	24.3	5.7	10.7
1914-1920	3.9	1.8	n.a	n.a	n.a	n.a	41.3	20.1	24.9	6.8	6.9
1921-1929	5.3	3.2	4.0	5.3	4.7	10.7	37.8	20	26.1	8.3	7.8
1930-1945	3.9	1.7	1.9	6.5	3.8	4.5	32.7	24.7	25.7	8.2	8.8
1946-1955	6.8	3.9	3.6	9.3	6.9	9.8	31.7	30.8	20.6	8	8.9

Sources: Goldsmith (1986, pp. 8-11, Tab.I-5, I-6 and I-7).

This thesis aims at filling this gap and investigates the rise of the middle class in Brazil and its connection to inequality and economic growth during the period between 1839 and 1950. Moreover, it compares findings for the mentioned period with those of

the most recent decades. In particular, the thesis addresses the following four research questions: (1) Why is the middle class relevant for economic growth?; (2) How can the middle class be measured in the long-run?; (3) When and how did the middle class emerge in Brazil?; and (4) Is there any connection between the rise of the middle class and inequality?

To answer these questions, I first review the literature on the main characteristics of the middle class -those that make it relevant for economic growth- as well as its most common definitions and measures. As shown later, several definitions and measures have been developed over the last decade. Yet the consensus on what is the most suitable definition has not been achieved. This is because most of these definitions are too arbitrary when delimiting the middle class. While this would not necessarily be a problem when studying a single case study in the short run, it becomes problematic when one aims at extending the analysis of the middle class to long periods or making comparisons across countries. Importantly, in this dissertation I propose a new measure that permits the study of the middle class in the long run.² I construct a database for my period of research, which offers information on Brazilian real wages for 36 different professional categories (in both rural and urban areas). As shown later, this database is the result of an extensive compilation of data on active population and real wages coming from national censuses, historical statistics and complementary sources. Finally, based on this database I explore Brazil's income distribution between 1839 and 1950 from two dimensions: inequality and polarisation. In doing so, I analyse the rise of the middle class in Brazil, as well as the relationship between the middle class,

² While it is not the aim of this thesis, the referred measure also permits comparison across countries.

inequality and economic growth in Brazil from 1839 to 1950 and in more recent decades.

This thesis makes a number of important contributions to the literature. Firstly, it serves to fill the existing gap on Brazil's income distribution before the mid-twentieth century, offering continual time series on inequality, polarisation and middle class for 1839-1930, 1940 and 1950. In this vein, it also contributes to the debate on whether Brazil has suffered from persistent inequality from its colonial era until recent times (Acemoglu, Johnson, & Robinson, 2002; Engerman & Sokoloff, 1997) or whether inequality arose at a different time (Prados de la Escosura, 2007a; Williamson, 2015). Thirdly, it makes a contribution to the debate on how to define and measure the middle class, proposing a new middle class index (the MC index). Finally, this dissertation sheds new light on the relationship between middle class, inequality, and economic growth in historical perspective.

2. Chapter outline

The thesis is structured as follows. After this introduction, Chapter 2 reviews the literature on the relationship between the middle class and economic growth. Illustrated by means of a conceptual framework, it is shown how a country's middle class can influence good economic performance by means of promoting greater economic, social and political stability. Importantly, the chapter discusses the role that redistribution plays in making this relationship feasible and starting the virtuous circle between good institutions, a valuable middle class and sustained economic growth.

Chapter 3 investigates the most accurate method of defining and measuring the middle class. With this aim, it reviews the concept of "middle class" throughout

different times and contexts. Moreover, it explores the existing middle class measures, discussing their strengths and weaknesses. Finally, it proposes a new middle class definition, based on polarisation measures, which aims at maintaining accuracy while preventing arbitrariness when investigating the middle class over long periods.

Next, Chapter 4 is dedicated to showing the sources of evidence and data transformation. First of all, it examines Brazil's historical background, analysing its economic, social and political scenarios between 1839 and 1950. It then describes how the database was created. This involved the construction of a social table, resulting from an extensive compilation of data from different sources (such as national censuses and historical statistics) and the transformation of this data taking into account particular characteristics of Brazil's active population (such as gender, ethnicity and urbanisation).

Then, using this database, Chapter 5 explores Brazil's income distribution between 1839 and 1950 from two different perspectives: inequality and polarisation. In doing so it investigates whether Brazil's inequality has been persistent from colonial times, as well as the presence of the middle class. Importantly it analyses the rise and evolution of the Brazilian middle class by applying the middle class index proposed in Chapter 3. Moreover, Chapter 6 studies Brazil's middle class inequality and economic growth in historical perspective. With this purpose it analyses long run trends in the MC index together with other indicators, including the Gini index and GDP per head. Furthermore, it investigates how economic growth was distributed throughout different percentiles of the distribution between 1850 and 1950, and how it was redistributed in recent decades (1990s-2000s). Additionally, it discusses the results through the lens of the conceptual framework proposed in Chapter 2. Finally, Chapter 7 summarises and concludes.

Chapter 2. The Middle Class: Why is it relevant?

1. Introduction

In this chapter I explore the relationship between the middle class, economic growth and development according to the existing literature. Without denying its endogenous nature, the middle class is presented as indispensable for achieving sustained economic growth that leads to development. To explain this reasoning, I build a conceptual framework that takes into account the endogenous nature of the middle class and shows the existing interrelationship among 1) institutions, 2) the middle class, and 3) sustained economic growth. In this conceptual framework the three variables relate and feed into each other, generating a virtuous circle in which redistribution policies are a key factor.

In this vein, the middle class is suggested as a valuable factor when explaining the differences in development levels across countries. In particular, I claim its relevance when studying the lack of persistence of economic growth in countries that have traditionally shown high levels of inequality and polarisation, as in Latin America. In this regard, I introduce the Brazilian case: historically one of the most unequal countries which, however, during the last decade has undergone a high rate of economic growth accompanied by distributive policies which, in turn, have permitted the rise of a growing middle class. Notably, this growing middle class opens up new prospects for the future of the country. The chapter proceeds as follows: In Section 2, I review the literature on the middle class and its influence on economic growth. Next, after dealing with the problem concerning middle class endogeneity in Section 3; I present the

conceptual framework in Section 4. Following, in Section 5, I introduce the Brazilian example. Section 6 concludes.

2. Literature review: the middle class and economic growth

During the last decade there has been an increased interest in the middle class. Economists, social scientists and politicians have shown an increasing concern for the middle stratum, whether regarding its expansion in emerging countries (Ferreira, et al., 2013; Kharas, 2010) or its contraction in developed countries after the last financial crisis in 2007 (Atkinson & Brandolini, 2011; Bouzou, 2013). Indeed, allusions to the middle class have been constantly appearing in the speeches of the Prime Ministers of leading economies.³ Interestingly, these concerns are not the result of a mere interest in persuading the *medium voter*, but the verification of the benefits that a safe and sound middle class implies for good economic performance. In President Barack Obama's words during his State of the Union address: "The verdict is clear. Middle-class economics works." (CNN Politics, 2015).

In the literature, the relationship between the middle class and economic success has been defined according to different features held by this social group, which make it the promoter and guarantor of economic growth. The main reasons can be summed up in three points: (1) the economic, social and political stability that this social group generates, (2) the modernisation it promotes, and (3) the improvement of institutions it demands. These arguments are detailed in the following section.

³ E.g. Speech by Federal Chancellor Angela Merkel at the Reception for the Diplomatic Corps at the Federal Chancellery: "A growing middle class is an expression of growing prosperity" (Die Bundesregierung, Jun 11, 2014). Speech by Britain's Prime Minister David Cameron before general elections in which he announced a tax cut for nearly a million middle-class Britons (The Telegraph, 2014).

2.1 The middle class and economic stability

There is evidence that economic stability is good for growth, as it implies a guarantee for private investors, savers, and international lenders. Interestingly, throughout the literature, a solid middle class is presented as the determinant of such economic stability. Indeed, the main theories that link middle class and economic growth point to this social group as the creator of economic stability because of its role as a source of demand, production and its capacity to respond to economic shocks. The reasons behind this argument are further developed below.

2.1.1 The middle class as a source of demand

According to Solimano (2008), the increase in the consumption power of the members of the middle class, as a result of an increase in their per capita income, will have an important effect on aggregate demand. Importantly, the rise of the consumption power of the middle stratum will have implications not only for the production of staple products, but also for the production of higher quality sumptuary goods and new services (Banerjee & Duflo, 2008). According to Engel's (1857) law, as the income of individuals increases (and thus their living standards), the demand for basic products decreases, in favour of other durable goods.⁴ Deaton (2006) points out that these changes in consumption preferences can happen even in poor households.⁵ It is not strange, for instance, that low income families give up the consumption of greater quantities of staple food in favour of tastier goods, or that they earmark part of their

⁵ Hersh and Voth (2009) also show evidence of the change in preferences towards more varied goods among low class members. They observed that there is a substitution of basic products (such as meat or wheat) for more varied and tasty ones, (such as tea, cocoa or coffee), in the diet of the end of the end-eighteenth century English society, at all social levels.

budget to obtain durable goods (such as a radio, a fridge or a television). Nevertheless, the trend towards higher consumption of sumptuary goods and services becomes more pronounced once the individuals have risen in the social scale and, consequently, as appearance and status begin to gain importance. Indeed, as will be further discussed in Chapter 3, historically one of the main features of the middle class has been its concern with conspicuous consumption.⁶

Accordingly, in a society where the middle class becomes important a greater consumption environment is created as the demand for higher quality goods and services spreads among its members. In the words of Tocqueville (1835): “The passion for physical comforts is essentially a passion of the middle classes: with those classes it grows and spreads, with them it preponderates”.⁷ Indeed, as in the case of poor households, the propensity towards greater consumption among middle class members will also happen in the absence of an increase of their incomes. Just the belief of being part of the middle class or the expectation of belonging to it in the near future will have an effect on the expenditure and consumption choices of these individuals. Consequently, they will maintain a high level of demand, fostering production and contributing to economic growth.

2.1.2 The middle class as source of production

Besides increasing production through augmented demand, the middle class when identified with the petite bourgeoisie might be considered a source of

⁶ Some examples on middle class consumerism values are shown in Chapter 3.

⁷ From *Democracy in America* (book 2, chapter 10:1)

entrepreneurs that invest, produce and create employment.⁸ Nevertheless, such an observation cannot be totally correct for a developing country which has limited access to credit. In this case, as Banerjee and Duflo (2008) point out, the businesses set up by the middle class members will not be very different from those set up by the poorer ones; neither the machinery used nor the number of workers employed. However, it will depend on the definition of the middle class we are considering. According to López-Calva and Ortiz Juárez (2011), belonging to a middle class entails that individuals have a low probability of falling into poverty. In this case, if we assume a lower risk for this social group, we can expect that as its income increases so too will its willingness to invest and set up new businesses. Indeed, as mentioned before, the social environment in which individuals live will influence their expenditure and investment decisions. In this vein, in a society where the middle class becomes important, there will be a greater propensity to risk and invest in new activities with the expectation of rising in the social scale.

2.1.3 The middle class and the response to shocks

Finally, the idea of a larger middle class generating more economic stability can be based on the statements of some authors such as Berg, Ostry and Zettelmeyer (2012) who observed that more homogeneous societies (thus, less polarised) have more capacity to adapt themselves to economic shocks, or Birdsall, Graham and Pettinato (2000) who also hold that the response to volatility and external shocks is better within this social group. Hence maintaining the size of the middle class will be important, not only for this class itself but also for all members of society, including the more

⁸ As further explained in Chapter 3, in the nineteenth century in Europe the middle class was a synonym for a small bourgeoisie constituted by small owners and entrepreneurs, an ascendant class between the aristocracy and the working class.

vulnerable, as Ravallion (2010, p. 18) observed: “[P]oor people living in countries with smaller middle classes will be more exposed to aggregate contractions...” Indeed, the presence of economic stability will also be reflected in more domestic and foreign investment, and thus in greater economic growth.

2.2 The middle class and social stability

“The middle class decline leads to war”. These words from Hassner (2013, p. 26), quoting Toqueville’s thoughts, summarise the most repeated argument in the literature when linking the middle class and economic growth. According to this line of reasoning, polarisation is a major cause of social conflicts (Esteban & Ray, 1994; Gradín & del Río, 2001) and these, in turn, hinder economic growth (Gasparini et al., 2008; Rodrik, 1999). Therefore, as later developed in Chapter 3, the phenomenon of polarisation deserves special attention when studying the middle class. Indeed, in this work polarisation will be central when analysing the evolution of this social group.

Interestingly, slightly polarised societies (i.e. with a greater middle class) are considered to have more social cohesion, less discontent and less conflict risks (Easterly, 2001; Esteban, Gradín, & Ray, 2007). Consequently they attract more investment which drives economic growth. Indeed, according to Easterly (2001) less polarised societies are also supposed to rely on greater social consensus, which is important for the implementation of good policies which lead to economic growth. In the same vein, Easterly, Ritzen and Woolcock (2006) asserted that social cohesion

(measured by the size of the middle class) endogenously will determine the quality of institutions, which, in turn, will determine economic growth.⁹

2.3 The middle class and political stability

Around 350 BC, Aristotle affirmed: "... the best political community is formed by citizens of the middle class, and that those states are likely to be well-administered in which the middle class is large, [as it] prevents either of the extremes from being dominant".¹⁰ Centuries later many scholars still pointed to the middle class as the social group which promotes equality, political stability and democracy, which indirectly and positively affect economic growth.

For instance, Alesina and Perotti (1996) state that there is a direct relation between inequality and political instability, and that political instability, in turn, has adverse effects on investment and growth. Instead, the presence of the middle class led to more political stability (Alesina & Perotti, 1996; Solimano, 2008). In this vein: Hattori, Funatsu, & Torii (2003) assert that the middle class fosters the movement of democratization; Easterly (2001) shows that less polarised societies are more democratic; therefore Barro (1999) points out that democracy rises with the middle class share of income; and Loayza, Rigolini and Llorente (2012) hold that the middle class is correlated with better quality of government (understood as more political participation and less corruption). Additionally, it is expected that the middle class does not have any incentives to move away from a democratic regime. On the contrary, it will look for the achievement of more rights and liberties, which will allow its members to keep on

⁹ Here the authors define "social cohesion" as the extent of social and ethnic divisions in society. They use it to see to what extent people work together when crises, strikes or coup threats are a key factor in the economic environment.

¹⁰ Politics: book 4, chapter XI.

climbing up the social scale or, at least, to avoid losing their social status. However, history does not permit the establishment of a direct relation between democracy and economic growth.¹¹ Nevertheless, democracy is related to the existence of social and political stability, and these both, in turn, are indispensable for investment to be perceived as safe. Thus, an indirect relationship between democracy and economic growth can be suggested. In this regard, the middle class as a promoter of democracy can also be perceived as a booster of economic growth too.

2.4 The middle class and modernisation

Frequently, the middle class is seen as the instigator of revolutions and change. Hattori and Funatsu (2003) and Easterly (2001) also associate the rise of the middle class with “modernisation” processes. According to Hattori and Funatsu (2003), it is “modernisation” itself which leads to the development and the emergence of the middle class. However, even if the innovation is exogenous, importing it into the country will require a certain level of “social infrastructure” (Hall & Jones, 1999) and “social capability” (Abramovitz, 1986) which, instead, are endogenous.

The “social infrastructure” refers to the group of “institutions and governmental policies that determine the economic environment, in which the individuals accumulate skills and the firms accumulate capital and generate production” (Hall & Jones, 1999, p. 84). If this “social infrastructure” is favourable, it will stimulate the acquisition of skills, innovation, and the transmission of knowledge and new technologies, with important effects on productivity and growth. In this regard, as mentioned before (in Section 2.2 The middle class and social stability), a society with a bigger middle class and,

¹¹ Some historical examples are: the growth of the four economic dragons of Southeast Asia (Hong Kong, Singapore, South Korea and Taiwan) after the sixties or Chile after the mid-seventies.

consequently, more social consensus, will endogenously determine the quality of this “social infrastructure” which stimulates innovation and economic growth.

Meanwhile, “social capability” refers to the capacity of the society to adopt and adapt itself to technological change. According to this idea, since societies with a larger middle class are more prone to modernisation and processes of change, they will be more likely to provide the “social capability” needed for the creation or incorporation of innovations that foster economic growth.

2.5 The middle class and institutional reforms

The last argument outlining the relation between the middle class and economic growth is based on the literature that relates growth and institutions. This section focuses on the capacity of the middle class to promote the institutional reforms needed to reach higher levels of development.

According to Loayza, Rigolini and Llorente (2012) the middle class is more likely to undertake political action, demanding institutional reforms and social policies aimed at the provision of public services (such as education or health). Kimura (2003) also describes this group as being more active in politics, and explains that in the case of the Philippines the role of the middle class in political activity was important for the democratisation process. Once the democratic regime is set, the participation and cooperation of the middle class in continual reforms is fundamental for achieving greater institutional quality.

In this vein, Birdsall (2010) asserts that the middle class will be more willing to pay more taxes for better quality education, health and infrastructure, as well as more willing to back the rule of law and property rights. However, the introduction of

changes will not only depend on the policies that citizens demand, but also on their collaboration for these policies to be carried out. This, in turn, will depend on social cohesion and social capability, which will increase with the presence of the middle class. In this respect, Easterly, Ritzen and Woolcock (2006) find that lower polarisation and more social cohesion lead to higher levels of income and public goods.

In short, as the middle class is more given to carry out political actions, to demand for institutional changes, and to cooperate to make them a reality, its presence is essential to achieve a higher degree of economic and social development, meaning better education, health and infrastructure.

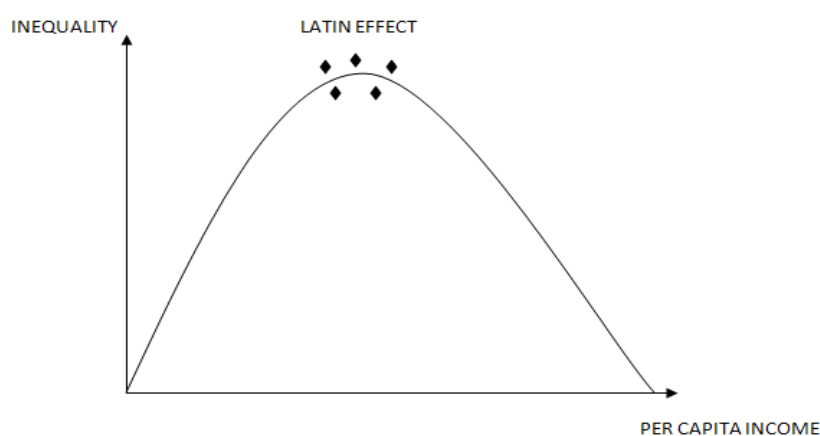
3. The “endogeneity problem”

Once the connection between the middle class and economic growth has been shown (in Section 2), it can be argued that the rise of the middle class is just the consequence of this economic growth and not the cause. This argument is acceptable in the respect that the middle class is certainly endogenous and that it emerges as a result of the increase in income per capita. However, this does not imply that economic growth necessarily means that income increases for all of sectors of society. Indeed, high levels of inequality and polarisation impede this process.

According to Kuznets (1955), economic growth is accompanied by an inverted U-shaped evolution of inequality. According to this theory, increases in GDP per head initially goes hand in hand with increases in inequality; however, it reaches a point after

which GDP per head keeps on rising whereas inequality starts to fall.¹² Nevertheless, Deininger and Squire (1998) found that some Latin American countries are trapped in the highest part of the Kuznets curve (Figure 2.1). This means that they have reached the highest level of inequality while GDP per capita stagnates. Yet there is evidence that after rising throughout the 1990s, income inequality in Latin American countries declined (at an average of 1.1 per cent a year between 2000 and 2007), while some countries in the region experienced high per capita growth rates during the same period (López-Calva & Lustig, 2010). Market oriented reforms and the implementation or expansion of conditional cash transfer programs seem to have contributed to this performance (Barros et al., 2010).

Figure 2.1. Kuznets curve.



Therefore, it can be argued that the transition to the second part of curve can be accomplished by either the promotion of economic growth that would lead to the reduction of inequality and the emergence of the middle class; or the reduction of inequalities with the objective of permitting the emergence of the middle class, so the creation of a scenario that is more appropriate for boosting economic growth. This

¹² For Kuznets, this particular behaviour of GDP per head and inequality is linked to the transition process from the traditional sector to a modern one. This will be further developed and discussed in Chapter 6.

choice lies in the types of institutions adopted. In this sense, it could be argued that the middle class is a mere consequence of the establishment of “good institutions” that ensure economic, political and social freedoms. However, freedoms are not set by chance, but rather arise in certain contexts as a result of the new needs created by a growing society, in which the middle class (as mentioned in section 2.4 and 2.5) will play a crucial role when fostering processes of change and demanding higher quality institutions.

In short, while the middle class is endogenous to economic growth and dependent on the quality of institutions, the middle class itself is crucial to achieve the other two. Notably, in the next section, I show that the common element that links institutions, middle class and economic growth, thus untangling this web of interrelationships, is redistribution.

4. Institutions, the middle class and sustained economic growth: a virtuous circle.

Before establishing a relationship between institutions, the middle class and sustained economic growth, in what follows I clarify the meaning of concepts used in the conceptual framework showed below.

“Good” institutions: Based on previous works such as those of Acemoglu, Johnson, & Robinson (2002; 2005), Alesina and Perotti (1994), North and Thomas (1989) or North and Weingast (1989) “good institutions” are defined as those that ensure not only the definition and accomplishment of property rights, but also those which allow free participation in politics and the exercise of civil rights; that is, those that guarantee economic, political and social freedoms. The extent to which institutions

ensure liberties will have important consequences for economic growth. Gwartney and Lawson (2003) hold that, very often, economic freedom and social and political liberties run together. This is because the presence of political and social liberties strengthens the existence of economic freedom. Aixalà and Fabro (2009) confirm the influence they exert over each other, and discuss the existence of a virtuous circle in which economic freedom generates economic growth, the created development promotes political liberties, and these, in turn, lead to a higher level of economic freedom. Nevertheless, as will be explained later, the presence of “good institutions” (according to this definition) is a necessary but not sufficient condition for achieving sustained economic growth.

Sustained economic growth: The definition of “sustained economic growth” is based on Ranis and Stewart’s (2002) work. According to these authors, it is growth that fosters economic development, and this will depend on the income distribution. Therefore, income distribution will be a key factor in the conceptual framework presented below.

Throughout the literature, different points of view on the relation between income distribution (measured by inequality indexes) and economic growth can be found. Forbes (2000), for instance, argues that in the short and medium term inequality has a positive effect on economic growth. Nevertheless, she adds that her results do not contradict the long-run negative effects. Others, such as Banerjee and Duflo (2003) assert that there is no lineal relation between inequality and growth, and find that changes in inequality (whatever direction they take) will have a negative effect on growth. Meanwhile, the negative relation between inequality and growth can travel through several channels. Easterly (2007), for instance, confirms the Engerman and Sokoloff (1997) hypothesis (that inequality hinders growth), by showing the negative effect that inequality has on certain development indicators, such as education or

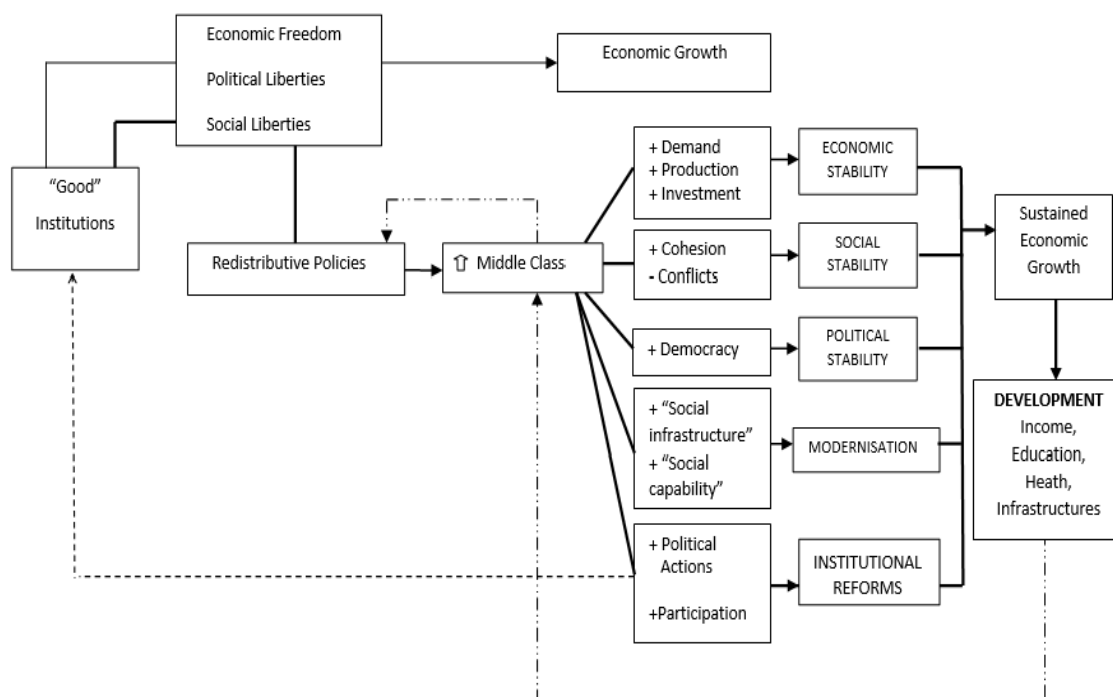
institutional quality. In the conceptual framework presented here, the indicator allowing us to relate income distribution (inequality) and sustained economic growth will be the presence of the middle class.

Middle class: Regarding the identification of the middle class, due to the complexity of this concept, a whole chapter (Chapter 3) will be dedicated to its definition. Nevertheless, in order to understand the conceptual framework, it will be enough to define it as: the social class halfway between the most impoverished class and the most enriched one. Additionally, its members are considered to have enough economic security, to assume risks, and to have the education needed to adapt themselves to innovation, to know their rights, and to participate actively in politics.

- *Conceptual framework*

Figure 2.2 shows how each of the main elements of the conceptual framework are connected. The conceptual framework is distinguished into three parts: 1) the left side, which focuses on the variables that determine institutional quality; 2) the central part, in which the middle class and its characteristics are placed; and 3) the right side, which is devoted to sustained economic growth and development.

Figure 2.2. Conceptual framework.



The left side shows that “good” institutions that ensure economic, social and political liberties to citizens are needed to achieve economic growth. However, the presence of such institutions will not be enough to achieve sustained economic growth if they do not succeed in promoting a middle class society. Importantly, as also shown on the left side, economic growth by itself is not enough to achieve a middle class society. According to Aixelá and Fabro (2009, p. 167), “growth accelerates the processes of social mobility, which leads to a broader middle class and greater access to education and information, generating a growing demand for political rights and civil liberties”. Yet, while it is true that more growth can make social mobility easier, if the income distribution is unequal, this growth could be translated into greater social polarisation instead of a larger middle class that promotes sustained economic growth. However, if institutions succeed when applying redistribution policies and fostering the middle class, the result can be different.

As presented in the central part, the fostering of the middle class leads to sustained economic growth through five channels: 1) economic stability, 2) social stability, 3) political stability, 4) modernisation, and 5) the introduction of reforms. As further developed, in Section 2, economic stability is the result of increased demand, investment and higher resistance to economic shocks. Next, social stability is the result of a higher level of social cohesion and lower conflict risks. Political stability is deduced from greater support of democratic systems by the middle class. Additionally, modernisation is a consequence of the “social capability” of this social group that, in turn, will determine the “social infrastructure” needed for the introduction of innovations, which allows for increases in productivity. Finally, the higher predisposition of the middle class to participate in politics (and undertake political action) will result in institutional reforms aimed at ensuring more freedoms, redistribution policies, and the provision of quality public services.

Together these five channels lead to the right side of the model; sustained economic growth which, in turn, leads to development, which is reflected by more income per capita, more education (human capital), improvements in health and better infrastructure. Development, in turn, will contribute to the constant rise of the middle class. Therefore, since the middle class demands institutional reforms and supports distributive policies, it will permit others to ascend to the middle class, generating a virtuous circle. Importantly, in this virtuous circle the key factor is redistribution.

On the one hand, it can be argued that some redistribution policies (such as public expenditures and economic regulation) cut inequalities and poverty, enlarging the consumer market and fostering production and growth. While, on the other hand, an excess of public expenditures and regulation can be seen as harmful for efficiency and growth. According to Mendes (2014), in the Brazilian case, the pervasive effects of

redistribution policies on economic growth worsen when there is '*dissipative redistribution*'. For example, redistribution policies biased towards the high-income strata can explain a model of low efficiency and low growth. In this case, the 'dissipative redistribution' takes place by means of two channels. First, the closure of the country to international trade, through the protection of national producers and their business, which, in turn, hinders productivity gains that could be provided by greater competition. Second, the fragility of property rights and judicial uncertainty (being susceptible to political influence) that make difficult the participation of the private sector and scare potential investors. Additionally, redistributive policies directed at the low-income strata can also lead to low efficiency and growth. This may occur when, on the one hand, the excess of public expenditures for social programs generates the increase of public deficit, the increase of interest rates, the reduction of public savings, and a decrease of public investment in infrastructure; on the other hand, when economic regulation establishes minimum wages above the increase in labour productivity. Yet, according to the same author, "the increase of political power in some intermediate income segments [this is the middle income strata] could induce a movement in the direction of dismantling privileges created for the rich or to restrict policies in favour of the poor. This would reduce the adverse effects of redistribution in economic performance." (Mendes, 2014, p. xxx). Therefore, it is worth noting that while redistribution appears as the relevant element to begin the virtuous circle, this redistribution should not be dissipative and should promote the enlargement of the middle class, as "the expansion of the middle class creates conditions for this group to demand better public services and greater economic growth."

5. *The Brazilian case*

Brazil is a recent example of economic growth and the emergence of the middle class. After exhibiting a mediocre performance between the 1985 and 2003 (growing at 0.8 per cent per annum), between 2004 and 2010 GDP per head grew at an annual rate of 3.3 per cent. Consequently, Brazil's status changed from developing country to emerging economy, and has been described as the “*country of the future*” or “*South America's emerging superpower*” (Mendes, 2014, p. xix).¹³

Importantly, the impressive economic growth that occurred between 2004 and 2010 was accompanied by the rise of what has been denominated “the new middle class”. In fact, the rise of this new middle class has been commonly attributed to the result of the reduction of inequality, due, in turn, to the emergence of favourable labour market conditions because of the recent commodities boom (Mendes, 2014, p. 84). Nevertheless, it should be noted that the reduction of inequality has been also linked to the introduction of distributive policies aimed to fight poverty (Barros et al., 2010, p. 333).

Some of the redistributive actions involved labour market policies, the expansion of access to credit and social and educational assistance. Labour market policies consisted of: broadening (ensuring) the unemployment insurance throughout the FAT (*Fundo do Amparo ao Trabalhador*) and the PSD (*Programa Seguro-Desemprego*); the

¹³ Recent estimates have predicted a deceleration of Brazil's growth rate: “growth has averaged just 1.3 percent over the past four years and economists conducted by the Central Bank of Brazil suggests a 0.5 percent contraction this year followed by 1.5 percent growth in 2016.” (The Economist, 2015). Still, the most optimistic economists see Brazil as one of the most powerful economies in 2050. In 2003, a group of economists of Goldman and Sachs asserted that Brazil, Russia, India and China (called the BRIC group) were the new greatest powers, which will lead the world economy; Russia and Brazil as the biggest producers of raw materials, and India and China as the biggest providers of technology and services. In 2015, PwC's project, *The world in 2050: Will the shift in global economic power continue?*, still placed Brazil amongst the top 5 largest economies by 2050 in terms of GDP at PPPs.

active regulation of minimum wages; occupational mediation and professional training. Meanwhile, monetary policies aimed at the expansion and democratization of the access to credit by means of subsidized credits to: SMB (micro-banks system), family agriculture, the internalisation of Brazilian enterprises, and sectors of infrastructure and housing. Finally, the implementation of social programs involved the *Programa Bolsa Familia* (PBF) consisting of income transfers conditional on schooling attendance of children younger than seven and primary care assistance; *Beneficio de Prestación Continuada* (BPC) offering income transfers of a minimum salary to people older than sixty and people in conditions of poverty; and the *Programa Territorios de Ciudadanía*, which combines programs of assisted credit, *bolsa familia*, the provision of infrastructure and centres of social attendance, in order to promote the inclusion of the poorest rural areas.

The strategy has reduced the extent of inequality and poverty indexes, and expanded the internal market through the increase of popular consumption.¹⁴ At the end of 2003, almost 40 per cent of the population lived below the poverty line, while in 2009 this percentage fell to 24 per cent.¹⁵ Notably, between 2003 and 2009 nearly 29 million people, previously poor, became part of the middle class (Côrtes Neri, 2010, p. 12), the total figure rising to 35 million between 2002 and 2012 (SAE- Secretaria de Assuntos Estratégicos, 2012, p. 7). Interestingly, this growing middle class, apart from becoming an important source of private consumption and investment, demonstrates new expectations and the demand for more institutional reforms that accomplish its emerging needs. One example of this can be found in the demonstrations of June 2013, on the eve of the World Cup, when thousands of people took to the streets to denounce

¹⁴ See Cacciamali (2011).

¹⁵Secretaría de Assuntos Estratégicos da Presidência da República (2012). Estimations based on Ipeadata's poverty lines.

the billion dollar expenditure on soccer stadiums while public education was underfunded, hospitals lacked equipment, and public transport and infrastructure remained poor and insufficient. Essentially, this growing new middle class and its implications raise new hopes for the future of the country.

Interestingly, this is neither the first time that Brazil has experienced rapid economic growth, nor the first time that good conditions for economic success have been present. According to Goldsmith (1986), from 1901 to 1914, Brazil experienced a rapid economic growth, and it also had other periods of apparent prosperity throughout the twentieth century. However, these were all interrupted and followed by harsh economic crisis. Why was Brazil's growth experience in the past not sustained? A possible answer suggested here is that despite the presence of economic growth, inequalities perpetuated themselves and kept on increasing, and this, in turn, prevented the consolidation of a middle class that fostered the institutional reforms needed to build upon this success.¹⁶ In order to test this hypothesis, the next chapters will be dedicated to the investigation of the evolution of inequality, the middle class and economic growth in Brazil between 1839 and 1950. Notably, outcomes from the past serve to provide new lessons for the present.

6. Conclusions

This chapter has conducted a revision of the literature assigning the middle class a relevant role in the achievement of economic growth and social development. Traditionally, the main arguments supporting the view that the middle class promotes

¹⁶ See Bresser-Pereira (2009), Ferreira (2000), Furtado (1965), Gaulard (2011), Medeiros (2004), and Summerhill (2010).

economic growth are founded on the economic, social and political stability that this social group generates. Therefore, it has also been claimed that its presence is essential in process of modernisation, as its greater “social capability” implies a better adaptation to change. Finally, this chapter has also highlighted the relevance of the middle class for obtaining institutional improvements, given its greater implication in politics, as well as the amelioration of public services and infrastructure, which are within its main demands and claims.

To provide a better understanding, these arguments have been shortened and represented in a conceptual framework, in which institutions, the middle class and development relate to and influence each other. In this virtuous circle the middle class emerged thanks to institutions that promoted economic growth without disregarding a key factor: redistribution. Notably, the subsequent emergence and consolidation of the middle class appeared as a crucial element for the achievement of sustained economic growth that lead to development.

Next, the Brazilian case has been presented as an example of this virtuous circle. There is evidence that the economic growth experienced by this country during the last decade has been accompanied by the introduction of redistributive policies and projects aimed at reducing poverty, which, in turn, have allowed millions of households (who previously were poor) to rise to the middle class. As a result Brazil has achieved unprecedented development levels and new hopes emerge for the future of the country. The question arises however: Why did the virtuous cycle not begin before? The hypothesis proposed in this chapter pointed to an uneven distribution of growth which hampered the eradication of poverty and the emergence of a middle class. Finally to test the hypothesis, this chapter calls attention to the relevance of studying the Brazilian middle class from a historical perspective, discovering its origins and then its

subsequent evolution with respect to inequality and economic growth. Therefore, the next chapter will be dedicated to the definition and measurement of the middle class in the long-run.

Chapter 3. The Definition and Measurement of the Middle Class

1. Introduction

How to define the middle class is a challenging question whose answer will always depend on someone else's criteria. Indeed, based on a desire to find the most accurate definition, diverse estimations have been elaborated. In particular, the most difficult challenge consists of finding a non-arbitrary definition that permits the replication of the analysis in different countries and periods of time. Since the final purpose of this thesis is to measure the Brazilian middle class from a long-run perspective, this chapter aims to find a middle class definition that avoids the arbitrariness problem and permits the study of the evolution of this social group over long periods.

With this objective in mind, in this chapter I first make clear the concept of class in Section 2. Then, I present and discuss current definitions of the middle class in Section 3. Next, in Section 4, I show the advantages of using polarisation measures to infer the middle class as an alternative to traditional measures, and present different polarisation indexes. In Section 5, I propose a new middle class index (based on polarisation indicators) to be used for measuring the middle class in the long-run. Finally, Section 6 concludes.

2. *Clarifying the concept of “class” and the definition of “the middle class”*

Before establishing a definition of “the middle class”, one should take into account what the concept of “social class” involves. Importantly, social classes are not part of the natural order of things, but a human artifice subject to historical change. Moreover, different from the castes or the feudal strata, their limits are not clearly defined by legal or religious norms that confer individual specific rights; on the contrary, they are economic groups separated by vague limits which tend to change and overlap (Tezanos, 2001).

In the literature the identification of classes appeared intimately linked to the development of industrial-capitalism, when the social position was conceived as determined by the ownership and use of the means of production. The first theories on class structures can be found in the works of Marx and Engels (1848 [2012]) and Weber (1922 [1978]). In the Marxist view the class structure is divided into two groups: the capitalists –owners of means of production- and workers – whose unique possession is their capacity to sell their labour power. Therefore, this theory denies the significance of intermediate groups, which are both temporary and illusory, bound to disappear or merge back into the upper or lower strata (Blumin, 1989).¹⁷ However, the Weberian approach acknowledges the presence of an intermediate group with its own entity, composed of small capital owners who are also involved in the production process (as entrepreneurs, commercialists, industrialists) or by professionals with special skills (or formation) that gives them a preferential value (e.g. lawyers, doctors, artists, white-collar workers).

