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# ***RENE***

*Revista Nexos Econômicos*

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# REVISTA NEXOS ECONÔMICOS

Publicação Semestral  
Programa de Pós-Graduação em Economia  
Curso de Mestrado e Doutorado em Economia  
Faculdade de Ciências Econômicas  
Universidade Federal da Bahia

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v. 11, n. 2, jul.-dez. 2017

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Salvador-BA

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RENE : Revista Nexos Econômicos / Universidade Federal da Bahia, Faculdade de Ciências Econômicas, Cursos de Mestrado e Doutorado em Economia. - Ano 1, n. 1 (jun. 1999) - Salvador, BA : UFBA, PPGE, 1999.  
v. : il.

**Semestral**

Descrição baseada em: Ano 9, n. 2, dez., 2015.

Continuação de: Nexos Econômicos

Não foi publicada em 2005-2009.

ISSN 1516-9022

1. Economia - Periódicos. I. Universidade Federal da Bahia. Faculdade de Ciências Econômicas.

CDD - 330.05

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**Financiamento  
PROAP-CAPES**

Universidade Federal da Bahia, FCE, Programa de Pós-Graduação em Economia - Cursos de Mestrado e Doutorado em Economia.

Praça da Piedade n° 6, Centro, CEP 40.070-010, Salvador - BA, Brasil.

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# Celso Furtado: tensions and contradictions about the manpower problem in his classical book *Economic Formation of Brazil*<sup>1</sup>

Elias de Oliveira Sampaio<sup>2</sup>

**Abstract:** *The article discusses the issue of manpower in the classical book *Economic Formation of Brazil* of Celso Furtado. The goal is to demonstrate that despite the importance of the classical text to understanding the process of building of country's economy, the content and sequencing of Furtado's arguments to explain the process of Brazilian underdevelopment in the first half of 1900s should be reviewed conceptually, analytically and theoretically due some tensions and contradictions observed on his own text, specifically, when he argues the reasons for the exclusion of the former slave – and their descendants – in the development of the Brazilian economy over in that period. Our main argument in this paper is that based in a formulation with an apparent neutral economic logic, the analytical construction of Furtado disregarded the importance of racial prejudice process that had undergone the former slaves to be included in the labor market at the time of transition from the slave labor to paid labor. Thus, he articulated the incorrect understanding that such exclusion was due, mainly per the lack of proper economic rationality of*

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<sup>1</sup> This paper is based on two Brazilian editions of the book: *Formação Econômica do Brasil*. 23. ed. São Paulo: Editora Nacional, 1989. 248 p and the *Edição Comemorativa – 50 anos*. Organização Rosa Freire d'Aguiar Furtado. São Paulo: Companhia das Letras, 2009. 568 p. and the American edition: *The Economic Growth of Brazil – A Survey from Colonial to Modern Times*. University of California Press Berkley and Los Angeles California Cambridge University Press London, England, 1963.

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*former slaves in front of the new relations established in the labor market in the coffee's new company after the slavery and not because of the deep complexity that overwhelmed the whole Brazilian economy and particularly the paradigmatic changes in the labor market in the country since that time.*

**Keywords:** *Development. Underdevelopment. Slave labor. Transition economic. Racial Exclusion.*

**JEL Classification:** O15. N36. J15.

**Celso Furtado:** *tensões e contradições sobre o problema da mão de obra em seu livro clássico Formação Econômica do Brasil*

**Resumo:** O artigo discute a questão da mão de obra no livro *Formação Econômica do Brasil* de Celso Furtado. O objetivo é demonstrar que, apesar da importância do texto clássico para entender o processo de construção da economia do país, o conteúdo e sequenciamento dos argumentos de Furtado para explicar o subdesenvolvimento brasileiro na primeira metade do século XX devem ser revistos conceitualmente, analiticamente e teoricamente devido a algumas tensões e contradições observadas em seus próprios argumentos, especificamente, quando discute as razões da exclusão dos antigos escravos – e seus descendentes – no desenvolvimento da economia brasileira naquele período. Nosso principal argumento neste artigo é que, baseado em uma formulação com uma aparente lógica econômica neutra, a construção analítica de Furtado desconsiderou a importância do processo de discriminação racial a que tinha sido submetido os ex-escravos quando sua entrada no novo mercado de trabalho na época da transição para o trabalho remunerado. Assim, ele articulou o entendimento errôneo de que tal exclusão se devia, principalmente, à falta de racionalidade econômica adequada dos ex-escravos diante das novas relações estabelecidas no mercado de trabalho na nova empresa do café após a escravidão e não por causa da profunda complexidade que dominou toda a economia brasileira e, particularmente, as mudanças paradigmáticas no mercado de trabalho no país a partir daquela época.

**Palavras-chave:** *Desenvolvimento. Subdesenvolvimento. Trabalho escravo. Transição econômica. Exclusão racial.*

**Classificação JEL:** O15. N36. J15.



## I The book *Economic Formation of Brazil (EFB)* as a fundamental work in the study of the Brazilian economy

It seems to us to be a consensus that Celso Furtado's *Economic Formation of Brazil* book can be presented as one of the most important academic works and responsible for a set of most accepted hypothesis on the explanation of Brazilian underdevelopment, regarding the phase which comprises of the colonial period until the first half of the 20th century. The work and its Author are inseparable elements of the first strategies of governmental economic planning for the development of the country, specially, from the Northeast Brazilian<sup>3</sup> region, in the 1950s when Brazil begins an important stage of its economic growth process, based on the so-called "developmentalism model".<sup>4</sup>

Celso Furtado (1920-2004) was a participatory and emblematic figure in the various governmental and non-governmental initiatives in the economic debates in the second half of the twentieth century. In 1953, he presided over the joint Eclac<sup>5</sup>-BNDE<sup>6</sup> group that elaborated the "Outline of a Development Program, period 1955-1962", published in 1955 and which served as the basis for the Goals Plan of the President Juscelino Kubitschek government in the same time. Starting the following year, began the publication of his series of books on economics which the first one being *Brazilian Economy*, edited in 1954. What is important to note is that with this productive phase of production in the specific field of knowledge, Furtado also began a strategy of intervention in the Brazilian reality associating his work in the academic area with initiatives of political

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3 The Northeast region is one of more important territory in Brazil. It is a set of nine states (Bahia, Sergipe, Alagoas, Pernambuco, Paraíba, Rio Grande do Norte, Ceará, Piauí and Maranhão) and one parte of north of Minas Gerais State that geografically belong the Southeast region. This characterization was done juntamente com a criação da SUDENE in 1959. Thus, Its size is about 1,6 million of Km<sup>2</sup> and its population is of almost 55 million people (data from 2010) and its regional GDP is aproximately 255 billion American dollars (data from 2013).

4 The concept of developmentalism is a rather ambiguous term per definition. It involves two perspectives, which obviously are intertwined, but are not the same neither from an epistemological viewpoint nor in daily practice: 1) a phenomenon of the 'material world', i.e. a set of practices of economic policies proposed and/or executed by policy makers, and 2) a phenomenon of the 'world of ideas', i.e. a set of ideas proposed to express theories, concepts or visions of the world. The former expresses itself also as political discourse, while the latter seeks to form a school of thought. (FONSECA, 2014, p. 30 apud FRITZ, 2017)

5 Economic Commission for Latino American and Caribbean (Eclac). See: <<http://www.cepal.org/en/about>>.

6 Economic Development National Bank (BNDE). Initials in portuguese. See: <[http://www.bndes.gov.br/SiteBNDES/bndes/bndes\\_en/Institucional/The\\_BNDES/](http://www.bndes.gov.br/SiteBNDES/bndes/bndes_en/Institucional/The_BNDES/)>.

and administrative nature, such as the creation of the Club of Economists and the Brazilian Economic Review, still in the early fifties.

According to Valente (2009, p. 28), both initiatives have become a privileged space of action on the technocracy in the federal government in order to create an ideological basis for the “developmentalism model” project through the economic debate in the country.

Furtado often addressed his word to the active and experienced Economists or students yet, as well as to a wider audience of social scientists. He also targeted his word to the general public, seeking to act as an opinion maker, always valuing the political and union organization of the set working population. He elected this objective, not only in the field of knowledge he dominates, through the publication of academic and technical papers, but also through the search for influence and personal power through institutional insertion in public careers, in the federal administration and as a political person.<sup>7</sup>

In this context, Furtado assumes in 1958 a board of the BNDE and the coordination of the Northeast Development Working Group (GTDN),<sup>8</sup> which the most important result, from these works, was the study “A development policy for the Northeast of Brazil”. Furthermore, it was also the basis for creating two of the most important institutional arrangements for the Northeast Brazilian region economic growth since 1960s: The Northeast Board of Development (Codeno)<sup>9</sup> which he was appointed Director and, right after, he created the Northeast Development Superintendence (Sudene),<sup>10</sup> which he was the first and more important “chairman” until today. It is important to say that among the beginning of his work in the BNDE and the creation of these important and innovative organisms dedicated to the development of the poorest region of the country is that its best-known book, Economic Formation of Brazil was published in January of 1959.

The truth is: the creation and implantation of the most important regional structures of the government apparatus had the theoretical,

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7 Free translation. Original in Portuguese.

8 Initials in portuguese. See: <<http://procondel.sudene.gov.br/NoticiaDetalhes.aspx?id=1018>>.

9 Initials in portuguese. See: <<http://procondel.sudene.gov.br/NoticiaDetalhes.aspx?id=1018>>.

10 Initials in portuguese. See: <<http://www.sudene.gov.br/quem-foi-celso-furtado>>.

methodological and propositional content of Furtado mind, which had been synthesized in his best known and perhaps the most important work. In fact, the importance of the book and Celso Furtado's thought in the process of construction of those institutional arrangements and in the strategies for the development of the Northeast Region is indisputable. According Oliveira (2009),<sup>11</sup> for example, the development concept for the Northeast region, which gives rise to the creation of Sudene by President Juscelino Kubitschek (JK) in 1959, is entirely based on the interpretation of the northeastern economic complex, one of the main concepts developed by the Author of *EFB*. That means:

An export sector with high profitability and very high concentration of property and incomes, based on slave labor, in articulation with a subsistence sector of low productivity and low profits, which was based on servile work, not slave labor, neither also free in sociological sense too. And this complex, once again, strength and weakness, which Furtado has called dual, will definitely mark the Northeast region until our days.<sup>12</sup> (OLIVEIRA, 2009, p. 498)

More than that, the technical and political recognition of the creator of Sudene transformed him, in 1962, in the first titular of the Planning Ministry and mentor of the Triennial Plan of the President João Goulart (Jango) government that replaced the government of president JK<sup>13</sup> Thus, both the development governments policies of JK and of Jango were strongly influenced by the work of Celso Furtado. The content of his thesis synthesized in *Economic Formation of Brazil* served as the basis for strategies and government choices for intervention and planning not only in the Region Northeast, but throughout Brazil, at a crucial period for building the bases of the Brazilian "developmentalism model". That is, Furtado was one of the first (if not the first one) economists not only to propose, but also to put into practice his conceptions, convictions and theoretical and

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11 This text was originally published with the title "Economic Formation of Brazil: Geneses, Importance and Theoretical Influences", in the book *Introduction of Brazil - a banquet in the tropics*, by Lourenço Dantas (org), São Paulo: Senac, 1999. Free translation. Original in Portuguese.

12 Free translation. Original in Portuguese.

13 Actually, the President João Goulart replaced the President Janio Quadros, elected in 1960. However, Quadros resigned in august, 1961, only seven months after his inauguration ceremony. See Abreu (2014).

methodological approach in governmental actions, through interventionist policies directly under his management.

According to the paragraph above, it seems to us no exaggeration to affirm that Furtado's experience brought to the practice of public policy the main elements of his theoretical understanding about the process of Brazilian underdevelopment. He may have been a unique example in the country in that period. Perhaps that is why his thesis was responsible for "setting the minds" of many Brazilian economists in the last almost sixty years, consolidating himself as a kind of intellectual mentor of several thinkers, when interpreting evolution of the Brazilian economy since the period colonial until the beginning of industrialization in early 1900s.

In fact, *Economic Formation of Brazil*, was and continues being one of the main constituent elements of the debate on Brazilian economic development, despite any criticism it may have received in the last 57 years of academic production on economic history of Brazil. A good sample can be observed in the set of articles published in the edition commemorating of the book's 50th anniversary, in 2009, called the *Critical Fortune*.<sup>14</sup> There are prefaces written by historians and economists, criticisms published in academic journals abroad, in foreign editions in Europe, in United States and Latin America, all of them present unmistakable elements of the receptivity of the text and, lastly, in more recent articles, when social scientists evaluated *EFB* as a classical work for the state-of-the-art in the academic production on this subject.

To achieve the objectives of this paper, we preliminary observe that the reverse chronological reading of some of the articles of the *Critical Fortune* will help us to prove this statement, while we also try to demonstrate that, in the course of time, some important critical aspects of the same set of approaches, has been left aside in some important points in *furtadian* analysis. Coutinho (2009),<sup>15</sup> for example, points out Celso Furtado as the most influential and renowned Brazilian Economist of his generation and the reading of *Economic Formation in Brazil*, an obligatory item for the entire social scientist.

Following in this line of reasoning, deepening it, Oliveira (2009), almost a decade before Coutinho statement, shows Furtado as one more else "demiurge" of Brazil, placing him side by side with Gilberto Freyre, Sérgio Buarque de Holanda and Caio Prado Junior, authors who, according

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14 See Furtado (2009).

15 This text was originally published with the title "The Economic Theory of Celso Furtado: Economic Formation of Brazil", in the *Current Thinking of Celso Furtado*, Marcos Costa Lima and MD David (org.), Goiania: Verbena, 2008. Free translation. Original in Portuguese.

to him, elaborated interpretations that definitively shaped the way of Brazilian society to understand its own formation, including its social, economic, political and cultural forms, as State-Nation, “with its stigmas and modes of relationship that have given us a special stamp”. Mattoso (2009), on the other hand, points out that in general, Celso Furtado’s work of 1959 is a demonstration of impeccable logic about the historical construction of Brazil, where the underlying economic theory would lead to a perfect understanding of the Brazilian process of economic development.

We used, a priori, only 3 of the 21 authors whose references to the Brazilian Economic Formation were part of the Critical Fortune cited above, because two reasons. The first one is to show that in spite of some problematic aspects observed in the work, almost all the scholars who dialogue with him, explicitly in different moments of history, has a true admiration and intellectual respect for his analytical and explanatory capacity to understand the country’s process of underdevelopment. Second one, in none of the 21 texts that have been chosen to celebrate the fifty years that separated the first edition of the book and its commemorative edition, is there some kind of deeper criticism to an element that we find extremely important in *furtadian* conception about the Brazilian underdevelopment: the reasons that, in the Furtado arguments, determined the behavior of the former slave – and their descendants! – in the transition period from the slavery as mode of production to free and wage labor, and the respective consequences for Brazilian development.