¹⁷ According to this theory only some successful individuals will achieve the first group, while the majority will join the ranks of the second through a process of proletarianisation.

Yet, as Blumin (1989) pointed out: “the concept of the middle class, historically and in the present, is both pervasive and elusive; indeed it is elusive precisely because it is pervasive”. In economic terms, it might be broadly defined, in Aristotle’s words, as a “third group in a mean”, halfway between the very poor and the very rich.¹⁸ However, the actual economic limits that enclose it are not fixed; indeed they can change across countries. Moreover, it is commonly argued that, apart from income, there are other subjective characteristics (such as education, labour conditions or status) considered as relevant to define the middle class (Lora & Fajardo, 2011; Williamson, 1962). Finally, there is evidence that “the composition of the middle class often appears dependent on the historical period under consideration.” (Archer & Blau, 1993, p. 21).

For example, in the nineteenth century in Europe, the middle class is seen as a synonym for a small bourgeoisie constituted by small owners and entrepreneurs, an ascendant class between the aristocracy and the working class (Blumin, 1989; Cruz Valenciano, 2014; Maza, 1997). Similarly in America, the nineteenth century middle class was comprised of small business owners (Archer & Blau, 1993, p. 28). Then, at the end of the century the middle class also included technical, clerical and managerial workers (Archer & Blau, 1993; Gray, 1977; McLeod, 1977). Finally, from the Second World War onwards, the middle class in both Europe and America is associated with the increasing salaried employees in the services sector and, particularly, consisting of those who benefited more from technical specialisation in new sectors (Bacqué, Bridge, Benson, & Butler, 2015; Bouzou, 2013; Hassner, 2013). Do these middle class definitions fit the Brazilian context? In this respect, Fernandes (1978, p. 26) affirmed that:

¹⁸ Aristotle (350 BC) *Politics Government by the Middle Class*, Book 3, part XI.

“the bourgeois and the bourgeoisie in Brazil [...] are entities that appear lately, following a path markedly different from that followed in Europe, but within trends that prefigure features and social destinations analogous both for the kind of personality and the type of social formation”.

Similarly, Owensby (1999, p. 29) shows that the modernisation process linked to industrialisation, even if it was slow and late, developed along with the creation of new professions that required special skills and formation, as happened previously in more advanced countries. Finally, notably, we find evidence of a similar lifestyle, behaviour and values within the Brazilian middle class to those exhibited by their counterparts in Europe or America. These common values were based on: individualism, achievement, consumerism, education, privacy, religion, family and conventionalism (Archer & Blau, 1993, p. 32; Cruz Valenciano, 2014, pp. 101-220; Gray, 1977, pp. 134-158; McLeod, 1977, p. 61; Owensby, 1999, pp. 107-110). Therefore, perhaps, the biggest difference between the Brazilian middle class and its European counterpart was the size and vulnerability of the former more than its composition and characteristics. Indeed, those cultural codes of the middle class were nothing but the import of a lifestyle, learned behaviour patterns for those who struggled to keep appearances and distinguish themselves from the poor (Anderson, 1977, pp. 113-133; Archer & Blau, 1993, p. 32; Owensby, 1999, pp. 72-75).

From an economic approach, the characteristics of the middle class (such as education level or professional status) might be considered subjugated to the level of income. However, to identify and compare the middle class in terms of income across countries and time is a difficult task, as here there is no consensus on the boundaries that delimit it. On the contrary, this is dependent on the researcher's criteria, the selected country and the period being examined. Indeed, in the next Section, I introduce several definitions of the middle class in terms of income discussed in the literature.

Then, I propose a new definition that permits one to make comparisons over time and space.

3. Looking at the middle class definitions

Many authors have based their definitions of the middle class on the income and consumption capacities of individuals. In what follows, I present some of these definitions and distinguish those that set their limits by quantiles; those that are based on central tendency measures; and those that use absolute and mix thresholds.

3.1 Definitions based on quantiles

These definitions are set by the same methodology used by the inequality indicators (such as the Lorenz's curve), in which society is partitioned in equally sized groups (by percentiles, deciles or quantiles) and the income is distributed (equally or not) among them. Next, the choice of the quantile to identify the middle class depends on the researcher's criteria. Easterly (2001), for example, uses the three central quantiles. Meanwhile, Adelman and Morris (1971) and Alesina and Perotti (1996) apply the third and fourth quantiles. Additionally, Solimano (2008) defines the middle class as those from the third to ninth quantile, making a second subdivision in order to distinguish between the lower middle class (from the third to the sixth quantile) and the upper middle class (from the seventh to ninth).

As mentioned previously, the definitions of the middle class based on quantiles face a problem of arbitrariness in establishing the limits that enclose it. Additionally, while they allow the comparison of changes in income corresponding to each group, changes in group sizes are not captured, as the income groups are always the same size.

3.2 Definitions based on central tendency measures

This approach bases the middle class definition on measures of central tendency, such as the mean or the median. Hence, in order to set the middle class limits, authors who follow this approach, define the lower bound as a fraction of the mean (or median) income and the upper bound as a multiple of one of these central tendency measures. For example, Birdsall, Graham and Pettinato (2000) define the middle class as those households whose income per head is in a range between 0.75 and 1.25 times the median of the income distribution. Additionally, Cruces et al. (2011) and Lora and Fajardo (2011) also support definitions based on central tendency measures as opposed to those based on percentiles. They argue that central tendency measures are more sensitive to changes in the distribution of income over time. Indeed, these definitions permit comparisons of the income share and the income size of each group over time. Nevertheless, these definitions still face a problem of arbitrariness in establishing the lower and upper bounds that delimit the middle class.¹⁹

3.3 Definitions based on absolute thresholds

This method involves definitions that are set according to absolute thresholds of daily mean income or capacity of consumption (PPP adjusted). For instance, Ravallion's (2010) definition is those households whose consumption per head is between \$2 (mean of the poverty lines of seventy developing countries) and \$13 (U.S poverty line) at 2005 PPP. Moreover, Banerjee and Duflo (2008) add a distinction between the lower and the upper middle class, the first consisting of those households

¹⁹ See Cruces et al. (2011).

whose purchasing power is between \$2 and \$4 and the second those with a purchasing power between \$6 and \$10.

Notably, while international comparisons are possible using this methodology, sometimes the lower threshold is too low to conduct a global analysis, as people placed closer to the lower threshold might not be considered middle class in higher income countries. Furthermore, those near the lower bound are more vulnerable to any financial crisis, which could move them out of the middle class even under their country life standards.

To address this problem, López-Calva and Ortiz Juarez (2011) propose the following middle class definition: those individuals just above the poverty line, but with low probability (vulnerability) of falling into it. In this way, they set the lower limit to \$10. Meanwhile, Milanovic and Yitzhaki (2002) set a lower threshold of \$12 (daily mean income in Brazil) and an upper threshold of \$50 (daily mean income in Italy). This increased lower threshold assures that the definition refers to people with a certain purchasing power (at least marginally above the poverty line).

Finally, to make this approach more accurate, Birdsall (2010) proposes a definition based on mixed thresholds (global and local). She sets the lower bound at \$10 daily (high enough to compare at a global level) and points out the need to also set an upper threshold at a local level. In this way, she takes into account the differences within each country according to its characteristics in terms of income, employment, and financial capacity. As the author argues, in some countries the lower threshold could be available just for the richest people, who cannot be considered “middle class” when their incomes come from inherited wealth or that derived from monopolies and other privileges. Then, she proposes to establish the upper threshold on the 95th

percentile of each country, which lets us show its own reality. This last definition seems to be the most accurate, as it permits the comparison of the size of the middle class over time as well as taking into account the real situation of each country. Nevertheless, like the previous definitions, it still suffers from arbitrary criteria.

Table 3-1. Objective middle class definitions.

TRADITIONAL MEASURES	Based on:	Middle class definitions:		
	Quintiles	Adelaman and Morris (1971) and Alesina and Perotti (1996)	Quintiles 3 and 4	
		Easterly (2004)	3 middle quintiles	
		Solimano (2008)	Quintiles 3-9	3-6 (lower middle class) 7-9 (upper middle class)
	Central tendency measures	Birdsall, Graham and Pettinato (2000)	$0.75 < Y < 1.25$	
	Absolute thresholds (PPP)	Banerjee and Duflo (2008)	$\$2 < x_i < \10	$\$2 < x_i < \4 (lower middle class) $\$6 < x_i < \10 (upper middle class)
López-Calva and Ortiz Juarez (2011)		$\$10 < x_i < \50		
Milamovic y Yitzhaki (2002)		$\$12 < x_i < \50		
Ravallion (2009)		$\$2 < x_i < \10		
Mix thresholds	Birdsall (2010)	$\$10 < y_i < 95\text{th percentile}$		

4. Searching for alternatives: Polarisation measures

An alternative method to measure the middle class is to infer it from polarisation. This methodology, proposed by Foster and Wolfson (2010) and also applied by Cruces et al. (2011), presents many advantages over the traditional ones.²⁰ In particular, these measures can capture better the presence of different social groups along the distribution and prevent the arbitrariness problem when defining them. For a wider understanding of this alternative, in this Section I define polarisation and explain

²⁰ Although they do not have the purpose of measuring the middle class, we can find other studies on polarisation in societies (Esteban, 1996; Gasparini et al., 2008; Prados de la Escosura, 2007b; Zhang & Kanbur, 2001).

its differences from inequality, then I show the different polarisation indexes which can be applied for investigating the middle class.

4.1 What is polarisation?

The phenomenon known as “polarisation” consists of the formation of a reduced number of groups which are very homogeneous internally but very different among them. In a society, polarisation can exist in several dimensions, such as income, religion, or ethnicity. Additionally, in any of these dimensions polarisation can be a cause of social conflicts and instability, although, according to Esteban and Ray (1994), this is especially true of the income dimension.²¹

“A society that is divided into groups, with substantial intra-group homogeneity and inter-group heterogeneity in, say, incomes, is likely to exhibit the features mentioned above [tensions, possibilities of revolt, and the existence of social unrest in general]” (Esteban & Ray, 1994, p. 820).

Certainly, income differences have frequently been seen as the main cause of social struggles. Therefore, differences in income distribution have been traditionally studied from an inequality point of view. However, among the income distribution dimensions (inequality, poverty, mobility and polarisation), polarisation is the one which better captures the extent of social cohesion and, thus, the risk of disharmony.²² In this regard, it is important to remember that (as detailed in Chapter 2) social cohesion is considered as one of the factors throughout which the middle class leads to economic development. Consequently, it is evident (as explained in the next section) that, instead of inequality, the use of polarisation measures is a more appropriate methodology to explore the middle class and its relation to economic growth.

²¹ For Gasparini et al. (2008) individual diversity does not entail polarisation, it just happens when identity becomes a factor of fragmentation and conflict.

²² See Esteban and Ray (1994); Gasparini et al. (2008); and Gradín and del Río (2001).

4.2 Differences between inequality and polarisation measures

The principal difference between inequality and polarisation is that while the first focuses on the differences among individuals, the second looks at the income distance among groups. Importantly, inequality measures estimate the extent of concentration of population around the mean income of the distribution, while polarisation measures test the formation of different income groups along this distribution. Consequently, with inequality measures distributions follow unimodal shapes, while with the polarisation measures distributions take bimodal or multimodal shapes. In this regard, from an inequality perspective the extreme situation would be reached when one person receives all the income and the rest receives nothing (distributions with a long right tail). From a polarisation perspective, instead, the extreme situation arises when the population is equally distributed between two distant poles (bipolarised distributions), highlighting the absence of a middle income group or middle class (Gradín & del Río, 2001, p. 4).

Notably, dissimilarities between inequality and polarisation measures come from the different principles they are based on. In particular, inequality measures are based on the transfer principle of Dalton-Pigou, which stipulates that whenever there is a transfer among individuals from one richer to one poorer, inequality must decrease.²³ Meanwhile, the polarisation measures are based on the following characteristics:

²³ Apart from the Dalton's transfer criteria, inequality measures are also founded in other axioms such as: anonymity, population and relative income. For further explanations see Ray (1998, pp. 169-196).

- I. A high degree of homogeneity within each group.
- II. A high degree of heterogeneity across groups.
- III. A small number of significant sized groups. This means that very small groups (e.g. isolated individuals) have little weight.²⁴

Hence, although very often inequality and polarisation are related, such differences in their characteristics mean that they do not always move in the same direction, nor lead to the same conclusions. To understand this, some examples, based on the work of Esteban and Ray (1994), Esteban (1996) and Gasparini et al. (2008) are given below:

- ***State 1: Polarisation and inequality go in opposite directions:***

Take a society with six individuals (denominated A, B, C, D, E, and F) whose income is respectively \$1, 2, 3, 4, 5, and 6 (Figure 3.1). Let's suppose that C realises a \$1 transfer to A, and F makes the same transfer to D (Figure 3.2). That way according to the Dalton-Pigou criteria the inequality measures should report this as a better situation (meaning more equal). Nevertheless, in terms of polarisation the society in the aforementioned situation is worse off. In this new situation the society becomes divided into two groups, which are perfectly homogenous inside but clearly differentiated from each other. Now there are three people (A, B and C) with \$2 and three with \$5 (D, E and F). That is: two homogenous groups that antagonize each other, giving rise to social tensions and conflicts.

²⁴ See Esteban and Ray (1994, p. 824).

Figure 3.1. State 1, before transfers.

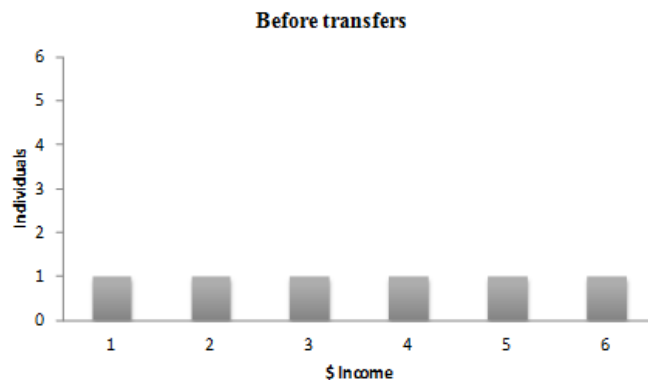
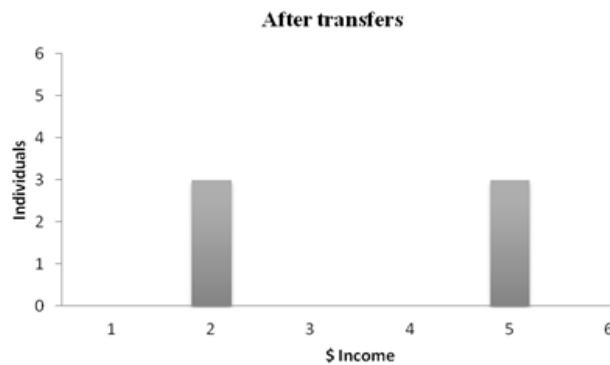


Figure 3.2. State 1, after transfers.



- **State 2:** Polarisation and inequality go in the same direction:

a) Both of them go up:

Given the same society with the same number of individuals, in which there are three individuals (A, B and C) receiving \$2 and three (D, E, F) with \$5 (Figure 3.3). Imagine that each individual of the first group realises a \$1 transfer to the individuals of the other group (Figure 3.4). This results in a worse situation in terms of both inequality and polarisation. Now, the poor group becomes poorer, the rich group becomes richer and both move away from each other.

Figure 3.3. State 2a, before transfers.

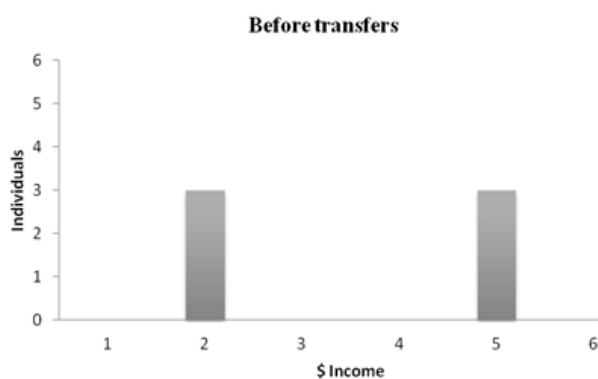
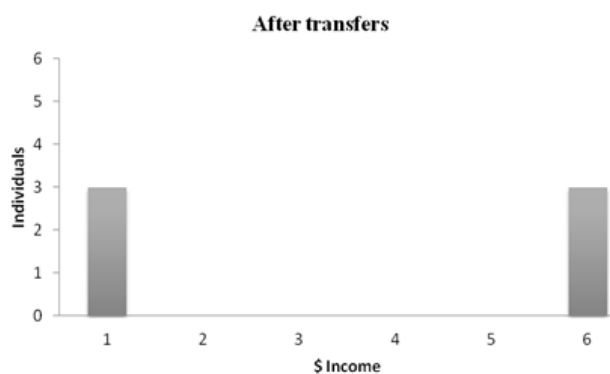


Figure 3.4. State 2a, after transfers.



b) Both of them go down:

Suppose now a society with five individuals A, B, C, D and E, receiving \$1, 1, 5, 5, and 6 respectively. Then almost the whole society is divided into the \$1 and the \$5 groups (Figure 3.5). If each individual in the second group make a \$2 transfer in favour of the individuals in the first group, then they became a unique and bigger group with \$3 (Figure 3.6). This leads to a new situation in which inequality and polarisation go down. Inequality goes down as a result of these progressive transfers. On the other hand, as the size of the remaining \$6 group is so insignificant with respect to the new \$3 group, polarisation disappears.

Figure 3.5. State 2b, before transfers.

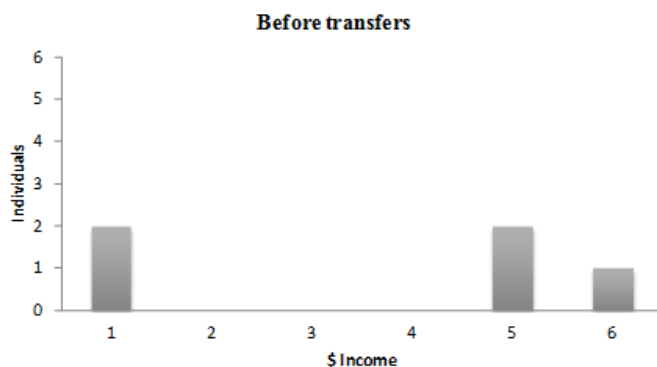
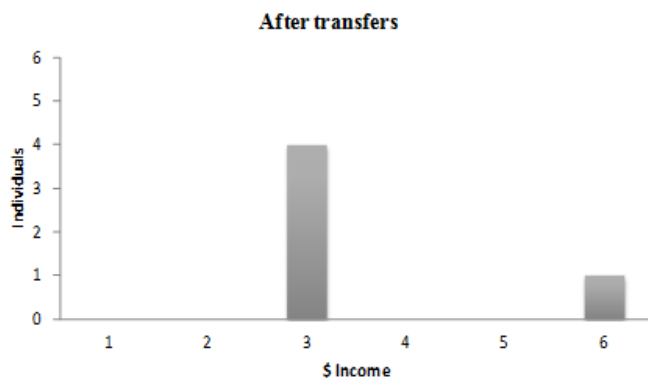


Figure 3.6. State 2b, after transfers.



Although it is still likely that both inequality and polarisation move in the same direction, and thus that they can be complementary, the aforementioned arguments show that polarisation measures should be preferred when measuring the middle class.

4.3 Polarisation indicators

The first studies on polarisation in societies, in terms of income, appeared in the nineties and include the work of Foster and Wolfson (1992. Rev.2010), Esteban and Ray (1994) and Esteban, Gradín and Ray (1999. Rev. 2007). Later, the increasing interest in other dimensions such as ethnicity or education gave rise to other polarisation indicators based on such characteristics, as those developed by Gradín (2000) and Zhang and Kanbur (2001). Hence, in this Section, I will present the different

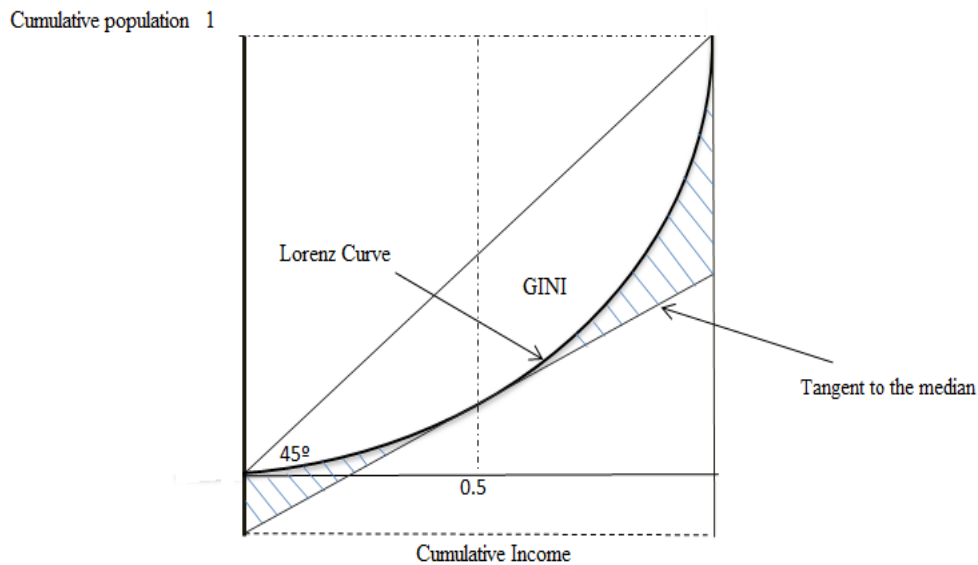
polarisation indexes that exist in terms of income and other characteristics which could be applied to infer the middle class.

4.3.1 Polarisation indicators in terms of income:

- **Index of Foster and Wolfson (1992, Rev. 2010)**

Foster and Wolfson’s objective was to examine the absence of the middle class. For this purpose they developed a bipolarisation measure, which assumed the existence of two equally sized groups whose cut-off is the median income. In this sense, the increase in the bipolarisation index reported the disappearance of the middle income group. This polarisation index is derived from the Lorenz curve and it can be defined as: twice the area of the region between the Lorenz curve and the tangent line (the crosshatched area in Figure 3.7)

Figure 3.7. Foster and Wolfson index.



It is expressed as:

$$FW = \frac{\mu}{m} \left(0.5 - L(0.5) - \frac{G}{2} \right); P^w \in [0,1] \quad [1]$$

Where μ = mean, m = median, $L(0.5)$ =the value of the Lorenz curve at the median income, G = Gini. Like the Gini index, the FW index fluctuates between 0 and 1.²⁵

With this polarisation measure, Foster and Wolfson (2010) prevent the arbitrariness issue. Nevertheless, since this indicator assumes the existence of only two groups with the same size, it would be inappropriate if there were more income groups that, moreover, have different shares.

▪ ***Index of Esteban and Ray (1994)***

Esteban and Ray (hereafter ER) proposed a more general polarisation measure, which allows for the existence of n groups with different sizes. For them, polarisation is characterized by the three characteristics mentioned before (homogeneity within, heterogeneity across, and significant sized groups). Nonetheless, they add one more, stipulating that the higher the number of selected groups, the lower will be the polarisation.

Hence, they present an index that fulfils the four axioms. The index is based on a model of individual perceptions, according to two factors: *identification* and *alienation*. The *identification* factor refers to what the individual feels with respect to the rest of individuals considered members of his or her group in terms of income. Meanwhile the *alienation* factor corresponds with the individual feeling with respect to the rest of individuals that belong to other groups. The joining of both factors composes the *effective antagonism feeling* of each individual.

²⁵ See Foster and Wolfson (2010) to obtain a broader explanation of this polarisation measure.

Finally, the aggregation of the effective antagonism feelings of the all members of the society leads to the following polarisation measure:

$$ER(\alpha, \rho) = \sum_{i=1}^k \sum_{j=1}^k P_i^{1+\alpha} P_j |Y_i - Y_j| \quad [2]$$

Where P_i = Population share in the group i , Y_i = Income of population in the group i and α = a parameter that captures the sensitivity to polarisation. A higher α reflects more sensitivity to the groups concentration. To satisfy the axioms, the authors establish that $k > 0$ and $\alpha \in [1, 1.3 \text{ and } 1.6]$.²⁶

This indicator improves the Foster and Wolfson proposition as it permits one to take into account several groups in the society. Nevertheless, this measure requires the previous identification of each group (on the basis of any characteristics) and it does not consider the distribution within groups.

▪ ***Index of Esteban, Gradín and Ray (1999, Rev. 2007)***

In 1999 Esteban, Gradín and Ray (hereafter EGR) addressed the principal weakness of the ER (1994) indicator and tried to deal with the issue of dispersion within groups. Since the previous measure divides society into a finite number of groups, as the same authors pointed out, this leads to a loss of information regarding the initial dispersion inside these groups. Hence, they proposed a new indicator -the EGR [2007] henceforth- in which the number of groups is still chosen by the investigator but the cut-offs are determined endogenously.

In this case, they used a representation of the density function f (associated to a distribution function), which they called ρ .

²⁶ If $\alpha=0$ the results will be very similar to those obtained from the Gini Index. For a broader explanation of the choice of the α fluctuation range, see Esteban and Ray (1994).

$$\rho = (z_0, z_1, \dots, z_k; y_1, y_2, \dots, y_k; p_1, p_2, \dots, p_k) \quad [3]$$

Where: p_i and y_i are respectively the proportion of the population and the mean income corresponding to each group. Additionally, groups are defined as belonging to an interval $[z_{i-1}; z_i]$.

Since ρ is an approximation of the original density function f , it contains an implicit error $\varepsilon(f, \rho)$. This error indicates the extent of dispersion within groups and represents the lack of identification or the internal heterogeneity of these groups. Thus, the new polarisation indicator is expressed as:

$$P(f; \alpha, \rho) = ER(\alpha, \rho) - \beta \varepsilon(f; \rho) \quad [4]$$

Where: the first term corresponds to the polarisation measure ER and the second term is the error term (or lack of identification) pondered by the free parameter β .²⁷ This second term can be expressed as:

$$\varepsilon(f; \rho) = G(f) - G(\rho^*) \quad [5]$$

Thus, the equation can be rewritten as:

$$P(f, \alpha, \beta) = ER(\alpha, \beta) - \beta[G(f) - G(\rho^*)] \quad [6]$$

Where: $G(F)$ is the Gini of the original function, and $G(\rho^*)$ is the Gini of the optimum representation of the function, the closest to the original one.

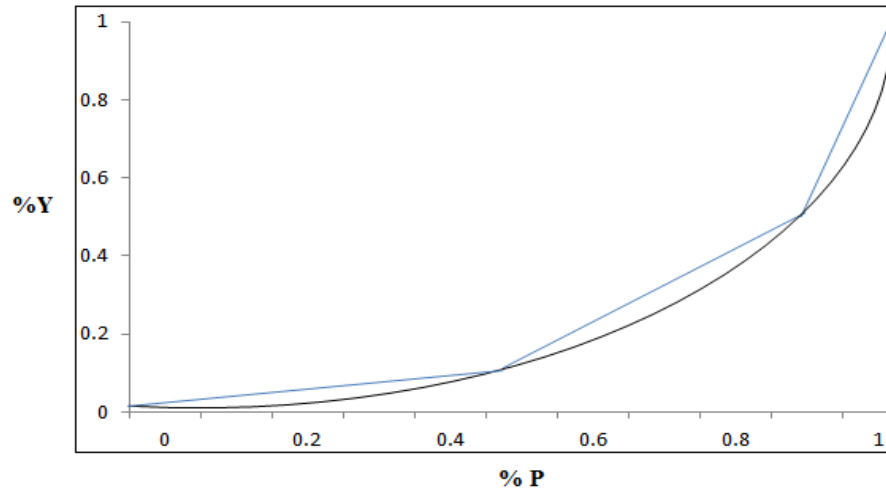
Graphically, the function ρ can be represented as a function with n peaks, which can be approximated with a Lorenz curve formed by n sections (Figure 3.8).²⁸ The

²⁷ B is the weight assigned to the error in the representation of the density function. The case $\beta = 0$ leads to the particular case of ER.

²⁸ The Figure below, from Gasparini et al. (2008), shows the function approximation for the case in which

minimum error is obtained by minimising the area between the Lorenz curve and the new fragmented function.

Figure 3.8. EGR (2007) index.



Source: based on the Honduras example appearing in Gasparini et al. (2008).

The main advantage of this measure is that, for a fixed number of groups, it takes the optimum position of each group, which minimises the internal heterogeneity error. Nevertheless, the election of the number of groups still depends on the investigator's criteria. For example, Cruces et al. (2011), when applying this index for studying Latin American middle classes, chose to start from a tripolarisation situation, by assuming the existence of three groups and looking at the evolution of the intermediate one.

4.3.2 Polarisation indicators in terms of characteristics:

The measures of polarisation described above applied income as the relevant variable to identify social groups. Nevertheless, some authors such as Williamson (1962) and Lora

$n = 3$. In this case the middle class would be represented in the second section of the distribution.

and Fajardo (2011) have pointed out the need to add other subjective characteristics (such as status or education level) to define the middle class. Luckily, we can find polarisation measures that also deal with the subjective attributes of social classes.

These measures use income as the *alienation* variable. Meanwhile, the *identification* factor is based on other discrete variables such as area of residence, race, religion or educational level. There are some authors who have incorporated subjective attributes into their polarisation measures. This section will focus on the works of Gradín (2000) and Zhang and Kanbur (2001).

▪ ***Index of group polarisation GGP (2000)***

The index of Gradín (2000), labelled the index of group polarisation (GGP), derivates from the ER (1994) and studies different household characteristics which determine the creation of groups. Thus, in this index, the population is divided into n groups and these groups are exogenously set according to any characteristic they share, independently from their income proximity.

Additionally, like the EGR (2007), this index takes into account inequalities within and across groups and also the superposition among them.²⁹ Thus, similarly to the mentioned index, this measure is presented as:

$$GP(F; \alpha, \beta, \rho^c) \equiv P(F; \alpha, \beta, \rho^c) - (-\beta) = ER(\alpha, \rho^c) - \beta[\varepsilon(F; \rho^c) - 1] \quad [7]$$

$$\varepsilon(F; \rho^c) = G(F) - G(\rho^c) \quad [8]$$

$$\text{Defining } \rho^c = (q_1, \dots, q_n; m_1, \dots, m_n) \quad [9]$$

²⁹ The more relevant characteristics are those showing high homogeneity inside the groups and high differences across them. (Gasparini et al., 2008).

Where q_i is the population share in group i , and m_i is the mean income of groups.³⁰

▪ ***Index of Zhang and Kanbur (2001)***

Zhang and Kanbur (2001) also seek to take into account differences in terms of other characteristics apart from income. In this case, they propose a polarisation index (ZK 2001 hereafter) based on the inequalities within and across groups (derivatives from Theil's generalized entropy index). However, as with the GGP (2000) index, the groups must be formed exogenously according to given characteristics. This also means that, contrary to the EGR (2007) index, with the ZK (2001) index the size of groups remains fixed. The measure can be expressed as:

$$ZK = \frac{GE \text{ Between}}{GE \text{ Within}} \quad [10]$$

Where ZK is the polarisation indicator defined as the ratio between GE Between and GE Within, which respectively capture the inequality between groups and the inequality within groups, in terms of any particular attribute and according to the General Entropy inequality index. In this sense, the more homogenous the groups are (meaning less inequality within groups), the bigger the differences existing across groups and the bigger the polarisation.³¹

³⁰ For a better understanding of this index see Esteban and Ray (1994), Esteban, Gradín and Ray (2007) and Gradín (2000).

³¹ For more details see Zhang y Kanbur (2001).

Table 3-2. Polarisation indexes.

Index	Identification variable	Alienation variable	Number of groups	Cut-offs
FW(1992)	Income	Income	2	Endogenous
ER (1994)	Income	Income	n	Author's criteria
EGR (1999)	Income	Income	n	Endogenous
GGP (2000)	Any characteristic: education, status, race...	Income	n	Author's criteria
ZK (2001)	Any characteristic: education, status, race...	Income	n	Author's criteria

5. *Estimating the middle class:*

In previous sections it has been shown that polarisation, not inequality, is the best approach to study the presence of the middle class. Moreover it has been shown that some polarisation measures even permit one to avoid the arbitrariness issue when defining social income groups. In this section I aim to find a new middle class definition, based on polarisation measures, which allows me to capture the rise of the Brazilian middle class and study its evolution over a long period. Additionally, since the purpose of this thesis is to find as much an accurate definition as possible of the Brazilian middle class, I will address two dimensions of the middle class: income and status. Hence, I will construct two middle class indexes: one based on polarisation measures in terms of income; and another based on polarisation measures in terms of characteristics.

- *Middle Class index*

As shown in Section 4, Foster and Wolfson (2010) studied the middle class starting from a bi-polarisation situation; that is assuming the existence of two equally

sized groups. In this sense, for these authors, the increase in the bipolarisation indicator (FW index) indicated the disappearance of the middle class, while the fall of the index suggested the opposite: the rise of the middle class.

Later on, this idea was subsequently taken to the next level by Cruces et al., (2011), who studied the Latin American middle class starting from a tripolarisation situation; that is, assuming the existence of three income groups. Hence, for these authors it was the increase of the tripolarisation indicator that indicated the rise of the middle class. In this case, since they assumed three income groups from the beginning, they calculated tripolarisation by using the EGR (2007) index, which, contrary to the FW index, allows for the existence of n sized groups.

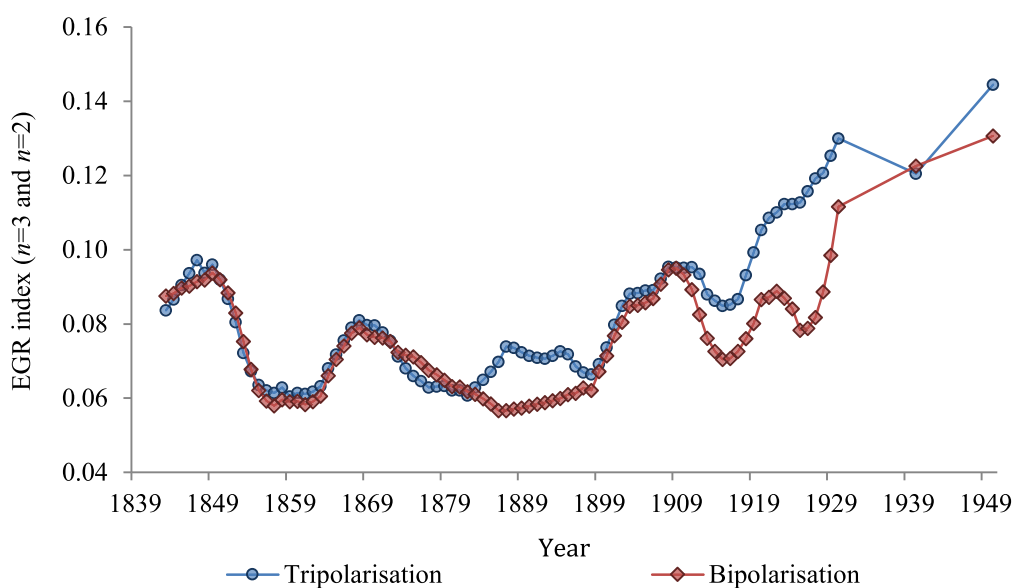
Following this reasoning (Foster & Wolfson, 2010; Cruces, López-Calva, & Battistón, 2011), it is crucial to understand that decreasing bipolarisation together with increasing tripolarisation clearly points to the emergence of a middle class. Therefore, I propose to go one step further with regard to the definition of the middle class by introducing a new middle class index (MC index henceforth), which is defined as the ratio between tripolarisation and bipolarisation.

$$**MC index = Tripolarisation /Bipolarisation [11]**$$

The rationale behind this new definition is twofold. To begin with, the separate analysis of bipolarisation and tripolarisation might lead to inaccurate conclusions when they move alongside each other. Additionally, just looking at the size of the middle income group can also lead to incorrect conclusions when this group is actually very similar to the poorer one in terms of income. For a broader understanding of this, in what follows I will present evidence in the case of Brazil.

In Figure 3.9, I show the evolution of both tripolarisation and bipolarisation in Brazil between 1839 and 1950. As can be observed, throughout the nineteenth century both indicators moved together making it difficult to conclude when the middle class arose. For instance, when looking at bi-polarisation trends one could place the emergence of the middle class in the early nineteenth century, when bi-polarisation was falling. Tripolarisation, however, was falling too. Similarly, in terms of tri-polarisation, one could place the rise of the middle class in the 1860s, when tri-polarisation increased. Yet, so did bipolarisation.

Figure 3.9. Brazil (1839-1950): Bipolarisation (EGR, $n=2$) and Tripolarisation (EGR, $n=3$), 5- year moving averages.



Sources: From 1839 to 1930 Bértola et al., (2007), DGE (1872; 1926) Lobo (1978, pp. 803-20), and Monasterio (n.d.). For 1940 and 1950: IBGE (1990) and DGE (1950; 1956).

This occurs because, in Williamson’s (2010, p. 229) words, when:

“classes were clearly delineated, and differences in mean incomes between them were substantial [...] [i]f class (and race) alone determined one’s income, and if income differences between classes were large, while income differences within classes were small (mainly reflecting life-cycle status and luck), then most inequality [and, ostensibly, polarisation] would be explained by average income differences between classes”.

That means, when a society is very stratified (as was the Brazilian case in the nineteenth century) changes in polarisation mainly depend on the increase (or decrease) of differences between groups, as the differences within groups remain constant. Hence, in such a context tripolarisation and bipolarisation tend to behave similarly. This implies that just looking at bi-polarisation or tri-polarisation performance separately does not permit one to arrive at accurate conclusions.

Meanwhile, if one analyses both indicators together, it can be presumed that increases in tri-polarisation along with decreases in bi-polarisation are what undoubtedly should be indicating the emergence of a middle class. This is because tripolarisation is a particular case of bipolarisation, which arises when one of the two groups (the high or the low) has become heterogeneous inside (in terms of income) giving rise to the emergence of a middle class. In the same vein, bipolarisation is a particular case of tripolarisation, so it increases when two of the three groups have merged because both have become equal in terms of income.