All texts are silent and only repeat or ratified, in a complementary way the thesis presented by the Author. Actually, Mattoso (2009)<sup>16</sup> even considering the book as a kind of “Opera Magna”, indicates some hypothesis in the text as interesting suggestions of study for economists and historians. Among these suggestions, there is the Furtado’s view that abolition would have more a political character, than economic one, because, by him, “it neither destroyed nor created wealth, but allowed a redistribution of these riches within the national collectivity”. Moreover, she also seeks to complement this explanation, through a footnote in her original paper, stating that by Celso Furtado, there was in fact a redistribution of income in favor of the former slaves who began to receive high wages after the abolition. However, she continues, Furtado insisted on the fact these former slaves preferred leisure to work every day because they lived in the mediocre

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16 This text was originally published in Cahiers du Brésil Contemporain, Paris, 1998, n° 33-34. It brings the minutes of the colloquium “Le développement, que ‘st-ce? L’apport de Celso Furtado”, organized in Paris in February 1997. Free translation. Original in Portuguese.

picture of their needs, and end up her text observing that “this stereotype is being nuanced by the historians of slavery”.

The aspects showed in the previous paragraph have an extremely deep meaning in the Furtado’s work and are far from being just a matter of stereotypes to be dealt with by historians of slavery. On the contrary, the perspective presented in *Economic Formation of the Brazil* book, in this respect, seems to us a crucial element not only for the whole analytical framework of it, but mainly, for the guiding elements that it points out as possible solutions to the problem. In this way, there is the imperative of a reinterpretation about it and that is the main objective of the present work. Therefore, we believe that it is extremely pertinent to draw attention to the observations of two authors which pointed out, as early as 1959, year of book launch, some theoretical and methodological problems of great relevance in the Furtado’s work.<sup>17</sup>

Sodré (2009),<sup>18</sup> for example, affirms that the initial moment of *EFB* history, had important frailties in its descriptive structure and, even without going into the merits of the issues now, we see in these notes, usefulness for the unfolding which we intend to give throughout the text:

Celso Furtado really knows, but he does not know how to convey what he knows – which is a bad thing, of course. But, moreover, he making history – it’s about the development of the Brazilian economy in the course of historical time – it does not dominate the sources and even reveals contempt for them. Who quotes Antonil by Simonsen’s quotations one, and even Gama Barros, did not have the slightest concern in studying history. Without historical knowledge, there is no way of unroll the development of material progress. The author confesses this, however, with a candor that marks

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17 In seeking the critiques of the book in the most different moments and opportunities of its diverse editions from its initial publication in 1959 to the year 2008, we made a methodological choice to demonstrate in this brief article that along with the complete omission on the *Furtadian* interpretation of the role of the manpower of the former Slaves in the period of transition to wage labor after abolition, there were also important theoretical and methodological criticisms related to his text, in particular, those contemporaneous with the year of its first releases. It means, that when we opt for this set of approaches, we affirm both the book importance had for the construction of Brazilian economic thought, but also, we did a good methodological choice for the purpose of the present paper, when using the *Fortuna Critica* as a kind of summary about the understanding of important thinkers, especially economists, about *EBF*, in more than half a century of its existence.

18 This review was originally published in the “Book of the Week” section of the *Ultima Hora* Literary Supplement of April 18, 1959. Free translation. Original in Portuguese.

naivety, total innocence, the quiet sufficiency that leads to disaster. He behaves like one who says: 'I know economy, – and that's enough – history is for lay people.' It is not – and there, is the error of an intelligent man. And It's a pity, because he is a great author, and a great work.<sup>19</sup> (SODRÉ, 2009, p. 348)

On the other hand, Arena (2009),<sup>20</sup> suggests even more profound clues on the aspects that we will treat. He points out, for example, the lack of coherence and rigor in the interpretation of the historical facts treated in the book:

The author omits himself almost entirely from the appreciation of the direct and reflex actions of economic infrastructure movements in the social superstructure, and vice versa. More precisely, seems to him to lacks the understanding of these two categories of dialectics, and their interaction. Since as he does not seem to have another theory to explain socioeconomic facts, his exposition is often partial, unilateral, lacking in coherence and outlook. Economist, he always tends to fill this lack of a global theory by a kind of 'animism' in which purely economic facts become subjects of history with supernatural decision-making power.<sup>21</sup> (ARENA, 2009, p. 351)

Obviously, we do not intend here to use only these interpretations to assert our interests as to the main objectives of our work, from the critical point of view. However, even without entering into the specific merits of the observations quoted above, we believe it is important to indicate that these insights, when confronted with some of the most important aspects written out by Furtado when interpreting the role of the work of the former slaves in the transition period for paid labor seems to us to clarify problems that we consider extremely significant, as we will see below.

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19 Free translation. Original in Portuguese.

20 This review was originally published in the "Book Review" section of Issue 6, Year II, May-September 1959. Publisher Revan. Free translation. Original in Portuguese

21 Free translation. Original in Portuguese.

## 2 The “furtadian manpower problem” for the understanding of the Brazilian economy development, after slavery.

The problem of labor was one of the main aspects treated by Furtado in the book *Economic Formation of Brazil*. Its relevance can be measured by the fact that the manpower problem to be present itself as one of the analytical supports that structure his theoretical perspective to explain the process of underdevelopment of the country as an agro-exporting economy, from the end of the slavery, but also and especially during the transition to paid work, passing, obviously, by the gestation of the coffee economy and the beginning of the industrialization process. Or, according to Dean (2009, p. 423).<sup>22</sup>

Furtado’s principal thesis is this: that Brazil could not experience continuous economic development as long as it employed slave labor and producing principally for export. In a slave system, there is no payment for labor as a factor, Consequently, there is no effective internal demand. The slave owner appropriates all income; In an export-oriented economy he satisfies his demand by importing, most notable by importing labor. When the price of export product declines, the slave owner ceases purchasing slaves, sends his capital abroad, and allows his operations to vegetate, to turn to subsistence production. In an industrial wage-paying economy, however, a decline in prices does not lead to this kind of regression, but to a defense of the level of employment.

Dean’s text, already in 1965, suggested that the overcoming of slave labor in favor of wage-earning labor, as well as the overcoming of essentially export-oriented production, would be, by Furtado, the necessary conditions for a true development process from the country. Regarding his considerations about the agricultural for export economy, the economic literature on the subject is vast and substantive and doesn’t let doubt about it. But, the issue of labor, which in itself contains extremely complex aspects, when we place it as one of the central and endogenous variables to a model of

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<sup>22</sup> Quote from original book reviewed in *Luso-Brazilian Review*, v. 2, n. 2, p. 105-107, Winter 1965.



growth and economic development, lacks a deeper understanding, especially because of the Furtado's interpretations of the role of the manpower of former slaves in the period of transition to wage-earning labor economy.

Considering that the overcoming of slave labor was an important element for the country's development, the Author of *EFB* brought to his analysis the need to explain two extremely profound problems, not only for the formation of the Brazilian economy itself, but for the formation of the Brazilian society also as a whole, it means, the economic justifications for mass importation of the contingent of European manpower in the end of slavery and, consequently, the motives, and economic reasons, for non-absorption of manpower already resident in a crucial time for Brazilian economy, namely, the consolidation of the coffee economic cycle – the most important for economic growth of country until today – and especially to the phase of transition to the nascent Brazilian industry.

In general, on the case of the economies that have been developed from the endogenous use of the slavery as mode of production, this is a crucial issue for the formation of the emerging economy, society and the nation which it has been structured. The interpretation, the analysis and, above all, the political and economic interventions aimed in the treatment of the issue must be observed as constitutive elements both for the consolidation and deepening of the problems, as well as the possibilities of their overcoming through specific policies.

In few words, the problem of manpower in *EFB* can be summed up in two aspects interconnected more important. Firstly, the tension between the Author's statement about manpower shortage for the dynamic sector of the economy, the agricultural for export sector with high profitability, high concentration of income and property, based on slave labor; and, the other side, the potential supply of the manpower of the subsistence economy sector, whose basic characteristics were low productivity and low profits, where even having the social relations of landed property with labor had been structured on the margins of slavery model and but even after it, it were remaining intact even after abolition.

Despite peculiarities of labor relations in the subsistence economy, the fundamental issue that must be pointed out here is that, long before the end of slavery, and in an endogenous way to the Brazilian economic model of the colonial period, there was relations of labor external to the slavery regime. Thus, the issue of labor shortages is not properly related to the quantity of manpower that was unavailable for work in the period of transition to paid labor or even related to the "quality" of labor, but to a contingent of workers who were not integrated into the labor market by

way of wage labor and also who were not enslaved in the specific sense of the term.

Maybe that is why, Furtado (1989) affirmed that in the end of the nineteenth century, a substantial reservoir of labor existed in Brazil and this led him to believe that if it had not been possible to solve the problem of coffee plantations with immigrants, an alternative solution would have arisen within the country itself. In other words, the seek for European immigrants to overcome the “inelasticity” of the country’s workforce was referring to the inelasticity of slave labor in the agricultural for export sector and not necessarily the total number of resident workers that could be made available internally for the new period of economic growth based on the coffee company. Or, as affirms Delgado (2009, p. 23):

From the documentation related to the Demographic Censuses of 1872 and 1900, Furtado estimates a demographic potential of the subsistence sector, quantitatively sufficient to meet the various demand pressures stemming from coffee expansion or any other regional growth centers in the second half of the nineteenth century - Livestock in the South, rubber in the North, cocoa in Bahia and circumstantially sugar in the Northeast, with the experience of the central sugar mills after 1875.<sup>23</sup>

In a very objective way, both the numeric data of the census and the discursive contradictions of the Author suggest, besides the tension about the meaning of inelasticity of supply of labor in the dynamic sector and the manpower underutilization of subsistence’s sector to face the employment demand, was in the first place, a political choice did by the government in favor of European immigration after the end of slavery.

Obviously, the revelation of this proposition does not show any novelty in general discussions in the field of social sciences and political sciences about the Brazilian immigration process in nineteenth century. However, what we need to bring to the debate is why for economic matters or of economic policies reasons, the Author of *EBF*, faced with these explicit contradictions of his own text, chose not only to attribute to the immigrant European a kind of superior labor skills than the former slaves, but also a dangerous omission of the contingent of workers who even in that time were no more part of the slavery regime.

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23 Free translation. Original in Portuguese.

Another important aspect that we need to observe, concerns the interpretation about European solution to solve the “labor shortage” problem. Furtado’s gaze on the way out encountered in the period considered not only deepens the contradictions already observed, as we seem to overcome in terms of analytical complexity, and quite strongly, the tension about the existence or not of inelasticity (absolute or relative) of domestic supply of labor to cope with the profitable coffee cycle.

The fundamental premise of the Author is that Europe’s immigrant labor force would have “indisputable” comparative advantages over the former slaves. It is his statement: “The advantages of the European laborer over the former slaves are too obvious to need further emphasis”. (FURTADO, 1989, p. 139) Besides not clearly identifying what were these “overly obvious advantages” of European immigrants would be in relation to the former slaves, Furtado did not deal with important deeply contradictory issues which, at a glance in his work, would completely nullify his own statements above. The most emblematic of them were the failed experimentation of German colonization of Rio Grande do Sul state, specifically in the city of São Leopoldo in 1824 that the Author himself used as an illustrative case of the lack of economic foundation and the belief of superiority of the European laborer. In his own words:

It was a heavily subsidized colonization. Transportation and installation costs were paid by the government, and public works were promoted for the purpose of providing jobs for colonists. Some of these projects were prolonged to an absurd extent. And in almost every instance in which - after heavy expenditures - the colony was left to its own fate, it tended to wither away and revert to a mere subsistence economy.<sup>24</sup> (FURTADO, 1989, p. 124-125)

As there is no reference in the text about existence of any kind of incentives in order that local subsistence sector labor force would have migrate to the dynamic sector of the economy, the coffee plantation in particular, we can infer that from the point of view of quality of the workforce, the Author’s own observations reveal no empirical evidence of none advantages, a priori, of European workers over those already was residing in Brazil, including former slaves and their descendants. Actually, in addition to the experience of São Leopoldo discussed above, the fact is

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24 Free translation. Original in Portuguese.

that European immigration to Brazil, the Italian especially, was from the southern region of Italy, precisely the region of “lower development and lower agricultural productivity”. (FURTADO, 1989, p. 128)

In the face of the evidence on the political choice that has engendered so many profound economic and institutional changes favorable to immigration and European immigrants in that period, both the issue of absolute scarcity and about the quality of the local labor force in the period of the development of the coffee cycle are, in our view, issues that demand a re-examination due to explicit contradictions in the Author’s speech about this aspect in his more known and studied book in Brazil.

Finally, we must argue in more depth other fundamental aspect on the question of labor, in the basilar Furtado’s book: the role of the former slave when the slavery system was eliminated and its evolution towards an economy based in salaried work. This issue was the Gordian knot, not only for the real understanding of the construction of the Brazilian economy since the end of the nineteenth century, but mainly, to the analyzes theories and interpretations of several social thinkers since there, Celso Furtado and his followers specially.

Therefore, a substantial part of Furtado’s entire intellectual effort was an attempt to untie this knot. In our point of view, such attempt was made in the light of the one more mistaken interpretation considering the thinker of his carat. In addition to debatable economic assertions in the specific treatment of the labor issue – which he insists on calling the problem of labor – the Author makes inferences about the behavior of the former slaves in their socioeconomic relations which would be only possible with a deep analytical understanding of them included through a strong data-based empirical knowledge, as well as history in its broadest sense, the anthropology, sociology, political science and something we have never seen happen in the field of economic sciences: an analysis of the growth evolution of a given country or region, devoid of any hegemonic ideology that underlies it.

### **3 The role of former slave in the transition period to paid labor: Inadequacy for the new economic cycle or “invisible” strategic human resource to the coffee’s production?**

From reading the chapters on the manpower problem, we understand with some discomfort, that the Author seems to develop his entire argumentation from a structured analytical model of the point of view of economic

history, but also with underlying elements of a consolidated mental model not necessarily economic that have been overlooked by the majority of his interpreters about the analysis of the work under our discussion here. However, only by admitting the existence of this underlying mental model we can understand the various and huge contradictions and analytical depth problems found in *EFB* when the Author concerns focus about the slave manpower, in particular way.

Furtado suggests, for example, an extremely simplistic unfolding for the understanding the “issue of the manpower” which he so insistently calls “the problem of manpower”. For him, there was no issue of labor in general sense to being analyzed and unraveled, in that extremely complex historical context and of profound transformations, but a trouble to be solved, or, an possible explanation to be elaborated from a supposedly coherent economic logic for support the political events already consolidated in that time – like the end of slavery, for example –, but not necessarily, theoretically justified well.

His text indicates, therefore, that the main Brazilian economic cycle, the coffee, whose were bases would foment the process of industrialization, institutionalization, re-population and, mainly, spatial reorganization of the economy lacked a fundamental element for its sustenance and sustainability beyond the productive soils: the paid labor force. Thus, based on his reading of Brazilian economic history, Furtado affirmed that the solution found in that time was given per the following logical unfolding: due the scarcity and low quality of resident laborers – especially the former slaves – to cope with the accelerated growth of the dynamic sector of the new economy since the end of second half of the nineteenth century, associated the difficulty of interregional labor mobility, the “only alternative” for the growth and development of the Brazilian economy, in that moment, would be the massive importation of the “skilled” European laborers for the coffee cultivation.