At this point, it might be argued that merely estimating tripolarisation and testing the size of the middle income group would provide enough evidence of the presence of the middle class. However, as will be shown, the share of the middle income group is insufficient to conclude the emergence of a valuable middle class. For instance, Milanovic (2009, p. 7) argued that: “in preindustrial societies the middle [in terms of income] was not much different from the bottom”. Therefore, in such a society, even if we can divide the distribution into three groups (low, middle and high), this does not change the fact that we actually have a bipolarised society (the high class and the rest) without any emerging middle class. For a better understanding of this I now provide some examples:

▪ **Scenario 1**

Imagine we have a society with twelve individuals. Three of them earn 1\$ each, three earn 3\$ each, and six earn 6\$ each. In terms of tripolarisation (Figure 3.10) we have three groups: Group A (those earning 1\$); Group B (those earning 3\$); and Group C (those earning 6\$). In terms of bipolarisation (Figure 3.11), however, those earning between 1\$ and 3\$ because of proximity might merge into one group (Group A), while those earning 6\$ would form the second group (Group B).

Figure 3.10. Scenario 1. Tripolarisation (before changes).

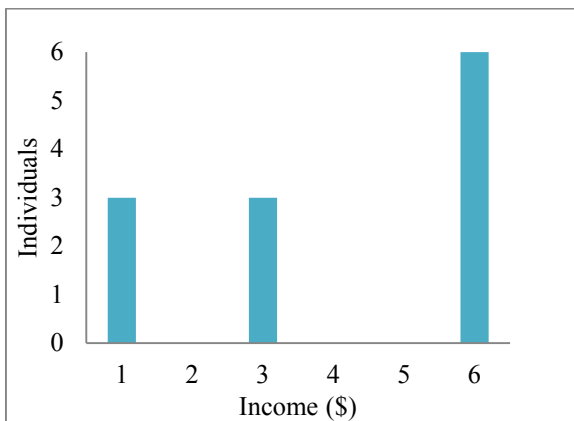
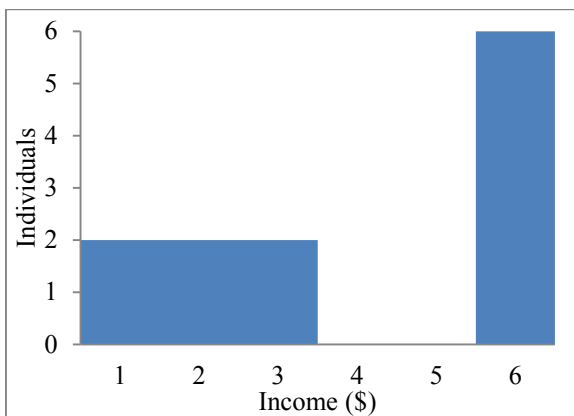


Figure 3.11. Scenario 1. Bipolarisation (before changes).



▪ **Scenario 2**

Following, imagine that Group C (in Scenario 1) becomes richer and the individuals in this group now earn 7\$, while the others earn the same as before. In this situation, both tripolarisation (Figure 3.12) and bipolarisation (Figure 3.13) increase because inequalities between groups are rising while inequalities within groups remain the same (groups are homogeneous inside). However, it is crucial to understand that in this new situation even though tripolarisation is increasing the middle income group is not bigger than before. Therefore, in this case, reporting a middle class emergence because of the increase in tripolarisation would be an incorrect conclusion.

Figure 3.12. Scenario 2. Tripolarisation (after changes).

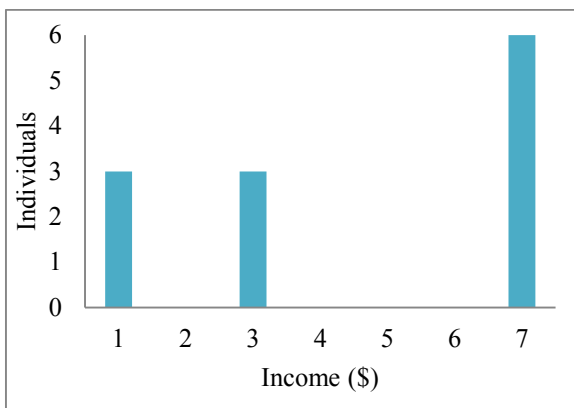
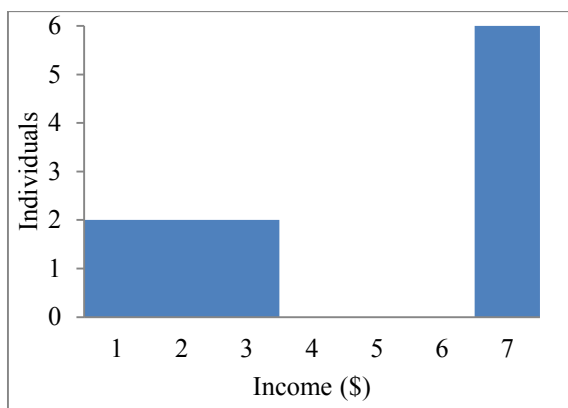


Figure 3.13. Scenario 2. Bipolarisation (after changes).



Scenario 3.

Now, starting from the previous bipolarisation situation (scenario 2), imagine that people who belonged to Group A started to diverge in earnings, which range now between 1\$ and 4\$, while people in Group B earn 6\$ (Figure 3.14). In this new situation the inequality between groups falls (as Group A is now closer, in terms of income, to Group B), while inequalities within groups rise (as the Group A is now more heterogeneous). As a result, bipolarisation decreases. On the contrary, if we look at the new tripolarisation situation (Figure 3.15) differences between groups increase, while the groups are now homogeneous within. As a result, tripolarisation rises. Notably, in this case, the increase in tripolarisation goes hand in hand with the increase of the middle class.

Figure 3.14. Scenario 3. Bipolarisation (after changes).

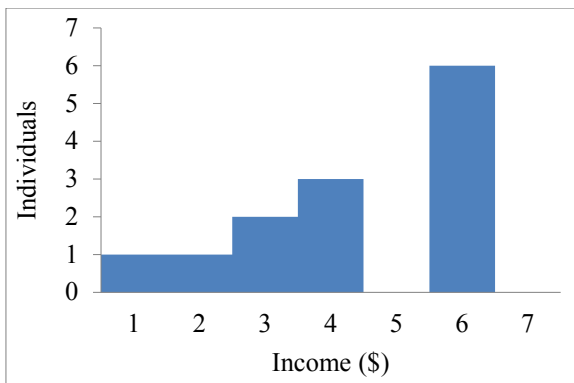
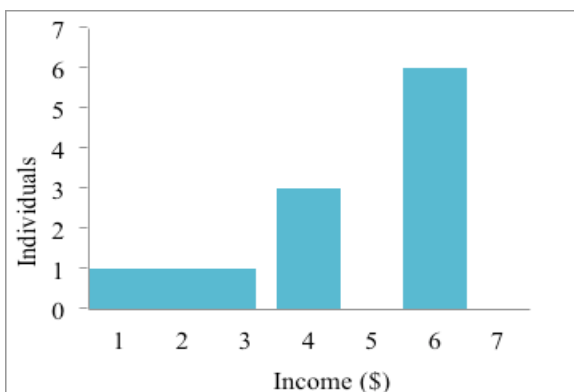


Figure 3.15. Scenario 3. Tripolarisation (after changes).



Therefore, in order to avoid incorrect inferences when reporting the rise of the middle class, it is crucial to consider those situations in which the increase in tripolarisation goes hand in hand with the decrease in bipolarisation, or at least in which the first phenomenon dominates the second. Importantly, the proposed MC index permits one to capture this phenomenon. Therefore, here, the rise and evolution of Brazil's middle class will be studied using this new indicator. In particular, the polarisation measure applied to calculate the MC index in terms of income will be the EGR (2007) as, contrary to FW (2010), it permits the existence of n groups, and, unlike ER (1994), it sets the cut-offs endogenously, preventing any arbitrariness problem.³² Thus, I will first calculate the EGR (2007) for the cases $n=3$ (tri-polarisation) and $n=2$ (bi-polarisation), then the ratio between both to obtain the MC index.³³

Notably, when applying the MC index, defined as the ratio between tripolarisation and bipolarisation, I will capture to what extent the increase in tripolarisation surpasses the increase in bipolarisation. In this sense when tripolarisation overcomes bipolarisation, the MC index will be above one, reporting the presence of a middle class. Meanwhile when bipolarisation is equal or higher than tripolarisation, the MC index will be equal or below one, suggesting the opposite: the disappearance of the middle class.

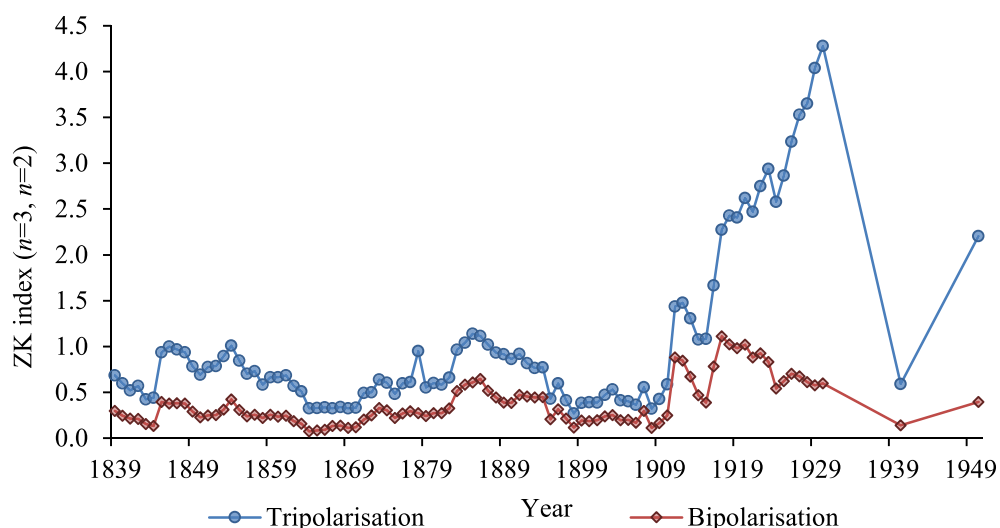
Furthermore, as mentioned before, other subjective attributes might certainly be relevant when defining the middle class. In particular, in Brazil's case, Owensby (1999) shows that at the beginning of the twentieth century, some characteristics such as being "cultivated" or having non-manual work, were the identifying markers of the middle

³² The Stata code has been kindly provided by Carlos Gradín. Code for the earlier version (ER 1994) can be found at <http://cgradin.webs.uvigo.es/stata.htm>

³³ In the same way, if we would like to test the existence of a low and a high middle class, the method would consist of calculating the ratio between tetrapolarisation (four groups) and tripolarisation (three groups) and to see to what extent the first dominates the second.

class rather than income.³⁴ Thus, for a more complete study of the middle class, I will estimate the MC index also in terms of status (linked to the professional occupation).³⁵ For this purpose, I will recur to the ZK (2001) polarisation measure. Thus, I will calculate the ZK (2001) for the cases $n=3$ and $n=2$, then the ratio between these two to obtain the MC index. In this case, arbitrariness when defining groups is not just ineluctable but also necessary, as the groups need to be previously distinguished according to professional status. In this vein, it is worth noting that, as mentioned before, contrary to the EGR (2007) index, in the ZK (2001) index the size of groups remains fixed. Thus, given a fixed active population structure, it is the case that tripolarisation is always higher than bipolarisation (see Figure 3.16), so presumably the MC index in terms of status will be always above one. Yet, the evolution of the Middle Class in terms of status still can be assessed by looking at the evolution of the ratio between tripolarisation and bipolarisation.

Figure 3.16. Brazil 1839-1950: Tripolarisation and Bipolarisation according to the ZK index.



Sources: From 1839 to 1930 Bértola et al., (2007), DGE (1872; 1926) Lobo (1978, pp. 803-20), and Monasterio (n.d.). For 1940 and 1950: IBGE (1990) and DGE (1950; 1956).

³⁴ As a matter of fact, some manual work was better remunerated than non-manual work, but the middle class preferred to perform non-manual activities (Owensby, 1999).

³⁵ The criteria used to distinguish each group according to the social status (which is, in turn, linked to the professional category) will be explained in Chapter 4.

6. Conclusions

This chapter has addressed the debate on the definition of the middle class. This issue has been traditionally studied by social scientists and more recently by economists. Nevertheless, until now no consensus has been reached. This is because, unlike traditional strata, there are not unquestionable limits which confine social classes. Hence, over the last decades several researchers have faced the challenge of finding an accurate definition of the middle class. Most of these studies have focused on objective definitions (looking at income), such as those based on quantiles, central tendency measures and absolute thresholds. However, all of these definitions face a problem of arbitrariness, as they are dependent on the researcher's criteria. Thus, I have proposed another perspective, which allows one to infer the middle class size, while overcoming the arbitrariness problem. This is the polarisation approach.

Moreover, in this chapter, I have argued in favour of the use of the polarisation measures over traditional ones. The main reason is that the bimodal (or multimodal) shape that distributions exhibit in the presence of polarisation shows more clearly the absence of the middle class than the unimodal distributions applied by traditional definitions. On the other hand, the phenomenon of polarisation is more closely related to the generation of conflicts than inequality. This is consistent with the arguments exhibited in Chapter 1, regarding the links between the middle class and social stability.

Finally, after presenting different polarisation indicators, in terms of income and also in terms of characteristics, in this Chapter I propose a middle class index based on some of these polarisation indicators for the analysis of the Brazilian middle class in the long-run. The method consists of calculating the ratio between tri-polarisation and

bipolarisation, using the EGR (2007) (for calculating the MC index in terms of income) or using the ZK index (to replicate the study in terms of status). This method provides one with a non-arbitrary definition of the middle class comparable in time and (although not the focus of this study) space.

Chapter 4. Sources of Evidence

1. Introduction

This chapter is dedicated to the description of Brazil's historical background between 1839 and 1950; to showing the sources and data used for investigating inequality and the middle class in Brazil over this period; and finally to explaining the data transformation undertaken before carrying out the analysis appearing in the subsequent empirical chapters. This historical background has the purpose of giving the reader a better knowledge of the context in which the middle class arose as well as of the rationale behind how my data series has been constructed and transformed. Therefore, the chapter proceeds as follows: in Section 2, I present Brazil's demographic, economic, political, and social scenarios from 1839 to 1950. Then, in Section 3, I describe the sources and data applied to calculate inequality and the MC index. Finally, in Section 4 I explain how the data has been processed before the analysis.

2. Brazil's historical background.

In this section, I review the historical background of Brazil, from the early nineteenth to the mid-twentieth centuries, focusing on its demographic, economic, political and social scenarios. The purpose is to advance a further description of the economic, social and political conditions existing in Brazil over this period, to better place and understand afterwards (in Chapter 5) the time and context in which the middle class arose. Additionally, it also aims to show that even though Brazil is a very wide country with high regional differences, my focus on the South-Eastern and Southern

regions when investigating the middle class during this period is not only the consequence of a lack of information, but also the intention to take the most representative region (as the most populated and developed) in which the middle class was more likely to arise.

2.1 Demographic scenario

Right after its independence in 1822, Brazil's population was around 4 million people and 30 per cent of them were slaves.³⁶ However, by 1872, the Brazilian population had reached 10 million people and the percentage of slaves had fallen to 15 per cent.³⁷ During the following years, the population increased at an average annual rate of 2.2 per cent, while the slave population decreased until its complete abolition in 1888. Once the slave trade was prohibited (in 1850), the major contribution to the population increase was the subsidised European and Asian immigrants arriving from Europe from the mid-nineteenth century to 1930. Only between 1850 and 1872 a quarter of a million immigrants arrived to the south-eastern coffee plantations (Owensby, 1999, p. 19).³⁸ Additionally, the population growth acceleration, especially during the third quarter of the nineteenth century, was due to the fall in mortality rates, from 3 per cent in the second half of the nineteenth century to 1.5 in the 1950s, and a birth rate which remained around 4 per cent (Goldsmith, 1986, p. 2).³⁹ For the whole period, total population grew from less than 7 million in 1850 to 51 million in 1950.

³⁶ (IBGE-Instituto Brasileiro de Geografia e Estatística, 1990)

³⁷ *Ídem.*

³⁸ Between 1880 and 1930 the total amount of immigrants arriving in Brazil rose to 4.1 million (Luna & Klein, 2014, p. 25)

³⁹ According to Astorga, Berges, & Fitzgerald, (2005, p. 7) "Increasing life expectancy was probably as a result of declining infant mortality rather than increased adult longevity during the first half of the century, as in 1900 the mortality distribution was presumably dominated by infant deaths as in other cases of early industrialization."

Moreover, Brazil's population was characterised by its multiracial composition. According to the 1872 census, by race, the population was comprised of: 38.1 per cent white, 42.2 mulatto and 19.7 black. Yet, by the end of the period, the racial composition became 61.7, 21.2 and 14.6 per cent, respectively. The end of the slave trade and the arrival of immigrants mostly from Europe were the principal causes of the increase in the percentage of the white population, as most of them came from Mediterranean European countries (Baer, 2008, p. 7; Goldsmith, 1986, p. 2; Luna & Klein, 2014, p. 25).⁴⁰ Most of those subsidised immigrants came to substitute the slave force in the coffee plantations of Rio de Janeiro and São Paulo. Yet, from 1905 to 1920, unsubsidised immigrants surpassed those who were subsidised, and many of them went to the cities instead of the coffee plantations (Sánchez Alonso, 2007, pp. 410-13).

In fact, data provided in Table 4-1 and Table 4-2 show that between 1872 and 1950, population growth was accompanied by a slow urbanisation process.⁴¹ The urban population residing in Brazil in 1870 was lower than 17 per cent, while the rural population was around 83 per cent. In 1920 the urban population rose to 26 per cent and, after World War II, increased rapidly, reaching 36 per cent in 1950. Notably, by 1950 both the South-Eastern and Southern regions were the most urbanised (with 47 and 30 per cent of the urban population, respectively) while the Centre-Western and North-Eastern regions did not surpass 25 per cent mark.

Interestingly, the regional distribution of the population was marked by external and also internal migrations, which mostly finalised in the South-Eastern region. Historically, the North-East, centre of tropical agriculture, had been the most populated

⁴⁰ Notably, according to Goldsmith (1986, p. 3) this substantial increase in the white population from 1940 might be the result of alterations in the white and mulatto classification.

⁴¹ Information on urban population before 1940 and moreover by State are not available in national statistics and literature. These data have been kindly provided by Gregori Galofré-Vilà.

region. However, from the mid-nineteenth century onwards, given the sugar production decline, the population started to migrate to the temperate zones of the South-East and to the central region. Moreover, an internal slave trade was established from the North and North-East to the coffee rich provinces of Rio de Janeiro, São Paulo and Minas Gerais (Reis, 1975, p.46). However, by 1870, the percentage of the population concentrated in the North-East (45 per cent) was still slightly higher than in the South-Eastern (39 per cent) regions. Gradually the population in the North-Eastern region started to decrease, possessing 36 per cent of the total population in 1950, while the South-East showed the opposite trend, concentrating in 1940 almost half of Brazil's total population. Nevertheless, both the rates of mortality and birth in the South-Eastern region were lower than in less developed regions as those of the Northern region. Therefore, the increase in the South-Eastern population seems to be due to internal and external migrations.

Within the South-East, Minas Gerais was the most populated region (due to the remaining mining population attracted during the eighteenth century gold boom). In 1870 it concentrated 18 per cent of the total population in Brazil, followed by Rio de Janeiro (12 per cent) and São Paulo (8 per cent). Then, in 1920, Rio de Janeiro was surpassed in population by São Paulo, once this state had become the main centre of coffee agriculture (from the 1880's) and manufacturing (from the 1890s).⁴² Nevertheless, from Table 4-3, it can be noted that at the beginning of the twentieth century, immigrants still chose Rio de Janeiro as the main destination. Importantly, according to Goldsmith (1986, p. 2), the cultural level and knowledge of immigrants being higher (on average) than the Brazilian population, these immigrants contributed

⁴² In 1880s, the fertile lands of the Paraíba Valley (extending from the North to the West of Rio de Janeiro) became exhausted, so coffee production move to São Paulo (Baer, 2008, p. 20).

both in volume and in quality to the amelioration of the labour force in the destination states. Additionally, in this vein, Baer (2008, p. 22) affirmed that: “Immigration was to have a positive effect on economic development of Brazil, especially in the South, because it provided the country with a large number of economically ambitious people”. Therefore, the South-Eastern region, and in particular the state of Rio de Janeiro, as the main destiny for immigrants, appears as the more likely to develop a valuable middle class throughout the period.

Table 4-1. Total, rural and urban population in Brazil (1872, 1920)

	Population in 1870						Population in 1920					
	Urban	Rural	Total	% Urban	% Rural	% Total in Brazil	Urban	Rural	Total	% Urban	% Rural	% Total in Brazil
Brazil	1711236	8620600	10331835	16.6	83.4	1.0	7922658	22160446	30083104	26.3	73.7	1.0
North	97174	453901	551075	17.6	82.4	5.3	480842	1256561	1737403	27.7	72.3	5.8
Acre	10924	42979	53903	20.3	79.7	0.5	29282	63082	92364	31.7	68.3	0.3
Amapá	1697	7824	9521	17.8	82.2	0.1	6533	16956	23489	27.8	72.2	0.1
Amazonas	12528	64645	77173	16.2	83.8	0.7	99965	273742	373707	26.7	73.3	1.2
Pará	53072	250424	303496	17.5	82.5	2.9	272080	713398	985478	27.6	72.4	3.3
Rondônia	1673	7560	9233	18.1	81.9	0.1	6438	16088	22526	28.6	71.4	0.1
Roraima	943	4506	5449	17.3	82.7	0.1	4104	9294	13398	30.6	69.4	0.0
Tocantins	16337	75963	92300	17.7	82.3	0.9	62439	164000	226439	27.6	72.4	0.8
North-East	715390	3939894	4655284	15.4	84.6	45.1	2569779	8105000	10674779	24.1	75.9	35.5
Alagoas	57983	265418	323400	17.9	82.1	3.1	269372	681648	951020	28.3	71.7	3.2
Bahia	162499	1161094	1323593	12.3	87.7	12.8	526710	2418659	2945368	17.9	82.1	9.8
Ceará	83753	544128	627880	13.3	86.7	6.1	267070	954989	1222059	21.9	78.1	4.1
Maranhão	67734	333002	400736	16.9	83.1	3.9	249818	633272	883091	28.3	71.7	2.9
Paraíba	63730	294692	358422	17.8	82.2	3.5	262577	705836	968413	27.1	72.9	3.2
Pernambuco	169000	787945	956944	17.7	82.3	9.3	593076	1549288	2142364	27.7	72.3	7.1
Piauí	30332	185457	215788	14.1	85.9	2.1	122013	445479	567492	21.5	78.5	1.9
Rio Grande do Norte	41217	188651	229868	17.9	82.1	2.2	147828	380876	528704	28.0	72.0	1.8
Sergipe	39144	179508	218652	17.9	82.1	2.1	131314	334953	466268	28.2	71.8	1.5

Table 4-1. cont. Total, rural and urban population in Brazil (1872, 1920)

	Urban	Rural	Total	% Urban	% Rural	% Total in Brazil	Urban	Rural	Total	% Urban	% Rural	% Total in Brazil
Centre-West	44309	223482	267791	16.5	83.5	2.6	203973	564380	768353	26.5	73.5	2.6
Goiás	24497	120013	144510	17.0	83.0	1.4	140892	378776	519668	27.1	72.9	1.7
Mato Grosso	9800	46837	56636	17.3	82.7	0.5	30812	82455	113267	27.2	72.8	0.4
Mato Grosso do Sul	10012	56632	66644	15.0	85.0	0.6	32269	103149	135418	23.8	76.2	0.5
South-East	726751	3373604	4100355	17.7	82.3	39.7	3758326	9725035	13483362	27.9	72.1	44.8
Distrito Federal	n/a	n/a	n/a	n/a	n/a	n/a	n/a	n/a	70	n/a	n/a	n/a
Espírito Santo	15381	70544	85924	17.9	82.1	0.8	125865	320861	446726	28.2	71.8	1.5
Minas Gerais	330629	1564081	1894710	17.5	82.5	18.3	1620635	4257588	5878223	27.6	72.4	19.5
Rio de Janeiro	230848	1026158	1257006	18.4	81.6	12.2	747895	1840345	2588239	28.9	71.1	8.6
São Paulo	149893	712821	862715	17.4	82.6	8.4	1263932	3306171	4570104	27.7	72.3	15.2
South	127612	629719	757331	16.9	83.1	7.3	909738	2509470	3419208	26.6	73.4	11.4
Paraná	20567	104988	125555	16.4	83.6	1.2	180502	504572	685074	26.3	73.7	2.3
Rio Grande do Sul	77478	386874	464351	16.7	83.3	4.5	548769	1540880	2089650	26.3	73.7	6.7
Santa Catarina	29567	137858	167425	17.7	82.3	1.3	180467	464018	644485	28.0	72.0	2.1

Table 4-2. Total, urban and rural population (1940, 1950)

Population in 1940						
	Urban	Rural	Total	% Urban	% Rural	% Total in Brazil
Brazil	12880182	25199145	38079327	33.8	66.2	100
North	405792	1056628	1462420	27.7	72.3	3.8
North-East	3381173	11052907	14434080	23.4	76.6	37.9
Centre-West	270837	987842	1258679	21.5	78.5	3.3
South-East	7231905	11113926	18345831	39.4	60.6	48.2
South	1590475	987842	2578317	61.7	38.3	6.8

Population in 1950						
	Urban	Rural	Total	% Urban	% Rural	% Total in Brazil
Brazil	18782891	33161506	51944397	36.2	63.8	100
North	580867	1263788	1844655	31.5	68.5	3.6
North-East	4744808	13228605	17973413	26.4	73.6	34.6
Centre-West	423497	1313468	1736965	24.4	75.6	3.3
South-East	10720734	11827760	22548494	47.5	52.5	43.4
South	2312985	5527885	7840870	29.5	70.5	15.1

Sources: IBGE-Instituto Brasileiro de Geografia e Estatística (1990)

Table 4-3. Brazil (1908-1912): Migration.

NATIONALITY/ DESTINATION	Brazil	% Rio	% Other
Africans	111	60%	40%
Argentiniens	2112	25%	75%
Austro-Hungarian	19834	67%	33%
Belgians	817	51%	49%
Dutch	2760	89%	11%
English	5208	36%	64%
Frenchs	6277	49%	51%
Germans	22230	57%	43%
Italians	96403	24%	76%
Japaneses	4716	2%	98%
North-Americans	1595	36%	64%
Portugueses	223085	62%	38%
Russians	37112	84%	16%
Spaniards	114557	31%	69%
Swedes	1653	94%	6%
Swisses	1370	71%	29%
Turkish-Arabians	26065	42%	58%
Uruguayans	652	28%	72%
TOTAL	566557	49%	51%

Sources: DGE- Directoria Geral de Estatística (1916).

2.2 Economic scenario

- *Infrastructure*

As shown in Table 4-4, from the beginning of the nineteenth century until the early twentieth century, Brazil was predominantly an agricultural economy. Therefore, its success and failure depended on the prices of its main export products: sugar, rubber and especially coffee. Since the early nineteenth century, after the decline of sugar exports, the coffee sector was the engine of economic growth (Absell & Tena-Junguito, 2015, p. 19; Baer, 2008, p. 21). By the 1880s sugar prices had fallen by 40 per cent and continued to decline (1975, p. 43). Then, by the mid-1890s coffee exports had already reached more than two thirds of Brazil's total exports and it provided around 70 per cent of world coffee output (Abreu & Verner, 1997, p. 18). Coffee somewhat lost its relative position in 1910 when rubber exports rose, accounting for 40 per cent of Brazil's exports and 90 per cent of the world's rubber supply. Then, in the 1920s, given the fast collapse of the Amazonian rubber economy after 1913, the coffee sector regained its dominance (Abreu & Verner, 1997, p. 18; Baer, 2008, p. 22).

Importantly, it was “on the back of the expansion of coffee exports [...], the Brazilian economy began to modernise, even if it did so within the limits of a slave-based society” (Villela, 2011, p. 40). Since the coffee sector required investment in transport and infrastructure as well as in banking and trading companies, it created indispensable conditions for industrialisation (Abreu & Verner, 1997, p. 19; Baer, 2008, p. 21). According to Prado Júnior, cited by Jaguaribe (1968, p. 133): “in the decade following 1850 Brazil witnessed the creation of sixty-two industrial undertakings, fourteen banks, three saving banks, twenty shipping companies, twenty-three insurance

companies, eight mining companies, three urban transport companies, two gas companies and eight railroads.” Indeed, apart from the foreign capital, as early as 1870, coffee growers also invested heavily in infrastructure and railways (Abreu & Verner, 1997, p. 19; Baer, 2008, p. 29; Luna & Klein, 2014, p. 70).

As it coincided with the consolidation of the monarchy and coffee’s increasing prominence, modern industry in Brazil appears to have developed sometime in the mid-nineteenth century with the introduction of the first mechanized textile mills (Baer, 2008, p. 28; Villela, 2011, p. 39). Nevertheless, the country’s first major industrial spurt should be placed in the early 1890s with the advent of the first republic (Abreu & Verner, 1997, p. 19; Baer, 2008, p. 28; Villela, 2011, p. 40). Still, before World War I, Brazilian industry appeared unsophisticated, biased towards the low-tech consumer goods sector (Luna & Klein, 2014, pp. 66-67; Villela, 2011, p. 42). By 1907 textiles, clothing shoes and food industries accounted for over 57 per cent of industrial output and in 1919 for over 64 per cent (Baer, 2008, p. 29). Moreover, industrial growth remained heavily dependent on the coffee sector, through the overall demand and exchange rate performance (Baer, 2008, p. 35; Villela, 2011, p. 44).⁴³

Accordingly during the 1920s boom of the coffee export sector, Brazil experienced a spurt of investment activities in industry, which spurred the growth of newer industrial sectors (such as chemicals, metallurgy) and diversification (Baer, 2008, p. 34). This dependence and export-led industrial growth lasted until the 1930s, when from the Great Depression the coffee export sector experienced a sharp decline. The

⁴³ The link between coffee and industry can be explained as follows: on the one hand, with a coffee sector boom, rising coffee prices appreciated the rate of exchange, making imports of machinery cheaper and benefiting the expansion of industrial capacity; on the other hand, a collapse of the exchange rate due to the fall of coffee prices acted as local industry protection, making manufactures imports more expensive.

price of coffee in 1931 was one-third of the average price of the decade before (Baer, 2008, p. 37). Thus, from the 1930s political measures were devised to promote modern industry-led economic growth through Import Substitution Industrialisation (ISI) in Brazil.⁴⁴ According to Villela (2011, p. 44) “the gradual substitution of industry for coffee as the major driving force of economic development in Brazil was more an indirect by-product of government measures to address the coffee crisis than the result of conscious industrial policy”.

The idea that the government’s main concern focused on supporting the coffee sector rather than to promoting industry is also shared by Baer (2008, p. 38). In any case, there is evidence that anticyclical programs to support coffee became the main stimulator of industry (Furtado, 1965, p. 10). As a result, from the 1930s industry started its expansion with a gradual change from low-tech sectors towards intermediate goods (Bonelli, 1996).⁴⁵ According to Villela (2011, p. 45): “between the early 1930s and the late 1950s the breakdown of total output between agriculture, industry and service sector displayed the most marked shift of the century- in favour of industry”. Nevertheless, with growing urbanisation, investment in public services and communications also became important (Abreu & Verner, 1997, p. 19; Astorga, Berges, & Fitzgerald, 2005, p. 772). Indeed, from Table 4-4, it can be observed that from the 1940s the services sector increased its contribution to GDP over the rest.

⁴⁴ “A combination of tariffs, quotas and multiple exchange rates were largely part of a strategy of import substitution with a strong State involvement (ISI) aimed at developing and expanding an indigenous manufacturing base.” (Astorga, 2009, p. 14).

⁴⁵ Cited by Villela (2011, pp. 11-45).

Table 4-4. GDP distribution by sectors (per cent).

	1889	1900	1920	1929	1939	1947	1950
Agriculture	56.6	49.2	41.3	37.8	32.7	20.7	24.3
Industry	12.0	14.9	20.1	20.0	24.7	25.2	24.1
Services	22.8	26.3	31.7	34.4	33.9	48.0	45.0
State	8.5	9.6	6.9	7.8	8.8	6.1	6.6

Sources: Goldsmith (1986) from 1889 to 1939; from 1947 to 1950 IBGE (2007)-Estatísticas do século XX.

Additionally, regarding the regional economy, Table 4-5 shows that between 1872 and 1900 more than 70 per cent of total GDP was concentrated in the South-Eastern region. During the early nineteenth century, sugar (from the north coast) had been the most important export product, overtaken, however, from the mid-nineteenth century onwards, by rubber and coffee. In particular, coffee exports gained primacy during the post-independence decades (Absell & Tena-Junguito, 2015, pp. 16-20). Importantly, since coffee production was developed in the South-Eastern plantations, it was in this region that GDP was mostly concentrated. Additionally, given the dependence of industrial development on the performance of the coffee sector (by means of investment in new infrastructure and railways), it was also in that region that industry arose. Consequently, urbanisation, modernisation and the expansion of the services sector were also more intense there. Moreover, although the percentage fell to 50 per cent of total GDP, the predominance of the South-Eastern region, and divergence from the rest, continued throughout the twentieth century.

Table 4-5. Brazil (1872-2008): Regional distribution of GDP (per cent).

	1872	1900	1939	1949
North	1.4	5.4	2.6	1.8
North-East	24.5	13.5	16.7	14.4
South-East	71.0	78.1	53.2	55.1
South	3.0	2.8	15.3	16.3

Sources: Goldsmith (1986).

- *GDP per head, prices and wages*

Although Brazil's economic growth performance will be further explored in Chapter 6, it is pertinent to examine here the evolution of GDP per head over the period in question in order to later understand the economic context in which the middle class arose. In Figure 4.1, I show GDP per head trends, according to Goldsmith's (1986) and Maddison's (1995; 2003) estimates.⁴⁶ It can be observed that, over the period as a whole, Brazil exhibited increasing long run trends in GDP per head, slower during the nineteenth century, which accelerated, however, in the following century, and particularly from the 1930s.

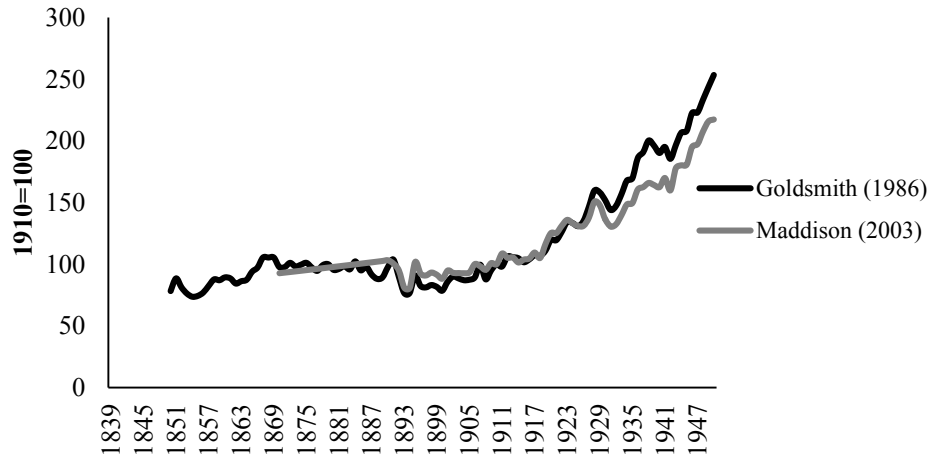
Brazilian economic growth appears moderate during the nineteenth century, as the dynamic economic performance of the coffee export sector in the South East was offset by the stagnation and decline of both sugar and cotton in the North East (Leff, 1972, pp. 245-248). Yet, there is evidence that a fair rate of endogenous economic

⁴⁶ These are, to a large extent, controlled conjectures as there are no GDP estimates for Brazil circa nineteenth century. Goldsmith's (1986) estimates, between 1850 and 1984, are based on four indexes: government expenses, total wages, exports plus imports, and the money supply (M2). Maddison's (1995; 2003) estimates between 1850 and 1900 follow closely on those by Goldsmith (1986), while he uses his own estimates for later years.

growth started to be created throughout this century after slave abolition, with the growing population of wage-earners who, as consumers of goods, stimulated the expansion of domestic demand (Jaguaribe, 1968, p. 128). Nevertheless, by the last decade of the nineteenth century, Brazilian economic growth decelerated due to the collapse of export prices (Goldsmith, 1986, p. 90; Leff, 1982a, pp. 84, tab. 5.4).

By the turn of the twentieth century, economic growth started to accelerate. It can be noted that between 1900 and 1913 Brazilian GDP per head grew substantially. In this period the revalorisation of coffee prices together with the protection and development of nascent industry seem to be the principal determinants of the favourable economic performance (Baer, 2008, p. 24; Leff, 1982a). Interestingly, GDP per head steadily increased, albeit at a lower rate during World War I. The conflict apparently acted as a promoter of Brazil's manufacturing sector, as it raised barriers to the entry of finished products in the domestic market and stimulated home production (Baer, 2008, p. 41; Villela, 2011, p. 42). Therefore, in the 1920s the country had achieved a certain level of industrialisation and its GDP per head grew substantially during most of the decade. However, still dependent on the coffee export sector and with the crash of 1929 disturbing world demand and cutting the flow of foreign credit, Brazil's GDP per head suffered a slowdown in the late 1920s. The crisis was overcome in the 1930s, with the beginning of the ISI era, and the gradual substitution of coffee by industry as the engine of economic growth. From this date, Brazil recovered its previously dynamic growth trending GDP per head, which it maintained until the 1950s.

Figure 4.1. Brazil (1839-1950): GDP per head (1910=100).



Source: Goldsmith (1986), 1850-1984 and Maddison (1995; 2003).

Since Maddison's (1995; 2003) per capita GDP estimates until 1900 are based on Goldsmith's (1986), both series look very similar in the long run. Yet, there are slight differences in the short-term that will be discussed in what follows. From Table 4-6, it can be seen that both Goldsmith and Maddison report moderate GDP growth during the six decades before 1914, when GDP increased yearly at an average rate of 2 per cent; becoming faster during the interwar period when it reached average annual rates between 4 per cent and 5 per cent; and accelerating even more after World War II, when GDP achieved growth rates over 6 per cent. Despite these trends, both suggest some stagnation of GDP per head during the late nineteenth century, showing an average annual growth rate of only 0.4 per cent. These periods of deceleration are more prolonged and deeper in Goldsmith's estimates than Maddison's. Finally, both agree when reporting increasing growth rates of GDP per head throughout the twentieth century, showing yearly growth rates ranging from 3 per cent and 4 per cent between the mid-1940s and mid-1950s. Given these similarities, I will use both data series depending on the period of study: applying Goldsmith's data (1986) when analysing

past periods starting in 1850 and Maddison's (2003) when extending the analysis to the present.