We already have observed previously that both the issue of the absolute scarcity of labor and the so-called best intrinsic quality of the immigrant in relation to the former slaves, do not support itself when we focus look at some explicit contradictions in book narrative. But, we must have to show considerations about the element that we believe to be the most complex of these matters. That is, the Furtado affirmatives about the “total inadequacy” of the former slaves to the new salaried economy that emerged in Brazil on the end of the 1800s. Indeed, to confirm his understanding, he observes initially that the abolition of slavery, like an “agrarian reform”, does not imply per se neither destruction or creation of wealth. What it

does amount to is merely a redistribution of property within a community. (FURTADO, 1989)

We can see clearly that in the Author's thought, both the abolition itself, and consequently the fate of the previously enslaved persons, seemed, for him, variables totally exogenous to his analytical model. But that was not true. On the contrary, the issue of former slave's manpower was a structuring part of his model and an important basis for his interpretation of the entire economic process in that period and not just to explain the future labor supply of European immigrants. In this aspect, by way of illustration we can wonder if, by methodological exercise, we hypothesize that in the period immediately preceding the abolition of slavery, there were, by a totally unknown action, the complete elimination of all slaves of the Brazilian productive system, so we may ask: there would be destruction of wealth, from the *furtadian* point of view? Or if, in opposite, that same god ex-machine would double, or tripled, the number of slaves, would there be wealth creation?

As slave manpower is understood as capital goods in a slavery economic system, and hence the creation and destruction of capital goods necessarily leads to an increase or decrease the process of accumulation, that in its turn is the necessary condition for the growth of any economy, the answer is necessarily, yes for both questions. Thus, the problem was another one: it was not the slave's quantity who disappeared, doubled or tripled in the late nineteenth century, but it was the guiding political principle and the economic logic of the productive system that was sustained by the slavery regime that ceased exist institutionally, after almost 380 years! Therefore, even in the absence of other economic-based theoretical elements, we never can imagine that a specific institutional arrangement that allowed the transition from slave labor to wage labor (abolition) could have a neutral effect in terms of creating or destroying wealth in any economic model, as well as profound transformations and reorganizations of the all productive system since there.

On the other hand, it practically impossible to wondering that one of the greatest Brazilian economic thinkers have not perceived, in the end of 1950s, 20 years after the Lord Keynes's General Theory was published that his statement had not make sense, except if we forget at all the simply concept of aggregate supply and demand or the effective demand's meaning according Keynesian theory. But, the most serious of all this assertion is that it eventually cast a huge smokescreen on some elements that could lead to totally opposite interpretations of the possible zero effect on the economy of such profound institutional change like, the abyssal differences between the material conditions given to the newly arrived immigrant in

the country and those that not given the manpower of the liberated from enslavement in the new economic and political-institutional context.

If in the macroeconomic context lacked a certain degree of *keynesianism*, in the economist's model of analysis so he could see that the abolition of slavery should be a fundamental element for creation of wealth, it is in the microeconomics aspect that we observe the most dangerous manifestations made by him about the effects of the end of the slavery period and more specifically the role that the former slaves – and their descendants! – had have and would have in Brazilian economic development from then on.

The work of Delgado (2009), concludes pertinent observations (despite not exhaust) as well as possible justifications regarding the problems that we have been announcing in the course of the text and, especially, the developments that we intend to do from now on:

The lack of documentary information and specific research on the fate of former slaves, replaced in the production of coffee by the European immigrant, contrasts with a certain documentary prodigality, both on the influx of this immigrant, and from his work relations, before and after 1870, when the Government of the Province of São Paulo assumed all expenses related to immigration. This gap in historical it causes (exceptionally in the case of Celso Furtado) conclusions about the former slaves' microeconomic behavior, as a probable explanation for their relative marginalization of the labor market in the coffee zone. The following quotation, which illustrates Furtado's judgment on the exclusion of ex-slaves from wage labor, requires proper contextualization and a certain critical eye, as we shall see below.<sup>25</sup> (DELGADO, 2009, p. 236)

The quotation above refers to, without any kind doubt, one of the most disastrous statement someone of the intellectual importance as Celso Furtado could write in a work of such emblematic, even if we consider that it was made in the years 1959:

The favorable job situation existing in the coffee region afforded the freed slaves relatively high wages.

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25 Free translation. Original in Portuguese.

In fact, abolition caused an effectively redistribution of income in favor of manpower in the coffee region. Nevertheless, that improvement in the real remuneration for labor seems to have had negative rather than positive effects on the utilization of factors. A better understanding of this aspects of the matter may be achieved by examining the broader social trait of slavery. The man raised under slavery is altogether unfit to respond to economic incentives. Because he has almost no habits of family life, the idea of accumulation of wealth is almost entirely alien to him. Moreover, his rudimentary mental development sets narrow limits upon his necessities. Work being a curse for the slave and leisure an unattainable blessing, raising his pay above the cost of his necessities – which are defined by the slave’s subsistence level – promptly induces a strong preference for leisure. [...] ‘In the old coffee region where, in order to retain the working force, it was necessary to pay relatively high wages, there was soon a slackening in work standards. Being able to meet his subsistence expenses on two or three working days a week, the erstwhile slave saw a more attractive proposition in ‘buying’ leisure than in working he felt he had enough to live on. Hence, one of the direct consequences of abolition in the regions of most rapid development, was a reduction in the degree of utilization of the working force. That problem has broad social repercussions which are beyond the scope of this work. At most I shall mention here only that the low mental development of the slave population led to slavery a partial segregation after abolition, delaying their assimilation and stunting the economic development of the country. Throughout the first half of the twentieth century, the great mass of the descendants of the former slave were to go living within its limited system of ‘necessities’, and playing purely passive role in the economic transformations of Brazil.<sup>26</sup> (FURTADO, 1989, p. 140)

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26 Free translation. Original in Portuguese.



Even if we considered only the state-of-the-art of knowledge about economics in that time, the profound improprieties of the previous citation content already would “leap into the eyes” of more attentive observers. If we admit, as a basis for our evaluation, everything else that had been produced in the field of economic sciences and other social sciences, in Brazil and abroad since there until now, we might suggest that the chapters that Furtado deals with the question of slave labor in his more notorious book, we may wonder if those pages should never have been written, because their assertions must have contributed to the strengthening of one of the greatest stigmas imposed on human beings – and their descendants – submitted to slavery in Brazil, that is, the “lack of skills” for work, for the learning and for economic activities outside a slavery regime. This affirmative seems a deep strongly statement but, unfortunately, it is the “bare and raw” synthesis of his proposition, in that topic of *EFB*.

However, the book is already consolidated itself as an important part of the whole framework of Brazilian economic knowledge and, therefore, it does not seem sufficient only try to put question its conceptions only by pointing out some of its serious incongruities or deleterious assertions, but from of them, to guide out the necessary paths to a process of deconstruction of those statements because even with the existence of some very appropriate criticisms, the majority of economists and other thinkers on the social sciences seem to have absorbed the logic presented in *EFB* without great or none reservations.

Mattoso (2009), for example, already pointed out as problematic the assertion of Furtado as to his perspective that the former slaves had the preference for idleness, when in a wage-setting regime and so the former slaves and their descendants passed to suffer discrimination and social exclusion. Delgado (2009) follows in the same line of reasoning when he affirms that the consensus of historical research on this issue is exhausted by the finding of social exclusion of former slaves in the coffee labor market, but there is no consensus on the “preference for idleness” [on the part of the ex-slaves] as justification for the existence of this process of exclusion.

The citation of Cunha (2004), below, from his doctoral thesis: *A faithful portrait of Bahia: society-racism-economy in the transition to paid work in the Recôncavo açucareiro, 1871-1902*,<sup>27</sup> is emblematic in the measure that participates in the debate historical economic, including racist ideology as an intrinsic variable to the analytical model that advocated the former slave’s inadequacy to the wage-labor regime that had been presented by Furtado and others social scientists:

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27 Free translation. Original in Portuguese.

From the quotation, it follows that the former slaves lacked 'qualities', the rationality of homo oeconomicus, which would make them unsuitable for capitalist labor relations. In the author's words, this 'immediately determines a strong preference for idleness,' and the 'reduced mental development of the population submitted to slavery led to its partial segregation after abolition, delaying its assimilation, and hindering the country's economic development.' Thus, the economic literature constituted the myth of the former slave's inadequacy to capitalist relations, or rather, to the new labor relations post-abolition. Nothing, however, was said about the slave of gain that throughout the nineteenth century, in exchange for his freedom, he worked hard and in any activity to provide for his survival and the income of his employer/lord. There is also no mention of the possibility of the slave does constitute savings, which was provided for by Law 2040 of September 28, 1871 (the free womb's Law), nor to the countless wills and inventories left by the African former slaves and Creoles, in which one observes a mastery of the economic codes for the accumulation of wealth. On the other hand, there is a total silence about the meaning of idleness, which seems to be understood by scholars as synonymous of non-work. From the perspective of the former slave, idleness could be an expression of the resistance to discipline imposed by the wage-labor regime.<sup>28</sup> (CUNHA, 2004, p. 18-19)

The author advances in the discussion demonstrating that both economic inadequacy and the preference for idleness were a myth rooted in the economic canons of economic history in particular, giving us concrete examples of the both phenomena actually lacked minimum empirical proofs. However, the "inadequacy" of the former slaves to the new labor relations, or more precisely, their preference for idleness would not in fact be the most problematic aspect of being debated from Furtado's economic model. Strictly speaking, classical economics itself already advocated that the dilemma between work and leisure was part of the process of choosing

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28 Free translation. Original in Portuguese.

the rational individual in front of capitalist labor market, so it is not a foreign concept to economic analysis, except for the categorization given by the Author to the motive cause of the former slave's preferences.

Our point is: the fundamental issue that must be discussed and deconstructed in Furtado's assertion about is the reason advocated by him to justify the behavior of the former slave in face of that we might call of disutility marginal of his own work, because of the point of view of economic analysis is not really different from the behavior of any and all laborer in a given economic and institutional environment, especially in the capitalism. Simonsen (1983, p. 13), helps us to better understand this complex issue:

Each individual distributes the 24 hours a day between working hours and leisure hours. The term 'leisure' is used here in the broad sense, encompassing rest, amusements, and work outside of companies and for self-consumption. The number of hours that each individual dedicates to the work in the companies depends on their preferences between income and leisure and the real salary paid by the companies. In the short term it is assumed fixed the number of individuals and their preferences. Thus, the supply of labor is a function of the real wage.<sup>29</sup>

The Holanda text (1995), below, illustrate in the curious way, the universal character of human behavior before the perception of the marginal disutility of its work force:

The truth is that typical English is not industrious, nor does it possess to an extreme degree the sense of economics... It tends, on the contrary, to indolence and prodigality, and esteem above all the 'good life'. This was the current, almost unanimous opinion of the foreigners who visited Britain Before the victorian era.<sup>30</sup> (HOLANDA, 1995, p. 45)

Therefore, could we infer that the "good life" of typical English (or would it be a preference for idleness?), in a society which was the cradle

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29 Free translation. Original in Portuguese.

30 Free translation. Original in Portuguese.

of the industrial revolution, would also mean a rudimentary mental development of their people?

Thus, in addition to contradicting the myth of the absence of typical homo oeconomicus reasoning in the former slaves and their descendants just because they were submitted to slavery in Brazil as Furtado suggested, what we should affirm is that in the absence of elements substantial and empirical in his own work, nothing could be said, a priori, about the true cause of the former slave's behavior in the moment their entry into the salaried labor market, much less to attribute to them to a rudimentary mental development that would limiting the their needs – and of the their descendants! – as the reason for their supposedly behavior not economic.

In this sense, what we must observe with the greatest possible emphasis on this assertion is that despite representing a seemingly simple discursive construction (there are only three key words in the complete sentence), it is the core of all logic “of a thesis” whose post developments point to “a theoretical” construction which seems to contain much more serious aspects in the interpretation of *EFB* Author than only to announce the “preference for idleness” per the former slaves in a wage-labor relationship as an immediate cause of their own social and economic exclusion, and consequently as an engine of the retardation and numbness of the country's economic development throughout the first half of the twentieth century like said Furtado

Among the various contradictions observed during reading the Furtado's book, this one is the most significant. Not only by the seemingly logical unfolding of the economic consequences related to it, but fundamentally because it also serves to show, quite objectively, that the task of presenting a theorizing economically based to justify the facts from that period of Brazilian history which accumulated over on time, seemed to draw from the context of the Author's arguments any critical element in relation to his own study, when the subject matter was the enslaved human beings. Indeed, when we observe that the Author himself, in discussing the mining economy of the eighteenth century, in the same book, presents information that enables any reader to arrive conclusions totally inverse to those that he has recorded about the low mental development of ex-slave population to work on the new coffee enterprise:

If immigrants with some manufacturing experience had arrived in Brazil, the most likely consequence would be that the initiatives would arise at the right time, developing a capacity for organization and technique that the colony did not know. A clear

example of this is what happened with the iron metallurgy. The demand for this metal was great in a region where livestock branding existed by tens of thousands – to mention the case of a single article – and being so abundant iron ore and charcoal, the development of the steel industry was made possible by the technical knowledge of African slaves.<sup>31</sup> (FURTADO, 1989, p. 80)

The question that must be asked is how individuals who possessed technical knowledge for metallurgy and steelmaking, activities much more complex than the farming techniques existing in that time, could have “a rudimentary mental development”, as Celso Furtado affirmed so explicitly and directly?

Besides that, it also should be pointed out that black population was the same – even forcibly as slaves – that supported more than 3,5 centuries of the production of sugar cane and other export products that shaped all the Brazilian economy throughout the colonial period and yet for almost seventy years after Brazil’s independence. So, we must ask enfatically what could scientifically explain the mind inadequacies for the free and paid work in only few years after the abolition, as try to argue Furtado?

To emphasize these profound contradiction in the analytical construction presented in the book is fundamental for the deconstruction of the myths that led to the stigmatization of the former slaves and their descendants that if not ware created by the Economist, were certainly accentuated by him in his analytical construction in the field of hegemonic economic history for more than half a century, notably in *EFB*.

A second aspect to deserves attention is the extent of the responsibility that Furtado attributes to the black population for Brazilian underdevelopment until the middle of the 20th century. He is not content to “blame” for the atrophy of our economic development the 15% of the population submitted to slavery, but also the about 42% of the population of their descendants if we observe only the census of 1872, sixteen years before the end of slavery.

Therefore, for him, if 58% of the country’s black population of that period was not properly included in the productive process, in the new phase of the Brazilian economy and in the social system as a whole, it would be due their own “incapacities” and not the abyssal difference in terms of living and working conditions that the black population was

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31 Free translation. Original in Portuguese.

submitted, absolutely, after the abolition of slavery, and relative, when we comparing the totally different conditions of the immigrants coming from Europe, which were supported by a wide range of governmental policies of affirmative action and positive discrimination (social, pecuniary and of capital resources).