Table 4-6. GDP and GDP per head growth.

GDP and GDP per head growth (annual rates %)				
Period	Goldsmith (1986)		Maddison (2003)	
	GDP	GDP per head	GDP	GDP per head
1851-1860	2.9	1.3		
1861-1870	2.4	0.9		
1871-1880	1.6	-0.2	2.4	0.5
1881-1889	1.1	-0.6	2.4	0.5
1890-1900	1.2	-1.2	1.4	-0.9
1901-1913	4.5	2.3	3.6	1.5
1914-1920	3.9	1.8	4.8	2.6
1921-1929	5.3	3.2	4.0	1.9
1930-1939	4.3	2.2	3.2	1.2
1940-1945	3.3	1.0	4.1	1.7
1946-1955	6.8	3.9	6.4	3.3

Sources: Goldsmith (1986, pp. 8, tab. I-5) and Maddison (1995; 2003).

Importantly, when explaining Brazil's economic performance over the period, price fluctuations become important factors to consider. For example, the fall in GDP per head first observed during the 1870s and afterwards in the 1890s coincided with the succession of inflationary episodes which occurred during the Paraguayan War (1865-1870) and the speculative period known as the "Encilhamento" in the early years of the First Republic. Meanwhile, it is commonly accepted that the first decade of the twentieth century (mostly deflationary) was the period of more rapid growth until World War II (Goldsmith, 1986, p. 9). Yet, between 1913 and 1950 the economic growth experienced by Brazil occurred in a context of continued and increasing inflation (with some exceptions: 1921, 1926/27, 1930/31 and 1933). Furthermore, a

deeper analysis of Brazil's inflationary performance over the period as well as the evolution of wages and cost of living is detailed below.⁴⁷

Until the end of the Empire (1889), while Brazil suffered from continued and accelerated inflation, prices increased on average by an annual rate of only 2 per cent. Then, from the beginning of the First Republic, following the monetary supply expansion introduced by the Treasury Minister Rui Barbosa under the government of Deodoro da Fonseca (1889-1891), the price level of doubled between 1889 and 1894, increasing at an annual rate of more than 15 per cent. After the Marshalls government, during the civil candidature of Prudente de Morais (1894-1898), the increasing trend continued, although at a lower rate (oscillating between 2.4 and 12 per cent). It was during the early twentieth century, under the government of Campo de Sales (1899-1902), that the introduction of restrictive policies made prices fall (22 per cent) and maintained until 1908. Then, the deflationary period was followed by a new increase of prices (around 5 and 15 per cent) between 1909 and 1912 and a decline again in 1913. Finally, from 1913, Brazil exhibited continual inflation evolving at 5 per cent. Indeed at the end of World War II the level of prices was five times higher than at the beginning of World War I.

Meanwhile, regarding the evolution of wages and purchasing power over the period, available information from Rio de Janeiro suggests a general increasing long run trend in nominal urban wages. Yet, the evolution of real wages and purchasing power was quite unstable, as they were highly affected by the export crisis and inflationary periods. The trend in real wages and purchasing power was highly unstable during the

⁴⁷ The next section is mostly based on data offered by Goldsmith (1986). Inflation data is for the whole country. Meanwhile, available information on prices, wages and cost of living are restricted to Rio de Janeiro and São Paulo.

mid-nineteenth century and the early twentieth century. During this period, factors such as the Paraguayan War (rising prices) and the increasing population of wage-earners after slave abolition (depressing wages) had devastating effects on the purchasing power of workers. Then during the early twentieth century, deflationary policies together with new investments in the secondary sector increased the demand for labour, so worker's livings standards ameliorated substantially. However there were also crisis periods in which food prices rose over nominal wages. This gave rise to worker upheavals from 1906, which resulted in the general strikes of 1916 and 1927. Consequently, from 1918 and 1930 there was an increasing trend in nominal wages, while food prices increased more moderately. Accordingly, real wages increased slightly at an average rate of 1.7 per cent between 1919 and 1930. Nevertheless, during World War II, the cost of living increased 40 per cent, while nominal wages remained. Therefore, real wages decreased by around 7 per cent annually during the conflict.

2.3 Political scenario

- *Political System*

From its independence from Portugal (in 1822) to the revolution of 1889, Brazil was the last surviving monarchy in Latin America: first, under the government of the emperor Pedro I, then, of his son, Pedro II. Nevertheless, the economic structure remained a colonial one, characterised by its dependence on outside demand and decisions for its exports (Jaguaribe, 1968, p. 128). Indeed, both the social order and political institutions revolved around the landowners and agricultural production based on slavery. The first signs of change started to appear from 1850. In the parliament both conservative and liberal the preservation parties alternated in power, while laws to

eradicate slavery took place one after another Reis (1975, pp. 45-97). Nevertheless, the basic functions of the state continued to be the preservation of landowners' interests and cheap labour (Maddison, 1992, p. 19).

In 1889 a military coup put an end to the monarchy and changed it into the first Brazilian republic (República Velha). The Republican period during the Marshall government (1889-1894), first under the administration of Deodoro da Fonseca (1889-1891) and then of Floriano Peixoto (1891-1894), was not an important period of economic success. However, it was significant as a period of alteration from the traditional system of domination (held by landowners) to a new one with the influence of bourgeois and traders. Importantly “there was a desire to transform the traditional social order, overcoming the monopoly of big landowners and agricultural production throughout initiatives of middle classes” (Iglesias, 1994, p. 20). Some reforms applied included the establishment of a federal system; the separation between Church and State; the granting of religion freedom, and the naturalisation of immigrants. Nevertheless, the election of the first civil president, Prudente de Morais in 1894, gave way to a second period in which traditional oligarchies linked to the agricultural sector returned to power and kept it under a patronage system, in which local oligarchs (coronéis) gave favours in return for votes. Under this period (1891-1930), known as *coronelismo*:

“contested presidential elections were the exception; landowners had a free hand in their constituencies through control of the police and the judicial system; they rigged election as required, local political leaders automatically supported official candidates. A pact among provincial governors implemented this arrangement. It [...] guaranteed the political hegemony of São Paulo [coffee producers] and Minas Gerais [ranchers], the two big states in the southeast.” (Abreu & Verner, 1997, p. 19).

The first attempts at ending the “coronéis” system appeared already in the 1920s and led to the revolution of 1930. Then, following the 1930 revolution, Getúlio Vargas took power and established a provisional dictatorship government (1930-1934) formed by politicians and lieutenants. During this period some political measures including pro-worker rights (such as the minimum wage and 8 hours workdays) were implemented in order to put an end to social turmoil (Maddison, 1992, p. 21). Then a brief constitutional period followed (1934-1937) in which new laws seemed to focus on women’s and worker’s rights. Nevertheless, they were aborted with a new authoritarian constitution, which centralized power in Vargas. This was the beginning of a ten-year dictatorship, known as Estado Novo, which extended until 1945. Under the Vargas regime, policies were focused on maintaining social peace and industrial expansion. These objectives were achieved by means of repression, as well as welfare programs and social services addressed at workers through co-opted unions (Chacón, 1977, p. 56; Skidmore, 1967, p. 40; Wolfe, 1993, p. 100). Meanwhile a new industrial oligarchy was protected by ensuring high industrial production at low labour costs (Wolfe, 1993, p. 102). The following five years under the government of his successor, Dutra, did not witness any big changes, and are thus considered years of transition and political continuity (Iglesias, 1994, p. 123; Luna & Klein, 2006, p. 11).

- *Doctrine*

While the protectionist character of Brazil and the interventionist attitude of the Brazilian state during the ISI era are little contested, debates abound regarding the liberal or protectionist ideas ruling in Brazil before 1930. For instance, according to Jaguaribe (1968), Brazilian economic thought stayed faithful to laissez-faire doctrines, exceptions being a weak tendency towards industrial protectionism in the late 1850s.

According to the author, the logic of economic liberalism corresponded to the interests of the Brazilian exporters of primary goods, as they were favoured by non-protectionist tariffs on imports of foreign manufactures, while price rises obligated them to buy domestically manufactured articles at a higher-price (Jaguaribe, 1968, p. 138). However, for Abreu and Verner (1997), Brazil did not have any tradition of laissez faire policies; on the contrary, state intervention was already the rule, for instance by means of subsidies to immigration or discriminatory land policies. Indeed, Jaguaribe (1968, p. 133) recognised that the suppression of the slave trade was actually adopted in a protectionist spirit, in order to channel into industry the capital hitherto invested in the importation of slaves. In addition, ‘[t]wo of the major pillars of the republican economy, coffee valorisation and high imports tariffs, conflicted directly with the conventional liberal creed’ (Abreu & Verner, 1997, p. 19).

An example of this was the state intervention through the Convention of Taubaté (in 1906), which permitted the valorisation of coffee prices by means of financing the purchase of stock production (Iglesias, 1994, pp. 34-35). Notably, this protection of the coffee sector also had benefits for industry, as in periods of coffee sector growth the appreciation of the local currency made machinery imports cheaper, permitting the expansion of industrial capacity. Meanwhile, once coffee prices dropped and the exchange rate collapsed the protection of local industry was guaranteed. In sum, it can be said that the traditional Brazilian doctrine, at least during the period under review, was protectionist and interventionist, either to protect coffee, or industry, or both.

2.4 Social scenario

Under the Empire, the social structure of Brazil was stratified and rigid. Indeed, it has been commonly described as a master-slave dichotomy (Luna & Klein, 2014, pp. 4-5; Maddison, 1992, p. 19). Yet, according to Reis (1975, pp. 349-350) the free poor who coexisted with slavery were by the nineteenth century an important element in Brazilian society too. Furthermore, Jaguaribe (1968, p. 136) described Brazilian society at this time as formed by three groups. On the one hand, the rural rich elite consisted of: sugar planters (*senhores de engenho*) in the Northeast; coffee planters (*fazendeiros*) in the Central South; and ranchers (*estancieiros*) in the extreme South. On the other hand, there existed a sizable poor servile class. In the middle: the urban middle class. However this urban middle class is described by Jaguaribe as being recruited from the rural elite and bureaucracy instead of an entrepreneurial bourgeoisie, who had not yet emerged as a social group. Moreover, it seems that the middle class linked to the rural elite grew in number during the reign of Pedro II and, in the absence of any industrial development, found their outlet in the army. Then, after winning the Paraguayan War, the overstaffed army returned to Brazil as an economically idle middle class. According to Sodré (1944, p. 345), the reabsorption of this military mass was around 60.000 men. This identification of military personnel with the middle class in Brazil during this period is commonly found in literature (Dean, 1992, p. 351; Iglesias, 1994, p. 27; Nachman, 1977, pp. 19-22). However, the aim of this research is to investigate the emergence of a wider urban middle class as mentioned by Fausto (1995, pp. 437-438), Leff (1982a, p. 60) or Viotti da Costa (1995, p. 423), which will be empirically tested in Chapter 5.

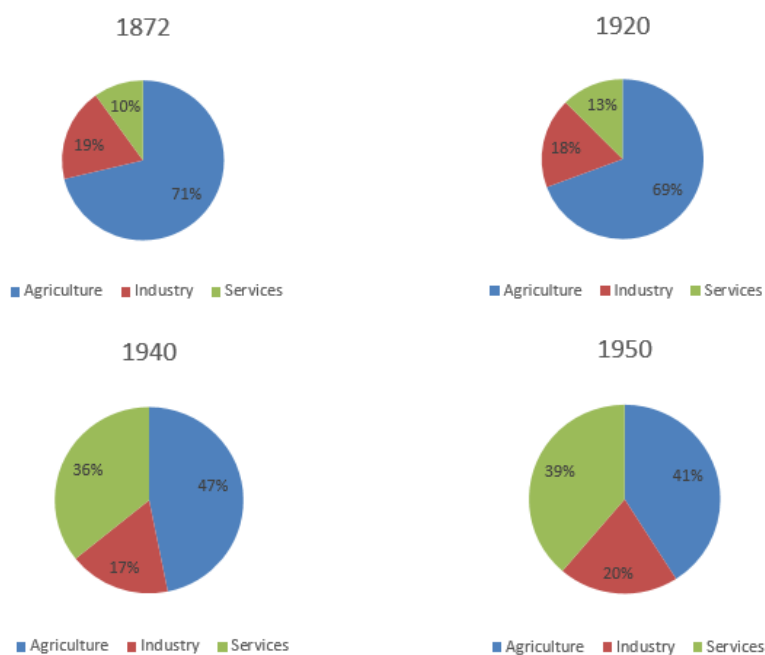
This emergence might have been more likely after the military uprising in 1889, when according to Jaguaribe (1968, p. 141) “the military elite made its first attempts to radicalize the petty bourgeois revolution, establishing a revolutionary government strongly influenced by class ideologies, in which middle class leaders held the power”. Additionally, there is evidence that under the Marshall government (1889-1894), the crisis of the coffee sector affecting big landowners, together with the abolition of slavery, put an end to the master-slave dichotomy and permitted other groups to rise (Iglesias, 1994, p. 27). Importantly, the substitution of slave labour with free workers after abolition, as well as the arrival of new immigrants, served to relax the rigid social structure.

Yet, the return to power of old oligarchies under the “coroneis system” (1894-1930) could be thought of as being contrary to the promotion of middle class interests and social diversification. Nevertheless, industrial growth and the urbanisation process that occurred during those years lead one to think that the rise of a middle class during this period would be quite feasible. For example, as mentioned in previous sections, there is evidence of an industrial spurt from the 1890s, as well as an important urbanisation process occurring around the early twentieth century. Importantly, the appearance of the first industrial establishments came together with the creation of new professional categories. Additionally, there is evidence of the creation of first associations and unions along with the uprising of the first workers movements and strikes.

Finally, these urbanisation and industrialisation processes seemed to accelerate after the revolution of the 1930s. Indeed, as shown in Figure 4.2, while in 1920 most of the active population was employed in the agricultural sector (around 70 per cent), this

proportion started to decrease to the detriment of the industrial and services sectors, which together exceeded the agricultural sector in active population from the 1940s. Actually, by the 1950s, the services sector alone attained a similar proportion of active population to agriculture, around 40 per cent each.

Figure 4.2. Active population by sector (per cent).



Sources: From 1872 to 1940, Estatísticas Históricas do Brasil (IBGE, 1990); For 1950, Anuário de Estatística (IBGE, 1978).

Yet, despite the literature and data on active population which suggest the diversification of the social structure, as well as the possibility of the emergence of a middle class at some point between 1889 and 1950, the identification of the particular moment in which that occurred, as well as the examination of the evolution of this social group over the period, require the support of additional empirical evidence. In this thesis this evidence will consist of analysing the evolution of inequality (Gini index) as well as the MC index over the period. The estimation of both indicators will

be based on data on active population and income. The sources of these data as well as the construction of my database, are explained in the following section

3. Sources and database construction

To calculate inequality (Gini index) as well as the MC index I have collected data on active population and income. Modern studies obtain active population data from household surveys (Cruces, López-Calva, & Battistón, 2011; Foster & Wolfson, 2010; Gasparini et al., 2008). However, in Brazil, the first household survey dates from 1967, making this approach unpractical for the historical purpose of this work. Nevertheless, an alternative method to construct the population time series is to look at the active population structure provided in the demographic censuses.

In Brazil the first national census was carried out in 1872 and the subsequent censuses were developed in 1920, 1940 and 1950 (DGE-Diretoria Geral de Estatística, 1872; 1926; 1950; 1956). Hence, since there is not an annual series on active population data, I will apply the fixed structure of the active population provided in censuses to an income time series (Bértola et al., 2007). While interpolation methods could have been applied from 1870 to 1950 using data on total population, the lack of data from 1839 to 1870 did not allow me to maintain a uniform criterion. Therefore, I decided to maintain the same methodology for my whole period, using the fixed active population provided in the censuses benchmark years.

Next, the data for the income time series, for each professional category, comes from the censuses (DGE-Diretoria Geral de Estatística, 1872; 1926; 1950; 1956) but

also from Historical Statistics (IBGE-Instituto Brasileiro de Geografia e Estatística, 1990); and official information on nominal wages provided by Lobo (1978). In Lobo (1978), wages are presented as yearly averages.⁴⁸ Here, yearly averages have been multiplied by 12 (months) in order to obtain wages per year and make them comparable to the yearly income information presented by other sources. Finally, complementary information of yearly incomes for landowners and slaves has been kindly provided by other authors.⁴⁹ The income and population sources used by period are detailed below.

3.1 From 1839 to 1898

As shown in Table 4-7., from 1839 to 1898 most of the income information comes from Bértola et al., (2007), Lobo (1978), and Monasterio (n.d.), while the information on “active population by profession” is found in the 1872 census. Moreover, since income information mainly belongs to Rio de Janeiro and other regions of South-Eastern Brazil, I construct the “active population” time series with the population in the South-East: Espírito Santo, Minas Gerais, Município Neutro, Rio de Janeiro and São Paulo. Aggregation results in a population of 4,005,801 individuals. It is worth noting that, as mentioned in previous sections, the sample is representative for Brazil, as in 1920 more than half of the urban population resided in Rio de Janeiro and São Paulo (Bethell, 1989, p. 234). Moreover, almost 75 per cent of total GDP was concentrated in the South-Eastern and Southern regions by 1872, and this percentage increased during the first decades of the twentieth century due to the expansion of the South (Bértola et al., 2007, p. 3).

⁴⁸ For the estimation, she uses wage rates per hour (8 hours per day, 200 hours per month)

⁴⁹ I am grateful to Henry Willebald and Leonardo Monasterio for sharing unpublished data.

Additionally, that population of 4 million individuals is distributed across 36 different professional categories. However, of these observations only 2,268,208 could be considered as “active”, while the other 1,737,593 are categorised as without a profession. Nevertheless, since these people could be working in the informal market, I assign to this group average income estimations that are based on low income professional categories such as hairdressing and caretaking.

Furthermore, the 1872 census includes information on the gender of the active population (male or female) and about labour condition (slave or free). In Brazil the end of slavery came with the “Lei Áurea” in 1888, nevertheless the status of past slaves did not change directly and presumably neither did their mean income. There is evidence that once the free labour system was established, “darker skinned people tended disproportionately to work at manual jobs [whereas] the white or near-white men [...] benefited from racial cleavages and assumptions in hiring, promotion, housing, patronage, social contracts and education.” (Owensby, 1999, p. 41). Therefore, I applied the 1872 census that includes slave records until 1898. Additionally, slave income estimations provided by Bértola et al. (2007) are set according to the cost of feeding slaves in mining companies, plus a similar amount that covered clothing and housing expenses.

3.2 From 1899 to 1930

Next, from 1899 to 1930, the “mean income” time series is constructed using the same income resources, as in the previous period, but assigned to a fixed structure of the active population according to the 1920 census (Table 4-8). In 1920, the demographic census also offers information on gender. However, this census does not provide

aggregate data at the country level, nor at the state level, but disaggregated information by municipalities. Due to large number of municipalities (1,304 in the whole country and 430 in the South-East region), I take a sample selection from the most populated municipalities (183 of 430), belonging to the States of the South-East region: Minas Gerais (68 of 178); São Paulo (37 of 48); and Rio de Janeiro (78 of 204). The data aggregation is carried out on a sample of an active population with 7,851,044 individuals, also distributed across 36 different professions.⁵⁰

3.3 The 1940s and 1950s

Finally, for the years 1940 and 1950 (Table 4-9), both the active population (by profession) and the linked mean income by professional category come from the censuses (DGE, 1950, 1956) and from the Estatísticas Históricas do Brasil (IBGE, 1990). On this occasion, the information has been compiled at country level. It comprises an active population with 15,741,344 (in 1940) and 25,827,223 (in 1950) distributed across 22 professional categories.⁵¹ As in the previous period, nominal salaries have been deflated by the 1919 price index before performing any analysis.

⁵⁰ Total population at this time was about 27 million people.

⁵¹ According to the demographic censuses total population in Brazil in 1940 and 1950 gathered 41,236,315 individuals and 51,944,397 individuals respectively.

Table 4-7. Brazil (1839-1898): Sources and data.

POPULATION DATA	INCOME DATA
Profession classification according to 1872 census	Estimations:
Artistas (artist)	Based on Lobo (1978), Bértola et al. (2007) and Monasterio (n.d.)*
Advogados (lawyer)	
Canteiros, Calceteiros e Mineiros (stone cutter, platelayer, miner)	
Capitalistas e Proprietários (landowner, proprietary)	
Cirurgiões (doctor surgeon)	
Costureiras (dressmaker)	
Criados e Jornaleiros (house servant and journeyman)	
Escravos (slave)	
Juízes (judge)	
Oficiais de Justiça (judicial solicitor)	
Op. Em Edificações (construction worker)	
Op. Em Metais (blacksmith)	
Procuradores (procurator)	
Serviço Doméstico (domestic servant)	
Sem Profissão (without any profession)	
Capelão (priest)	Based on Lobo (1978)**
Administração pública (Government administrators)	
Comerciantes, Guarda-Livros e Caixeiros (retailer, book-keeper, cashier)	
Enfermeiros (nurse)	
Farmacêuticos (chemist)	
Lavradores (farmer)	
Médicos (doctor)	
Operários em Madeiras (wood treaters)	
Professores e Homens de Letras (teacher and first letters teacher)	
Sacristão (sexton)	
Criadores (stock-breeder)	Equal to horticulturist's wage in Lobo (1978)***
Notários e Escrivães (notary)	Equal to lawyer's wage
Op. De Calçado (shoemaker)	Equal to 89% carpenter's wage in Lobo (1978)***
Op. De Chapéus (hat maker)	Equal to 89% carpenter's wage in Lobo (1978)***
Op. De Vestuários (dressmaker)	Equal to 89% carpenter's wage in Lobo (1978)***
Op. Em Couros e Peles (leather goods maker)	Estimated as 87% carpenter's wage in Lobo (1978)***
Op. Em tecidos (weaver)	Estimated as 60% carpenter's wage in Lobo (1978)***
Op. Em Tinturaria (dyer worker)	Equal to carpenter's wage in Lobo (1978)***
Parteiras (midwife)	Equal to nurse's wage in Lobo (1978)
Procuradores (procurator)	Equal to lawyer's wage

Notes: English translations of professions are based on HISCO database.

* Bértola's et al.,(2007) estimations are mostly based on Lobo (1978).

** Lobo's estimations have been adjusted according to those reported by other authors for specific periods: Klein (1995) provides data for 1880; Nunes (2003) from 1870 to 1889; Monasterio for 1880 and 1881; and chosen Lobo's sample for adjustment is from 1879 to 1881.

*** Equivalences are based on information of industrial salaries from IBGE (1990).

Table 4-8. Brazil (1899-1930): Sources and data.

POPULATION DATA	INCOME DATA
(profession classification according to 1920 census)	Estimations from:
Advogados (lawyer)	Based on Lobo (1978), Bértola et al. (2007) and Monasterio (n.d.)*
Canteiros, Calceteiros e Mineiros (stone cutter, platelayer, miner)	
Capitalistas e Proprietários (landowner, proprietary)	
Cirurgiões (doctor surgeon)	
Costureiras (dressmaker)	
Criados e Jornaleiros (house servant and journeyman)	
Juízes (judge)	
Oficiais de Justiça (judicial solicitor)	
Op. Em Edificações (construction worker)	
Serviço Doméstico (domestic servant)	
Sem Profissão (without any profession)	
Administração pública (Government administrator)	Based on Lobo (1978)**
Capelão (priest)	
Comerciantes, Guarda-Livros e Caixeiros (retailer, book-keeper, cashier)	
Enfermeiros (nurse)	
Farmacêuticos (chemist)	
Lavradores (farmer)	
Médicos (doctor)	
Operários em Madeiras (wood treaters)	
Sacristão (sexton)	
Criadores (stock-breeder)	Equal to horticulturist's wage in Lobo (1978)
Notários e Escrivães (notary)	Equal to lawyer's wage
Op. De alimentação (food and beverage processors)	Equal to press worker's wage in Lobo (1978)***
Op. De aparelhos de transporte (transport equipment operator)	Equal to machine worker's wage in Lobo (1978)***
Op. De cerâmica (potter)	Estimated as 87% carpenter's wage in Lobo (1978)***
Op. De mobiliário (bench carpenter)	Equal to carpenter's wage in Lobo (1978)***
Op. De produção e transmissão de forças físicas (stationary engine operator)	Equal to machine worker's wage in Lobo (1978)***
Op. De Vestuários (dressmaker)	Estimated as 89% carpenter's wage in Lobo (1978)***
Op. Em Couros e Peles (leather goods maker)	Estimated as 87% carpenter's wage in Lobo (1978)***
Op. Em Metais (blacksmith)	Estimated as 96% carpenter's wage in Lobo (1978)***
Op. Em tecidos (weaver)	Estimated as 60% carpenter's wage in Lobo (1978)***
Op. Relat. Às sciencias, letras e artes (artists)	Equal to carpenter's wage in Lobo (1978)***
Parteiras (midwife)	Equal to nurse's wage in Lobo (1978)
Procuradores (procurator)	Equal to lawyer's wage in Lobo (1978)

Notes: English translations of professions are based on HISCO database.

* Bértola's et al. (2007) estimations are mostly based on E. Lobo (1978).

** Lobo's estimations have been adjusted according to those reported by other authors for specific periods: Klein (1995) provides data for 1880; Nunes (2003) from 1870 to 1889; Monasterio for 1880 and 1881; and chosen Lobo's sample for adjustment is from 1879 to 1881.

*** Equivalences are based on information of industrial salaries from IBGE (1990).

Table 4-9. Brazil (1940, 1950): Sources and data.

POPULATION DATA	INCOME DATA
Profession classification according to 1940 and 1950 censuses	Estimations from:
Agricultura (Farmers) Capitalistas e Proprietários (Landowners, proprietors)* Criação (Livestock Farmer)	Agricultural censuses 1940 and 1950
Capitalistas e Proprietários (Owners, proprietors)* Extacção de mat.mineraes (Stone cutters, platelayers, miners) Industria de transformação (Processing industry workers) Produção e alimentos, bebidas, etc (Food and beverage processors) Texteis, vestuário, caçados, etc (Weavers, dressmakers, shoe makers etc) Metalurgia, material de transporte, etc (Blacksmiths, toolmakers, machine-tool operators) Química, derivados de petróleo (Workers with chemical and related processes) Outras industrias (Bricklayers, stonemansons, potters)	Industrial censuses 1940 and 1950
Transportes y comunicações (Transports)	Transport censuses 1940 and 1950
Alimentos, bebidas, comercio ambulante, etc (Salesperson, wholesale or retail trade) Bancos e outras actividades financeiras (Bank tellers, finance clerks, insurance salesman) Comercio Productos agrícolas, quimicos, maquinas (Purchasing agent or technical salesman) Outras actividades comerciais (Other sales workers)	Commercial censuses 1940 and 1950
Capitalistas e Proprietários (Owner, proprietor)* Serviço de Recreação (Leisure services) Servicio doméstico (Domestic servant) Otros serviços pessoais (Hotel and Restaurant) Actividades mal definidas (Badly defined activities)**	Services censuses 1940 and 1950
Serviço governamentais (Government Administrators)***	IBGE (1990)

Notes: English translations of professions are based on HISCO database.

* Agricultural owner rents= land rents+ production value- cost of production / number of establishments of large scale production; Industrial owner rents (assuming one owner by establishment)= Annual rent by establishment (production value+ processing value - consumption- expenses- salaries)/ number of establishments; Services owner rents (assuming one proprietary by establishment) = Annual rent by establishment (revenues from commodity trade - expenses- salaries)/ number of establishments.

**Average of wages on housing and care activities (Doorkeepers, hairdressers, beauticians)

***Government administrator's wage= Government personnel expending/ personnel. Source: IBGE/ Conteúdo Histórico/ Estatísticas do século XX/ Econômicas/ Contas Nacionais/Setor Público/Despesa primaria do Governo / pessoal.

3.4 Linking status

To calculate the MC index in term of status, apart from data on population and income (described in Section 3), I also need to know the status linked to each profession. In this regard, the status dimension is obtained by means of the professional category, according to the HISCLASS linked to the HISCO classification.

The Historical International Standard Classification of Occupations (HISCO) provides comparable classification of occupational titles across different periods, countries and languages. Additionally the Historical International Social Class Scheme (HISCLASS) grouped the classified occupations into twelve classes ranked on a prestige or status scale (Van Leeuwen, Maas, & Miles, 2002; 2011). Therefore, according to the HISCLASS classification the status of each professional category depends on the kind of work (manual or no-manual) and the skill level needed (low, medium and high). Thus, according to that criterion, they distinguish twelve different classes, which I group into 3 groups (High, Middle-High and Low) and then into 2 (High and Low) in order to calculate both tripolarisation and bipolarisation. The HISCLASS classification and the aggregation criteria applied are shown in the table below.

Table 4-10. HISCLASS classification and group aggregation.

Class label	Skill level	Manual/ Non manual	3 Groups aggregation	2 Groups aggregation
Higher managers	} HIGH [1, 2]	} NON MANUAL [1, 2, 3, 4, 5]	} HIGH CLASS [1, 2]	} HIGH CLASS [1, 2, 3, 4, 5]
Higher professionals				
Lower managers	} MEDIUM [3, 4]		} MIDDLE CLASS [3, 4, 5, 6, 7]	
Lower professionals and clerical and sales personnel				
Lower clerical and sales personnel	} LOW [5]			
Foremen				
Medium skilled workers	} MEDIUM [6, 7, 8]	} MANUAL 6, 7, 8, 9, 10, 11, 12,		
Farmers and fishermen				
Lower skilled workers	} LOW [9, 10]	} MANUAL 6, 7, 8, 9, 10, 11, 12,	} LOW CLASS [8, 9, 10, 11, 12]	} LOW CLASS [6, 7, 8, 9, 10, 11, 12]
Lower skilled farm workers				
Unskilled workers	} UNSKILLED [11, 12]	} MANUAL 6, 7, 8, 9, 10, 11, 12,	} LOW CLASS [8, 9, 10, 11, 12]	
Unskilled farm workers				

Sources: Own elaboration

3.5 Fitting the database

Once the data has been collected, when constructing the database I take into account some characteristics of my case study, such as the differences in wages between urban and rural areas, as well as monetary effects (such as inflation) on nominal wages. Here I explain these changes.

Firstly, in order to take into account differences throughout the country, I consider differences between rural and urban areas. Therefore, since Lobo (1978) provides wages that are nominal urban wages, I estimate the rural salaries for the 36 professional categories and the proportion of population (by profession) in one area or

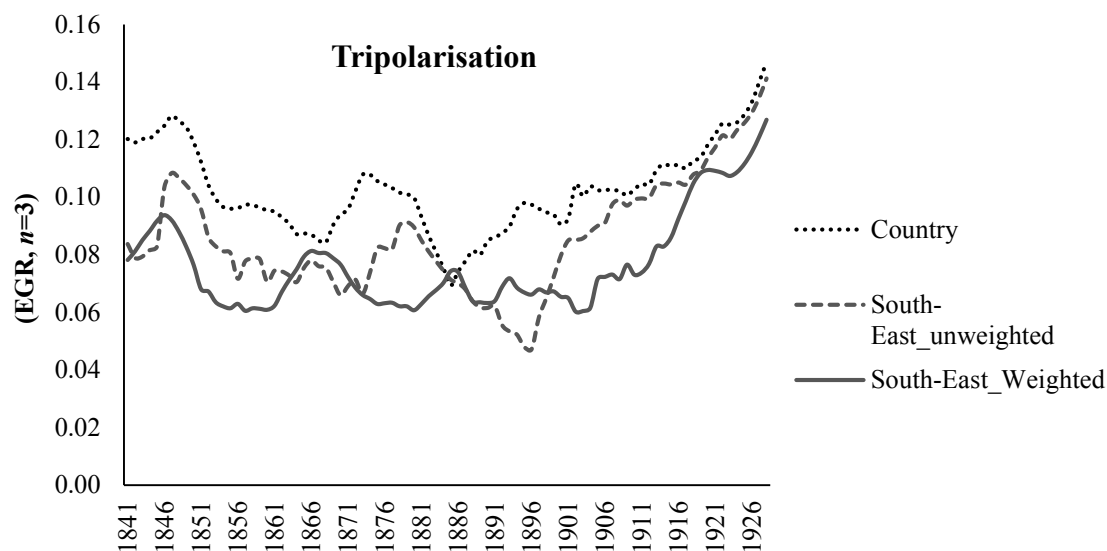
another. For this purpose, I employ Klein (1995) and Nunes's (2003) work as well as Monasterio's data. Klein (1995) and Nunes (2003) provide information for São Paulo, and Monasterio for Rio Grande do Sul. The estimations obtained for São Paulo and Rio Grande do Sul have been compared with those obtained for the city of Rio de Janeiro (provided by the 1890 census). Results are very similar, so it seems possible to use the same estimations along the South-Eastern region. These sources provide information on the income declared in the electoral rolls, including voters' profession and their area of residence (distinguishing between urban and rural parishes). With this information I estimate the differences between urban and rural wages (by profession) and the proportion of people (also by profession) residing in one area or another (Table 4-11). As a result, Figure 4.3 shows that when taking only the South-Eastern sample (instead of the whole country) and when weighting for urbanisation, polarisation estimations look smoother.

Table 4-11. Rural and urban comparison.

	% Population by professional category and area			Rural income relative to urban income (by professional category)	Source:
	Urban	Rural	Source:		
Clergy	90%	10%	Klein, H. (1995)	40%	Klein, H. (1995)
Liberal professions	96%	4%		25%	
Qualified professionals	96%	4%		50%	
Retailer	84%	16%	Nunes, N.(2003)	45%	
Farmer	35%	65%		77%	
Unqualified professionals	41%	59%	DGE (1890 census)	77%	
Without any profession	73%	27%		77%	
Civil servant	95%	5%		17%	Monasterio, L.
Servants	84%	16%	84%		

Source: Own elaboration

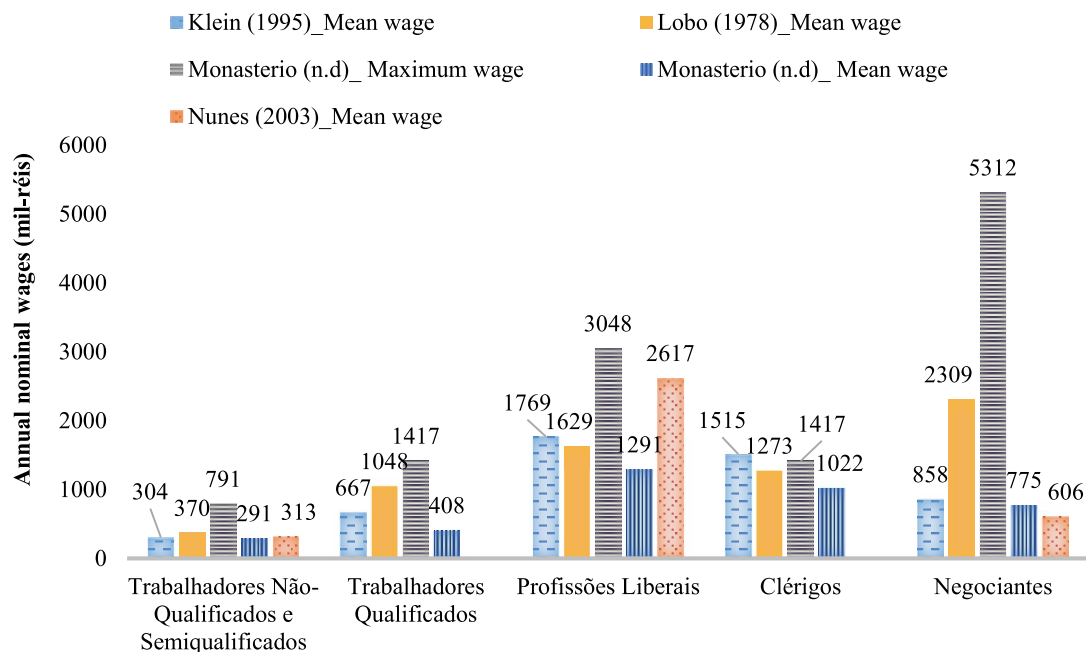
Figure 4.3. Tripolarisation (EGR, $n=3$).



Sources: From 1839 to 1930 Bértola et al. (2007), DGE (1872 and 1920) and Lobo (1978, pp. 803-20)

Moreover, while Lobo's series can raise some concerns for representativeness beyond Rio de Janeiro, there are a number of reasons why they can be defended to be representative at the country level. Firstly, as seen in Figure 4.4, Lobo's urban nominal wages are very similar to those reported by other authors: Klein's (1995) data of urban wages are for São Paulo and Nunes's (2003) for Rio de Janeiro; meanwhile Monasterio (n.d) provides data of mean wages and maximum wages for Minas Gerais and Rio Grande do Sul (presumably the maximum ones belong to the urban area).

Figure 4.4. Annual urban nominal wages (1870-1880).



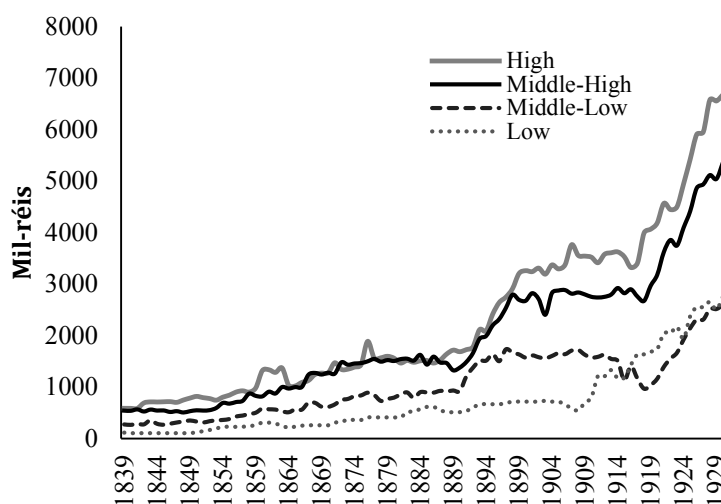
Notes: Klein (1995) provides data for 1880; Nunes (2003) from 1870 to 1889; Monasterio for 1880 and 1881; and chosen Lobo's sample is from 1879 to 1881.