Such favors for European immigrants were perhaps the greatest example seen in the recent history of the western world of affirmative action toward a particular racial ethnic group made by a Nation-State. So, we must argue strongly is that those policies not only created the social and economic gap, between European immigrants and the former slaves and their descendants already resident in the country, but instigated, in a way “economically justified”, the prejudice, the discrimination and the Brazilian racism through a seeming productive logic “and a perverse system” of unequal competition, which has structured all social relations in Brazil, especially the economic relationship between its different social groups since the end of slavery. The result of this policy can be verified by the sharp increase in the participation of the European white population (less than 40%) in 1872 to something around 62% in 1950, of the total population, while the black population decreases its participation of 60% to less than 36% in the same period.

In a really objective word, the fact is the ideological perspective underlying Furtado’s presented analytical model did not allow him to see – almost in the early 1960s! – that behind the socioeconomic exclusion of blacks, built after abolition, there was an explicit policy of whitening and “europeização” of the Brazilian people and not defects of biological, cultural or racial origin of the former slaves and their descendants. This kind understanding weakened his main arguments about the manpower issue on the book. In this context, the quotation below help us to open our view about it:

Brazilian intellectuals, skeptical of the redemptive promises of abolition and of the republic, had to account for the causes of backwardness and flagrant social differences in the country and they did so by explaining the internal inequalities and the mismatch of the nation Before the civilized world by the racial prism. Thus, in Brazil, from the end of the nineteenth century onwards, different modalities of deterministic thoughts had gained space, with the function of giving a foundation to the rigid social hierarchy of the country based on racial differences.

National backwardness and the impossibility of reaching higher levels of civilization have been explained on the basis of the perverse combination of unfavorable environments (the tropics) and inferior races (blacks and Indians) prevented from achieving human perfectibility...<sup>32</sup> (VIEIRA, 2007, p. 139-140)

Two aspects demand more emphatic records. The first one concerns the convergence of above perspective with the thought of Celso Furtado recorded in an interview in 2002, when he affirmed: “with the theory of racial inferiority gone, the answer could only be in history, and I went there – in the history – to get her”. Here, it is important to say that he was talking about his book *Organized Fantasy*,<sup>33</sup> from 1985, which he wrote 26 years after the first edition of *EFB!* But, in that time the book *Economic Formation of Brazil* already was a classical and imperative reading for several generations of economists, social thinkers and policy makers.

Therefore, if old Furtado of 2002 was assuming that there was some racist component in his earlier analyzes when he referred to rudimentary mental development as the extreme limiting of the needs of black people and their descendants to justifying their own economic and social exclusion belonged to that range of racist constructions, we will never know for sure! However, important authors that published in the same historical period of the economist already had pointed out, even before 1959 that the perspective of racial inferiority was not the causal motive of the process of Brazilian underdevelopment and neither justification to the social exclusion of the black, indians and mestizo population. In fact, the situation was result of a strategy of defense of interests and the maintaining the status quo of the national bourgeoisie and aristocracy, that were deeply shaken by the end of slavery.

For example, Bastide and Fernandes (2006, p. 65-67), in two important moments of his work “Whites and Blacks in São Paulo”,<sup>34</sup> whose first publication dates from 1955 and the second edition is published in 1959, coincidentally in the same year of the first edition of *Formation*, argues:

To the slaves were granted a theoretical freedom, without any guarantee of economic security or compulsory assistance; To the lords and to the state

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32 Free translation. Original in Portuguese.

33 Free translation. Original in Portuguese.

34 Free translation. Original in Portuguese.

no obligation was attributed with reference to the persons of the freedmen freed from their own fate thereafter. To sum up, the social interests of the slave owners prevailed politically, [...] And even until 1887, already in the acute period of the abolitionist agitations, several farmers from São Paulo and their most authoritative interpreters defended the necessity of educating the freedman and transforming him into a free laborer

[...] However, the foundations of these ideas were linked to the social interests of the masters, having nothing to do with the humanitarian ideals of the abolitionists. [...] The discovery of the inconsistency of these ideas produced a reversal in the attitudes of the masters and, as a consequence, the old preoccupations of the human recovery of the slave as a free man were abandoned.

The authors continue,

It was assumed, in principle, that this process resulted even from the Negro's biological inability to adapt to the Paulista plan and that it would be sufficiently devastating to produce the extinction of the black element and his mestizo descendants in a period of forty or fifty years. More meticulous statistical analyzes, however, demonstrate that the aforementioned selective process did not reach alarming extensions and that, by itself, it would not be enough to determine a sudden change in the composition of the population as to the color. On the other hand, the results of the sociological investigations, made by Roger Bastide, led him to conclude that the black deficit did not come from the adaptive incapacity of the Negro, nor from physiological factors, but from the deplorable conditions of life faced in the slums of the city.<sup>35</sup> (BASTIDE; FERNANDES, 2006, p. 75-76)

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35 Free translation. Original in Portuguese.



The difference between the interpretation of Furtado and Fernandes/Bastide in relation to the same problem is of a qualitative very strong contrast, if we observe the place that each of them places the former slaves and, especially, the role of these former slaves in the process of underdevelopment of Brazil in that environment of profound transformation. It did not seem to us that there was any concern in *EFB* to outline the new role of freed people, in need of education or specific training for the transition to free labor, considering due regard to their humanity as were suggested by the authors of the 1955's book. Thus, for Bastide and Fernandes (2006), with the end of slavery, the human beings who were being submitted to that, could not simply be placed in a frank and open competition, in a labor market in deep transformations and in conditions of dispute profoundly unequal when observed the immeasurable policies of positive discrimination given to European immigrants, in comparison the conditions given to the workers here resident and especially the former slaves and their descendants

The authors therefore suggest that this new labor potential should had, necessarily, be adequately included in the country's new development model. On the other hand, the social, technical or even cultural differences of this new contingent of workers had nothing to do with their "rudimentary mental development", like was appointed by Furtado, but with the material and economic conditions historically structured and external to their personality, therefore, passable from to be corrected just as the material conditions of life, production and reproduction were institutional build in the Brazilian social structure in order to welcome the arrival of European immigrants.

If Furtado's statement, per se, already would create a deep confusion in the comprehensive understanding of the historical processes that were responsible for the Brazilian economic underdevelopment of all first middle of the 20th century. Beyond this, it is important to say that in the core of his conception, there was an even more problematic element. That is, his conception of that the black men and women, were suffered social and economic exclusion because of their "rudimentary mental capacity" what according Furtado limited their needs. Due the importance of this statement to the general context of his book, there is another profound issue to be taken up by research in the field of economic history and also development policies which was the effect of this Furtado's view, on the Brazilian development policies, especially the regional development policies designed under his responsibility from 1959 and the follow years, when he was one of the most important leaders of the country's public policies makers.

## 4 Final considerations

The book *Economic Formation of Brazil* was, still is and will continue been one of the more important works for understanding the process of Brazilian economic development. However, there is a serious problem to be argue in its analytical construction, which is the Author's understanding about the reasons that led to the socioeconomic exclusion of black population after the slavery regime. The tensions and contradictions in the Author's own speech are obvious, and in themselves would require a profound revisiting of their propositions. But, much more than this, admitting almost exclusively to the former slaves and their descendants the responsibility for their own social, and economic exclusion due to a supposed "rudimentary mental development" that limited their needs and work demand, and also hence to Brazilian underdevelopment in the first half of the 20th century, Furtado seems to reveal the main limitations of the economic model that he developed in his very important work, as showed by Sodré (2009) and Arena (2009), that we mentioned in item 2 of this paper.

Moreover, if we look at other statements throughout the work, we can affirm also that following the path of a range of intellectuals and thinkers of that time, the racist ideology had a preponderant effect on their interpretations. In our opinion is hard to understand how he got have that kind of conclusions in front of the empirical evidence on the big differences in conditions of entry between European immigrants and former slaves and their descendants in the wage labor market, after the slavery. That is, the abstraction capacity of the Author of *EFB* led him to statements that suggest to their readers that the primary responsibility for the exclusion of a significant part of the Brazilian population was the result of the limitations of the individuals who were the target of the historically structured process of social exclusion: first, because they were slaves during the period of slavery and after the abolition, for having been enslaved in the previous period. In few words, the fact is: his argument is incoherent and a weak tautology that can be clearly observed in his own narrative in the book.

Furthermore, the fundamental difference between the production of his knowledge and the other thinkers in the same period in the history and about same topic in the Brazilian economic history, is that Furtado, as the more important policy maker in that time, received by the government the task to formulate the bigger intervention public already done, in Brazil, in the country's Northeast region especially. Therefore, just as his work had

merited the merit in identifying the particularities of Brazilian economic evolution in different regionally localized productive systems, since the colonial time until 1950s, we can also affirm that was underling those regional development policies, designed by him, also a kind of impediment to see the necessity to put in his planning the problem of the exclusion of the blacks manpower of the new economic model as one of the endogenous variables to overcome the Brazilian and regional underdevelopment. It is clear to us that this was done because, by him, the exclusion process of the former slaves and their decedents was not an endogenous problem of the country's economic system, but only due the absence of a correct economic behavior of that part of Brazilian population. Thus, the European immigration could fix it in the time.

Indeed, the same analytical capacity that allowed Furtado to perceive so correctly the duality of the northeastern region economic complex as an important obstacle to be overcome in favor of Brazilian development through specific public policies was not enough to show him also that internally in the region, and much more marked than in the rest of the country, substantial negative externalities of the unequal process had remained and deepened with regard to the conditions of entry into the wage labor market between former slaves and their descendants, and new workforce that came from Europe in the end of slavery. Paradoxically, therefore, the inter-regional policies that were a kind of "territorial affirmatives policies" to mitigate imbalance in the space economic national growth, not had in Brazil, from the point of view of intra-regional issues, any concern with the particularities under which the various social groups were "included" (or excluded) in the economic and social system, after the slavery and the beginning of the industrialization.

Faced with evidence of so many contradictions, the good science requires reinterpretations and even overcoming some paradigms to progress to a better understanding of phenomena under study and observation. Thus, our contribution aimed to present several arguments to demonstrate that one of the central aspects of the furtadian thesis, in *EFB* – the exclusion of the part Brazilian population after the slavery and the underlying causes of this exclusion, according to their understanding – merit an overview more appropriate and really comprehensive because the great majority of the literature about it, does not do none question about some of his important statements – but not necessarily correct – in his work. Perhaps that's why in Brazil there was no structure, executive arrangement neither kind of incentives by the national, regional and local governments for the implementation of a public policy focused on affirmative action and civil-rights

for the black population until the second half of the 1990s, thirty years after the first edition of *Economic Formation of Brazil* and of the public policies of development created and implemented by Celso Furtado.

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# Distribuição funcional de renda: tendências internacionais e dificuldades de mensuração

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**Resumo:** Uma das críticas feitas à literatura econômica contemporânea que estuda a desigualdade de renda é que esta, predominantemente, estuda aspectos relacionados à Distribuição Pessoal de Renda (DPR), esquecendo-se de se aprofundar nas questões relacionadas à Distribuição Funcional de Renda (DFR). O artigo tem por objetivo apresentar as principais dificuldades teóricas e metodológicas de mensuração da Distribuição Funcional de Renda. Diante dessas dificuldades, procuramos apresentar a dinâmica internacional da DFR a partir da participação da renda do trabalho na renda nacional, sob uma ótica secular e contemporânea.

**Palavras-chave:** Distribuição Funcional de Renda. Distribuição de Renda. Desigualdade de Renda.

**Classificação JEL:** E25, E01, E20.

Functional distribution of income: international trends and dimensions of measurement

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**Abstract:** One criticism of the contemporary economic literature that studies income inequality is that it predominantly studies aspects related to Personal Income Distribution (DPR), forgetting to go deeper into issues related to Functional Income Distribution (DFR). The objective of this article is to present the main theoretical and methodological difficulties of measuring Functional Income Distribution. In view of these difficulties, we seek to present the international dynamics of DFR, based on the participation of labor income in national income, from a secular and contemporary perspective.

**Keywords:** Functional Income Distribution. Income distribution. Rent inequality.

**JEL classification:** E25, E01, E20.

## I Introdução

A distribuição da renda é uma das questões mais vivas e polêmicas da atualidade. Em grande parte, isso se deve a intensificação dos conflitos sociais e dos índices de desigualdade no contexto internacional a partir da década de 1970/1980. Geralmente, a desigualdade no cerne dos conflitos políticos-ideológicos é associada a visões duais, tratando-se de uma questão complexa ao se remeter a noções de cidadania e justiça social, temas difíceis que aludem a princípios morais e éticos. Por mais antagônicas e diversas que sejam as concepções sobre os mecanismos econômicos e sociais que produzem as desigualdades, podemos atribuir esse debate a duas instituições responsáveis pela distribuição da renda na sociedade contemporânea: o mercado e o Estado.

Nas ciências econômicas são vastos os trabalhos que analisam a temática voltada às desigualdades econômicas. Geralmente, esse tema é visto sobre uma perspectiva estritamente econômica, através de análises que investigam as origens, as mudanças e as causas da desigualdade nos sistemas econômicos. Uma das críticas feitas à literatura econômica contemporânea que estuda a desigualdade de renda é que esta, predominantemente, estuda aspectos relacionados à Distribuição Pessoal de Renda (DPR), esquecendo-se de se aprofundar nas questões relacionadas



à distribuição funcional de renda que, geralmente, possui caráter secundário frente a outros temas vinculados.<sup>3</sup> Mesmo a DFR sendo um aspecto importante no desenvolvimento de muitas teorias macroeconômicas, seu estudo ainda é muito negligenciado tanto em nível internacional quanto nacional.

Isso se deve, em grande parte, às limitações teóricas e metodológicas inerentes ao seu estudo, porém, apesar dessas limitações, existem diversos fatores que motivam o estudo da participação do trabalho na renda nacional, como seu uso: na função de produção agregada, como medida de custo marginal, a sua influência sob o crescimento econômico via modificações nos componentes da demanda agregada e a contraposição entre distribuição funcional e pessoal de renda, dentre outros. Assim, este trabalho busca apresentar as principais dificuldades teóricas e metodológicas para a mensuração da DFR, evidenciando sua dinâmica internacional.

## 2 A expressão distribuição funcional de renda

A DFR trata-se basicamente de uma ótica de análise distributiva que visa analisar a repartição do Produto Interno Bruto (PIB) ou da Renda Nacional entre os proprietários de capital (renda do capital) e os trabalhadores assalariados (renda do trabalho). Ela analisa as participações dos rendimentos oriundos do trabalho e do capital na renda gerada pela economia, enquanto, a DPR verifica a distribuição dos rendimentos que as pessoas, famílias ou domicílios recebem.