Secondly, before carrying out any analysis, nominal wages have been deflated by the 1919 price index provided by Lobo (1978). This index is introduced in Lobo (1971) and it is based on the consumption basket elaborated by Affonseca (1920) in 1919.⁵² This basket reported upper-middle class consumption habits (i.e. the food weights were attributed according to their importance on the basket of a middle-high class family). While this index has some deficiencies in that it does not include clothes and housing prices, its use is justified given the absence of a better alternative. Figure 4.5 and Figure 4.6 show the evolution of nominal and deflated wages, in Rio de Janeiro between 1839 and 1930, for different social classes. It shows that nominal wages increased during the whole period: from the early nineteenth century nominal wages

⁵² Affonseca (1920)

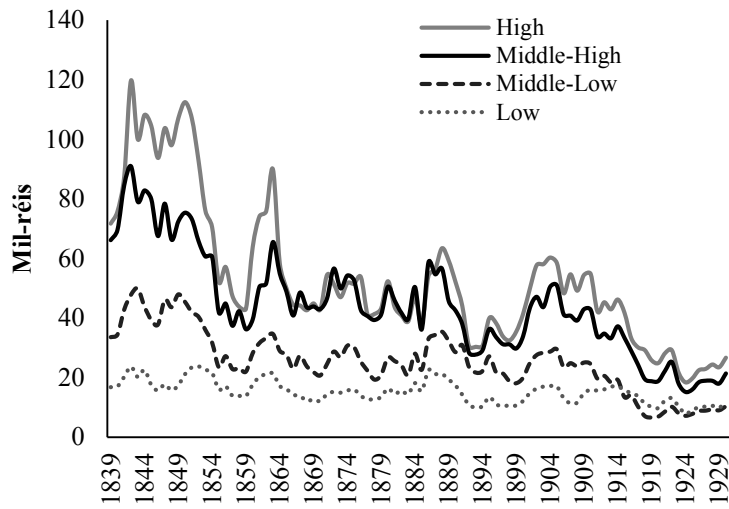
increased for all social categories, which actually did not seem to present big differences from each other; later on, from the late nineteenth and early twentieth centuries, nominal wages began to increase rapidly and the higher classes started to diverge from the lower ones, while the latter began to converge. However, in real terms, real wages experienced a long-run decreasing trend throughout the period, with the exception of short periods in the nineteenth century and a sustained period from the late nineteenth to the early twentieth century. Furthermore, when looking at the evolution of real wages, differences across social classes are shown as evident from the beginning of the period with the exception of the late 1880s when the fall in wages for the higher categories permitted convergence with the lower categories.

Figure 4.5. Rio de Janeiro (1839-1930): Nominal wages.



Source: Own elaboration based on Lobo (1978)

Figure 4.6. Rio de Janeiro (1839-1930): Real wages.



Source: Own elaboration based on Lobo (1978)

4. Conclusions

This chapter had the aim of providing the reader with a brief overview of Brazil's historical background as well as discussing the sources and data used for estimating the emergence of the middle class. As already described, this data consists of the active population structure (by profession) and associated real wages, obtained from censuses, historical statistics and secondary sources. Notably, a large amount of information on gender and condition (free or slave) as well as the transformation of this data (controlling for urbanisation) offered the most reliable database for this period in Brazil. Moreover, this data compilation permits the calculation of the income distribution in Brazil for consecutive years from 1839 to 1930, and the extension of the series to 1940 and 1950. Therefore, in the following empirical chapters I will explore the income distribution in Brazil from a number of different perspectives (inequality and polarisation) using this database.

Chapter 5. The Rise of Brazil's Middle Class (1839-1950)

1. Introduction

Was there a middle class in Brazil between the early nineteenth and the mid-twentieth century? From a traditional view of persistent inequality rooted in Brazilian colonial history, the answer would probably be no. However since some scholars have claimed that during the nineteenth century Brazil's inequality was low, it may be suggested that the presence of a middle class would not have been so unlikely. This chapter sheds new light on Brazil's income distribution in the long-run and investigates the presence of the middle class between 1839 and 1950. To this purpose, Brazil's income distribution is explored from two dimensions: inequality and polarisation. From the inequality perspective it will be shown that Brazil did not suffer from persistent inequality, as it did not start to increase until 1913. Meanwhile, from the polarisation dimension, results based on the MC index suggest the presence of a middle class during the period, emerging in the early twentieth century as a consequence of the important structural changes that happened during the late nineteenth century. It is shown that since the beginning of the twentieth century, the middle class increased in terms of both income and status, given a context of the expansion of industry and modernisation. Still in a context of increasing industrialisation but social immaturity and political repression, the

middle class declined in term of income and also status during the Vargas era (1930-1950).

The chapter proceeds as follows: in Section 2, I explore Brazil's income distribution from the inequality dimension and provide new Gini estimations between 1839 and 1950. Then, I explore Brazil's income distribution over the same period, using the polarization approach, by applying the MC index, showing the evolution of the middle class in terms of income (in Section 3) and status (in Section 4). Section 5 concludes.

2. What does the literature on Brazil's historical inequality suggest?

As shown in Chapter 3, quantitative studies on the middle class have usually looked at the income distribution from the inequality dimension. Relying on this approach, the existing literature on Brazil's historical inequality might yield some ideas on when the Brazilian middle class arose and how it evolved. In particular, quantitative works using the Gini index might be especially useful for this purpose, as the Gini index has the characteristic of being particularly sensitive to transfers in the central part of the distribution.⁵³

Therefore, an examination of the literature on Brazil's inequality highlights two different stories: a pessimistic one, in which persistent high inequality in Brazil would make unlikely the existence of any social group different from the wealthy landowners and a poor servile class; and a more optimistic one, in which inequality

⁵³ The Gini index (derived from the Lorenz curve) records inequalities between individuals and its coefficient gives a measure of income inequality, where 0 is the minimum inequality and 1 the maximum.

would not have been endemic and the presence of different social groups not so improbable.

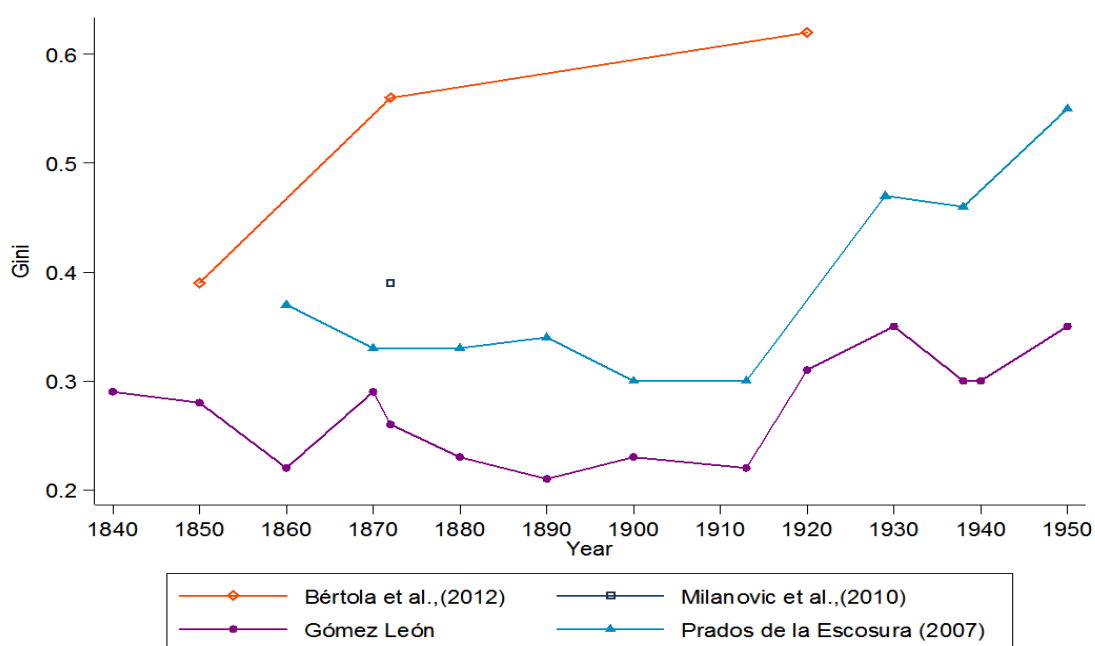
In the negative view, inequality would be rooted in Brazilian colonial history. Engerman and Sokoloff (1997) argued that the roots of Latin America inequality are located in the natural resource endowments that fostered the development of extractive institutions, which, in turn, undermined growth. Acemoglu, Johnson and Robinson (2002), while also pointing at the presence of extractive institutions as the main reason for persistent inequality in Latin America, held, however, that extractive institutions originated due to the abundant population density and affluence. According to this view, quantitative estimations from Bértola et al. (2012) suggest that inequality was already high by 1870, with a Gini coefficient higher than 0.5 that continued increasing during the first globalisation boom.

From a more optimistic perspective, quantitative explorations by Prados de la Escosura (2007a), Milanovic, et al. (2010) and Williamson (2010) suggest that Brazil's inequality persistence is a "myth", as inequality did not begin to rise until a decade or two before the start of the *belle époque* (1870-1914) (Williamson, 2010) or even later, from 1913 onwards, according to Gini coefficients below 0.5 (Prados de la Escosura, 2007a). To these authors low inequality values resulted from low levels of income per head.

The findings of this thesis tend to agree with this last hypothesis of low inequality levels associated with low income values, with estimated Gini coefficients ranging between 0.2 and 0.35. Indeed, as can be seen in Figure 5.1, my estimates are very close to those reported by Prados de la Escosura (2007a), even though we use

independent sources.⁵⁴ Both show a long-run decline in inequality until 1913, which was interrupted by a flat phase between the 1870s and the 1890s according to Prados de la Escosura's (2007a) estimates, or by a short-lived increase from 1860s to 1870s according to my estimates. However, both estimates then report a sharp increase in inequality from 1913 onwards.

Figure 5.1. Brazil's inequality: Gini coefficients.



Sources: Prados de la Escosura (2007a, pp. 296, Tab.12.1); Milanovic et al. (2010, pp. 63, Tab.2) and Bértola et al. (2012, pp. 12, Tab.6). Own estimates are detailed in Chapter 4.

At this point, I would like to introduce Milanovic's approach as a way to test how plausible these estimates are. This author claims that when:

“there is a society with an average income just slightly above the subsistence minimum. If all members of the society are to survive, then the surplus [the extraction ratio], even if it is appropriated by a tiny group of

⁵⁴ Prados de la Escosura (2007a) calculated Pseudo-Ginis by backcasting actual Gini estimates with the ratio between real GDP per worker and unskilled real wage rates, expressed in index. He relies on Williamson's ([1995] 1996) real wages for the case of Brazil, whereas my Gini estimations come from own calculations based on the sources presented in Chapter 4.

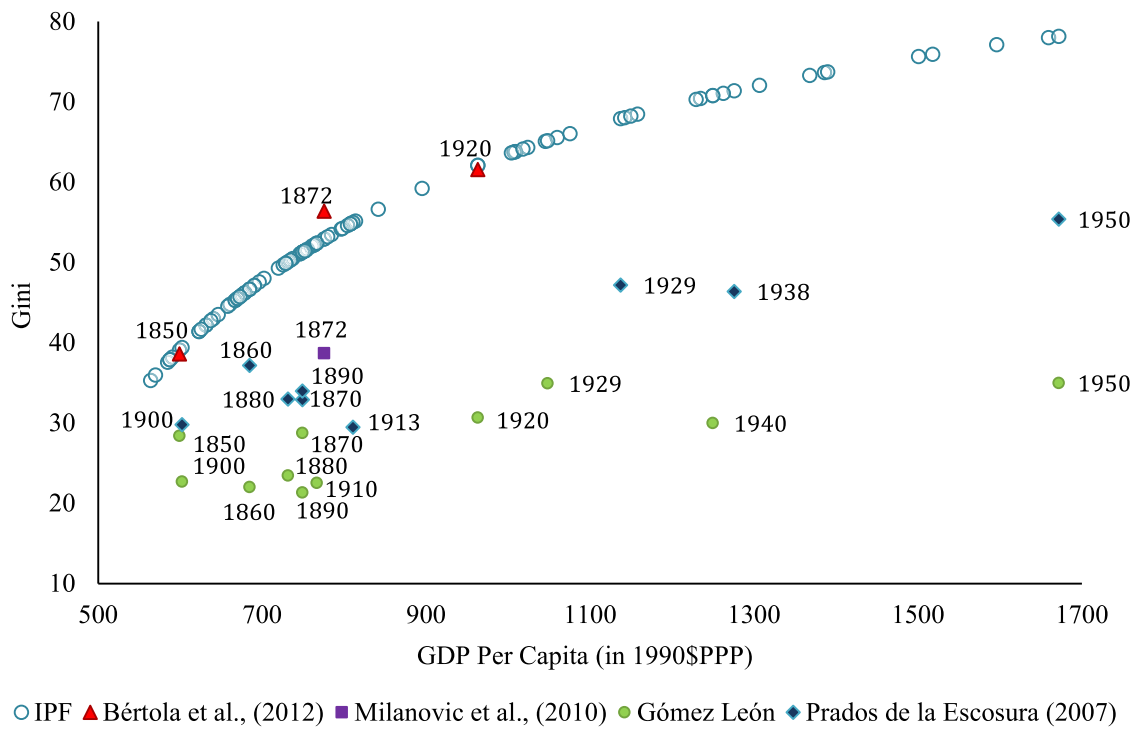
people, cannot be large, and the Gini coefficient must be relatively low” (Milanovic, 2006, pp. 466-67).

He further argued for the existence of a maximum attainable inequality (which is an increasing function of mean overall income) that can be estimated and represented by the Inequality Possibility Frontier (IPF henceforth).⁵⁵ Then, let’s place the different estimates within the proposed IPF, based on GDP per head (in 1990\$PPP) from Maddison (2003). Figure 5.2 shows Brazil’s IPF, with a proposed maximum Gini ranging between 0.3 and 0.6.⁵⁶ Own estimates, in accordance with the more optimistic outlook, remained below the frontier, starting from 0.2 at the beginning of the period and growing later from 1913 once GDP per head had begun to increase. Meanwhile, pessimistic estimates, such as those reported by Bértola et al. (2012), surpass the frontier suggesting that “such a society [would be] doomed to a dwindling population and ultimately extinction” (Milanovic, 2009, p. 9). It is worth noting that low Gini values do not necessarily signify an egalitarian society, in fact, they might conceal a bipolarised society, but one in which the elite was very small because the surplus available for extraction was low.

⁵⁵ These concepts are also used in Milanovic et al. (2007; 2010) and Milanovic (2009).

⁵⁶ In this case, the maximum feasible Gini has been calculated considering a subsistence level of 365\$, that means a poverty line of 1\$ per day.

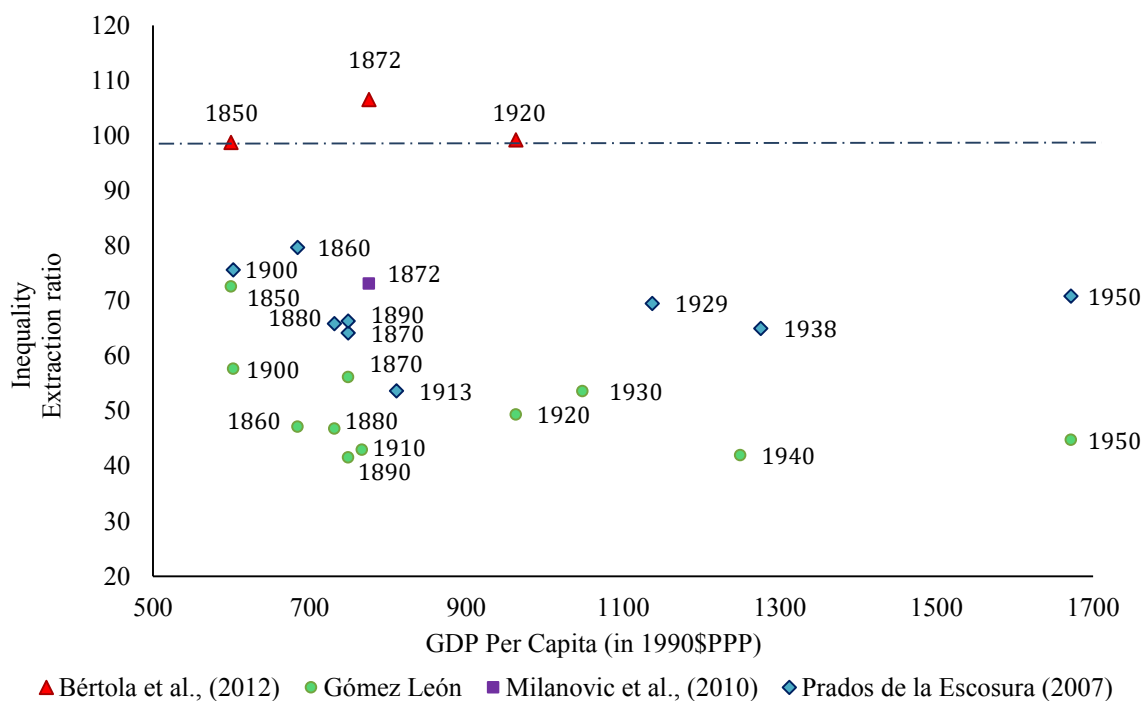
Figure 5.2. Brazil's IPF (1839-1950).



Sources: Prados de la Escosura (2007a, 296, Tab.12.1); Milanovic et al. (2010, 63, Tab.2) and Bértola et al. (2012, 12, Tab.6). Own estimates are detailed in Chapter 4. Estimates of GDP per head (in 1990\$PPP) are based on Goldsmith (1986) and Maddison (2003).

Actually Figure 5.3 shows that my estimates imply an extraction ratio between 50 and 70 per cent. Meanwhile, Bértola's estimates imply an extraction ratio oscillating between 99 and 110 per cent, meaning that Brazil's society was close to disappearance between 1872 and 1920.

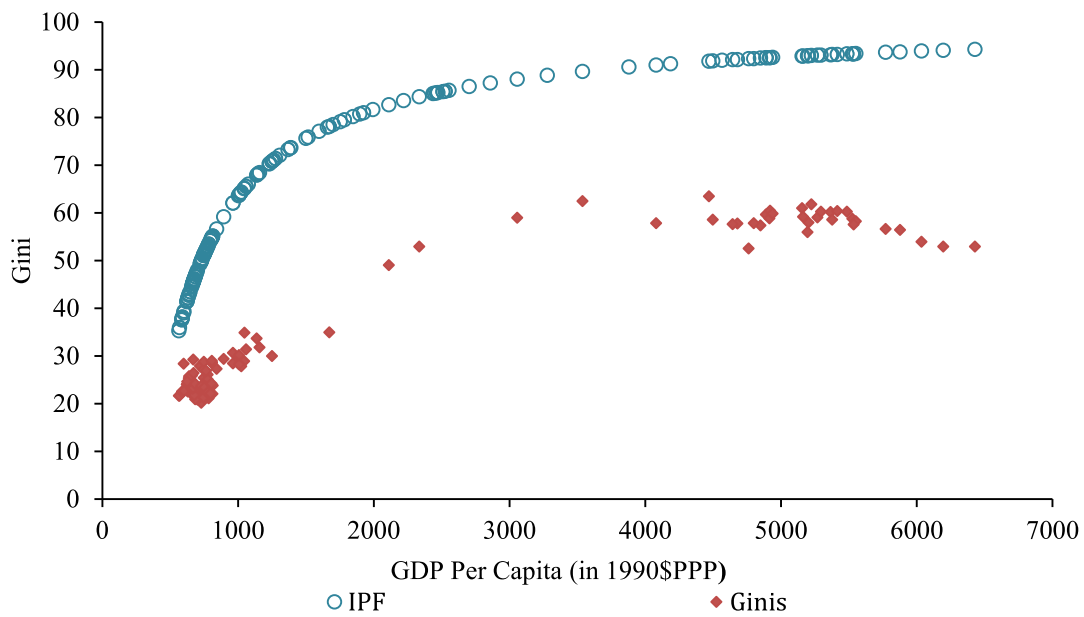
Figure 5.3. Brazil's inequality extraction ratio (1850-1950).



Sources: Same as Figure 5.2

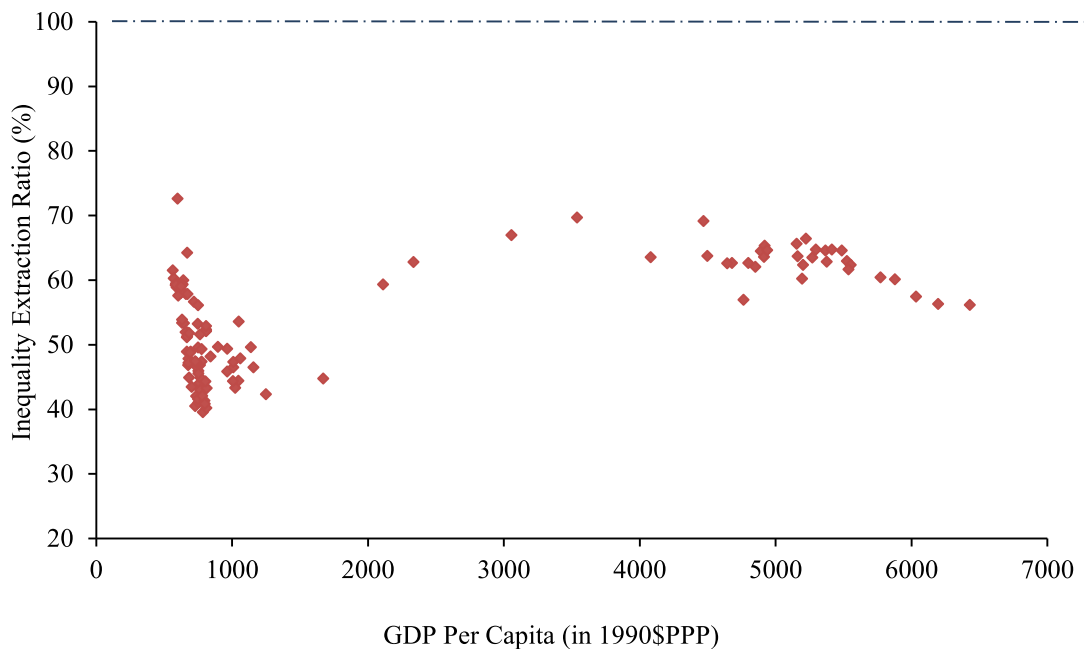
Additionally, estimations of Brazil's historical IPF and *Extraction Ratio* (Figure 5.4 and Figure 5.5) indicate that, despite periods of high GDP per head, Gini coefficients have remained quite below its maximum attainable inequality and that the *Extraction Ratio* has never surpassed 80 per cent.

Figure 5.4. Brazil's IPF (1850-2008).



Sources: Until 1950 Gini own estimates are detailed in Chapter 4; From 1950 Gini values come from UNU-WIDER World Income Inequality Database (WIID). Estimates of GDP per head (in 1990\$PPP) are based on Goldsmith (1986) and Maddison (2003).

Figure 5.5. Brazil's Inequality Extraction Ratio (1850-2008).



Sources: Same as Figure 5.4.

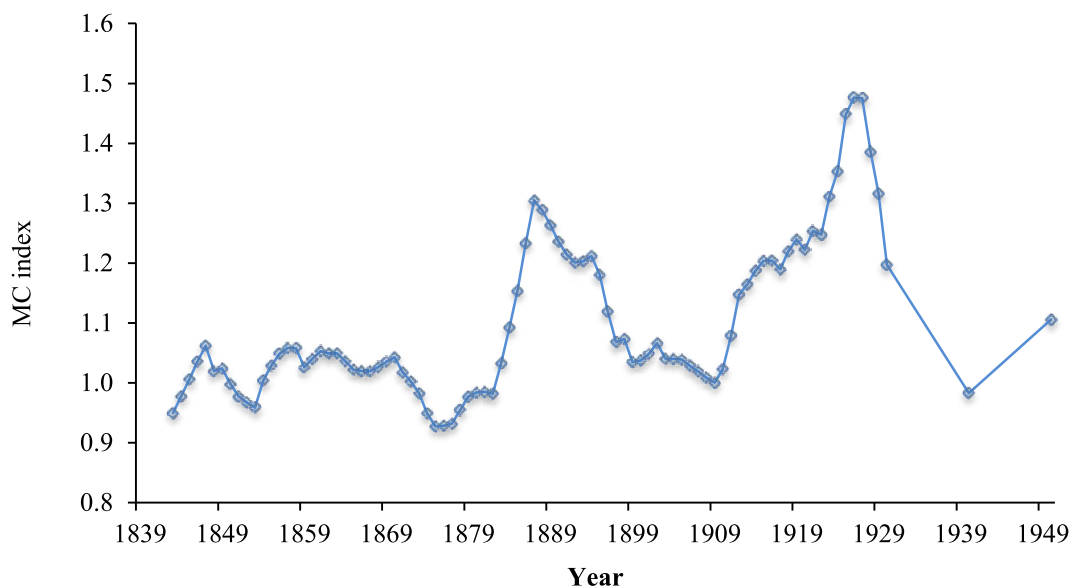
To sum up, inequality trends might be interpreted as supportive of the presence of a middle class over the period 1850-1950, especially up to 1913 (when Gini coefficients were falling) with a reversal thereafter. The alternative interpretation could be, however, that low inequality values in the nineteenth century, pointing to low income levels, might have prevented the emergence of the middle class. Yet, the opposite could have happened during the twentieth century, when high inequality values could be linked to an early phase of economic growth in a Kuznetsian sense, allowing for the appearance of different social groups. Therefore, inferences on the middle class' performance based on inequality measures are far from being conclusive, and thus a complementary analysis must be applied. The alternative, as already introduced in Chapter 3, is examining the income distribution from the polarisation approach, in particular, by using the new MC index based on polarisation measures. Hence, the next sections show results on the middle class performance based on this index.

3. Brazil (1839-1950): Middle Class evolution in terms of income

Figure 5.6 shows the evolution of the Middle Class index (MCI) in terms of income, which, until the late 1870s, exhibits smooth trends, suggesting the lack of a significant middle class. This is not surprising as there is evidence that throughout this period the recently independent Brazilian Empire was essentially a rural economy based on slave labour. Thus, it had a strongly hierarchical and stratified social structure, in which wage labour remained the exception to the rule and the population of independent small farmers and slaves did not offset the power of big landowners (Leff, 1982a, p. 17; Mendonça, 1950, pp. 83-84; Owensby, 1999, pp. 15-16). Moreover, there is evidence that important structural shifts in the Brazilian economy did not occur until the end of

the nineteenth century (Leff, 1982a, p. 166), particularly, after the abolition of slavery and the arrival of new immigrants (Luna & Klein, 2014, p. 61).⁵⁷ Thus, short-lived increases of the MC index (1843-1847; 1853-1857) might be the result of the sparse amelioration of salaries for scarce skilled professionals in a context of increasing demand for skilled labour (Lobo, 1978, p. 128), instead of the result of deep changes in the social structure, still far from presenting social mobility.

Figure 5.6. Brazil (1839-1950): Middle Class index (according to income), 5-year end-centred moving averages.



Sources: From 1839 to 1930 based on Bértola et al., (2007), Monasterio (n.d), DGE (1872, 1926) and E. Lobo (1978, 803-820); for 1940 and 1950 sources are IBGE (1990) and DGE (1950, 1956).

A more promising outlook for the middle class emergence came, however, between the mid-1870s and the late-1880s, when the MC index shows a sharp increase. This occurred in a context in which the slavery system had started its decline and free labour and European immigration started to be fostered, implying that salaried work became the rule rather than the exception (Leff, 1982a, pp. 52-53; Iglesias, 1994, p.

⁵⁷ Around 3.2 million immigrants, mainly from Southern-Europe, arrived to Brazil after the liberation of near 1 million slaves in 1888 (Goldsmith, 1986, p. 136)

12; Sánchez Alonso, 2007, p. 406).⁵⁸ Moreover, these events had important consequences on the social structure. For example, the end of slavery was followed by the recession and coffee production crisis, which opened a gap in the traditional system of domination (in which the agrarian elite governed) and permitted other groups to temporarily rise and gain some power over the traditional oligarchy (Lobo, 1978, pp. 454-455; Iglesias, 1994, p. 27). These groups were mainly formed by a small urban bourgeoisie linked to commerce, which emerged under the figures of handicraft agents (involved in the commercialisation of internal production) or traders (whether of imports, securities or money) (Fernandes, 1978, p. 26).⁵⁹ This recomposition of the power structure marked the beginning of modernity and separated the stately era from a society of classes. Thus, in this period, the increase of the MC index witnessed some structural social change, suggesting that the seeds for the middle class emergence started to be sowed: “At the end of the Empire of Brazil [1889], there already existed a middle class with clean lines. The social distance between the diverse elements of our people was definitely extinct. The jump from one class to another, from one group to another, was a common spectacle” (Sodré, 1944, p. 328).

Yet, the MC index decrease during the early years of the First Republic suggests that this middle class in terms of income was not consolidated; on the contrary, it

⁵⁸ Although the abolition of slavery was not effective until the establishment of the “Lei Áurea” (in 1888), the decline of slavery had started before: first with the prohibition of the slavery trade (in 1850) and then with the “Lei do Ventre Livre” (in 1871), which gave freedom to the newborns of current slaves (Klein & Luna, 2010, pp. 295-296; Reis, 1974, p. 1). The decline in the slave population led to the rise of slave prices and the crisis of the slavery system (Leff, 1982a, p. 52). Yet some studies argue that the main reason was not that the activity was not profitable anymore (at least until two years before total abolition), but instead blamed the abolitionist movement and its disrupting effects on public order and safety of owners (Dean, 1992, p. 351; Reis, 1974, pp. 14-19)

⁵⁹ Yet, according to Fernandes (1978, p. 201): “What many authors denominated the crisis of the oligarchy system was not a collapse [...], but the beginning of a transition which inaugurated, still under the hegemony of the oligarchy, the recomposition of the power structures, from which will shape the bourgeois power and the bourgeoisie domination.”

weakened. It fell during the Marshall government first under the administration of Deodoro da Fonseca (1889-1891) and then of Floriano Peixoto (1891-1894). Yet, the fall became much more profound after the election of the first civil president, Prudente de Moraes, as this meant the return of the coffee oligarchies to power (Fausto, 1995, p. 442; Iglesias, 1994, p. 30; Mota & Lopez, 2009, p. 209) and the implementation of policies designed to protect the coffee sector to the detriment of emerging industry. The credit diverted to the coffee sector and the deflationary policies benefiting imports and a shrinking internal market negatively affected industry, as well as employment and wages in the secondary sector (Lobo et al., 1973, p. 249; Lobo, 1978, p. 487; Dean, 1992, pp. 338-39). Therefore, the crisis of industry together with the general lack of financing (with the exception of the coffee sector) might have frustrated the expectations of improvement of those susceptible to become middle class in terms of income. For example, by 1908 in Rio de Janeiro salaries of weavers were reduced from 1\$300-2\$000 per day to 600-1\$000, while housing rents ranged from 8\$000 to 30\$000, representing the lower rent of 44 per cent of the minimum salary and the higher rent of 50 per cent of the maximum salary (Lobo et al., 1971, p. 256).⁶⁰

However, a long run increasing trend in the MC index began in 1910 and lasted until the 1930s, reporting a fast recovering of the middle class in terms of income. During this period, despite the political prominence of the supporters of the export economy (particularly, the interests of coffee growers), there were some initiatives favourable to industry (Dean, 1992, p. 362). In particular, industry benefited from better access to credit, inflation, and a favourable customs policy (which restricted the arrival

⁶⁰ 1\$000 stands for 1 mil-réis (official currency in Brazil until 1941).

of competitive goods but allowed machinery imports), as well as the expansion of transportation systems, innovation, and the growing population accompanied by the expansion of effective demand (Lobo, 1978, p. 471; Leff, 1982a, pp. 166-187; Wolfe, 1993, p. 7). Indeed, from this period onwards, the interests of those in the industrial sector went hand in hand with those in the coffee export sector (Dean, 1992, p. 362; Fausto, 1995, p. 428; Luna & Klein, 2014, p. 74). Leff (1969, p. 479) argued that: “far from being ‘alternative’ patterns of development, as has some-times been suggested, export expansion and industrial development were complementary and mutually supporting”. Therefore, boom exports in this period favoured the development of industry (Leff, 1969, p. 479; Dean, 1992, p. 363; Baer, 2008, p. 27). During the first two decades of the twentieth century the sterling value of Brazilian exports had been increasing at an annual trend of 4.2 per cent, meanwhile between 1924 and 1930 the rate of industrial growth was 6 per cent (Leff, 1969, pp. 484-487).

This development of industry, in turn, had a profound impact on the social structure with the creation of new professions (Furtado, 1965, p. 14; Wolfe, 1993, pp. 6-7). It is important to stress that the progress in the industrial sector increased the demand for skilled workers in metalwork, clothing, shoe, and processed food industries. For instance: “In Rio white-collar employees and professionals made up 20 to 30 per cent of the half-million strong work force in 1920. São Paulo’s white-collar sector [...] neared 20 per cent of the work force” (Owensby, 1999, p. 29). Moreover, the increasing urbanisation and modernisation also fuelled new professional opportunities in the services and commerce sector (Furtado, 1965, pp. 18-19; Mota & Lopez, 2009, p. 427; Owensby, 1999, p. 49). For example, in Rio de Janeiro “in 1919, only 38.4 per cent of

its active population was involved in the real physical output, while 61.6 per cent was engaged in the production of services” (Fausto, 1995, p. 438).

Thus, throughout these two decades, the increasing middle class along with increasing inequality might be associated with an early phase of development in a Kuznetsian sense; that is, the result of a transition from the traditional sector to the industrial one and the subsequent rise in wage differences. Importantly, in such a scenario, increasing inequality linked to productivity differences did not prevent but rather fostered the rise of a middle class.

Yet, during this period there was also the risk of the deterioration of the purchasing power of middle and low income groups because of the fast increase in prices. Between 1914 and 1918 the cost of living tripled, affecting mainly the middle class, as its members had wider budgets than the working class but not very different earnings (Owensby, 1999, pp. 101-117). According to Owensby, in 1920, the real wage of those at the 50th percentile was 5.7 Cruzeiros (Cr\$), while of those at the 20th and 10th were 5Cr\$ and 3.8Cr\$, respectively.⁶¹ However, this deterioration was not unchallenged: salaried workers and those working in liberal professions started to associate together and to undertake strikes and protests demanding the raising of salaries and the improvement of labour conditions (Levine, 1998, p. 38; Paula & Monte-Mór, 2004, pp. 11- 12). These strikes succeeded and general real wages slightly rose (Lobo, 1978, p. 507; Wolfe, 1993, p. 22), experiencing on average an annual increase of 1.7 per cent between 1919 and 1929 (Goldsmith, 1986, p. 160). Consequently, it is not surprising that from 1920 to 1930 the middle class in terms of income increased.

⁶¹ 1 Cr\$ amounted to 1 mil-réis.

The consolidation of this new social middle, however, was completely frustrated during the following years (1930-1950), demonstrated by the abrupt fall of the MC index. This happened in a context of industrial expansion, modernisation and growth (Goldsmith, 1986, p. 143; Maddison, 1992, p. 26), but also in a context in which the income of the higher class (now integrated by a new industrial bourgeoisie, but whose interests were linked to those of the old oligarchy) was dramatically distancing itself from the rest.⁶²

“With the stimulus and protection of industry, the bourgeoisie felt safe and became even wealthier. Not just the industrial bourgeoisie, but also the landowners, the commercial and the financial ones. Labour legislation, rather than negatively affecting the bourgeoisie, helped it to grow and consolidate” (Iglesias, 1994, pp. 91-92).

This was because during this period, under the Vargas’ regime (referred to as Estado Novo), economic policies were focused on industrial expansion and social peace. To address the first, Estado Novo’s industrial relation system protected industrialists’ efforts to maintain low wages, while industrial workers had no power to bargain for higher wages and protect them, so they experienced a steady decline in real income (Wolfe, 1993, pp. 89-90). For instance, in São Paulo, between 1940 and 1945, all factory workers experienced a decrease in their real income of around 33 per cent (Wolfe, 1993, pp. 102, tab. 4.2). Social order, in turn, was maintained by means of repression and welfare programs through co-opted unions, which concentrated around social services (Skidmore, 1967, p. 40; Chacón, 1977, p. 56; Wolfe, 1993, p. 100).

⁶² According to Astorga (2015, p. 9) this appears as a common path in Latin America during the first half of the twentieth century, when the relative income ratios for the top income group tend to show high and rising values, especially in Brazil, Colombia, México and Venezuela.

Meanwhile, the heterogeneous middle class felt divided between joining worker protests or backing the interests of powerful entrepreneurs (Fausto, 1989, pp. 284-289), politically abandoned and without any bargaining power (Owensby, 1999, pp. 185-202). For instance, in São Paulo, when there were wage increases the increase of those of skilled workers was rather modest (about 11 per cent) in comparison to those of unskilled workers (about 38 per cent), as industrialists counted on the authoritarian Estado Novo's industrial relations to bargaining power of the highly skilled (Wolfe, 1993, p. 102). In addition to modest nominal wage increases, the recurrent inflation increased the cost of living, especially during World War II (Goldsmith, 1986, pp. 158, tab.IV-7) with dramatic consequences on the middle class' real income.