O termo “funcional” na expressão indica que a repartição da renda é realizada levando-se em conta a função desempenhada pelos agentes econômicos no processo de produção. Assim, se o foco de uma análise for a inserção no processo produtivo, o conceito mais adequado a ser utilizado é o da Distribuição Funcional de Renda que descreve como o total dos ganhos de uma economia em determinado período é repartido entre classes funcionais de renda. Em outras palavras, a distribuição funcional da renda descreve a distribuição de renda entre classes funcionais selecionadas (trabalhadores, capitalistas, proprietários de terras) considerando os diferentes tipos de renda (salários, lucros, aluguéis). Dessa forma, a DFR não é capaz de medir, por exemplo, a desigualdade de salários.

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<sup>3</sup> Este é o caso, por exemplo, de trabalhos que investigam através de modelos pós-keynesianos como a distribuição funcional de renda afeta o crescimento econômico dos países (vice-versa) via modificações nos componentes da demanda agregada.

Normalmente, a participação da renda do trabalho é estimada a partir das Contas Nacionais de Renda e Produção, poucos estudos se esforçam em calcular a distribuição funcional da renda a partir de dados declarados por empresas (microeconômicos).<sup>4</sup> Como a DFR é tipicamente medida a partir de dados agregados, ela é vista, geralmente, pelos pesquisadores como uma divisão macroeconômica da renda, como afirma, por exemplo, Guerriero (2012), enquanto, a distribuição pessoal é chamada de divisão microeconômica. Porém, Piketty (2014b) ressalta que essas duas dimensões distributivas põem simultaneamente em jogo mecanismos microeconômicos e macroeconômicos na sua composição.

A distribuição funcional de renda se preocupa essencialmente com os resultados distributivos da sociedade após a produção, mas afeta diretamente questões relacionadas à desigualdade de oportunidade que se preocupa com as possibilidades de acesso a direitos e recursos básicos pelos indivíduos.

A DFR é considerada uma distribuição primária da renda, pois se refere à renda antes das transferências e dedução de impostos, ou seja, antes de qualquer redistribuição dos rendimentos.<sup>5</sup> Assim, esse é um dos motivos que justificam a importância de uma análise conjunta da DFR e DPR para uma compreensão mais acurada do quadro distributivo, visto que os dois tipos de distribuição são mensurados em momentos diferentes do processo de apropriação da renda.

### **3 Principais dificuldades e metodologias de mensuração da distribuição funcional de renda**

A compreensão e a análise da evolução da distribuição funcional de renda de um país demanda, em si, uma comparação histórica internacional. A falta dessa compreensão seria altamente prejudicial, pois a comparação da trajetória da DFR entre as diferentes nações pode implicar tanto experiências com aspectos comuns quanto peculiares e esses indícios podem ser importantes em pesquisas que visem compreender fatores determinantes da distribuição funcional de renda.

Entendemos que a discussão proposta nesta seção é importante, pois não existe um consenso na literatura sobre a maneira mais condizente

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4 Alguns estudos têm estimado a distribuição funcional de renda a partir de dados microeconômico como, por exemplo, os trabalhos de Ryan (1996), García-Verdú (2005) e Wolff e Zacharias (2007).

5 Por isso, a DFR é insuficiente em uma análise sobre o papel do Estado como redistribuidor e a DPR sobre a repartição primária da renda.

de mensuração da DFR. As dificuldades de mensuração da DFR podem ser atribuídas basicamente a questões de natureza empírica e teórica. Teoricamente, a DFR parece ser fácil de definir, mas muitas questões surgem a partir de uma definição mais minuciosa. O que viria a ser renda do trabalho? A primeira vista, seria a renda auferida pelos trabalhadores, mas o conceito levanta opiniões um pouco mais complexas.

Geralmente, as estatísticas da participação da renda do trabalho na renda nacional incluem nos salários a renda de gestores e diretores, indivíduos que realizam atividades de caráter administrativo/controle, que para alguns autores deveriam ser tratadas a título de lucros.<sup>6</sup> E a renda dos autônomos? Deveria ser considerada renda do trabalho ou do capital? Essa é uma das questões mais polêmicas ao se mensurar a DFR, pois sabemos que muitos autônomos possuem renda inferior a dos trabalhadores contratados principalmente no setor agrícola e nos países pobres. O trabalho autônomo também pode ser tanto o reflexo de empreendedorismo, como um “disfarce” do desemprego, configurado na existência de empregos precários.

Decompor a renda nacional em renda do capital e do trabalho apresenta limitações, uma vez que um indivíduo auferir renda tanto do capital como do trabalho, por exemplo, se um empregado possui poupança, este auferir renda do capital. Nas próprias Contas Nacionais, a divisão da renda nacional entre renda do trabalho e do capital apresenta limitações. Sob a Ótica da Renda, a renda nacional é dividida em Excedente Operacional Bruto (EOB), Remuneração dos Empregados (RE) e Rendimento Misto Bruto (RM). O EOB corresponde à renda do capital, o RE à renda do trabalho e o RM à renda dos autônomos que constitui um *mix* de renda do capital e do trabalho.

Outro fator que influenciou por muito tempo que a DFR fosse pouco estudada frente à DPR foi a concepção “indiscutível” nas ciências econômicas de que no sistema capitalista a participação dos fatores na renda nacional é constante no espaço e ao longo do tempo tanto nos países ricos quanto em países pobres. Até hoje, muitos modelos econômicos amplamente utilizados assumem implicitamente e explicitamente que a participação dos fatores na renda é constante.

A concepção da participação constante dos fatores é fortemente influenciada pela corrente dominante da economia, que possui uma abordagem teórica baseada na teoria neoclássica da distribuição.<sup>7</sup> A concepção da constância dos fatores é utilizada para se justificar, por exemplo, o uso de formas funcionais do tipo Cobb-Douglas. Cobb e Douglas (1928)

6 Como afirma, por exemplo, Kalecki (1938).

7 Onde os indivíduos (escolhas individuais), a dotação de seus recursos e a produtividade determinam majoritariamente os rendimentos, o resultado distributivo na sociedade.

foram uns dos primeiros autores a salientar que, para os Estados Unidos, a participação do trabalho na renda parecia ser mais ou menos constante ao longo do tempo, independentemente das alterações dos preços dos fatores. (GOLLIN, 2002) Décadas depois, Nicholas Kaldor, em 1957, observou que a quota dos salários na renda no Reino Unido e nos Estados Unidos apresentava tendência constante desde a segunda metade do século XIX, o que ficou conhecido na história do pensamento econômico como “fato estilizado”. (KALDOR, 1961)

Do ponto de vista empírico, tanto em nível nacional quanto internacional, dois problemas principais dificultam o estudo da DFR: a compatibilidade e a disponibilidade de bases de dados. Na literatura disponível, os sistemas de contas nacionais dos países são a principal base para a mensuração da parcela do trabalho na renda nacional, porém, por apresentarem diferenciais metodológicos, poucas bases de dados possuem dados compatíveis para uma comparação internacional. Recentemente, algumas bases de dados buscam tornar compatíveis, a nível internacional, dados referentes à participação da renda do trabalho, como: International Labour Organization (ILO), Organizações das Nações Unidas (ONU), Organisation for Economic Co-operation and Development (OECD) e da European Commission. Graças a esses esforços, atualmente, é possível estudar as quotas da renda do trabalho e do capital em razoáveis condições, principalmente a partir da segunda metade do século XX, mas bases de dados que possuem recortes temporais mais abrangentes ainda se encontram mais disponíveis entre os países mais ricos do planeta.

Em nível nacional, a DFR tem sido pouco avaliada, principalmente, porque faltam informações compatíveis para uma série temporal longa em virtude de mudanças metodológicas no sistema de contas nacionais, além de existir uma defasagem de dois anos nos dados disponíveis. No Brasil, geralmente as participações do trabalho e do capital na renda são obtidas através da desagregação do PIB sob a ótica da renda. As Tabelas de Recursos e Usos (TRU) do Sistema de Contas Nacionais (SCN)<sup>8</sup> do (IBGE) são as principais fontes de dados para mensuração da distribuição funcional de renda, enquanto as pesquisas sobre distribuição pessoal de renda são geralmente realizadas através da PNAD do IBGE.

Em grande parte, todas as dificuldades apresentadas explicam a relativa escassez de estudos sobre a DFR frente à DPR e refletem-se diretamente sobre as metodologias adotadas na estimação da quota do trabalho na renda

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8 Antes de 1990 as Contas Nacionais só eram disponibilizadas pela Fundação Getúlio Vargas nos anos em que havia censo econômico, sendo que até 1986 a fundação foi responsável pelos cálculos das contas. A partir de então, o IBGE assumiu a responsabilidade sobre essas estatísticas.

nacional. A maneira mais simples de estimação da parcela do trabalho na renda ocorre através da razão dos salários sobre o valor adicionado bruto da economia:

$$\mathbf{RT} = \frac{\mathbf{SAL}}{\mathbf{VAB}} \quad (1)$$

Na expressão acima, onde RT é a renda do trabalho, SAL são os salários e VAB é o valor adicionado bruto; ambos para o total da economia em determinado período contábil. Se RT for equivalente a 0,75, dizemos que 75% da renda nacional é oriunda do trabalho (renda do trabalho), enquanto a parte residual, os 25% restantes, trata-se da renda oriunda do capital (renda do capital).

A renda do trabalho pode ser tratada de uma maneira mais abrangente:

$$\mathbf{RT} = \frac{\mathbf{RE}}{\mathbf{VAB}} = \frac{\mathbf{SAL} + \mathbf{CS}}{\mathbf{VAB}} \quad (2)$$

Nesta expressão, RE é a remuneração dos empregados,<sup>9</sup> ou seja, o custo do trabalho sobre a ótica do produtor, e CS trata-se das contribuições sociais, como o INSS e o Fundo de Garantia por Tempo de Serviço (FGTS). Para muitos pesquisadores, as CS podem ser incorporadas ao cálculo da renda do trabalho porque gera aos trabalhadores um fluxo de renda futura.

As Expressões 1 e 2, por não incorporarem as rendas mistas (autônomos) no cálculo da quota laboral, geralmente são chamadas na literatura de participações não ajustadas da renda do trabalho. Gollin (2002) afirma que esses tipos de estimações da quota trabalhista são ingênuos ao considerarem a renda dos autônomos como uma renda totalmente oriunda do capital, sendo essa questão particularmente mais agravante em países pobres, onde os autônomos e os indivíduos que trabalham em empresas familiares representam uma fração maior da força de trabalho. Dessa forma, as participações não ajustadas tendem a subestimar a quota da renda do trabalho na renda nacional, sendo essa subestimação mais intensa nos países pobres.

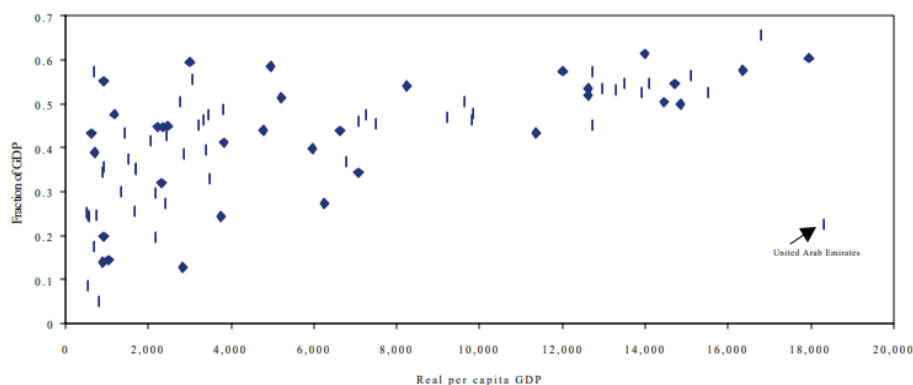
Em países pobres, em grande parte, o trabalho autônomo é um “disfarce” do desemprego, configurado na existência de empregos precários. Apesar de a literatura ser congruente na afirmação de que a participação

<sup>9</sup> Pode ser expressa em moeda ou/e bens e serviços.

do trabalho na renda é menor em países pobres do que em países ricos, Guerriero (2012) afirma que um tratamento (ajustamento) adequado dado à renda dos autônomos no cálculo da quota laboral levaria a refutar essa ideia legitimada, enquanto Gollin (2002) afirma que um tratamento adequado dado à renda dos autônomos diminuiria a diferença das participações da renda entre os países pobres e ricos. O mais importante nas afirmações desses autores é que estes criticam, de certa forma, a concepção de que a participação do trabalho na renda nacional depende essencialmente do nível de desenvolvimento econômico dos países, considerando-se a renda do trabalho embutida na dos autônomos.

O Gráfico 1 apresenta um cruzamento entre a participação da remuneração dos empregados no PIB e o PIB real *per capita* para 81 países entre 1987 a 1992, demonstrando que os países mais pobres, geralmente, possuem baixas participações da remuneração dos empregados.

Gráfico 1 – Participação da Remuneração dos Empregados X PIB real *per capita*:  
81 países (1987-1992)



Fonte: Contas Nacionais das Nações Unidas e Penn World Table (1992, apud GOLIN, 2002).

Diante do que já foi exposto em relação à renda mista (autônomos), uma das questões mais controversas na medição da participação salarial na renda nacional é particularmente o tratamento dado à renda dos autônomos.

As metodologias de estimação da DFR tornam-se mais complexas ao integrarem a renda mista. Por ser difícil de mensurar, infelizmente, dados sobre a renda mista não se encontram disponíveis para vários países. Em muitos destes, as rendas mistas são incorporadas nos excedentes operacionais, mas mesmo quando não possuímos informações sobre esses rendimentos, uma quota trabalhista ajustada ainda pode ser mensurada

através de dados sobre a composição da força de trabalho, que são mais fáceis de coletar.

A dificuldade de coleta da renda mista leva muitos economistas a suporem que a remuneração média do trabalho é equivalente entre os trabalhadores autônomos e os trabalhadores assalariados. (ILO, 2011) Dessa forma, a renda do trabalho ajustada mais simples encontrada na literatura pode ser definida como:

$$RT_{(\text{ajuste 1})} = \frac{RE}{VAB} \frac{EMP}{N} \quad (3)$$

Em que EMP é o emprego total (autônomos + empregados) e N é número de empregados, podendo estes serem expressos em horas de trabalho ou número de trabalhadores.<sup>10</sup> Perceba que a remuneração dos empregados é ponderada pelo nível dos trabalhadores autônomos no emprego total. Johnson (1954) e Bentolila e Saint-Paul (2003) afirmam que o rendimento dos autônomos é menor do que o dos trabalhadores contratados, por esse motivo propõem para os autônomos um rendimento de dois terços do salário médio dos trabalhadores contratados.<sup>11</sup>

Em virtude da suposição adotada, em determinado recorte temporal ou espacial, a Expressão 3 pode tanto subestimar quanto superestimar a quota laboral. Por exemplo, se os trabalhadores autônomos forem compostos, em sua grande maioria, por trabalhadores de baixa renda, sendo seus rendimentos menores que o rendimento médio de trabalhadores contratados (assalariados), isso superestimaria o rendimento dos autônomos. Supondo agora que a maioria dos trabalhadores autônomos possua alta renda, sendo esta maior do que o rendimento médio dos trabalhadores contratados, tal fato provocaria uma subestimação do rendimento dos autônomos. (ARPAIA; PÉREZ; PICHELMANN, 2009)

Outra desvantagem desse ajuste é que a expressão não incorpora diferenças setoriais da renda do trabalho entre os trabalhadores autônomos e os trabalhadores contratados (assalariados). A imputação de uma renda média para trabalhadores autônomos não leva em consideração as diferenças na renda do trabalho entre esses trabalhadores nos diversos

10 O número de trabalhadores é mais disponível e fácil de medir do que as horas de trabalho. As estimativas das horas de trabalho nem sempre são claras, mas são preferíveis porque o nível de trabalhadores pode ocultar mudanças na média das horas de trabalho. (ILO, 2011)

11 Mesmo que essa suposição seja condizente para muitos países, em outros ela não é realista. Seria importante considerar também mudanças ao longo do tempo na renda dos autônomos que podem refutar a suposição.

setores de produção. Na literatura, alguns autores como Askenazy (2003) e De Serres et al. (2002) afirmam que o evento provoca distorções na mensuração da participação da parcela trabalhista na renda nacional, enquanto outros, como Gollin (2002), acreditam que diferentes composições setoriais influenciam muito pouco as disparidades na participação dos fatores entre os países.