4. Brazil (1839-1950): Middle class evolution in terms of status

Although the income dimension is important to define the middle class, as mentioned in Chapter 3, there are other dimensions that characterised the middle class, such as social status. In particular, in Brazil during the nineteenth and twentieth centuries, status and appearance identified people with this social group more than their income did. Indeed, the middle class was very concerned about keeping its status: “[it] was likely less a conscious effort by middle-class people to imitate the rich than an imperative not to be confused with the working-class poor” (Owensby, 1999, p. 106). Notably, one of the main elements that conformed people to a particular class was their profession.⁶³

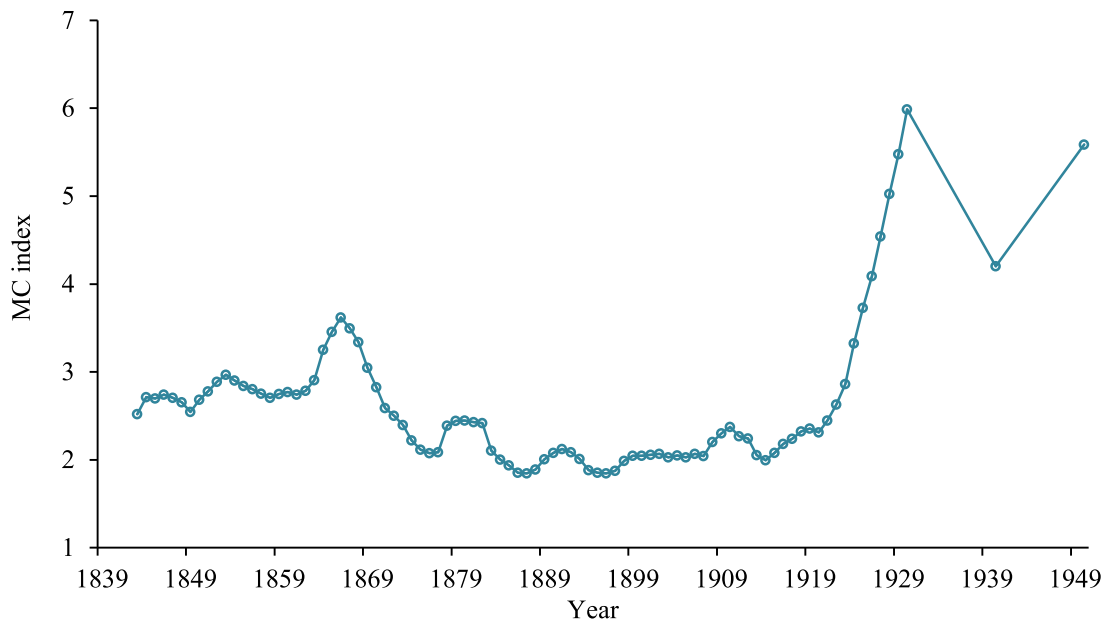
⁶³ Other characteristic elements of the Brazilian middle class, at that time, were expenditures on: clothing, servants, culture and education. (Owensby, 1999, pp. 107-10).

“Class was a such powerful determinant of position that the attributes of class would often influence the definition of color, whatever the phenotypic characteristics shown by the individual. Black lawyers were often defined as mulattoes, just as mulattoes ones were defined as white” (Klein & Luna, 2010, p. 268)

Therefore, Figure 5.7 shows the MC index performance in terms of status linked to the professional category. It suggests that the emergence of the middle class in terms of status remained unfeasible until the early twentieth century, as the MC index remained stagnant or declining until then. The exception took place between the 1850s and mid-1860s, when we observe a brief increase. This increase might have been linked to the expansion of manufacturing activity and the temporal rise in the demand of skilled labour. For instance, there is evidence that on the eve of the Paraguayan War there was increasing demand in skilled carpenters for the construction of fleets (Lobo et al., 1973, p. 156). Meanwhile, as mentioned in Chapter 4, during those years there was increasing investment in new industrial undertakings, shipping and urban transport companies (Jaguaribe, 1968, p. 133). In this vein, according to Sodré (1944, p. 71) there is evidence that after the prohibition of slave trade in 1850 public works contracts required the exclusion of slaves, exemplified by the works of the Union and Industry Highway, which mostly hired German and Portuguese workers.⁶⁴ Notably, since the rise of the MC index in terms of status was due to a temporal rise in the demand for skilled professionals, this did not mean any transformation of the social structure.

⁶⁴ The Union and Industry Highway (Estrada de Rodagem União e Indústria) was the road that connected the cities of Petrópolis and Juiz de Fora in the South-East of Brazil.

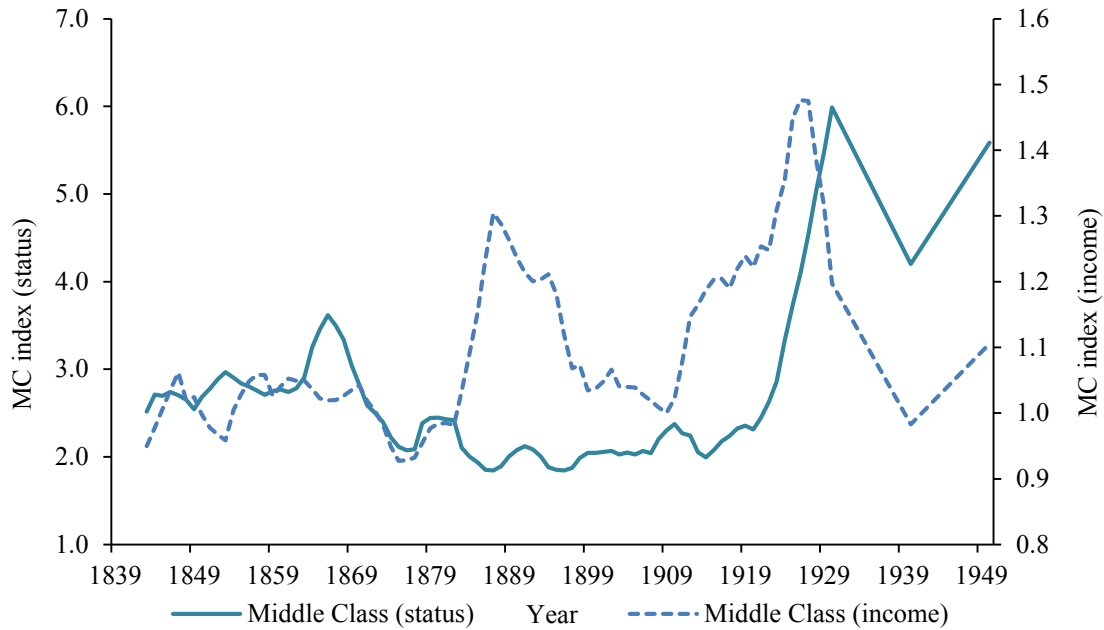
Figure 5.7. Brazil (1839-1950): Middle Class index (according to status) 5- year moving averages.



Sources: From 1839 to 1930 Bértola et al., (2007), DGE (1872; 1926) and Lobo (1978, pp. 803-20); for 1940 and 1950 sources are IBGE (1990) and DGE (1950; 1956).

Indeed, in Figure 5.8, it can be observed that the increase in the middle class in terms of income during the nineteenth century went along with the immobility of the middle class in terms of status. This suggests that temporal increases in mean income were not translated into real upwards movements in the social scale, denoting a highly stratified society.

Figure 5.8. Brazil (1839-1950): Middle Class index (according to status and income) 5-year moving averages.



Sources: From 1839 to 1930 Bértola et al., (2007), DGE (1872; 1926) and Lobo (1978, pp. 803-20); for 1940 and 1950 sources are IBGE (1990) and DGE (1950; 1956).

Nevertheless, from the early 1910s, in a context of increasing modernisation and urbanisation, as happened in terms of income, the middle class in terms of status grew vigorously until the 1930s. During those years, once the work force seems to have been industrialized, non-manual sectors expanded and the demand for professional qualifications and higher education grew in direct proportion to the expansion of these non-manual sectors (Owensby, 1999, pp. 29-30), so did the number of people employed in liberal professions, administration officer's corps and commerce (Furtado, 1965, p. 15; Owensby, 1999, p. 28). Indeed, according to Owensby (1999, p. 29) this process "had the effect of putting greater social distance between respectable employees and deskilled labourers". In this sense, those who felt part of the middle class in terms of status (for example, white-collar salary earners, commercial employees and clerks) become the most vulnerable to economic crisis and inflation, as they had to struggle to

keep up appearances with wider budgets, when prices of clothing and rent (typically demanded by middle class consumers) increased more than, for example, food prices (Goldsmith, 1986, p. 160).

Moreover, the prestige of having a non-manual profession acted as an incentive to choose, if possible, those jobs of higher status even though they were worse paid. Indeed, some manual work was better remunerated than non-manual work, but the middle class preferred to perform non-manual activities (Owensby, 1999, p. 54). This implies that, contrary to what happened in the nineteenth century, when the increased middle class in terms of income did not lead to a middle class emergence in terms of status, during the early twentieth century, the rise of the middle class in terms of status became more evident than it did in terms of income. Probably, for the same reason the decline of the middle class in terms of status took place later and to a lesser degree than in terms of income.

Yet the fall of the MC index, between the 1930 and 1950, also shows evidence of the damage of the middle class during the Vargas era in terms of status. Under the Estado Novo, the government handed out favours to interest groups while giving prerogatives to industrial workers (such as minimum wages, eight-hour day, holidays with pay, job security and a social security system) with a view to maintain populist support from labour groups (Maddison, 1992, p. 21; Luna & Klein, 2014, pp. 82-83). Meanwhile, those in the middle were dropped by the wayside, getting weaker and struggling to keep their social status, which, apparently most of them lost. According to my new estimations the middle class in terms of status passed from being 26 per cent of the active population in 1930 to 16 per cent in 1950, meanwhile those in the lower class increased from 73 per cent to 82 per cent over the same period. It is worth noting that

this weakening of the middle class occurred in a context of modernisation and economic growth, however, accompanied by increasing inequality, social repression and populist policies. Consequently, the middle class' prospects for consolidation became unfeasible.

In sum, we cannot ignore that substantial social structural change occurred in Brazil over the period under review. The decline of slavery (starting in the 1850s), the reduction of inequality (during the late nineteenth century), and the process of modernisation and urbanisation (from the early twentieth century) seems to have been crucial for the emergence of the middle class. However, from the 1930s the continuous increase in inequality, along with a low social cohesion, could have impeded the consolidation of a middle class. On the one hand, social issues were considered by governments as dangers that needed be repressed; on the other hand, the urban population did not yet have the self-awareness or class consciousness necessary to give coherence to its complaints (Furtado, 1965, p. 19). This, in turn, might have facilitated the emergence of a populist government, which focused on the elite's interests and satisfied immediate population aspirations with welfare programs, but which did not pay too much attention to the medium strata. Consequently, during the following years, until 1950, the consolidation of the middle class appears to have been frustrated.

5. Conclusions

This chapter has provided new insights on income distribution in Brazil from 1839 until 1950. Results based on inequality measures reject the idea of persistent inequality rooted in colonial Brazilian history. Brazil exhibited low inequality until 1913, probably due to low income levels, which in turn also impeded the emergence of the middle

class. Brazil's inequality started to grow from 1913 onwards, apparently linked to an early phase of economic growth in a Kuznetsian sense. Meanwhile, results based on polarisation measures, according to the MC index suggest that: (1) the seeds for the efflorescence of the middle class were sown in the late nineteenth century in a context of a crisis for the coffee elites and the decline of the slave system, which led to a more competitive social order and offered new opportunities to the growing population in the secondary and commerce sector; (2) nevertheless, its emergence in terms of both, income and status, should be placed during the three first decades of the twentieth century in a context of the expansion of industry and modernisation; (3) finally, from the 1930 until the end of the Vargas era, still in a context of urbanisation and growth, but increasing inequality and social repression, the middle class in terms of income and status experienced a deep deterioration. Notably, inequality prevented the emergence and consolidation of the middle class and the reduction of absolute poverty.

Chapter 6. Brazil's Middle Class, Inequality and Economic Growth

1. Introduction

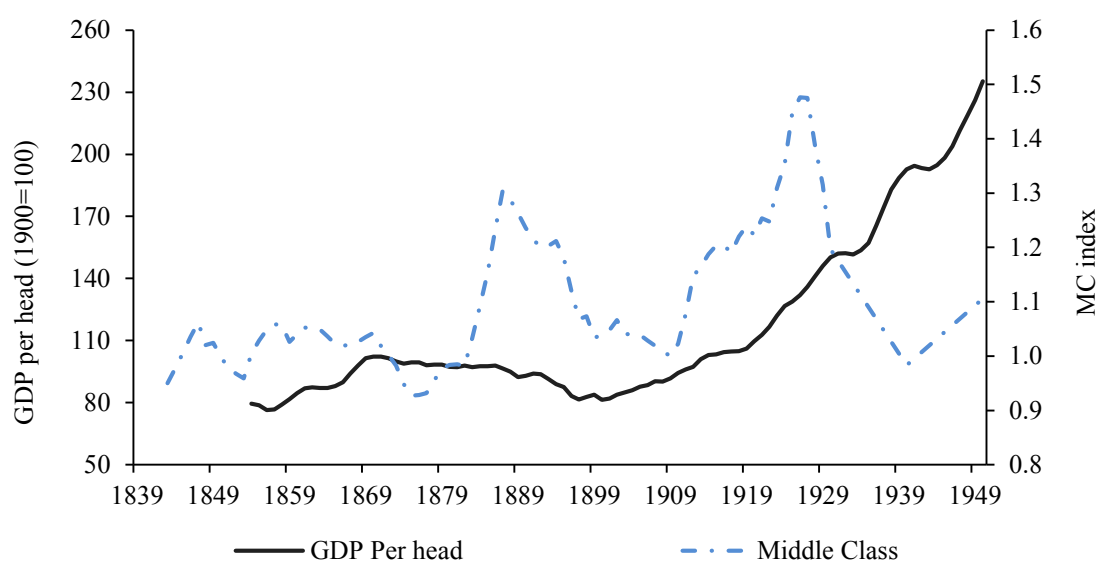
As shown in Chapter 2, there are several arguments supporting the notion that the middle class is relevant for the achievement of economic growth, in respect to the economic, social and political stability that this social group generates, the modernisation it promotes and the improvement of institutions it demands. Yet, as also pointed out, it can be argued that, given its endogenous nature, the middle class depends, in turn, on economic growth. For example, as mentioned in the Introduction, there is evidence that rapid economic growth in Brazil has recently gone hand in hand with the rise of the middle class. However, when going back to the period covered by this thesis (1839-1950), the relationship between economic growth and middle class in Brazil becomes somewhat indistinct.

From Figure 6.1, in which I show trends in the MC index and GDP per head, it can be observed that the middle class and economic growth did not follow a shared path between 1839 and 1950. For example, between 1875 and 1888, the rise of the MC index (from 0.92 to 1.3) occurred apparently in a context of GDP per head stagnation.⁶⁵ Meanwhile, the emergence of the middle class, during the first three

⁶⁵ A possible explanation of this behaviour (mentioned in Chapter 5) is that, despite of being a period of economic stagnation, the economic crisis mostly affected big landowners, permitting the reduction of

decades of the twentieth century, went along with impressive economic growth; when GDP per head grew on average at 1.75 per cent and the MC index achieved its maximum value over the period (1.5). However, from the late 1920s until 1950, the dramatic fall of the middle class (with the MC index reaching values below 1) occurred in a context of still high rates of economic growth (2 per cent on average).

Figure 6.1. Brazil (1839-1950): Middle class (MC index) and GDP per head trends, 5-year moving averages.

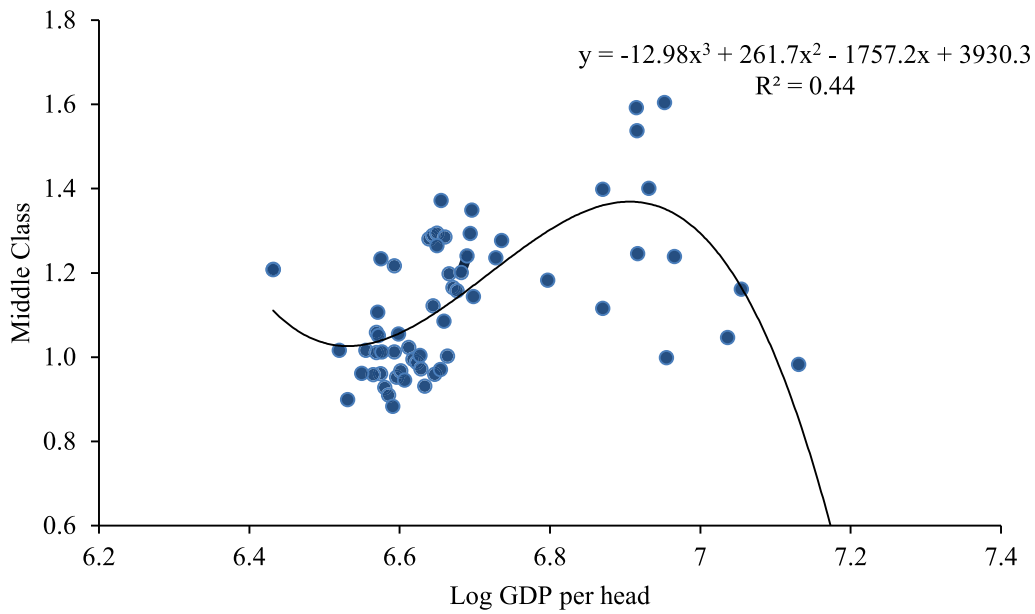


Sources: For MC index consult Chapter 4. GDP per head from Goldsmith (1986, pp. 82, tab. III-1. and p.147, tab. IV-2).

Indeed, from Figure 6.2, which shows the relation between GDP per head and the MC index between 1850 and 1950, it can be noted that while the Brazilian middle class increased with more economic growth (which explains 23 per cent of the MC index's increase), this relationship became weaker over time.

inequalities and allowing other groups to temporally arise. A different explanation (pointed out in Chapter 4) is that “the dynamic performance of the coffee export sector in the South East was offset by the stagnation and decline of both sugar and cotton in the North East” (Leff, 1972, pp. 245-248). In this sense, a better performance of real wages in the Southern and South regions (captured by the MC index) would not meet the per capita GDP performance at country level which was being affected by the decline of the North East.

Figure 6.2. Brazil (1850-1950): Middle class (MC index) and GDP per head.



Sources: For MC index consult Chapter 4. GDP per head from Maddison (2003)

The fact that the decline of the middle class (between 1930 and 1950) occurred in a context of rapid economic growth while in recent decades fast economic growth has been accompanied by the rise of the middle class, gives rise to new questions about the true relationship between economic growth and the middle class, as well as the factors influencing this relationship.

The hypothesis put forward (as already suggested in Chapter 2) is that income distribution is the key factor affecting the connection between economic growth and the middle class. For instance, there is evidence that, during the last two decades, the recent economic growth in Brazil and the rise of its middle class has been accompanied by an important process of inequality reduction, moving from a Gini

coefficient of 63.3 in 1989 to one of 50.2 in 2008, due to the introduction of redistribution policies.⁶⁶

Therefore, to test the thesis that distribution was the factor that affected the relationship between the middle class and economic growth, in this chapter I analyse how inequality has behaved, and importantly how economic success (or failure) has been distributed in Brazil. Notably, while the analysis is mainly focused on the period of this thesis, the chapter also shows how economic growth was distributed during the last decade. In so doing, it aims at investigating why this time might be different and the virtuous circle presented in Chapter 2 might have started.

The chapter proceeds as follows: after this introduction, in Section 2, I explore the economic growth and inequality relationship through the lens of the Kuznets curve; following this, in Section 3, I analyse the middle class evolution in respect to inequality; then in Section 4, I investigate how economic growth was distributed between 1850 and 1950, and how this distribution affected the middle class performance. In Section 5, I do the same for the 2000s and discuss the results from the perspective of the conceptual framework suggested in Chapter 2. Finally, the Section 6 concludes.

2. Economic growth and inequality in Brazil: A glance at Kuznets' theory.

From the seminal work of Simon Kuznets, a large part of the literature has been devoted to explaining how the process of economic growth itself has affected the performance of inequality, and whether this relationship follows an inverted U as

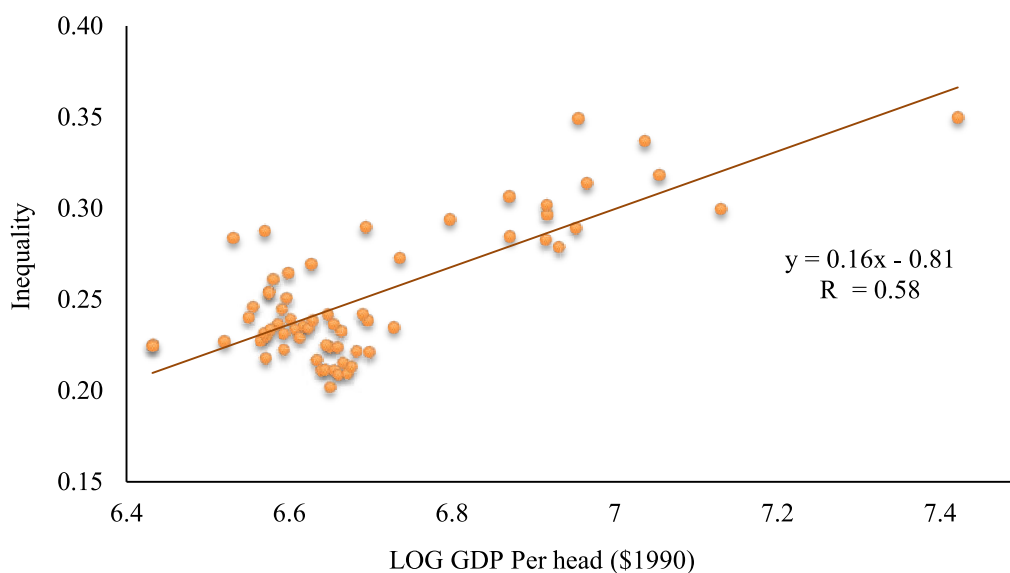
⁶⁶ UNU-WIDER

Kuznets suggested (Deininger & Squire, 1998; van Zanden, 1995; Williamson, 1991). According to Kuznets, during the first phase of development, increasing inequality is the consequence of the transition from a less productive sector to a more productive one, when salaries of one sector and the other start to diverge. Once the transition is finished, when the economy is industrialised and material progress is ongoing, there is a second phase in which inequality starts to fall. Nevertheless, when testing empirically the Kuznets hypothesis, some authors found that while a number of developed countries do support an inverted U relationship (van Zanden, 1995; Williamson, 2010), the evidence from developing countries is more ambiguous (Deininger & Squire, 1998, pp. 275-276).

In Figure 6.3, I show the relationship between inequality (calculated from the Gini index) and GDP per head for Brazil between 1839 and 1950. It can be seen that while the first phase of the Kuznets curve (KC) is accomplished, there is no evidence that a second phase took place in Brazil over this period. The first part of the curve supports evidence in Chapter 5, which clarified that, during the nineteenth century, low inequality levels were linked to low income levels associated with an essentially rural economy. Meanwhile, in the early twentieth century, once the country had started the transition to the industrial sector, salaries in this sector started to rise and diverge from the rest, so inequalities among groups increased. Therefore, during the following decades, since industrialisation and economic progress remained constant, in Kuznets' terms one would expect that inequality would start to decrease. However, on the contrary, Figure 6.3 shows that the relationship between GDP per head and inequality remained positive. Indeed, as concluded from Figure 6.4 and Figure 6.5, one would have to wait a half century before seeing the beginning of a second phase of the KC.

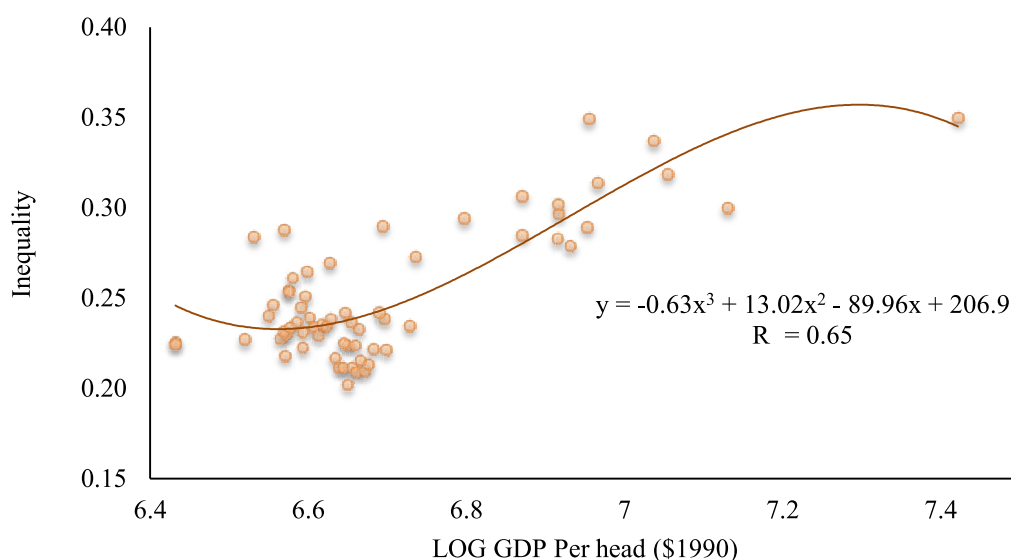
Yet, exhibiting Gini values much higher than at any period before 1950, this suggests that there is much left to be done before the second part of the curve can be accomplished.

Figure 6.3. Brazil (1850-1950): Inequality (Gini index) and GDP per head.



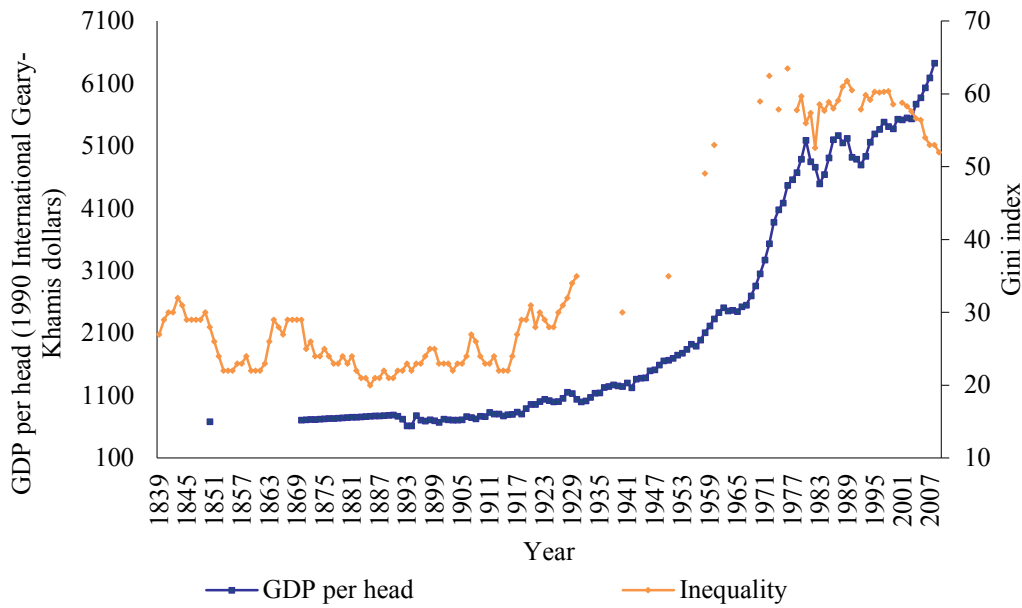
Sources: Gini values calculated from own database (see Chapter4). GDP per head data are estimations from Maddison (2003).

Figure 6.4. Brazil (1850-2009): Inequality (Gini index) and GDP per head.



Sources: From 1850 to 1950 Gini values calculated from own database (see Chapter4); from 1958 to 2009 Gini values come from WIID. GDP per head data are estimations from Maddison (2003).

Figure 6.5. Brazil (1850-2009): trends in Inequality (Gini index) and GDP per head.



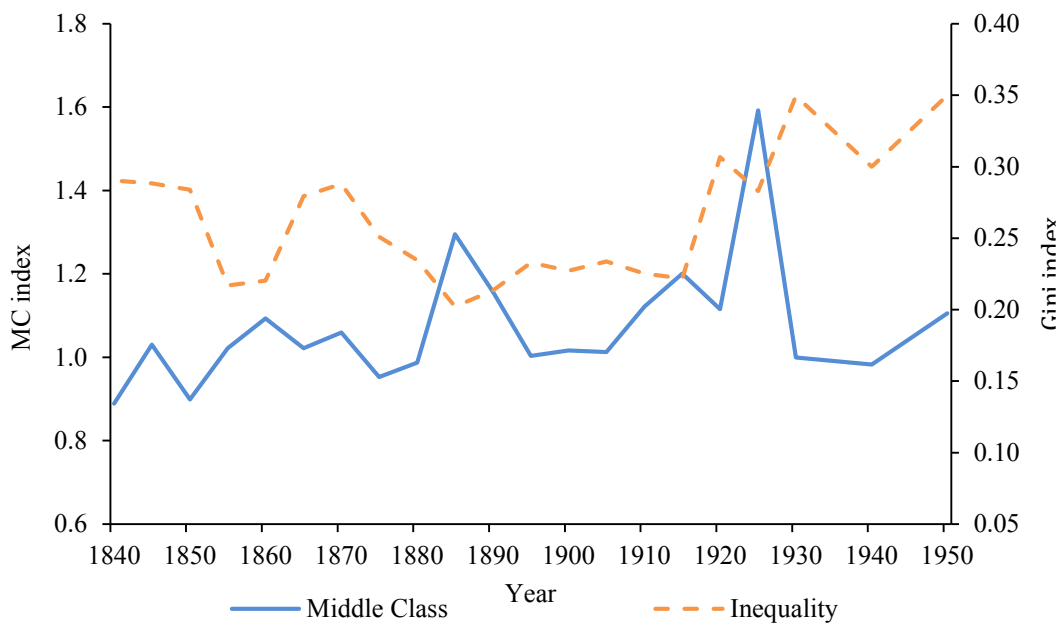
Sources: From 1850 to 1950 Gini values calculated from own database (see Chapter4); from 1958 to 2009 Gini values come from WIID. GDP per head data are estimations from Maddison (2003).

In this vein, it is important to see what was behind a possible reversion of the KC. The hypothesis suggested here is that economic growth by itself cannot invert the curve (otherwise the turning point could have been achieved fifty years before); it has to be accompanied by income redistribution. In fact there is evidence to suggest that the turning point (in the 1990s) matches the period in which both market oriented reforms as well as distribution policies started to be implemented in Brazil (Arnold & Jalles, 2014; Barros et al., 2010; Cacciamali, 2011). The strategy allowed for reducing inequalities in labour and non-labour incomes, reducing absolute poverty and increasing the middle class (Ídem). What happened instead from 1839 to 1950? In order to address this question, the next section analyses the evolution and connection between inequality and the middle class in Brazil over this period.

3. Inequality and the middle class in Brazil, 1839-1950

Figure 6.6 presents trends in inequality and the middle class in Brazil from 1850 to 1950. Interestingly, in the short-run both indicators seem to move in opposite directions, suggesting that when inequality increased, the middle class decreased and vice-versa. However, when looking at the long term, it can be noted that neither the decrease in inequality was always linked to the increase of the middle class nor that the middle class emergence always occurred in a period of decreasing inequality. In this regard, it is worth analysing the evolution of these indicators throughout different periods and investigating if different trends can be linked to different stages of development. For the analysis I will distinguish between four periods: from the 1850 to 1870; from 1870 to 1900; from 1900 to the late/1920s; and from the early-1930s to 1950.

Figure 6.6. Brazil (1839-1950): Trends in inequality (Gini index) and the middle class (MC index).



Sources: Own database (See Chapter 4)

From 1850 to 1870, both the inequality and the middle class indicators showed increasing trends. After a fall of the Gini index between 1850 and 1860 from 0.28 to 0.22, inequality recovered and maintained a value close to 0.3 until the 1870. Meanwhile, the MC index slightly rose over this period, from 0.9 to 1. In this period, it is likely that the rise in inequality was a consequence of the commodity export boom. This is because, in such a context, according to the Hecksher-Ohlin model, the relative price of natural resources (being the abundant factor) increases in terms of labour, therefore the returns to land grow relatively to those of labour. Moreover, according to the Stolper-Samuelson theorem, this implies that given that land is more unevenly distributed than labour, inequality will increase. Additionally, given the relative scarcity of skilled labour in an essentially rural economy with a huge slave labour force, periods of increasing demand for skilled professionals could help to increase inequalities within the lower group (supposing a bipolarised society with two groups: landowners and labourers). Therefore, in this period, the increase in inequality (linked to the growing differences between groups) seems to be the consequence of the growing international demand for commodities. Meanwhile, the brief increase of the middle class, linked to a slight rise in differences within groups, appears to be just the result of a temporal rise in the internal demand for skilled labour. For example, there is evidence that in Rio de Janeiro, on the eve of the Paraguayan war, the relative scarcity of skilled carpenters (required for the construction of fleets) resulted in higher wages for a while, similar to apothecaries (Lobo, 1978, pp. 233-234). Therefore, in such a context, the increase of the MC index, which went hand in hand with Gini growth, cannot be associated with any process of development in a Kuznetsian sense, as the increase in inequality (both

between and within groups) was not the result of any process of transition from a traditional sector to a more productive one.

Conversely, from 1870 to the 1890s, the trend was decreasing for both inequality and the middle class. Between 1870 and 1880 the Gini index fell quite sharply (around one point) while the MC index fell more moderately (from 1.05 to 0.98). Then during the following decade, while inequality kept on falling, the MC index experienced a short-lived increase between 1880 and 1885 (from 0.98 to 1.2), but declined again (to 1) before the 1890s. As mentioned before, following the H-O-S model, according to which the landowners should be relatively better off during the export boom, during this period they should have been relatively worse, as they were more exposed to international competition and the crisis of the coffee sector. Therefore, the decreasing trend in inequality, again, seems to be linked to changes in differences across groups, which at this time were reduced. Meanwhile, the changes in differences within groups, which led to the fall in bipolarisation and, in turn, to the increase of the middle class, still seem to be the result of temporal events.

However, between the 1900s and 1920s, one can observe a long run increasing trend of the middle class in parallel with the increase of inequality. Yet, the increase of the MC index was more notable (from 1 to 1.5) than that of the Gini index (from 0.2 to 0.3). This path was only interrupted during WWI when the MC index fell slightly while the Gini index rose steeply. In this period as a whole, the increase of the middle class alongside the increase of inequality might correspond to an early phase of development in a Kuznetsian sense, as the increasing inequality was likely the result of a transition process from the traditional sector to the industrial one, thus of the rise in differences in

wages. Importantly, in such a scenario, the increasing inequality linked to productivity differences did not impede but rather fostered the rise of a middle class.

Following, in a Kuznetsian sense, it would be expected that once the process of development has started, inequality would fall, or if not, at least would be still accompanied by the increase of the middle class. However, between 1930 and 1950, while the Gini index showed a fast increasing trend (achieving a value of 0.35 in 1950), the MC index exhibited a long run decline (reaching values below 1). These trends suggest the restoration of a bipolarised society with a high concentration of income. The industrialisation process (which was particularly boosted during the ISI era) seems to have corresponded with an unequal distribution of profits. As already mentioned in previous chapters, there is evidence that during this period the leverage power of workers, who negotiated with industrialists through co-opted unions, was very weak. Therefore, during this period, the increasing inequality might be explained using the Lewis (1954) model, according to which the elastic supply of labour (in a context of population growth and internal migration) facilitated the capital sector to maintain wages just above subsistence. Crucially, the continual increase of inequality had devastating consequences for the middle class.

To sum up, according to what has been presented in this section, it can be argued that in the short run the increase in inequality implies the worsening of the middle class. However, in the medium term, the increase in inequality associated with the development process seems ineluctable to the emergence of a middle class, which benefited from the transition to a more productive economy. Yet, in the long run, to the extent that the benefits of development can be more evenly distributed, this will be crucial to the consolidation of the middle class and the eradication of poverty. In this

regard, it is worth investigating further how the benefits of economic growth are finally distributed. In the next section, I will analyse how economic success (and failure) was distributed among different fractiles in Brazil.

4. Economic growth distribution and the middle class in Brazil, 1850-1950

Looking at how economic growth was distributed in Brazil throughout different percentiles in different periods helps to understand the evolution the middle class. In this regard, the growth incidences curves (GICs) introduced by Ravallion and Chen (2003) can be very illustrative as they show the growth rate of income for a particular percentile (e.g. the 5th or the 99th percentile of the distribution) between two years. However, for this investigation, the GICs proposed by Lakner and Milanovic (2013) seem more appropriate, as they compare the mean income growth for the same fractile group (e.g. the bottom 5 per cent or the top 1 per cent) between two particular dates, and allow one to capture distributional changes by groups. Therefore, in Table 6-1, I show the growth in the average annual income by percentile in eight benchmark years. As can be observed, intermediate percentiles, those between p30 and p70, benefited relatively more from the economic growth between 1900-1910 and 1920-1930. Meanwhile, between 1930 and 1950, even though this percentile's average annual income increased it did so relatively less than the bottom and top 10 per cent.

Table 6-1. Brazil (1850-1950): Average annual incomes (Cr\$).

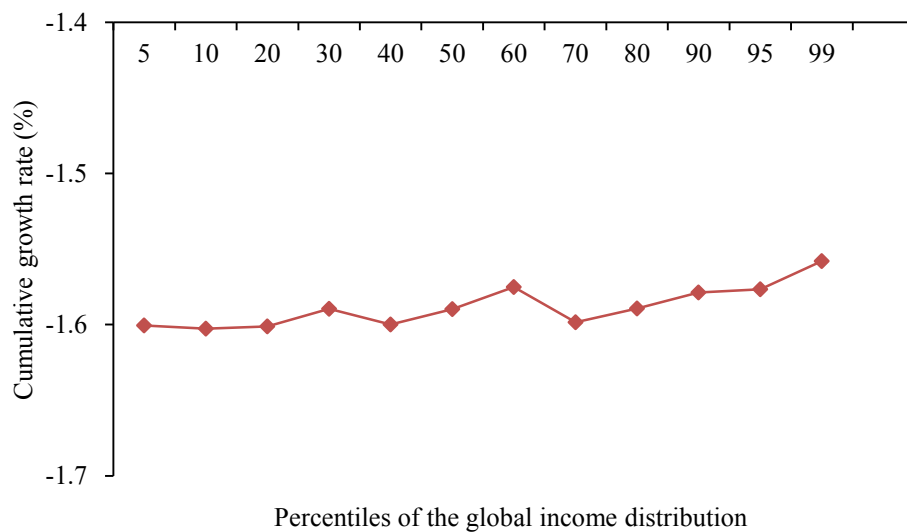
Fractiles	Average annual incomes (in Cr\$) in benchmark years							
	1850	1872	1900	1910	1920	1930	1940	1950
Bottom 5%	8.7	5.6	6.3	8.2	3.9	5.7	8.2	12.1
p5-p10	10.0	6.5	7.0	8.9	3.9	5.7	11.4	14.5
p10-p20	10.7	6.9	7.6	10.1	4.6	6.7	12.3	14.5
p20-p30	12.8	8.4	8.5	11.3	5.0	7.4	18.1	14.5
p30-p40	14.0	9.1	9.2	11.5	5.0	7.4	19.0	16.5
p40-p50	15.9	10.3	9.2	11.5	5.1	7.6	19.0	23.4
p50-p60	16.4	10.7	9.2	11.5	6.3	9.1	19.0	24.1
p60-p70	17.1	11.1	10.4	13.4	7.5	10.0	19.0	24.1
p70-p80	20.1	13.1	12.2	15.9	8.1	11.1	20.1	26.0
p80-p90	24.4	15.9	13.7	17.3	9.4	11.3	25.6	36.7
p90-p95	24.6	16.1	16.1	20.0	12.1	13.0	35.7	49.7
Top 5%	52.7	34.6	36.4	47.5	22.6	23.5	97.0	132.6

Sources: Average annual income by percentiles calculated from my database (See Chapter 4)

Moreover, in the figures below I show the calculated GICs for the seven periods existing among those benchmark years. The x-axis shows the percentiles of the global distributions and the y-axis report the income growth rate between the two benchmark years.