Agravando a situação apresentada no parágrafo acima, a remuneração dos trabalhadores autônomos em relação aos trabalhadores contratados é variante entre os setores ao longo do tempo. É condizente se afirmar que no setor agrícola, majoritariamente, a renda dos autônomos é inferior a dos trabalhadores contratados.<sup>12</sup> Como a parcela dos autônomos no setor é maior do que em outros setores, uma aplicação da Expressão 3 nesse setor possui forte tendência em superestimar a renda do trabalho. (ILO, 2011)

Em comparações internacionais, uma limitação imposta pelas Contas Nacionais é a de que nem sempre as definições de trabalhadores autônomos são similares ou idênticas. “Embora este efeito seja frequentemente menos perceptível ao nível agregado, é bastante aparente quando aplicado a setores individuais que têm uma elevada percentagem de trabalhadores autônomos no emprego total”.<sup>13</sup> (ILO, 2011, p. 95, traduzido pelos autores)

Uma forma de controlar as desvantagens impostas pelo Ajuste 1 (Expressão 3), seria adotar o seguinte ajuste:

$$RT_{(\text{ajuste 2})} = \sum_{i=1}^k \frac{RE_i}{VAB} \frac{EMP_i}{N_i} = \sum_{i=1}^k \frac{VAB_i}{VAB} \frac{RE_i}{VAB_i} \frac{EMP_i}{N_i} = \sum_{i=1}^k PVAB_i \times RT_i \quad (4)$$

Em que  $i$  são setores específicos da economia,  $PVAB_i$  é o peso do valor adicionado setorial no conjunto da economia. Nesse ajuste, a parcela nacional da renda do trabalho é expressa como uma média ponderada para cada setor da economia, usando  $VAB_i$  como peso, em que a remuneração média dos empregados em determinada atividade econômica é atribuída aos trabalhadores autônomos que pertencem ao mesmo setor.

É importante ressaltar que diferenças na participação dos fatores em um setor entre países podem ser o reflexo de diferenças no tamanho, na escala e na natureza das empresas. Kravis (1962) afirma que dois elementos são responsáveis por essas diferenças: discrepâncias na composição do

<sup>12</sup> Em parte porque esse possui uma grande quantidade de trabalhadores autônomos e pequenas empresas familiares.

<sup>13</sup> “Although this effect is often less noticeable at the aggregate level, it is quite apparent when applied to individual sectors that have a high share of self-employed in total employment”.

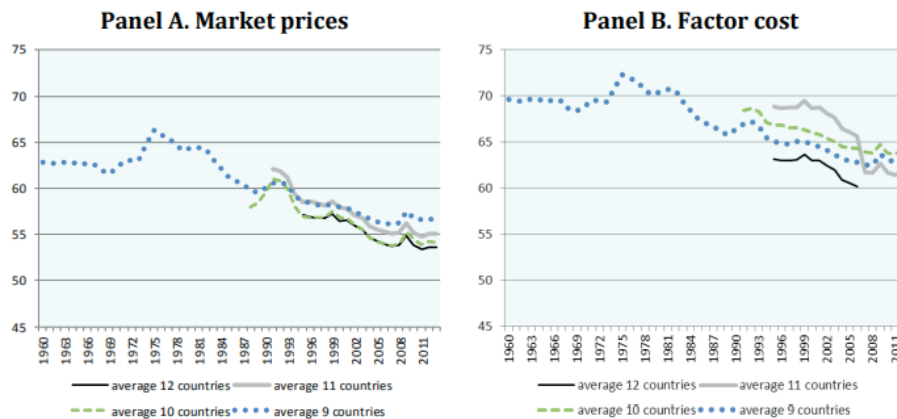


emprego e setorial produtiva. Mudanças na composição setorial produtiva podem deslocar a produção provocando mudanças na DFR.

A discussão sobre a metodologia adequada de medição da DFR não se circunscreve apenas às mudanças nos seus numeradores, alguns autores ressaltam a importância de VAB<sup>14</sup> ser expresso a custo de fatores (VAB sob a ótica do produtor), subtraindo-se do VAB a preço base os impostos líquidos sobre a produção e as importações (menos subsídios). Esse ajuste é feito sob a alegação de que trabalhadores e empresas só podem repartir a renda resultante da atividade econômica das empresas. Segundo essa concepção, os impostos indiretos pagos ao governo não representam nenhum tipo de retorno ao capital e, portanto, não podem ser considerados uma renda do capital, enquanto os subsídios que são pagos pelo governo às empresas estão disponíveis para compartilhamento entre capital e trabalho.

Através dos Gráficos 2 e 3, podemos perceber que a parcela laboral é maior quando mensurada através do VAB a custo de fatores.

Gráfico 2 – Parcela ajustada da renda do trabalho na Espanha e em países selecionados do G20<sup>15</sup>



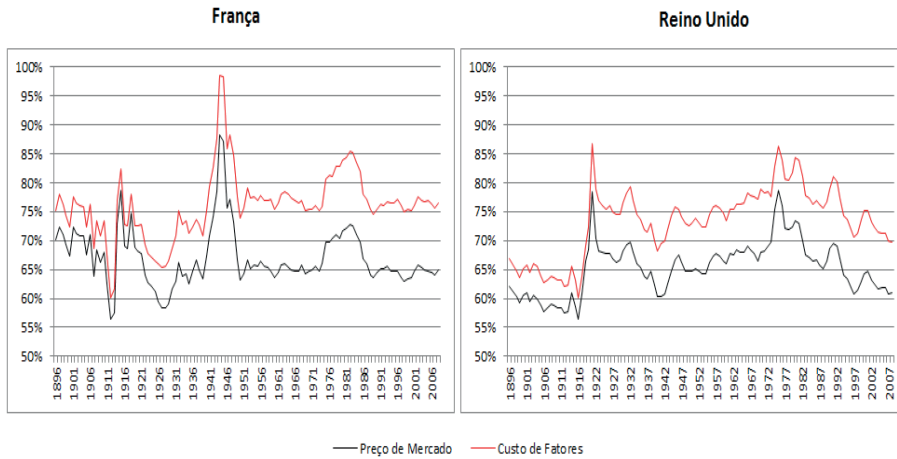
Fonte dos dados: AMECO (2015 apud ILO e OECD, 2015).

Nota: Os nove países são Austrália, Canadá, Alemanha, França, Itália, Japão, Espanha, Reino Unido e Estados Unidos. As outras séries incluem, respectivamente, a República da Coreia (10 países), o México (11 países) e a Turquia (12 países). A parcela do trabalho é calculada a partir da remuneração dos empregados sobre o PIB multiplicado pelo emprego total.

14 Quando não disponível, devido às identidades contábeis, o VAB é substituído pelo PIB.

15 Preferimos não modificar o título do gráfico original contido em ILO e OECD (2015). A Espanha aparece de forma destacada porque não pertence ao G20.

Gráfico 3 – Participação da renda do trabalho (em % da renda nacional) no Reino Unido e na França



Fonte: elaborado pelos autores com base em PIKETTY (2014a).

Diante do apresentado, as diferentes metodologias de mensuração da participação da renda do trabalho na renda nacional têm forte influência nos resultados, como nos apresenta o Gráfico 4.

Gráfico 4 – Participação da renda do trabalho (em % da renda nacional) na Alemanha através de ajustes selecionados entre 1980 a 2009



Fonte: estimações de OIT baseadas em dados da OECD (2010, apud ILO, 2010).

Nota: \*Raw<sub>1</sub> e Raw<sub>2</sub> correspondem à equação 2, mas Raw<sub>2</sub> exclui os serviços comunitários, sociais e pessoais. Adj<sub>1</sub> e Adj<sub>2</sub> correspondem à Expressão 3 e Adj<sub>3</sub> à Expressão 4. Adj<sub>2</sub> e Adj<sub>3</sub> excluem os serviços comunitários, sociais e pessoais; a agricultura, a caça, a silvicultura e a pesca.

### 3.1 Uma abordagem secular

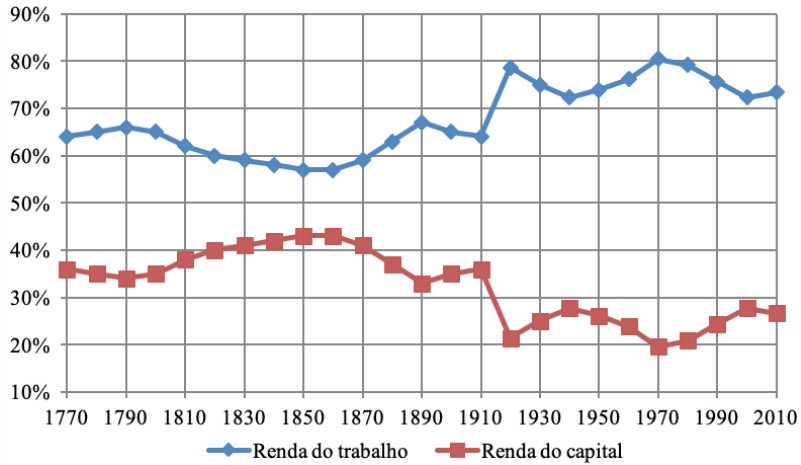
Nesta seção, procuramos apresentar o comportamento histórico da participação da renda do trabalho e do capital na renda nacional. Infelizmente, dados seculares sobre a DFR são raros e séries disponíveis compatíveis para uma análise internacional são mais comuns a partir da segunda metade do século XX e abrangem apenas cerca de um pouco mais de 25% dos países no mundo.<sup>16</sup> Para uma análise secular, só encontramos dados para a França e o Reino Unido que foram disponibilizados por Piketty (2014b). Apesar de termos apresentado diferentes metodologias de estimação da DFR na seção anterior, a indisponibilidade e falta de compatibilidade dos dados não nos permitiu fazer uma comparação empírica desses métodos. Assim, a apresentação do comportamento da DFR não opta por uma metodologia específica devido a essas dificuldades, apenas procuramos apresentar em cada gráfico dados compatíveis que nos permitam uma análise entre os países.

O Gráfico 5 demonstra que, no final do século XVIII (1770-1800), a participação média da renda do trabalho era equivalente a 65% da renda nacional no Reino Unido. Entre 1770 e 1790, a renda do trabalho sofreu singelos aumentos, mas a última década do século é marcada pelo início de um período de decréscimo da renda do trabalho que se entendeu até 1860. Dessa forma, podemos dizer que durante 70 anos (1790-1860), ou seja, durante o final do século XVIII e a primeira metade do século XIX, foram verificadas constantes quedas da participação do trabalho na renda nacional equivalente a nove pontos percentuais.

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<sup>16</sup> Para uma análise secular, só encontramos dados referentes à França e ao Reino Unido.

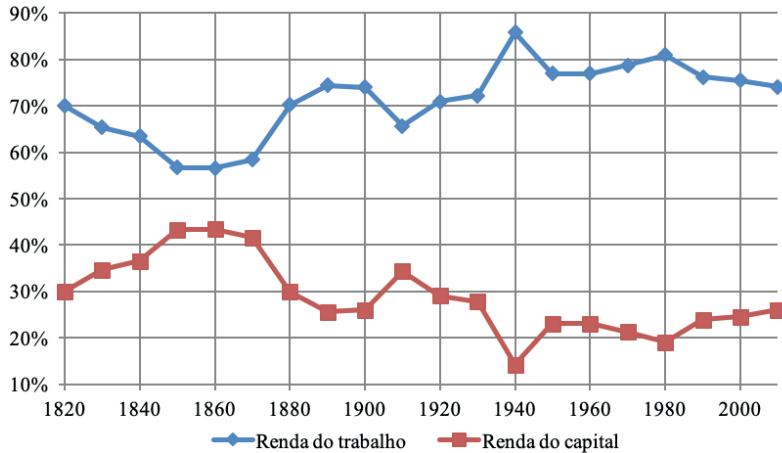
Gráfico 5 – Participação da renda do trabalho e do capital (em % da renda nacional) no Reino Unido entre 1770 a 2010



Fonte: elaborado pelos autores com base em PIKETTY (2014a).

Dados sobre a DFR na França (Gráfico 6) só encontram-se disponíveis a partir de 1820, mas, entre 1820 e 1860, esse país apresentou as mesmas tendências que o Reino Unido, porém, a queda da renda do trabalho foi mais acentuada. Enquanto, no período, a quota laboral caiu três pontos percentuais no Reino Unido, na França essa queda foi equivalente a treze pontos percentuais.

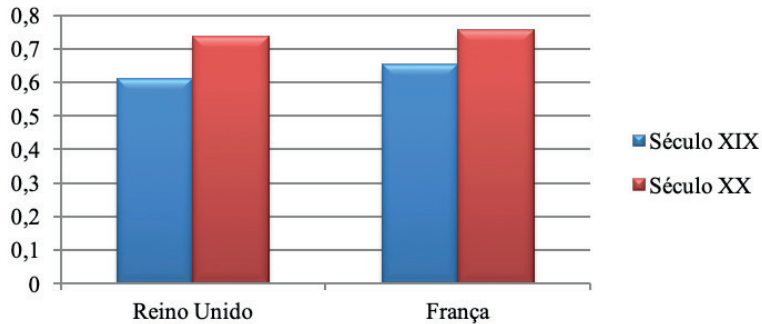
Gráfico 6 – Participação da renda do trabalho e do capital (em % da renda nacional) na França entre 1820 a 2010



Fonte: elaborado pelos autores com base em PIKETTY (2014a).

De 1860 a 1890, verificamos que houve um significativo aumento da parcela do trabalho na renda nacional, um aumento de 10 pontos percentuais no Reino Unido contra 17 pontos percentuais na França.

Gráfico 7 – Participação média da renda do trabalho no Reino Unido e na França nos séculos XIX e XX



Fonte: elaborado pelos autores com base em PIKETTY (2014a).

Nota: \*Na França, o século XIX corresponde ao período de 1820 a 1900.

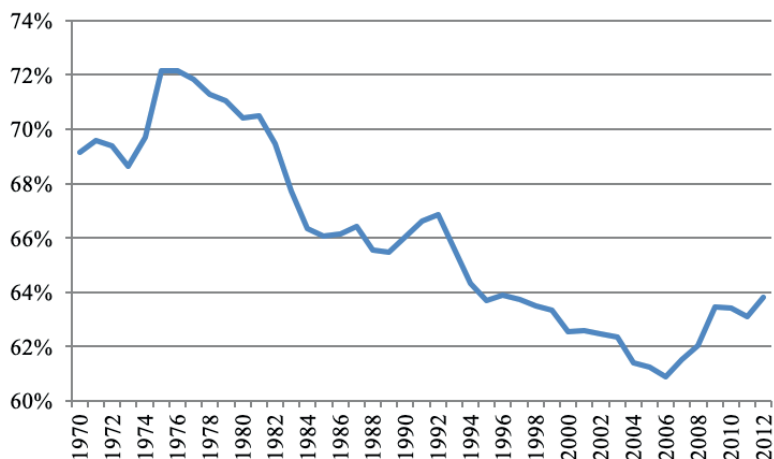
Como nos apresenta o Gráfico 7, no século XX, a participação média da renda do trabalho foi maior do que no século XIX. A França apresentou participações médias da quota do trabalho, nos séculos XX e XIX, maiores que no Reino Unido. Contemporaneamente, a partir da década de 1970-1980, verificamos através dos dados apresentados uma tendência de queda da participação do trabalho na renda nacional, mas apresentaremos isso mais detalhadamente na seção 2.2.2 deste trabalho.

Em relação ao comportamento secular da DFR, Piketty (2014b) chega à conclusão de que as variações no século XIX foram moderadas em comparação com o século XX. As fortes oscilações no século XX se devem à turbulenta história política e econômica do período, como: a Primeira Guerra Mundial, a Revolução Bolchevique de 1917, a crise de 1929, a Segunda Guerra Mundial e as políticas de regulação, tributação e controle público do capital.

### **3.2 Uma abordagem contemporânea**

Nesta seção, procuramos evidenciar o comportamento da DFR no mundo, a partir da década de 1970. Na seção anterior vimos que, na França e no Reino Unido, a participação do trabalho na renda nacional apresentou trajetória de decréscimo a partir da década de 1970-80, mas não foi apenas nesses territórios que esse comportamento foi verificado. Diversos relatórios de instituições internacionais apresentam provas que, desde esse período, a maioria dos países da OECD tem apresentado decréscimos da participação da renda do trabalho.

Gráfico 8 – Participação média da renda do trabalho (em % da Renda Nacional) em países da OECD entre 1970 a 2012



Fonte: Elaborado pelos autores com base em OECD (2016).

Nota: A parcela da renda do trabalho refere-se aos custos totais trabalhistas divididos pela produção nominal, na qual se supõe que os trabalhadores autônomos possuem remuneração equivalente aos trabalhadores de empresas. Países utilizados: Austrália, Áustria, Bélgica, Canadá, República Checa, Dinamarca, Estônia, Finlândia, França, Alemanha, Grécia, Hungria, Islândia, Irlanda, Israel, Itália, Japão, Coreia, Letônia, Luxemburgo, México, Países Baixos, Nova Zelândia, Noruega, Polônia, Portugal, República Eslovaca, Eslovênia, Espanha, Suécia, Suíça, Peru, Reino Unido e Estados Unidos.

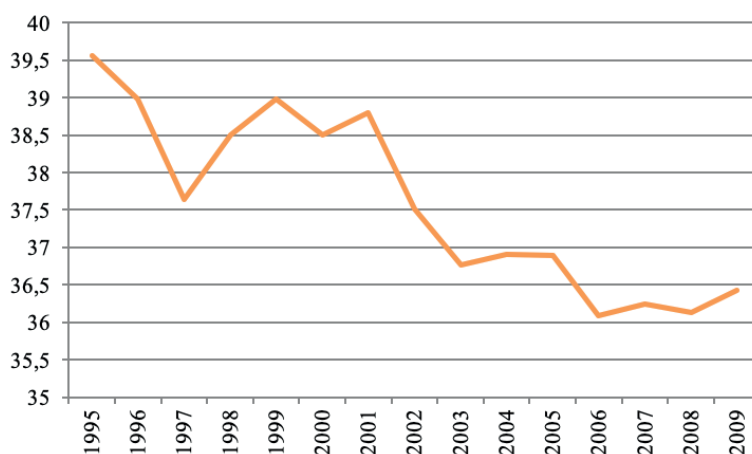
O Gráfico 8 demonstra que um pouco antes da crise internacional, a participação da renda do trabalho começou a ascender nos países da OECD. O declínio da quota do trabalho na renda nacional a partir de 2009 levou a OIT (2013, p. 44) a afirmar que a ascensão temporária da participação do trabalho pós-crise reflete a “típica natureza “anticíclica” do peso dos salários, que surge porque os salários tendem a ser menos voláteis do que os lucros durante as recessões econômicas” e que tal fato normalmente é verificado em tempos de recessão econômica.

Na América Latina, a participação da renda do trabalho apresentou um comportamento condizente com a trajetória dos países da OCDE entre 1995 a 2009<sup>17</sup> (Gráfico 9). Entre 1995 a 2006 verificamos, sobretudo,

17 Devido à indisponibilidade de dados, a série estende-se apenas até 2009.

uma tendência de decréscimo da quota laboral e a partir de 2006 uma ascensão dessa quota, que foi mais intensa nos países da OECD do que na América Latina. ILO (2011) evidencia que o declínio na participação da renda do trabalho foi mais estável na América Latina do que na Ásia e no Norte da África.

Gráfico 9 – Participação da parcela não ajustada do trabalho no PIB em países na América Latina



Fonte: elaborado pelos autores com base em ILO (2016).

Nota: A parcela não ajustada do trabalho no PIB trata-se da remuneração total dos empregados dada como uma porcentagem do Produto Interno Bruto, ambos fornecidos em termos nominais. \*\* Países utilizados: Argentina, Bolívia, Brasil, Chile, Colômbia, Costa Rica, Cuba, Guatemala, Honduras, Panamá, Uruguai e Venezuela.

Entre os Brics<sup>18</sup> e nos países ricos, a participação da quota da renda do trabalho na renda nacional também apresentou uma tendência ascendente após a crise de 2007. Apesar dos cortes na série, percebemos através do Gráfico 10 que, entre os países analisados, a Índia é o que apresenta menor participação laboral. Em 1995, a parcela não ajustada do trabalho na China era equivalente a 60% do PIB, em 2008 essa parcela representava apenas 48%, mesmo com o forte crescimento dos salários no país,<sup>19</sup>

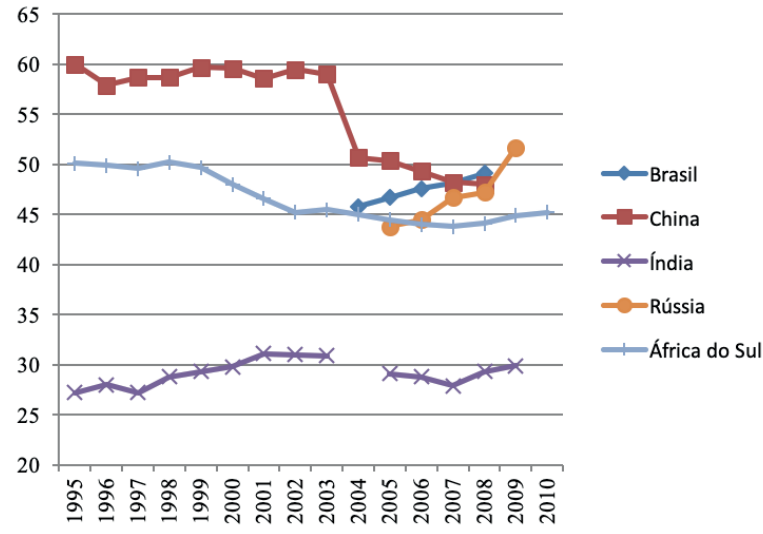
18 A sigla Brics faz referência aos países emergentes: Brasil, Rússia, Índia, China e África do Sul.

19 Na China, os salários médios reais mais do que triplicaram ao longo da década de 2000 a 2010. (OIT, 2013)



o que nos indica que o PIB na China cresceu a uma taxa maior que a massa salarial total.

Gráfico 10 – Participação da parcela não ajustada do trabalho no PIB



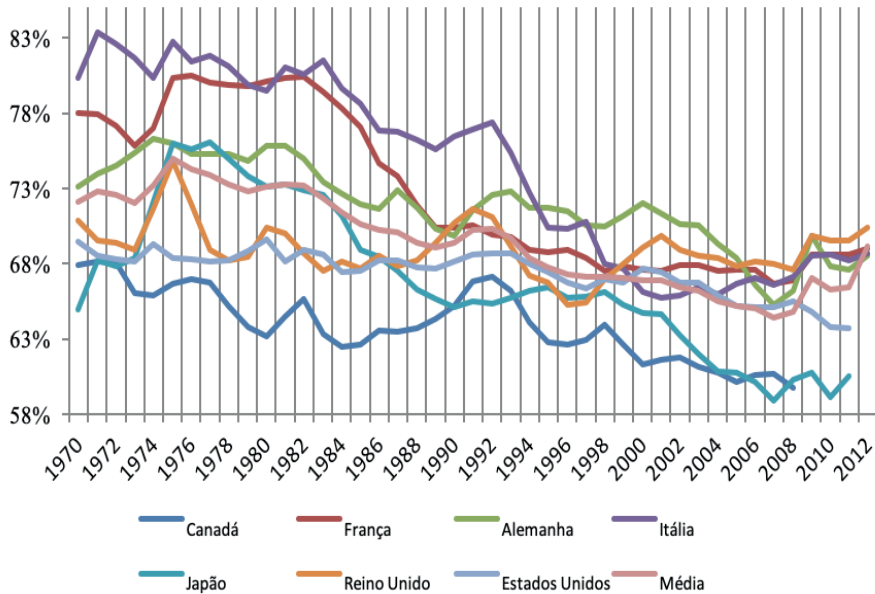
Fonte: elaborado pelos autores com base em ILO/STAT (2016).

Nota: \*A Parcela Não-Ajustada do Trabalho no PIB trata-se da remuneração total dos empregados dada como uma porcentagem do Produto Interno Bruto, ambos fornecidos em termos nominais. \*\* Na China, a forte variação entre 2003 e 2004 reflete provavelmente um ajustamento nos dados que, contudo não afeta o sentido da tendência. A ILO utilizou como base para os cálculos o China Statistical Yearbooks,<sup>20</sup>

Entre os países ricos, as maiores quedas na participação da quota laboral foram verificadas na Itália, França e no Canadá, respectivamente; 11, 9 e 8 pontos percentuais entre 1970 e 2012 (Gráfico 11). ILO (2011) evidencia que a queda da participação da renda do trabalho na renda nacional foi mais intensa nos países em desenvolvimento e emergentes do que nos países desenvolvidos.

20 Disponível em: <<http://www.stats.gov.cn/english/statisticaldata/yearlydata/>>.

Gráfico 11 – Participação ajustada da renda do trabalho em países ricos



Fonte: elaborado pelos autores com base em OECD (2016).

Nota: \*As estatísticas utilizadas são obtidas a partir da expressão (21) desse trabalho.

Alguns estudos de organismos internacionais (IMF, 2007; OECD, 2012) em economias desenvolvidas têm evidenciado que o declínio da participação do trabalho nesses países foi influenciado pelas quedas salariais dos trabalhadores de baixa e média qualificação, visto que entre os trabalhadores de alta qualificação o rendimento do trabalho sofreu aumento por volta da década de 1980 a 2005.

Piketty (2014b) ressalta que o declínio da participação do trabalho a partir da década de 1970-1980 se deve, por exemplo, à revolução conservadora anglo-saxã de 1979-1980, ao dismantelamento do bloco soviético em 1989-1990, à globalização financeira e à desregulamentação dos mercados nos anos 1990-2000.

No debate recente quatro fatores têm ganhado destaque na literatura como fatores chaves de determinação da distribuição funcional da renda tanto em análises empíricas quanto teóricas ao remodelarem o mercado de trabalho nos países desenvolvidos e subdesenvolvidos, são estes: 1) mudanças tecnológicas, 2) financeirização da economia, 3) globalização e o 4) fim do estado do bem-estar social. (ATKINSON, 2015; STOCKHAMMER, 2012) Dessa forma, as discussões recentes incorporam

fatores à análise da DFR de caráter histórico/institucional que são diretamente relacionados a decisões sociais, políticas e econômicas, diminuindo a atenção dada aos aspectos puramente econômicos e voltados à tecnologia, preconizados neoclássicos.

Diversos fatores e acontecimentos recentes têm motivado discussões recentes em torno da DFR, entre eles podemos citar, por exemplo, a crise econômica mundial de 2008 e as acentuações das desigualdades econômicas e sociais. Atualmente na literatura são vastos os trabalhos empíricos internacionais que visam investigar como os quatro fatores citados determinam a distribuição funcional de renda. A maioria destes estudos realizam essas investigações apoiados em instrumentos estatísticos-econômicos, estimando majoritariamente através de dados de painel a participação dos salários ao longo do tempo nos países desenvolvidos. Percebe-se também, um crescimento considerável de estudos sobre o tema vinculados a grandes organizações/instituições internacionais a partir, sobretudo, da crise de 2008. Entre os principais estudos podemos citar os do: IMF (2007), EC (2007), ILO (2008), ILO (2010), OECD (2008).

## 4 Considerações finais

No geral, para o período analisado, a DFR apresentou comportamento cíclico. A escolha de um recorte temporal menor teria nos proporcionado analisar melhor (devido a uma melhor compatibilidade metodológica para a análise da DFR entre países) o comportamento da participação da renda do trabalho entre os países, mas a partir de um recorte temporal mais amplo chegamos à conclusão que a participação do trabalho na renda nacional pode até apresentar comportamento relativamente constante no curto prazo, mas em recortes temporais maiores esta afirmação não se torna consistente.

Verificamos que estudos voltados à DFR devem levar em consideração fatores conceituais e metodológicos, pois, não existe um consenso na literatura em relação às suas técnicas de mensuração. Através das metodologias apresentadas, percebe-se que o tratamento dado à renda dos autônomos (renda mista) é o principal fator que influencia a existência de diversas formas de estimação da participação da renda do trabalho na renda nacional.

Ao considerar a renda dos autônomos como renda do trabalho, podemos tanto subestimar quanto superestimar a participação da renda do trabalho na renda nacional, isso vai depender das características dos autônomos no país em questão.