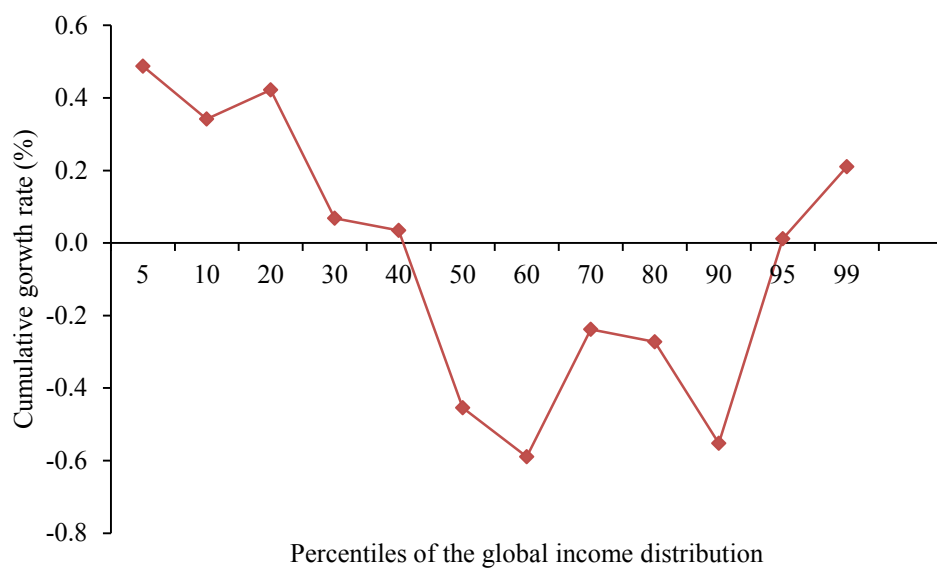
Between 1850 and 1872, as shown in Table 6-1, mean income fell. Moreover, from Figure 6.7, it can be seen that losses were similarly for the percentiles of the distribution (around -1.6 per cent), being the p60-p70 range and the top 1 per cent slightly less affected than the rest. Similarly, between 1872 and 1900 mean income fell (Table 6-1) while the losses were unevenly distributed; the biggest decline in mean income was recorded for those in the intermediate percentiles and the lowest for those at the bottom 40 per cent and top 5 per cent (Figure 6.8).

Figure 6.7. Growth Incidence Curve (GIC) 1850-1872.



Sources: Mean income growth by percentil calculated from own database (See Chapter 4)

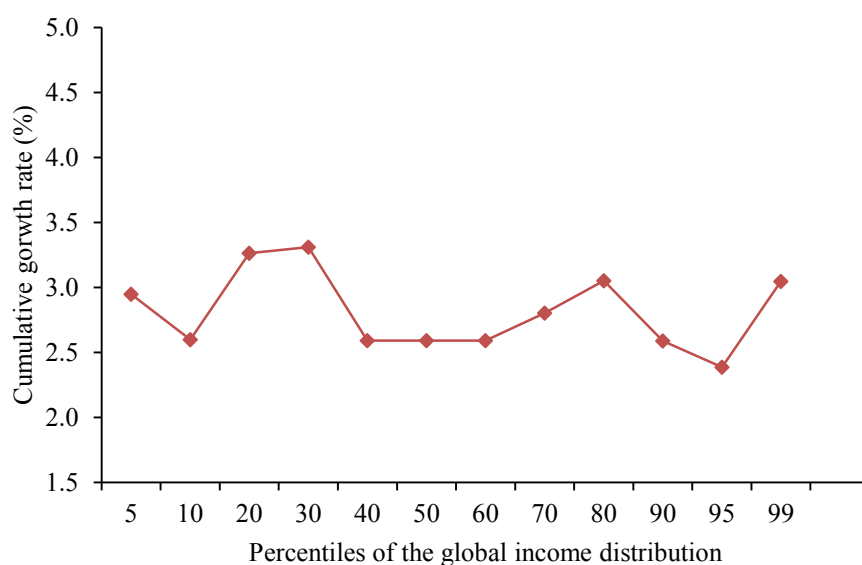
Figure 6.8. Growth Incidence Curve (GIC) 1872-1900.



Sources: Same as Figure 6.7.

The following period (1900-1930), in which the emergence of the middle class occurred, will be analysed in three separate 10-years periods. During the first decade, when there were first signs of industrialisation, the mean income increased (Table 6-1) and it did so for all the percentiles of the distribution, although the biggest gains (except for the top 5 per cent) were recorded between the 10p-30p and 60p-80p ranges (Figure 6.9). Therefore, although there was an increase in inequality in this decade, probably linked to the transition to the industrial sector, this brought benefits to those who could participate in this process and access new jobs, and in particular to those who had access to jobs requiring more qualification (the upper middle class).

Figure 6.9. Growth Incidence Curve (GIC) 1900-1910.

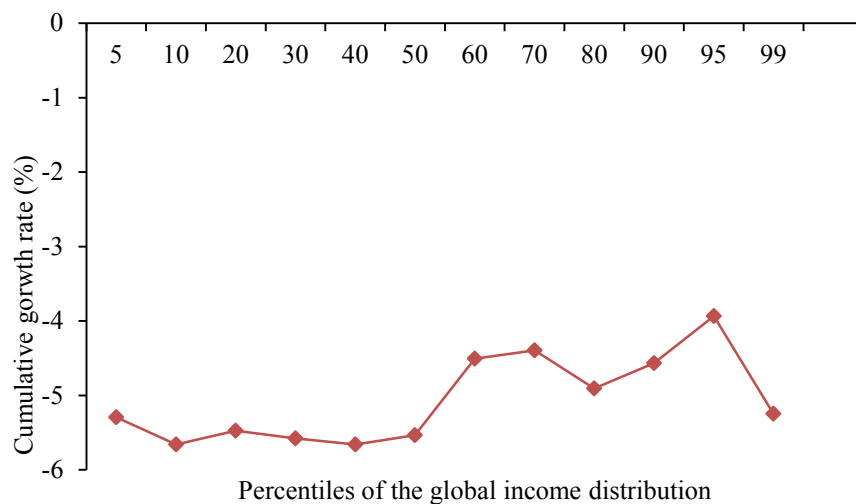


Sources: Same as Figure 6.7.

Nevertheless, in the following decade, mean income fell, damaging heavily those below the p50. It could be suggested that WWI not only contributed to increased inequality, but also damaged the lower percentiles and intermediate percentiles, which were more vulnerable to the loss of their position. Yet, it seems that the top 5 per cent

was also affected, probably because they were more exposed to the crisis in international commerce (Figure 6.10).

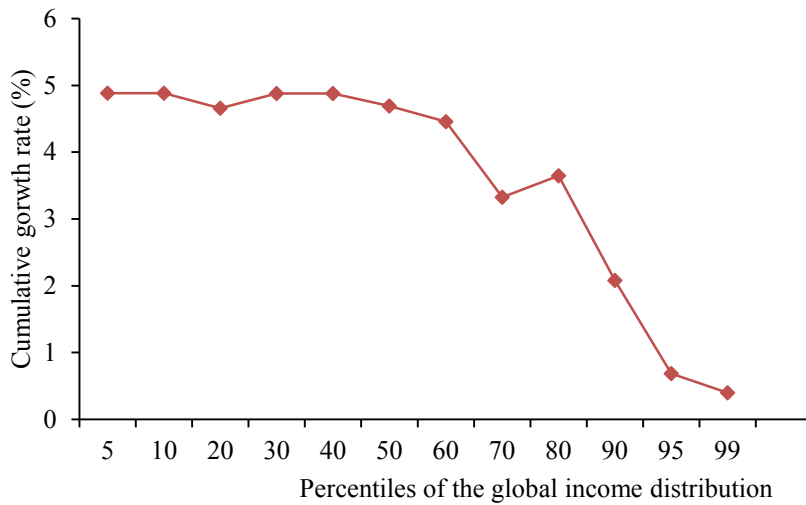
Figure 6.10. Growth Incidence Curve (GIC) 1910-1920.



Sources: Same as Figure 6.7.

Between 1920 and 1930, mean income recovered. Notably, it can be observed (Figure 6.11) that mean income grew more for those percentiles that had been the most affected in the previous decade and that, consequently, started from a worse situation (i.e. the bottom 50 per cent). Meanwhile, the increase for the highest part of the distribution was less notable. In this context, inequality fell and the middle class grew.

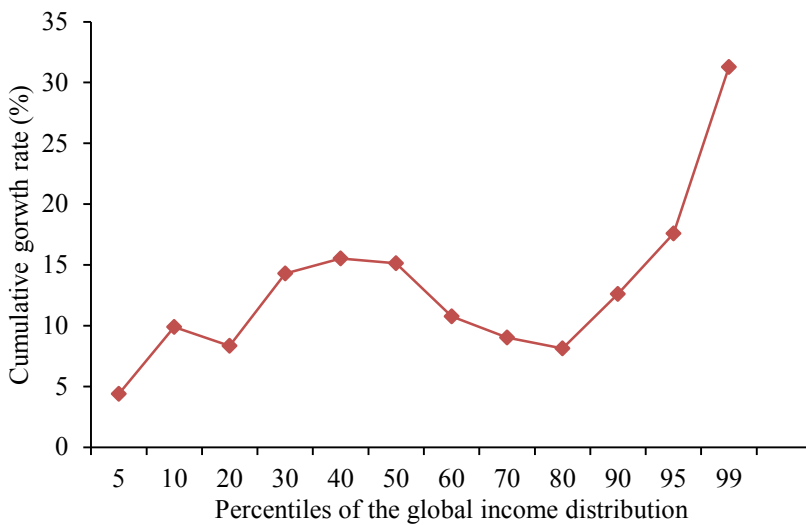
Figure 6.11. Growth Incidence Curve (GIC) 1920-1930.



Sources: Same as Figure 6.7.

Finally, the period between 1930 and 1950, in which one observes the decline and deterioration of the middle class, will also be analysed by separate decades. From 1930 to 1940 (Figure 6.12) mean income rose for all percentiles, however economic growth benefited particularly more the highest percentiles in the distribution to detriment of the intermediate ones, which together with the bottom 20 per cent recorded the lowest gains.

Figure 6.12. Growth Incidence Curve (GIC) 1930-1940



Sources: Same as Figure 6.7.

Moreover, this trend continued in the following decade, when mean income increased again, while the population was becoming concentrated below the mean income (Figure 6.13). This is because those between p30 and p50 were disadvantaged with respect to the bottom 10, while the gains of those in the p50-p70 were much lower than those in the top 5 per cent. In this context, there is evidence that the lower and the upper middle classes were abandoned and heavily deteriorated.

Figure 6.13. Growth Incidence Curve (GIC) 1940-1950.



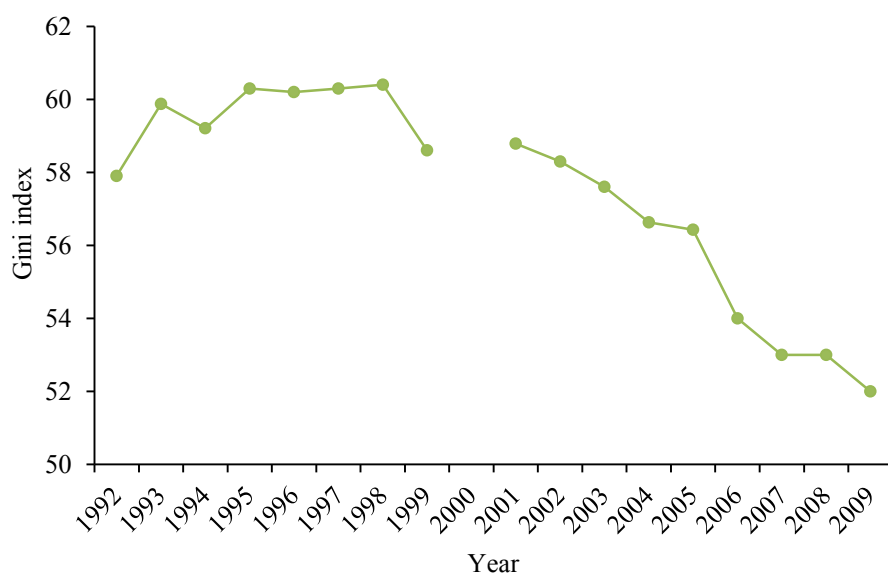
Sources: Same as Figure 6.7.

5. Economic growth (re) distribution and the middle class in Brazil (1990s-2000s)

During the last few decades in Brazil: “auspicious growth and consumption data, poverty reduction and the accelerated expansion of the middle class created the idea that the country was entering a new era” (Mendes, 2014, p. xx). Notably, the greatest determinant of this new era has been the reduction of inequality from 1998, which

accelerated from 2001. From 2001 to 2009, the Gini coefficient declined from 0.59 to 0.52 at an average rate of 1.2 percent a year (Figure 6.14).⁶⁷ While this is still a high level of income inequality in respect to the world average, the sharp decline in inequality during the last decade has been of great relevance for Brazil's social structure, by reducing the proportion of the poor and fostering the emergence of a new middle class.

Figure 6.14. Brazil (1992-2009): Inequality trends.

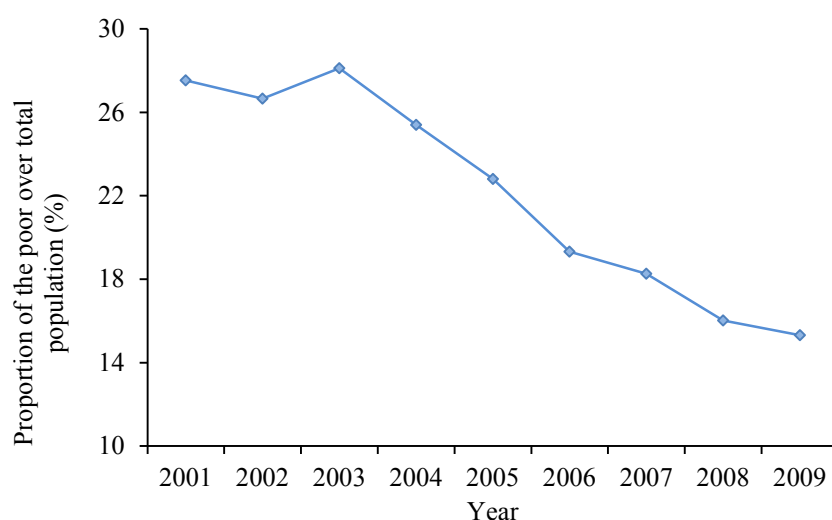


Sources: WIID2c

Thanks to the reduction in inequality, between 2007 and 2011 extreme poverty declined more than 60 percent, permitting a reduction that was three times faster than necessary to achieve the first Millennium Development Goals (MDGs) by 2015. (Barros et al., 2010, p. 135). Figure 6.15 shows that from 2001 to 2009 the proportion of people in the total population considered as poor fell from 27.5 per cent to 15 per cent.

⁶⁷ The reduction of overall inequality has been attributed to the reduction of both labour-income and non-labour income inequalities. While Between 2001 and 2011, the reduction of labour-income inequality was responsible for 58 per cent of the drop in the Gini index, the reduction of non-labour income was not negligible; public transfers contributed to about 36 per cent of the reduction of the Gini index.

Figure 6.15. Brazil (2001-2009): Evolution of proportion of the poor over total population (%).

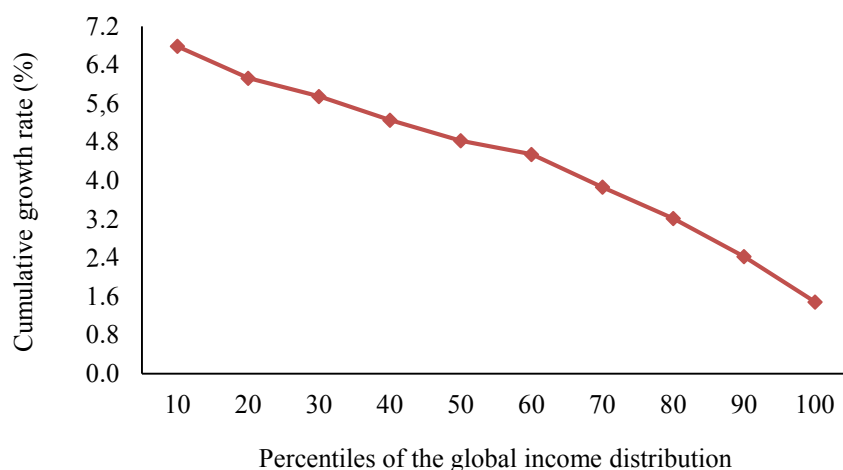


Sources: CPS/FGV based on microdata from PNAD/I

Additionally, the reduction in inequality had significant effects on the living conditions of the poorest groups (Barros et al., 2010, p. 134; Mendes, 2014, p. 77). Between 2001 and 2011 per head income of the poorest ten percent grew at an average of 6.7 per cent per year, while the richest ten percent was only 1.5 per cent year.⁶⁸ In this vein, in Figure 6.16, in which I represent the cumulative growth rate (per cent) by percentile of the income distribution, the line tending to the bottom suggests a progressive distribution of growth between 2001 and 2009, giving support to Mendes' (2014, p. 77) statement: "poorer the household, greater the income growth".

⁶⁸ While Barros et al. (2010) cover the period between 2001 and 2007 and Mendes extends it to 2011, both studies report very similar figures of average per head income growth of the poorest 10 per cent.

Figure 6.16. Growth Incidence Curve (GIC) 2001-2009.



Sources: CPS/FGV based on microdata from PNAD/IBGE See Côrtes Neri (2010, p. 10).

Importantly, a more progressive distribution of growth permitted the creation of what has been denominated as a “new middle class”. According to Côrtes Neri (2010, p. 31), between 2003 and 2009 nearly 29 million people joined the new middle class. Consequently, in 2009 the middle class reached 50.45 per cent of Brazils total population (in 2003 it was 37.56 per cent). Interestingly, this means that “the new Brazilian middle class not only includes the median voter, but it could alone decide an election campaign.” (Ídem, p.14). This greater political power appears as crucial when demanding institutional reforms (e.g. punishment of corruption) and better quality public services (such as education, transportation and sanitation). Some examples can be found in the demonstrations of June 2013 denouncing the government’s priority on expenditure on the World Cup instead of on education and health, or marches in August 2015 calling for the impeachment of President Dilma Rousseff after the corruption scandal in the oil firm Petrobras.⁶⁹ Importantly, as suggested in the conceptual framework shown in Chapter 2, this greater willingness to undertake political action and

⁶⁹ See BBC News (2013; 2015); CNN News (2015); The Economist (2013); The guardian (2014; 2015); and The Telegraph (2015).

demand institutional reforms is one of the five channels through which the middle class can lead to higher quality institutions that foster sustained economic growth.

With this conceptual framework in mind, another two important channels through which the middle class generates sustained economic growth are the achievement of economic and political stability. Regarding economic stability, there is evidence that the Brazilian middle class has been the dominant class in terms of consumption. Indeed, in 2009 it constituted 46.2 per cent of the consumption power (Côrtes Neri, 2010). Moreover, from the point of view of production, according to the Brazilian Institute of Geography and Statistics, in 2011 small enterprises [presumably set up by middle class entrepreneurs] were responsible for 27 per cent of the country's GDP. Additionally, they employed 52 per cent of the labour force and paid 40 per cent of wages (SEBRAE, 2011). Finally, there is also evidence of its greater resistance to economic shocks. From Table 6-2., it can be observed that the middle class (Class C) not only increased its income per head annually between 2003 and 2009 (especially between 2005 and 2006), but did so in the context of international crisis of 2007-2009, when other classes experienced losses.

Table 6-2. Cumulative growth (per cent) by income classes.

	2003-2004	2004-2005	2005-2006	2006-2007	2007-2008	2008-2009
Class E	2.36	2.41	-0.49	-3.70	1.35	-2.53
Class D	-0.11	0.32	0.99	-0.35	0.61	0.59
Class C	0.43	0.36	1.31	0.57	0.47	0.78
Class AB	-0.27	2.74	0.96	-1.84	0.77	0.01

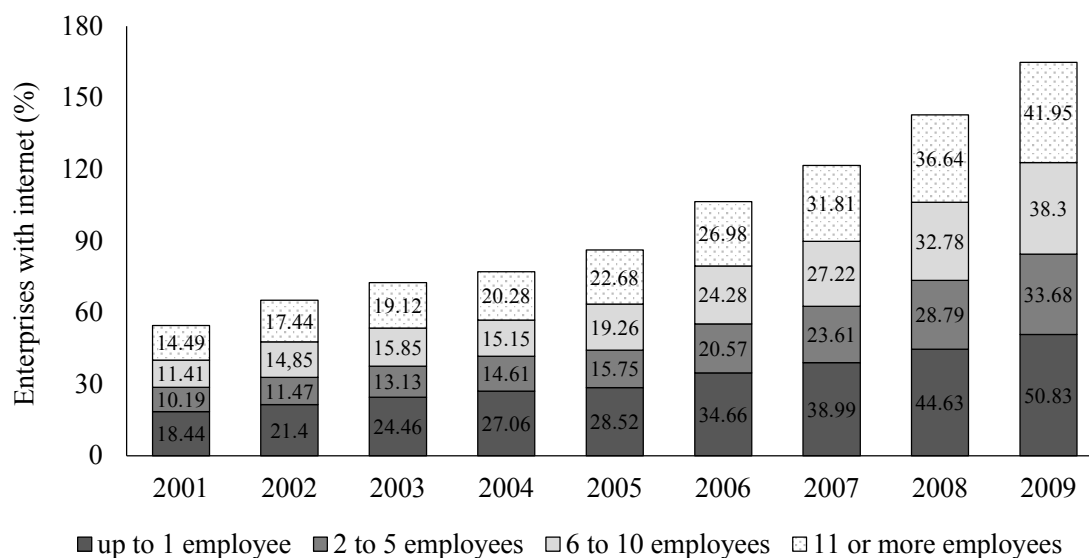
Sources: CPS/FGV based on microdata from PNAD/IBGE

Moreover, political stability can be said to have been attained from 1985 with the transition to democracy. In this vein, Luna & Klein (2006, p. 22) point out that “during the authoritarian period (1964-1985) the middle class was clearly against the

regime despite all the economic growth [...] even entrepreneurial groups were beginning to manifest their dissatisfaction”. In summary, during the last decade the Brazilian middle class has been playing an important role in terms of economic and political stability.

However, when looking at the two remaining channels linking the middle class with sustained economic growth, both modernisation and social stability appear as pending subjects. Regarding the modernisation process, there is some evidence indicating that modernisation is increasing in Brazil, and that small entrepreneurs are playing an important part in the process. For instance, Figure 6.17 shows that the percentage of enterprises with internet access increased between 2001 and 2009; furthermore the main driver of this increase should be attributed to small entrepreneurs (i.e. enterprises with up to one employee).

Figure 6.17. Total percentage of enterprises with internet connection.



Sources: CPS/FGV based on microdata from PNAD/IBGE.

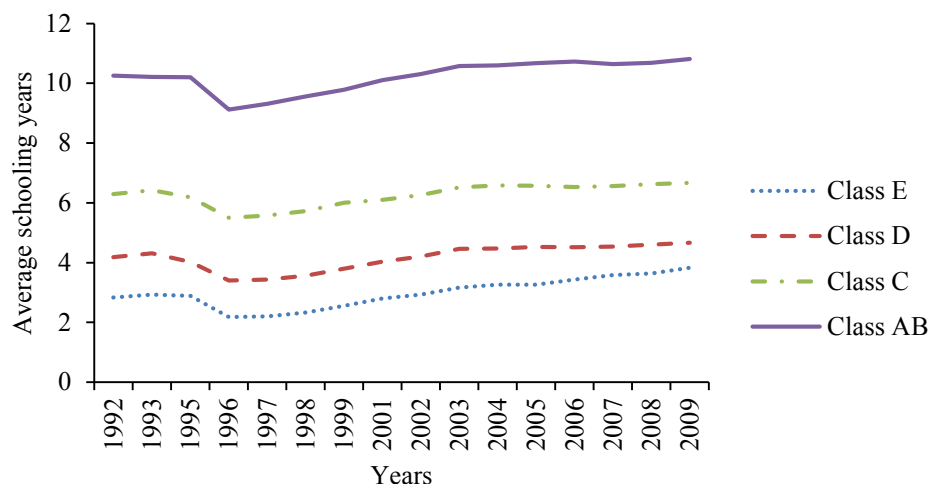
Yet, according to López-Claros and Mata (2011, p. 38), authors of the *The Innovation for Development Report 2010–2011*: “Brazil’s innovation is extremely low, given its level of per capita income [and] faces a number of challenges which must be addressed before it can fulfil its innovation potential”. In particular, the authors affirm that much progress needs to be made in improving the efficiency of spending as for instance not enough is spent on providing better educational opportunities to its young population and investing in research and development. In this vein, as mentioned in Chapter 2, the expansion of the middle class, the increase of political power in the middle stratum and greater social cohesion would be important factors to induce more efficient spending.

Furthermore, there is evidence that social polarisation has increased in Brazil (Gasparini et al., 2008) during the last decade. Importantly, as mentioned in Chapter 3, still in the presence of inequality reduction, the increase in polarisation creates social conflicts and reduces the social cohesion needed for the implementation of good policies that promote economic growth. Notably, in Brazil, the middle class still appears to be heterogenous, in which both old and new members have different prospects and claims. This lack of social cohesion when translated into opposing demands and dissipative redistribution might delay or even impede the implementation of good policies that lead to sustained economic growth.

Essentially, to reduce social polarisation it is necessary to address differences which go beyond income, such as differences in access to education, health and infrastructure. For instance, Figure 6.18 shows that between 1992 and 2009, the average of schooling years increased for all classes, however the average years of schooling is still very low for classes E and D (only up to 4 years) in comparison with other classes.

Moreover, the gap in average schooling years between Class C and AB (6 and 10 years respectively) also remains high, reflecting the differences in labour income.

Figure 6.18. Average schooling years evolution by economic class.



Sources: Sources: CPS/FGV based on microdata from PNAD/IBGE.

In this vein, Luna & Klein (2006, p. 214-215) pointed out that the universalisation of education did not signify equality of opportunity when the massification of primary and secondary public schools occurs at the cost of quality education for the children of the poorest, while the richest send their children to high quality private primary and secondary schools. Consequently, the later have a greater share of entrance, via exams, to the best quality free public universities, as well as better preparation for competing in the labour market and better salaries. Notably, such an educational system reinforces the process of concentration of wealth. In the same vein, Mendes (2014, p. 75) affirms that in Brazil an engineer earns up to seven times more than a carpenter. Notably, he predicts that “the engineer’s son will be born in a private hospital, paid for by a private health plan, go to a private school and, most of the time, travel by car. The carpenter’s son will probably be born in a public hospital, attend a public school and use public transportation, all of lesser quality than his private

counterpart.” (Mendes, 2014, p. 75). Therefore, in this sense, policies aimed at cutting inequalities in access to quality public education and health might help to reduce social polarisation and obtain greater social cohesion which, avoids dissipative distribution, attracts more investment and pushes economic growth.

In summary, evidence of the amelioration of income distribution in Brazil during the last few decades, helps to understand why this time both economic growth, the reduction on absolute poverty and the expansion of the middle class go hand in hand. Notably, the introduction of redistribution policies and social programs played an important role in reducing poverty and allowing for the emergence of a new middle class. As predicted in Chapter 2, this middle class, if consolidated, will be crucial for achieving sustained economic growth. Yet, Brazil’s still remaining low modernisation and social instability might delay the process. In this vein, reducing polarisation by reducing differences in access to quality education, health and infrastructure will be essential to achieve more innovation and social cohesion, which in turn foster investment and growth.

6. Conclusions

This chapter aimed at showing the connection between economic growth, inequality and the middle class. Notably, it has addressed differences in this relationship between the period of study (1839-1950) and recent times (1990s-2000s). Results show how the uneven distribution of economic growth during the earlier period impeded the consolidation of the middle class, while the emergence of a new middle class in the last few decades has been the result of economic growth accompanied by mild redistribution.

When testing the relationship between economic growth and inequality using the Kuznets curve, the results illustrate that in the first period only the first part of the curve was accomplished. While the second phase had not yet taken place, signs of a reversal have been shown from the 1990s. This turning point occurred after the introduction of distribution policies, which not only permitted the reduction of absolute poverty but also resulted in a growing middle class.

Results on the relationship between economic growth and the middle class between 1850 and 1950 show that, while in the first instance the middle class grew alongside economic growth, this relationship weakened over time. Apparently, this was due to the continual increase of inequality which ended up ruining the middle class. This thesis has been tested by the analysis of Growth incidence curves (GICs), which shows how between 1930 and 1950 the economic growth was concentrated in the highest percentiles, effectively abandoning the lower and upper middle classes.

Finally, results on inequality and the middle class relationship suggest that in the short run increases in inequality hampered the emergence of the middle class and the eradication of poverty. Yet, in the medium term, the increase in inequality, when associated with the process of economic and social development, was inexorable for the efflorescence of the middle class, which actually benefited from the transition to a more productive economy. However, in the long run, the continued increase in inequality once the transition process had finished hampered the consolidation of the middle class and the eradication of poverty. In the last few decades, redistribution policies permitted the reduction of extreme poverty, an improvement in the living conditions of the poorer groups, and an increase in the size of middle class. This new middle class, which at once promotes economic and political stability and fosters institutional reforms, appears

as essential to the achievement of sustained economic growth. Yet remaining social instability indicates that the consolidation of this middle class will require further measures. Importantly, future policies should be mainly focused on reducing social polarisation by means of reducing differences in access to quality public education, sanitation and infrastructure.

Chapter 7. Conclusions

1. Introduction

This concluding chapter aims at reviewing and gathering research questions, answers and contributions from this investigation as well as new enquiries and challenges for further research. This thesis had the purpose of shedding new light on the connection between economic growth, inequality and the middle class from a historical perspective. It attempted to do so through the case study of Brazil. The choice of Brazil allowed for the study of the economic and social transformation of the last slave society in Latin America. It helped to understand how a developing country succeeded in overcoming the vicious cycle of high inequality and GDP per head stagnation, turning into an emerging economy with decreasing inequality and a growing middle class. There is evidence that Brazil experienced periods of economic success before, which, however, could not be maintained for a long time. Meanwhile, it remained one of the most unequal countries in the world. Therefore, it is in the recent change of this trend that this investigation found its motivation. In particular, it asked: What is different this time? The main hypothesis of this investigation pointed to the introduction of different distributional policies, which together with a favourable economic performance, contributed to the reduction of inequality and the emergence of the middle class. Indeed, the role played by the middle class in fostering economic growth was particularly highlighted. Hence, this dissertation addressed the following research questions: Why is the middle class relevant to economic growth? Was there a middle class in earlier periods of economic growth?; and Was there any connection between the middle class,

inequality and economic growth? Moreover, these questions gave rise to other important enquiries such as: How can the middle class be defined and assessed from a historical perspective and Are there were reliable data to estimate the Brazilian middle class in the past? This work attempted to answer all these questions, while at the same time opening new lines of research related to this issue.

2. Contributions and reflections

Chapter 2 helped to understand the relevance of the middle class for economic and social development; to conceptualise the connection between the middle class, inequality and sustained economic growth; and to put this question into a historical perspective. Firstly, it was argued that the presence of the middle class is necessary to attain economic stability, social stability, political stability, modernisation and institutional reforms. The result of these five channels is sustained economic growth. Secondly, based on those arguments, a conceptual framework was proposed which theorised that: institutions when assuring economic, social and civil liberties, and, crucially, when implementing distributional policies, create the proper context for the emergence and consolidation of the middle class; the middle class, in turn, leads (through the mentioned five channels) to sustained economic growth; which leads to development; finally, development itself contributes to the constant expansion of the middle class and the eradication of poverty. Thirdly, according to this conceptual framework it was suggested that the lack of a middle class in traditionally polarised societies (such as Brazil) might help to explain their economic backwardness, social instability and poverty. Yet, recent and rapid economic growth in Brazil, along with the decline in poverty and the rise of the middle class, raise the question: what is behind this

process and why didn't it start in past periods of economic success? The hypothesis, introduced in this chapter, pointed at differences in the distribution of this economic growth. Therefore, to test this hypothesis, this chapter claimed the necessity of studying the Brazilian middle class and its connection with inequality and economic growth from a historical perspective.

Hence, Chapter 3 had the aim of finding a proper definition to assess the Brazilian middle class in the long run. To this purpose, a deep review of "middle class" definitions was undertaken throughout history and across countries. It was shown that the literature on the topic is extensive. Definitions of the middle class are constantly appearing. While some of them set their definitions according to objective characteristics such as income, others gave more importance to subjective characteristics such as status. Yet, far from finding in the literature a consensual definition of the middle class, this chapter argues for the necessity of obtaining a non-arbitrary definition which allows for studies in historical perspective and across countries. Crucially, the contribution of this chapter to that literature consisted in the proposal of a new middle class index (MC index), which permits the assessment of the middle class over long periods. This MC index is based on polarisation measures, demonstrated to be the proper methodology to study the formation of different income groups along the distribution. Therefore, after conducting a comprehensive investigation of the reasoning behind the effectiveness of using polarisation measures to investigate the rise of the middle class, as well as the mechanisms behind diverse polarisation indicators, in this Chapter I went one step further in the definition of the middle class, by proposing the new MC index. In summary, the MC index has been defined as the ratio between tri-polarisation and bi-polarisation. Notably, as demonstrated, the index

allows one to assess the middle class in terms of objective and subjective characteristics. In particular, when estimating the MC index in terms of income, I propose to use the Esteban, Gradín and Ray (2007) polarisation measure, as it sets the economic groups endogenously (i.e. avoiding any arbitrariness criteria). Meanwhile, when estimating the MC index in terms of status some extent of arbitrariness when classifying the groups is unavoidable. Therefore, in this case it has been proposed to use the Zhang and Kanbur (2000) polarisation measure, as it permits one to choose groups exogenously according to any characteristic.

With the objective of calculating Brazil's historical experience of inequality and polarisation, Chapter 4 was dedicated to the construction of a historical social class table for Brazil over the longest possible period. The resulting database consisted of a contribution of two un-interrupted series on active population (by profession) and real wages from 1839 to 1930, which extended to the years 1940 and 1950. Notably, this social table succeeded in being reliable and representative for the country, as it took into account differences in wages throughout the active population, according to the gender, condition (slaves or free), skills and location (urban or rural).

From this social table, Chapter 5 provided new insights on Brazil's income distribution between 1839 and 1950 from two different perspectives: inequality and polarisation. From the inequality perspective, it provided new and continued Gini estimations. In doing so, it contributed to the debate on Brazil's historical inequality, by showing that it was not endemic to its colonial era; on the contrary, it did not begin to increase until the early twentieth century. Then, from the polarisation perspective, the MC index was constructed (proposed in Chapter 3) for Brazil and its evolution over the period was presented. Notably, the evolution of the Brazilian middle class was shown in

terms of income and status. The results revealed that the emergence of the Brazilian middle class, in terms of both income and status, took place during the three first decades of the twentieth century in a context of expansion of industry and modernisation. However, still in a context of economic growth but increasing inequality, it suffered from deep deterioration between 1930 and 1950.

Finally, Chapter 6 contributed to shed new light on the connection between economic growth, inequality and the middle class. In particular, it investigated the failure to consolidate the middle class during the period 1930-1950. Between 1930 and 1950, even though Brazil experienced rapid economic growth, the uneven distribution of this growth, reflected by dramatic increases in inequality and bipolarisation, prevented the consolidation of the middle class and the reduction of absolute poverty. Meanwhile, in the most recent period economic growth accompanied by decreasing inequality succeeded in increasing the middle class and reducing poverty. While it is true that the decline in inequality has been to a large extent associated with the increase in wages of low-skilled workers due to favourable conditions created by a new commodities boom, the contribution of distributional policies and social programs mainly focused on the poor were crucial. Still, as discussed in Chapter 2, ‘dissipative redistribution’ might have pervasive effects for efficiency and growth. On the one hand, redistribution biased in favour to the high-income strata (throughout the protection of national producers; the fragility of property rights; judicial uncertainty; and political influence can explain a model of low efficiency and low growth. On the other hand, redistribution merely focused on the low-income strata can also lead to low efficiency and growth, when the excess of public expenditures in social programs generates the reduction of public savings, and the cut of public investment in infrastructure.

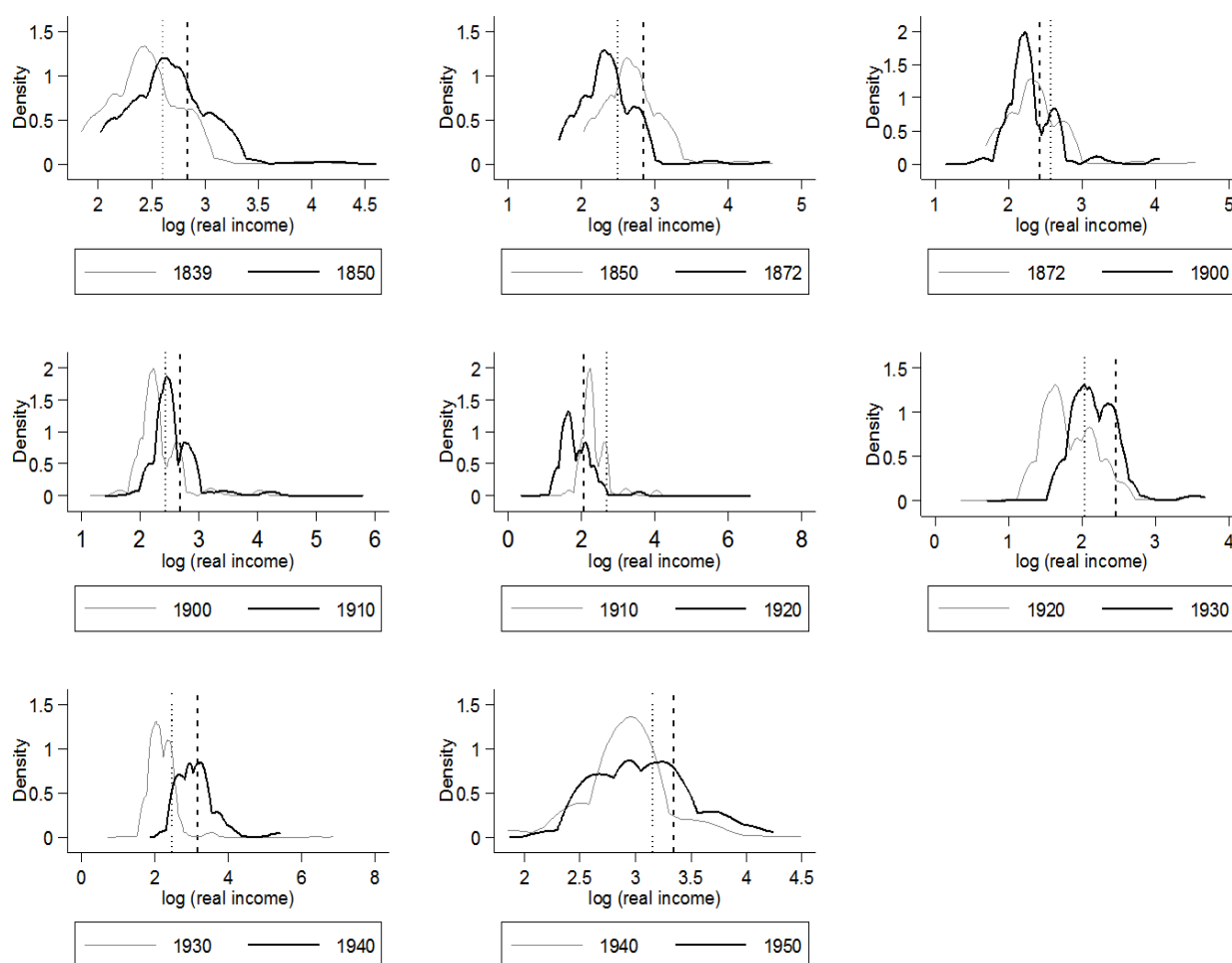
Meanwhile, redistribution policies aimed at promoting the enlargement of the medium strata could induce the dismantling of privileges created for the rich, while restricting policies in favour of the poor by fostering others linked to the amelioration of health, infrastructure, and, crucially, education. This leads one back to Aristotle's reflection that "it will clearly be best to possess the gifts of fortune in moderation."

3. Open gates to future research

While this investigation attempted to shed new light on the relationship between economic growth, inequality and the middle class, it did so in the particular case of Brazil, leaving some questions unanswered. Notably, it opens gates to future research in similar case studies both in Latin America and the wider world. In doing so, it allows for the investigation of the effectiveness of the MC index when comparing different countries and when using different sources of data. On the one hand, in order to obtain broader conclusions on the relevance of the middle class in the process of economic development, it would be interesting to explore and compare the rise of the middle class in other transitional economies, now and in the past. On the other hand, relevant policy implications might result from more research on the emergence of middle classes in emerging countries in contraposition to their decline in Southern-European countries after the last global crisis, and its connection with inequality. In this sense, the introduction of additional quantitative analysis (such as OLS, Granger Causality Test) to test the relationship between the middle class, inequality and economic growth across countries might be relevant.

Appendix

Table A-1. Brazil (1839-1950): Real income distributions.



Sources: From 1839 to 1930 based on Bértola et al., (2007), Monasterio (n.d), DGE (1872, 1926) and Lobo (1978, 803-20); for 1940 and 1950 sources are IBGE (1990) and DGE (1950, 1956).

Table A-2. Brazil (1839-1950): Inequality (Gini index) and Polarisation (EGR index, $n=2$ & $n=3$)

Year	Gini	EGR ($n=2$)	EGR ($n=3$)	Year	Gini	EGR ($n=2$)	EGR ($n=3$)
1839	0.27	0.08	0.07	1886	0.21	0.06	0.08
1840	0.29	0.09	0.08	1887	0.21	0.06	0.07
1841	0.30	0.09	0.08	1888	0.22	0.06	0.07
1842	0.30	0.09	0.08	1889	0.21	0.06	0.07
1843	0.32	0.09	0.12	1890	0.21	0.06	0.07
1844	0.31	0.09	0.09	1891	0.22	0.06	0.07
1845	0.29	0.09	0.10	1892	0.22	0.06	0.07
1846	0.29	0.09	0.09	1893	0.23	0.06	0.07
1847	0.29	0.09	0.10	1894	0.22	0.06	0.07
1848	0.29	0.10	0.10	1895	0.23	0.06	0.06
1849	0.30	0.10	0.10	1896	0.23	0.06	0.06
1850	0.28	0.08	0.08	1897	0.24	0.07	0.07
1851	0.26	0.07	0.07	1898	0.25	0.06	0.07
1852	0.24	0.07	0.06	1899	0.25	0.09	0.09
1853	0.22	0.06	0.06	1900	0.23	0.09	0.09
1854	0.22	0.06	0.07	1901	0.23	0.09	0.09
1855	0.22	0.06	0.06	1902	0.23	0.09	0.09
1856	0.23	0.06	0.06	1903	0.22	0.08	0.09
1857	0.23	0.06	0.06	1904	0.23	0.09	0.09
1858	0.24	0.07	0.06	1905	0.23	0.09	0.09
1859	0.22	0.06	0.06	1906	0.24	0.09	0.09
1860	0.22	0.06	0.06	1907	0.27	0.11	0.11
1861	0.22	0.06	0.06	1908	0.26	0.10	0.10
1862	0.23	0.06	0.06	1909	0.24	0.09	0.09
1863	0.26	0.07	0.07	1910	0.23	0.08	0.09
1864	0.29	0.08	0.08	1911	0.23	0.07	0.09
1865	0.28	0.08	0.08	1912	0.24	0.07	0.10
1866	0.27	0.07	0.08	1913	0.22	0.07	0.08
1867	0.29	0.08	0.08	1914	0.22	0.07	0.08
1868	0.29	0.08	0.08	1915	0.22	0.07	0.08
1869	0.29	0.07	0.08	1916	0.24	0.07	0.09
1870	0.29	0.07	0.08	1917	0.27	0.08	0.10
1871	0.25	0.07	0.07	1918	0.29	0.08	0.11
1872	0.26	0.08	0.07	1919	0.29	0.09	0.11
1873	0.24	0.07	0.06	1920	0.31	0.10	0.11
1874	0.24	0.07	0.06	1921	0.28	0.08	0.11
1875	0.25	0.07	0.07	1922	0.30	0.09	0.11
1876	0.24	0.06	0.06	1923	0.29	0.07	0.12
1877	0.23	0.06	0.06	1924	0.28	0.08	0.11
1878	0.23	0.06	0.06	1925	0.28	0.07	0.11
1879	0.24	0.06	0.06	1926	0.30	0.08	0.12
1880	0.23	0.06	0.06	1927	0.31	0.10	0.13
1881	0.24	0.06	0.06	1928	0.32	0.11	0.13
1882	0.22	0.06	0.05	1929	0.34	0.13	0.13
1883	0.21	0.06	0.07	1930	0.35	0.14	0.14
1884	0.21	0.06	0.07	1940	0.30	0.12	0.12
1885	0.20	0.06	0.07	1950	0.35	0.13	0.14

Sources: From 1839 to 1930 based on Bértola et al., (2007), Monasterio (n.d), DGE (1872, 1926) and Lobo (1978, 803-20); for 1940 and 1950 sources are IBGE (1990) and DGE (1950, 1956).

Table A-3. Brazil (1839-1950): Polarisation (ZK index $n=2$ & $n=3$)

Year	ZK ($n=2$)	ZK ($n=3$)	Year	ZK ($n=2$)	ZK ($n=3$)
1839	0.30	0.68	1886	0.65	1.11
1840	0.25	0.60	1887	0.52	1.02
1841	0.21	0.52	1888	0.44	0.94
1842	0.21	0.57	1889	0.39	0.91
1843	0.15	0.42	1890	0.39	0.86
1844	0.14	0.44	1891	0.47	0.92
1845	0.40	0.94	1892	0.45	0.82
1846	0.38	1.00	1893	0.45	0.76
1847	0.38	0.97	1894	0.45	0.77
1848	0.38	0.94	1895	0.21	0.43
1849	0.29	0.78	1896	0.31	0.60
1850	0.23	0.69	1897	0.21	0.41
1851	0.25	0.78	1898	0.12	0.27
1852	0.25	0.79	1899	0.19	0.39
1853	0.31	0.90	1900	0.19	0.39
1854	0.42	1.01	1901	0.20	0.39
1855	0.31	0.85	1902	0.24	0.47
1856	0.24	0.70	1903	0.25	0.53
1857	0.26	0.73	1904	0.20	0.41
1858	0.22	0.58	1905	0.20	0.40
1859	0.25	0.67	1906	0.17	0.36
1860	0.23	0.66	1907	0.30	0.56
1861	0.25	0.69	1908	0.11	0.32
1862	0.19	0.57	1909	0.16	0.43
1863	0.16	0.51	1910	0.25	0.59
1864	0.07	0.33	1911	0.88	1.44
1865	0.09	0.33	1912	0.85	1.48
1866	0.09	0.34	1913	0.67	1.31
1867	0.13	0.33	1914	0.47	1.08
1868	0.14	0.34	1915	0.39	1.08
1869	0.11	0.33	1916	0.78	1.67
1870	0.12	0.33	1917	1.11	2.27
1871	0.20	0.49	1918	1.02	2.43
1872	0.25	0.50	1919	0.98	2.41
1873	0.33	0.64	1920	1.02	2.62
1874	0.30	0.61	1921	0.88	2.47
1875	0.22	0.48	1922	0.93	2.75
1876	0.27	0.60	1923	0.83	2.94
1877	0.29	0.61	1924	0.54	2.58
1878	0.28	0.95	1925	0.62	2.86
1879	0.24	0.55	1926	0.70	3.23
1880	0.27	0.60	1927	0.68	3.53
1881	0.27	0.59	1928	0.61	3.65
1882	0.33	0.66	1929	0.58	4.04
1883	0.51	0.96	1930	0.60	4.28
1884	0.58	1.04	1940	0.14	0.59
1885	0.61	1.14	1950	0.39	2.20

Sources: From 1839 to 1930 based on Bértola et al., (2007), Monasterio (n.d), DGE (1872, 1926) and Lobo (1978, 803-20); for 1940 and 1950 sources are IBGE (1990) and DGE (1950, 1956).

Year	Occupation	Gender	Situation	Occupational income (mil-réis)	Number of people in occupation
1872	Administração pública (government administrator)	male	urban	2601	3639
1872	Administração pública (government administrator)	male	rural	442	192
1872	Advogado (lawyer)	male	urban	1512	681
1872	Advogado (lawyer)	male	rural	378	28
1872	Artista (artist)	male	urban	1141	12727
1872	Artista (artist)	female	urban	761	1050
1872	Artista (artist)	male	rural	456	530
1872	Artista (artist)	female	rural	304	44
1872	Canteros/Mineros (stone cutter/miner)	male	urban	309	707
1872	Canteros/Mineros (stone cutter/miner)	male	rural	238	1017
1872	Capitalista/Proprietario agric. (agric. landowner)	male	urban	7431	2422
1872	Cap/Proprietario agric. (agric. landowner)	female	urban	7431	1359
1872	Cap/Proprietario ind (ind. proprietor)	male	urban	2648	976
1872	Cap/Proprietario ind (ind. proprietor)	female	urban	2648	429
1872	Cap/Proprietario serv (serv. proprietor)	male	urban	1667	976
1872	Cap/Proprietario serv (serv. proprietor)	female	urban	1667	429
1872	Capelão (priest)	male	urban	533	34
1872	Capelão (priest)	male	rural	213	4
1872	Cirurgião (doctor surgeon)	male	urban	1296	126
1872	Cirurgião (doctor surgeon)	male	rural	337	5
1872	Comerciante/Caixaieiro (retailer/cashier)	male	urban	2467	26751
1872	Comerciante/Caixaieiro (retailer/cashier)	female	urban	1645	1220
1872	Comerciante/Caixaieiro (retailer/cashier)	male	rural	1110	5095
1872	Comerciante/Caixaieiro (retailer/cashier)	female	rural	740	232
1872	Costureira (dressmaker)	female	urban	300	70775
1872	Costureira (dressmaker)	female	rural	231	101847
1872	Criação (livestock farmer)	male	urban	375	6726
1872	Criação (livestock farmer)	female	urban	250	2490
1872	Criação (livestock farmer)	male	rural	289	12492
1872	Criação (livestock farmer)	female	rural	193	4624
1872	Criado/Jornaleiro (house servant/ journey man)	male	urban	263	40484
1872	Criado/Jornaleiro (house servant/ journey man)	female	urban	175	20470
1872	Criado/Jornaleiro (house servant/ journey man)	male	rural	221	75184
1872	Criado/Jornaleiro (house servant/ journey man)	female	rural	147	38017
1872	Operario de calçado (shoemaker)	male	urban	1037	4438
1872	Operario de calçado (shoemaker)	female	urban	692	78
1872	Operario de calçado (shoemaker)	male	rural	519	185
1872	Operario de calçado (shoemaker)	female	rural	346	3
1872	Op. de chapéus (hat maker)	male	urban	1037	802
1872	Op. de chapéus (hat maker)	female	urban	692	6
1872	Op. de chapéus (hat maker)	male	rural	519	33

1872	Op. de vestuário (dressmaker)	male	urban	1037	4824
1872	Op. de vestuário (dressmaker)	female	urban	692	14
1872	Op. de vestuário (dressmaker)	male	rural	519	201
1872	Op. de vestuário (dressmaker)	female	rural	346	1
1872	Op. em couros e peles (leather goods maker)	male	urban	1014	1476
1872	Op. em couros e peles (leather goods maker)	female	urban	676	3
1872	Op. em couros e peles (leather goods maker)	male	rural	507	61
1872	Op. em edificações (construction worker)	male	urban	775	4095
1872	Op. em edificações (construction worker)	male	rural	387	171
1872	Op. em madeiras (wood treaters)	male	urban	1166	11021
1872	Op. em madeiras (wood treaters)	male	rural	583	459
1872	Op. em metais (blacksmith)	male	urban	470	5673
1872	Op. em metais (blacksmith)	male	rural	235	236
1872	Op. em tecidos (weaver)	male	urban	699	1598
1872	Op. em tecidos (weaver)	female	urban	467	68568
1872	Op. em tecidos (weaver)	male	rural	350	67
1872	Op. em tecidos (weaver)	female	rural	233	2857
1872	Op. em tintuaria (dyer worker)	male	urban	1166	138
1872	Op. em tintuaria (dyer worker)	female	urban	778	54
1872	Op. em tintuaria (dyer worker)	male	rural	583	6
1872	Op. em tintuaria (dyer worker)	female	rural	389	2
1872	Farmacêutico (chemist)	male	urban	1082	780
1872	Farmacêutico (chemist)	male	rural	270	33
1872	Juiz (judge)	male	urban	1512	419
1872	Juiz (judge)	male	rural	378	17
1872	Lavrador (farmer)	male	urban	375	187270
1872	Lavrador (farmer)	female	urban	250	61611
1872	Lavrador (farmer)	male	rural	289	347786
1872	Lavrador (farmer)	female	rural	193	114420
1872	Médico (doctor)	male	urban	1080	858
1872	Médico (doctor)	male	rural	270	36
1872	Notário/Escrivão (notary)	male	urban	1512	598
1872	Notário/Escrivão (notary)	male	rural	378	25
1872	Oficial de Justiça (judicial solicitor)	male	urban	907	581
1872	Oficial de Justiça (judicial solicitor)	male	rural	562	24
1872	Parteiro (midwife)	male	urban	832	31
1872	Parteiro (midwife)	female	urban	555	439
1872	Parteiro (midwife)	male	rural	333	1
1872	Parteiro (midwife)	female	rural	222	18
1872	Procurador (procurator)	male	urban	1512	496
1872	Procurador (procurator)	male	rural	378	21
1872	Professor (teacher)	male	urban	1734	1644
1872	Professor (teacher)	female	urban	1156	983
1872	Professor (teacher)	male	rural	433	68
1872	Professor (teacher)	female	rural	289	41
1872	Religiosa (nun)	female	urban	355.75	49
1872	Religiosa (nun)	female	rural	142.3	5
1872	Sacristão (sexton)	male	urban	1209.96	799
1872	Sacristão (sexton)	male	rural	483.98	89
1872	Serviço doméstico (domestic servant)	male	urban	262.5	46759
1872	Serviço doméstico (domestic servant)	female	urban	175.09	185617
1872	Serviço doméstico (domestic servant)	male	rural	220.5	8906
1872	Serviço doméstico (domestic servant)	female	rural	147.07	35356
1872	Sem Proffissão (without any proffesion)	male	urban	420	553560
1872	Sem Proffissão (without any proffesion)	female	urban	280.14	581293
1872	Sem Proffissão (without any proffesion)	male	rural	323.4	204741
1872	Sem Proffissão (without any proffesion)	female	rural	215.71	214999
1872	Scravo (Slave)	male	urban	262.5	224642
1872	Scravo (Slave)	female	urban	175.09	211349
1872	Scravo (Slave)	male	rural	220.5	260727
1872	Scravo (Slave)	female	rural	147	193267

1920	Administração privada (private administrator)	male	urban	6342	12037
1920	Administração privada (private administrator)	female	urban	4230	725
1920	Administração privada (private administrator)	male	rural	1078	634
1920	Administração privada (private administrator)	female	rural	719	38
1920	Administração pública (government administrator)	male	urban	6342	19447
1920	Administração pública (government administrator)	female	urban	4230	657
1920	Administração pública (government administrator)	male	rural	1078	1024
1920	Administração pública (government administrator)	female	rural	719	35
1920	Advogado (lawyer)	male	urban	5305	1420
1920	Advogado (lawyer)	male	rural	1326	59
1920	Advogado (lawyer)	male	urban	1501	9266
1920	Advogado (lawyer)	female	urban	1001	1056
1920	Advogado (lawyer)	male	rural	601	386
1920	Advogado (lawyer)	female	rural	401	44
1920	Artistas (artists)	female	urban	800	1006
1920	Artistas (artists)	male	rural	600	343
1920	Artistas (artists)	female	rural	400	42
1920	Canteros/Mineros (stone cutter/miner)	male	urban	652	995
1920	Canteros/Mineros (stone cutter/miner)	female	urban	435	1
1920	Canteros/Mineros (stone cutter/miner)	male	rural	502	1432
1920	Canteros/Mineros (stone cutter/miner)	female	rural	335	2
1920	Capitalista/Proprietario agric. (landowner)	male	rural	121943	4358
1920	Capitalista/Proprietario agric. (landowner)	female	rural	40329	2283
1920	Cap/Proprietario ind (industry proprietor)	male	urban	25350	2200
1920	Cap/Proprietario ind (industry proprietor)	female	urban	25350	1153
1920	Cap/Proprietario serv (services proprietor)	male	urban	25350	2200
1920	Cap/Proprietario serv (services proprietor)	female	urban	25350	1153
1920	Capelão (priest)	male	urban	2160	1164
1920	Capelão (priest)	male	rural	864	129
1920	Cirurgião (doctor surgeon)	male	urban	4547	810
1920	Cirurgião (doctor surgeon)	male	rural	1182	34
1920	Comerciante/Caixeiro (retailer/cashier)	male	urban	5820	103497
1920	Comerciante/Caixeiro (retailer/cashier)	female	urban	3882	3963
1920	Comerciante/Caixeiro (retailer/cashier)	male	rural	2619	19714
1920	Comerciante/Caixeiro (retailer/cashier)	female	rural	1747	755
1920	Criação (livestock farmer)	male	urban	2040	7683
1920	Criação (livestock farmer)	female	urban	1361	163
1920	Criação (livestock farmer)	male	rural	1571	14268
1920	Criação (livestock farmer)	female	rural	1048	302
1920	Op. de alimentação (food and beverage processor)	male	urban	1089	11399
1920	Op. de alimentação (food and beverage processor)	female	urban	726	575
1920	Op. de alimentação (food and beverage processor)	male	rural	545	475
1920	Op. de alimentação (food and beverage processor)	female	rural	363	24
1920	Op. de aparelhos de transporte (transport equipment)	male	urban	1190	4257
1920	Op. de aparelhos de transporte (transport equipment)	female	urban	793	28
1920	Op. de aparelhos de transporte (transport equipment)	male	rural	595	177
1920	Op. de aparelhos de transporte (transport equipment)	female	rural	397	1
1920	Op. de cerâmica (potter)	male	urban	1044	7718
1920	Op. de cerâmica (potter)	female	urban	696	512
1920	Op. de cerâmica (potter)	male	rural	522	322
1920	Op. de cerâmica (potter)	female	rural	348	21

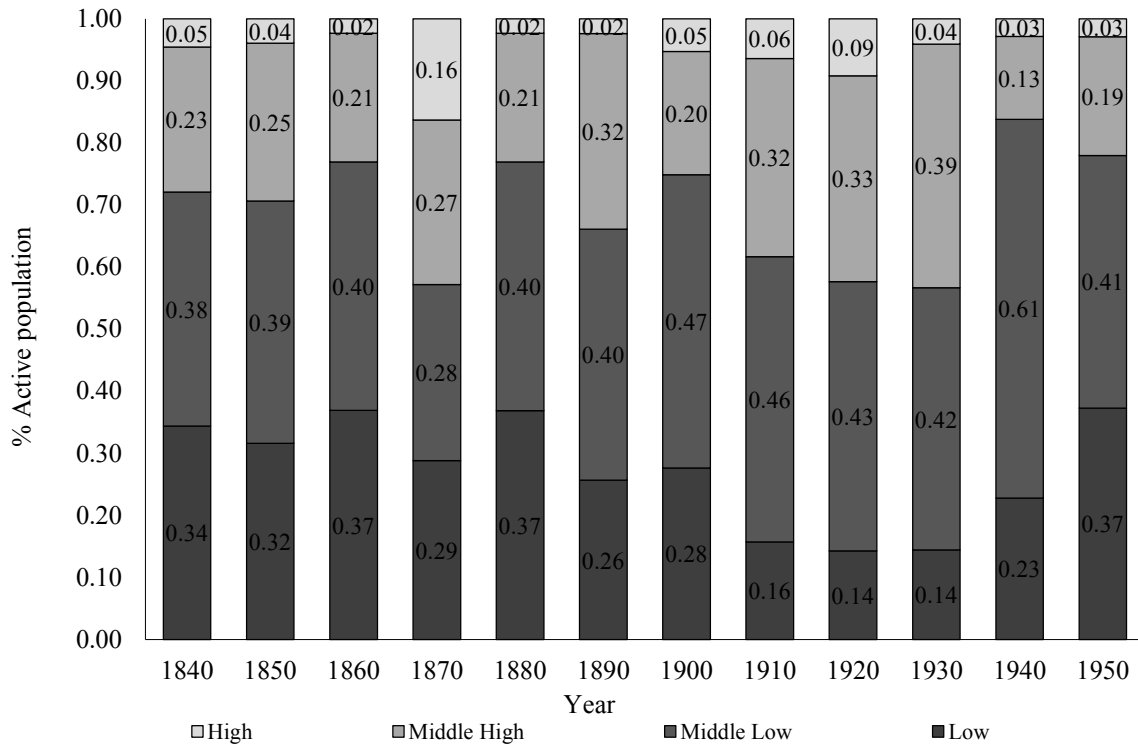
1920	Op. de mobiliário (bench carpenter)	male	urban	1200	9723
1920	Op. de mobiliário (bench carpenter)	female	urban	800	644
1920	Op. de mobiliário (bench carpenter)	male	rural	600	405
1920	Op. de mobiliário (bench carpenter)	female	rural	400	27
1920	Op. de produc. e trans de forças físicas (stationary engine op.)	male	urban	1190	6954
1920	Op. de produc. e trans de forças físicas (stationary engine op.)	female	urban	793	46
1920	Op. de produc. e trans de forças físicas (stationary engine op.)	male	rural	595	290
1920	Op. de produc. e trans de forças físicas (stationary engine op.)	female	rural	397	2
1920	Op. de vestuários (dressmaker)	male	urban	1068	40156
1920	Op. de vestuários (dressmaker)	female	urban	712	68835
1920	Op. de vestuários (dressmaker)	male	rural	534	1673
1920	Op. de vestuários (dressmaker)	female	rural	356	2868
1920	Op. em couros e peles (leather goods maker)	male	urban	1044	1229
1920	Op. em couros e peles (leather goods maker)	female	urban	696	1072
1920	Op. em couros e peles (leather goods maker)	male	rural	522	51
1920	Op. em couros e peles (leather goods maker)	female	rural	348	45
1920	Op. em edificações (construction worker)	male	urban	1635	83395
1920	Op. em edificações (construction worker)	female	urban	1091	583
1920	Op. em edificações (construction worker)	male	rural	818	3475
1920	Op. em edificações (construction worker)	female	rural	545	24
1920	Op. em madeiras (wood treaters)	male	urban	1200	7375
1920	Op. em madeiras (wood treaters)	female	urban	800	58
1920	Op. em madeiras (wood treaters)	male	rural	600	307
1920	Op. em madeiras (wood treaters)	female	rural	400	2
1920	Op. em metais (blacksmith)	male	urban	1152	29386
1920	Op. em metais (blacksmith)	female	urban	768	123
1920	Op. em metais (blacksmith)	male	rural	576	1224
1920	Op. em metais (blacksmith)	female	rural	384	5
1920	Op. em prod. químicos (chemical products)	male	urban	1118	1460
1920	Op. em prod. químicos (chemical products)	female	urban	746	222
1920	Op. em prod. químicos (chemical products)	male	rural	559	61
1920	Op. em prod. químicos (chemical products)	female	rural	373	9
1920	Op. em tecidos (weaver)	male	urban	720	12468
1920	Op. em tecidos (weaver)	female	urban	480	14598
1920	Op. em tecidos (weaver)	male	rural	360	519
1920	Op. em tecidos (weaver)	female	rural	240	608
1920	Farmacêutico (chemist)	male	urban	3240	4255
1920	Farmacêutico (chemist)	male	rural	842	177
1920	Juiz (judge)	male	urban	5305	546
1920	Juiz (judge)	male	rural	1326	23
1920	Lavrador (farmer)	male	urban	2040	489381
1920	Lavrador (farmer)	female	urban	1361	44824
1920	Lavrador (farmer)	male	rural	1571	908850
1920	Lavrador (farmer)	female	rural	1048	87012
1920	Médico (doctor)	male	urban	3789	4761
1920	Médico (doctor)	male	rural	985	198

1920	Notário/Escrivão (notary)	male	urban	5305	1202
1920	Notário/Escrivão (notary)	male	rural	1326	50
1920	Oficial de Justiça (judicial solicitor)	male	urban	3183	1257
1920	Oficial de Justiça (judicial solicitor)	female	urban	2123	48
1920	Oficial de Justiça (judicial solicitor)	male	rural	796	52
1920	Oficial de Justiça (judicial solicitor)	female	rural	531	2
1920	Parteiro (midwife)	male	urban	2220	304
1920	Parteiro (midwife)	female	urban	2220	2045
1920	Parteiro (midwife)	male	rural	888	13
1920	Parteiro (midwife)	female	rural	888	85
1920	Pedreiro (bricklayer)	male	urban	652	10065
1920	Pedreiro (bricklayer)	female	urban	435	16
1920	Pedreiro (bricklayer)	male	rural	502	14483
1920	Pedreiro (bricklayer)	female	rural	335	23
1920	Procurador (procurator)	male	urban	5305	1038
1920	Procurador (procurator)	male	rural	1326	43
1920	Professor (teacher)	male	urban	4500	5220
1920	Professor (teacher)	female	urban	3002	12267
1920	Professor (teacher)	male	rural	1125	217
1920	Professor (teacher)	female	rural	750	511
1920	Religiosa (nun)	female	urban	1441	816
1920	Religiosa (nun)	female	rural	576	91
1920	Sacristão (sexton)	male	urban	3300	388
1920	Sacristão (sexton)	male	rural	1320	43
1920	Serviço doméstico (domestic servant)	male	urban	1428	12467
1920	Serviço doméstico (domestic servant)	female	urban	952	67577
1920	Serviço doméstico (domestic servant)	male	rural	1200	2375
1920	Serviço doméstico (domestic servant)	female	rural	800	12872
1920	Sem Proffissão (without any proffesion)	male	urban	1260	1400000
1920	Sem Proffissão (without any proffesion)	female	urban	840	2600000
1920	Sem Proffissão (without any proffesion)	male	rural	970	507839
1920	Sem Proffissão (without any proffesion)	female	rural	647	948170
1940	Agricultor (farmer)	male	rural	1956	7901455
1940	Agricultor (farmer)	female	rural	1174	1248198
1940	Actividades mal definidas (badly defined activities)	male	urban	1845	91600
1940	Actividades mal definidas (badly defined activities)	female	urban	1107	11300
1940	Alimentos, bebidas, comercio ambulante (salesperson)	male	urban	2045	313700
1940	Alimentos, bebidas, comercio ambulante (salesperson)	female	urban	1227	21800
1940	Bancos e outras actividades financeiras (bank teller, finance clerk)	male	urban	7518	48200
1940	Bancos e outras actividades financeiras (bank teller, finance clerk)	female	urban	4511	3500
1940	Capitalista/Proprietario agric. (landowner)	male	rural	188247	3766
1940	Capitalista/Proprietario agric. (landowner)	female	rural	188247	744
1940	Cap/Proprietario serv. (services proprietor)	male	urban	18684	3296
1940	Cap/Proprietario serv. (services proprietor)	female	urban	18684	651
1940	Cap/Proprietario ind. (industry proprietor)	male	urban	126882	2354
1940	Cap/Proprietario ind. (industry proprietor)	female	urban	126882	465
1940	Com. Productos agrícolas, quimicos, maquinas (technical salesman)	male	urban	3632	79200
1940	Com. Productos agrícolas, quimicos, maquinas (technical salesman)	female	urban	2179	5300

1940	Criação (livestock farmer)	male	rural	1541	235869
1940	Criação (livestock farmer)	female	rural	925	11945
1940	Extacção de mat.mineraes (stone cutter, miner)	male	rural	1648	113500
1940	Extacção de mat.mineraes (stone cutter, miner)	female	rural	989	4900
1940	Industria de transformação (procesing industry worker)	male	urban	2155	940800
1940	Industria de transformação (procesing industry worker)	female	urban	1293	676300
1940	Metalurgia, material de transporte (blacksmith, machine-tool op.)	male	urban	3053	150500
1940	Metalurgia, material de transporte (blacksmith, machine-tool op.)	female	urban	1832	3000
1940	Otros serviços pessoais (worker in hotel/restaurant services)	male	urban	2594	234600
1940	Otros serviços pessoais (worker in hotel/restaurant services)	female	urban	1556	22800
1940	Outras actividades comerciais (sales worker)	male	urban	3279	305300
1940	Outras actividades comerciais (sales worker)	female	urban	1968	23900
1940	Outras industrias (bricklayer, stonemanson, potter)	male	urban	3487	264900
1940	Outras industrias (bricklayer, stonemanson, potter)	female	urban	2092	29500
1940	Produção e alimentos, bebidas (food and beverage processor)	male	urban	2379	156900
1940	Produção e alimentos, bebidas (food and beverage processor)	female	urban	1427	31300
1940	Química, derivados de petroleo (chemical and related processes)	male	urban	2418	92700
1940	Química, derivados de petroleo (chemical and related processes)	female	urban	1451	17700
1940	Servicio doméstico (domestic servant)	male	urban	1097	71900
1940	Servicio doméstico (domestic servant)	female	urban	658	548200
1940	Serviço governamentais (government administrator)	male	urban	15296	382100
1940	Serviço governamentais (government administrator)	female	urban	15296	23600
1940	Texteis, vestuario,caçados (weaver, dressmaker, shoe maker)	male	urban	2143	275800
1940	Texteis, vestuario,caçados (weaver, dressmaker, shoe maker)	female	urban	1286	594800
1940	Transportes y comunicacoes (worker in transport, communication)	male	urban	3807	485800
1940	Transportes y comunicacoes (worker in transport, communication)	female	urban	2284	14400
1950	Agricultor (farmer)	male	rural	6800	8217992
1950	Agricultor (farmer)	female	rural	4080	676046
1950	Actividades mal definidas (badly defined activities)	male	urban	4592	37800
1950	Actividades mal definidas (badly defined activities)	female	urban	2755	8600
1950	Alimentos, bebidas, comercio ambulante (salesperson)	male	urban	12515	600700
1950	Alimentos, bebidas, comercio ambulante (salesperson)	female	urban	7509	56200
1950	Bancos e outras actividades financeiras (bank teller, finance clerk)	male	urban	52180	102800
1950	Bancos e outras actividades financeiras (bank teller, finance clerk)	female	urban	31308	12700
1950	Capitalista/Propietario agric. (landowner)	male	rural	290062	1559
1950	Capitalista/Propietario agric. (landowner)	female	rural	290062	1406
1950	Cap/Propietario serv. (services proprietor)	male	urban	219816	1364
1950	Cap/Propietario serv. (services proprietor)	female	urban	219816	1231
1950	Cap/Propietario ind. (industry proprietor)	male	urban	482263	975
1950	Cap/Propietario ind. (industry proprietor)	female	urban	482263	879
1950	Com. Productos agrícolas, quimicos, maquinas (technical salesman)	male	urban	19594	164700
1950	Com. Productos agrícolas, quimicos, maquinas (technical salesman)	female	urban	11756	16400

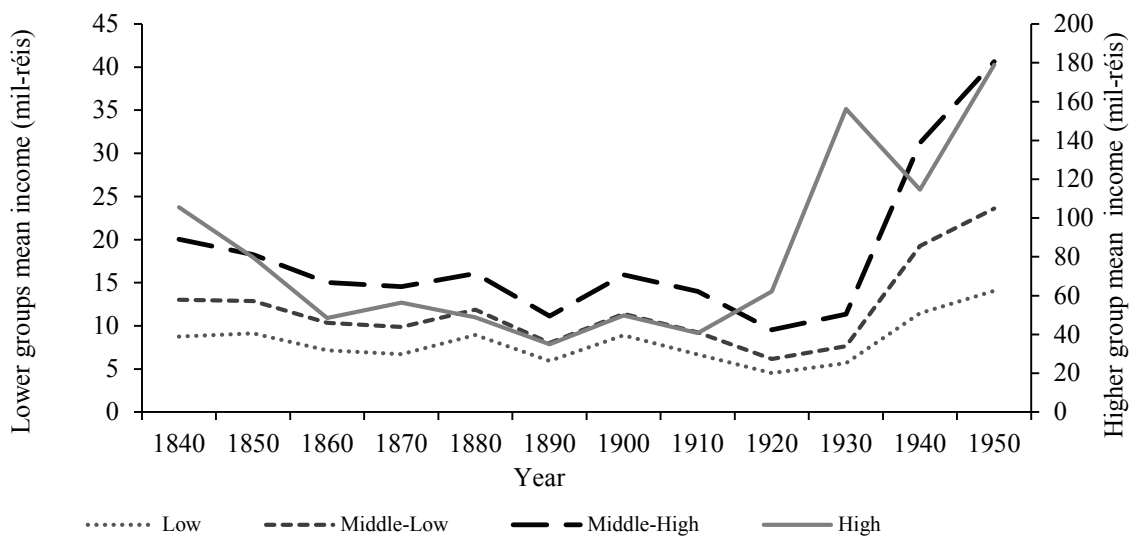
1950	Criação (livestock farmer)	male	rural	9510	356987
1950	Criação (livestock farmer)	female	rual	5706	7455
1950	Extacção de mat.mineraes (stone cutter, platelayer, miner)	male	rural	8987	113200
1950	Extacção de mat.mineraes (stone cutter, platelayer, miner)	female	rural	5392	2500
1950	Industria de transformação (procesing industry worker)	male	urban	10187	1565200
1950	Industria de transformação (procesing industry worker)	female	urban	6112	626400
1950	Metalurgia, material de transporte (blacksmith, machine-tool op.)	male	urban	18162	331000
1950	Metalurgia, material de transporte (blacksmith, machine-tool op.)	female	urban	10897	11600
1950	Otros serviços pessoais (worker in hotel/restaurant services)	male	urban	4266	290800
1950	Otros serviços pessoais (worker in hotel/restaurant services)	female	urban	2560	47900
1950	Outras actividades comerciais (sales worker)	male	urban	12534	111300
1950	Outras actividades comerciais (sales worker)	female	urban	7521	17000
1950	Outras industrias (bricklayer, stonemanson, potter)	male	urban	14858	381800
1950	Outras industrias (bricklayer, stonemanson, potter)	female	urban	8915	63500
1950	Produção e alimentos, bebidas (food and beverage processor)	male	urban	8617	256100
1950	Produção e alimentos, bebidas (food and beverage processor)	female	urban	5170	32600
1950	Química, derivados de petroleo (chemical and related processes)	male	urban	10727	200000
1950	Química, derivados de petroleo (chemical and related processes)	female	urban	6436	40300
1950	Servicio doméstico (domestic servant)	male	urban	4918	46700
1950	Servicio doméstico (domestic servant)	female	urban	2951	626900
1950	Serviço governamentais (government administrator)	male	urban	62415	468200
1950	Serviço governamentais (government administrator)	female	urban	37449	44500
1950	Texteis, vestuario,caçados (weaver, dressmaker, shoe maker)	male	urban	9713	396300
1950	Texteis, vestuario,caçados (weaver, dressmaker, shoe maker)	female	urban	5828	478400
1950	Transportes y comunicaciones (worker in transport, communication)	male	urban	15387	661000
1950	Transportes y comunicaciones (worker in transport, communication)	female	urban	9232	28300

Figure A.1. Brazil (1840-1950): Group's share according to EGR index ($n=4$), decade average.



Sources: From 1839 to 1930 based on Bértola et al., (2007), Monasterio (n.d), DGE (1872, 1926) and Lobo (1978, 803-20); for 1940 and 1950 sources are IBGE (1990) and DGE (1950, 1956).

Figure A.2. Brazil (1840-1950): Group's real mean income according to EGR index ($n=4$), decade average.



Sources: From 1839 to 1930 based on Bértola et al., (2007), Monasterio (n.d), DGE (1872, 1926) and E. Lobo (1978, 803-20); for 1940 and 1950 sources are IBGE (1990) and DGE (1950, 1956).

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