A análise secular da DFR demonstrou que a participação do trabalho na renda nacional é menor no século XIX do que no século XX. No mesmo sentido que estudos recentes sobre DPR indicam maior polarização de renda a partir de 1970 na maioria dos países, estudos voltados à DFR indicam maior polarização da renda para parcela do capital, no sentido em que há queda no rendimento do trabalho tanto nos países desenvolvidos quando nos subdesenvolvidos.

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# Exchange rate pass-through to domestic prices across American crisis: VAR analysis in the Brazilian economy

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**Abstract:** This research investigated exchange rate pass-through process across the American Crisis and its effects into the Brazilian economy. The methodology applied was VAR analysis with Granger causality and Impulse Response Function approaches. Results collected indicate decrease of pass-through process after the American crisis. Before American crisis, 20.60% nominal exchange rate depreciation provoked 17.22% domestic price increase. On the other hand, after American crisis, 28.91% nominal exchange rate depreciation provoked 6.35% domestic price increase. Results also suggest that interest rate effects on domestic prices seem to be unchanged when interest rates shocks are applied into the Brazilian economy. However, monetary policy seems to be more sensitive to nominal exchange rate after the American crisis, when interest rate increase would provoke nominal exchange rate appreciation. Moreover, increasing the degree of openness showed a considerable tool for inflation reduction. All results indicate that nominal exchange rate, interest rate and domestic prices in the Brazilian economy are fully interlinked. The reduction of the pass-through process contributes for greater trade competitiveness. Even high nominal exchange rate depreciation will not induce high inflation provoking real exchange rate depreciation for domestic currency.

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**Key-words:** VAR analysis. Pass-through. Exchange rate.

**JEL Classification:** C30. E31. F41. F62.

Repasso cambial para os preços domésticos ao longo da crise americana: uma análise VAR para a economia brasileira

**Resumo:** Esta pesquisa investigou o processo de *pass-through* da taxa de câmbio no período de 2000 a 2016, período que compreende a crise americana e seus efeitos na economia brasileira. A metodologia utilizada foi a análise VAR com a causalidade de Granger e abordagens da Função Impulso Resposta. Os resultados obtidos indicam decréscimo de processo de repasse cambial para a inflação após a Crise Norte-Americana. Antes da Crise Americana, 20,60% de depreciação da taxa de câmbio nominal provocou 17,22% de aumento dos preços internos. Por outro lado, após a Crise Americana, 28,91% de depreciação da taxa de câmbio nominal provocou apenas 6,35% de aumento dos preços. Os resultados também sugerem que os efeitos das taxas de juros sobre os preços internos parecem ser inalterados quando choques na taxa de juros são aplicados na economia brasileira. No entanto, a política monetária parece ser mais sensível à taxa de câmbio nominal após a crise americana, quando um aumento da taxa de juros promoveu uma apreciação nominal da taxa de câmbio. Além disso, o aumento do grau de abertura mostrou-se uma ferramenta importante para a redução da inflação. Todos os resultados indicam que a taxa de câmbio nominal, a taxa de juros e os preços domésticos na economia brasileira estão totalmente interligados. A redução do *pass-through* contribui para uma maior competitividade comercial.

**Palavras-chave:** Análise VAR. Pass-through. Taxa de câmbio.

**Classificação JEL:** C30. E31. F41. F62.

## I Introduction

In recent times, the American Crisis was the most outstanding economic event all over the world. Major economies have been affected and also emerging ones. The pass-through process is investigated in this academic research. The Brazilian economy was affected by this crisis in



many ways and in particular fashion by external factors. The exchange rate pass-through to domestic prices is especially important due to Brazilian inflation persistence. The inflation targeting approach was unsuccessful mainly after the American Crisis in Brazil. Inflation rates were far above the acceptable band. In order to face inflation acceleration, the Brazilian Central Bank pushed up interest rates to retain aggregate demand.

High interest rates should provoke domestic exchange rate appreciation, what will hold on domestic prices by the exchange rate pass-through mechanism. If this process is detected during research, exchange rate, interest rates and prices are fully interlinked.

Another relevant issue is the trade openness of the Brazilian economy. This ratio reveals that the economy is quite closed in comparison to major economies. Adding exportation to importation figures and comparing to Brazilian GDP shows shy outcomes. This feature should undoubtedly affect the exchange rate pass-through to domestic prices in Brazil. The combination of high nominal exchange rate depreciation and high domestic inflation should leave the export competitiveness unchanged.

There is a large literature of exchange rate pass-through mechanism, with a single-equation regression explaining effects of domestic prices from the changes in exchange rate such as: Feenstra (1989), Olivei (2002), Otani, Shiratsuka and Shirota (2005), Campa and Goldberg (2005), Campa, Goldberg and González-Mínguez (2005). However a single-equation pass-through regression ignores the fact that domestic prices may affect the exchange rate. In order to examine the reinforcing mechanism between domestic inflation and the exchange rate, a VAR analysis is required like the following studies: McCarthy (2000), Hahn (2003), Faruqee (2004) and Ito and Sato (2006).

The research data was broken down into two periods of time, the before-crisis period 2000-2007 and the after-crisis period 2008-2016. The methodology employed was vector auto regression (VAR) analysis in both periods of time with four macroeconomic variables as follows: nominal exchange rate (E), consumer price index (IPCA), interest rate (CDI) and degree of openness (OPEN). This methodology is especially appropriate in order to take into account of bi-directional effects among these macroeconomic variables. Granger causality approach was also applied in order to identify short run effects among these variables as well as Impulse Response Function to reveal the long run ones.

The purpose to divide research length into two periods of time is to detect the behavior of the exchange rate pass-through to domestic prices process before and after a major economic shock. Is this process increasing or decreasing over time? What are the main consequences to economic

policy? Therefore, the research objectives are as follows: measure the exchange rate pass-through to domestic prices, identify the behavior of this process across research length and make suggestions to economic policy due to these outcomes.

This paper is divided into the following stages: beyond this introduction, presents relevant academic research about exchange rate pass-through and its consequences to economic policies in 2, the time series cointegration, VAR and Granger Causality methodologies are explained in 3, empirical results are presented in 4, especially data collected, stationary and cointegration results are presented; in 4.1 the exchange rate pass-through is measured using model proposed by Goldfajn and Werlang (2000). In 5 final remarks are addressed and finally in 6 all references are listed.

## 2 Research review

Devereux, Lane and Xu (2006) investigated the effects of exchange rate regimes and alternative monetary policy rules for an emerging market economy that is subject to a volatile external environment in the form of world interest rates and the terms of trade. They conclude that when exchange rate pass-through is high, a policy of non-traded goods inflation targeting does best in stabilizing the economy, and is better in welfare terms. When exchange rate pass-through is low, however, a policy of strict CPI inflation targeting is better.

Ito and Sato (2006) studied exchange rates changes and inflation in Post-Crisis Asian economies. They used VAR analysis of the exchange rate pass-through process. They conclude that the pass-through to CPI was generally low, with a notable exception of Indonesia; moreover both the impulse response of monetary policy variables to exchange rate shocks and that of CPI to monetary policy shocks are positive, large and statistically significant.

Mandizha (2014) used a five year panel data to investigate Zimbabwean hyperinflation. Adopting the Granger causality test, the paper unveils a contradicting conclusion about the direction of the flow of cause and effect in the economy. Exchange rate pass-through dynamics also show differences between the short and the long run.

Pereira and Carvalho (2000) investigated the effects of exchange rate depreciation in the costs of Brazilian main sectors. The estimation follow the channels through which the cost increase caused by the exchange rate "shock" spread out into the economy converging to the total effect that takes

into account the very lasting recursive feedback effects. It also estimates the inflationary impact of the external shock in an environment of stable mark ups and no relevant indexation mechanisms on the consumer price index in different devaluation scenarios. It indicates that a 50% nominal exchange rate depreciation would cause an inflation cost push close to 8.2% in the consumer price index.

Mirdala (2013) analyzed, in this paper, exchange rate pass-through to domestic prices in the European transition economies. He estimated VAR model to investigate (1) responsiveness of exchange rate to the exogenous price shock to examine the dynamics (volatility) in the exchange rate leading path followed by the unexpected oil price shock and (2) effect of the unexpected exchange rate shift to domestic price indexes to examine its distribution along the internal pricing chain. His results suggest that there are different patterns of exchange rate pass-through to domestic prices according to the baseline period as well as the exchange rate regime diversity.

Edwards (2006) studied the relationship between inflation targeting and exchange rates. In particular he focused on: the effectiveness of nominal exchange rates as shock absorbers and the magnitude of the "Pass-Through" coefficient. He concluded that exchange rate should have an independent role in an open economy Taylor rule.

Serrano (2010) investigated the relationship of interest rate, exchange rate and the system of inflation target in Brazil. In the consensus view of the Brazilian system of inflation targeting, the core of inflation is due to demand shocks; the rate of interest is set to control demand; and some variation in the exchange rate happens as "collateral damage". In this paper he argue that in reality core inflation comes from cost push; the interest rate affects the exchange rate; changes in the exchange rate affect costs and prices; it is the effect of interest rates on demand that is the "collateral damage" and that the long run anchor of the system is low average real wage rigidity.

Almendra, Portugal and Macêdo (2015) analyzed theoretically and empirically the pass-through from exchange rate to inflation in Brazil. The analyzed period extends from 1994 to 2014, focusing on the floating exchange rate regime. Two methodologies were employed: an OLS through rolling windows in which the parameters are fixed in time and a Kalman filter, with varying-parameters. The results suggested a lower pass-through since the adoption of a floating exchange rate regime and also a lower pass-through after an appreciation then after depreciations. In addition, reactions of the IGP-DI and IPA to exchange rate shocks are faster and more intense than those of IPCA.

Melander (2009) studied the effects of real exchange rate depreciation in an economy with extreme liability dollarization using vector auto regression (VAR) methods. She found that real exchange rate depreciation has negligible effects on output, since a contractionary balance-sheet effect on investment is counteracted by the standard expansionary effect on net exports. Furthermore, she found that a real depreciation has inflationary effects.

Carneiro, Monteiro and Wu (2002) explored two changes in traditional models that measure the exchange rate pass-through in Brazil. The first change is a non-linear specification to the pass-through coefficient, making it depend on other variables that reflect economic conditions. The second change is to consider different components of the consumer price index, in search for transmission mechanisms of the exchange rate pass-through to prices. The empirical evidence obtained in the period between the quarter of 1994 and the last quarter 2001 suggests the existence of different non-linear pass-through mechanism among different price groups.

Ncube and Ndou (2011) used the inflation equation to search for a possible transmission channel between the real interest rate, inflation rate, exchange rates, real output growth rate using a Bayesian VAR sign restriction approach. They found that strict inflation targeting approach is not compatible with significant real output growth. They conclude that real effective exchange rate measuring competitiveness against trading partners' matters more than domestic currency and nominal effective exchange rate depreciations.

Bussière and Peltonen (2008) in this paper estimate export and import price equations for 41 countries, including 28 emerging market economies. Further, it relates the estimated elasticities to structural factors and tests for statistical breaks in the relation between trade prices and exchange rates. Results indicate that (i) the elasticity of trade prices in emerging markets is sizeable, but not significantly higher than in advanced economies; (ii) such elasticity is primarily influenced by macroeconomic factors such as the exchange rate regime and the inflationary environment, although microeconomic factors such as product differentiation also play a role; (iii) export and import price elasticities tend to be strongly correlated across countries; (iv) pass-through to import prices has declined in some advanced economies, noticeably the United States; this is consistent with a rise in pricing-to-market in several EMEs and especially with a change in the geographical composition of U.S. imports.

Caselli and Roitman (2016) estimated exchange rate pass-through to consumer prices in emerging markets focusing on nonlinearities and asymmetries. They found nonlinearities and asymmetries in the transmission

of exchange rate fluctuations to prices using local projection techniques to obtain state dependent impulse responses in a panel of 28 emerging markets. They also found significant evidence of nonlinearities during episodes of depreciation greater than 10 and 20 percent. More specifically, after one month, the exchange rate pass-through coefficient is equal to 18 and 25 percent respectively, compared to a coefficient of 6 percent in the linear case.

## 2.1 The purchasing power parity theory

The purchasing power parity (PPP) theory described in Cassel (1921), gives us a basic and fundamental relationship between the exchange rate and the price level. This theory is also known as the “Law of One Price” and is based on the premise that prices of comparable goods should not be different in two different locations. The hypothesis underlines that countries that experience high depreciation in domestic exchange rate also have high inflation.

The relative form of the PPP or “Law of One Price” affirms that starting from a base of an equilibrium exchange rate between two currencies, the future of exchange rate between the two currencies will be determined by relative movements in the price level in the two countries. The hypothesis is based on the premise that the economy has floating exchange rates. The equation is given as follows:

$$P = r \cdot P_f \quad (1)$$

Where:  $r$  is the exchange rate, price say US\$ in R\$, that is the price of foreign currency;  $P$  is the domestic price level and  $P_f$  is the average price level for the rest of the world.

## 3 Time series cointegration and Granger causality approaches

The stationary condition is the main requirement for time series analysis. The valid conditions of minimum squares are only valid in the presence of stationary time series Enders (1995). The unit root test was applied to check stationary conditions of data series in this research. The following series were used in this work: nominal exchange rate ( $E$ ), consumer price index (IPCA), interest rate (CDI) and degree of openness (OPEN). If a time

series has unit root<sup>3</sup> then it is not stationary and the differentiation process<sup>4</sup> is required. In order to test the null hypothesis of unit root existence the Augmented Dickey-Fuller (ADF), where  $H_0$  represents  $\delta=0$ , was applied. Besides ADF test, the Phillips-Perron test may be applied for the same objective.

Suppose  $Y_t$  e  $X_t$  time series I (1), stationary in first difference, the residues of equation (2) are also I (1), what is similar to say that those time series are not stationary in level.

$$Y_t = \alpha + \beta X_t + \varepsilon_t \Delta \delta \rho \Delta \delta \beta$$

$$Y_t = \alpha + \beta X_t + \varepsilon_t \quad (2)$$

According to Granger e Newbold (1986) there are some cases in which equation (1), for both I (1) time series, which may result in a stationary combination I (0). When this happen  $Y_t$  e  $X_t$  are so called co integrated or shows a long term balance. The co integration equation may be represented in (3) and  $\beta$  is the cointegration parameter.

$$\varepsilon_t = Y_t - \alpha - \beta X_t = 0 \quad (3)$$

According to Enders (1995) the most suitable test to detect time series co integration is the Johansen Test. The model proposed by Johansen (1988 apud KANAS, 1998) uses trace and eigenvalue statistics in order to detect time series co integration existence. The Johansen Test proposes the following VAR specification model:

$$\Delta Y_t = \Pi Y_{t-1} + \Sigma I_t \Delta Y_{t-1} + \beta X_t + \varepsilon_t \quad (4)$$

$X_t$  is the deterministic variable vector. According to Enders (1995), the critic point in the Johansen Test is to find the matrix  $\Pi$  rank. This rank  $r$  indicates the number of independent co integration vectors. So, if  $r=0$ , those time series are not co integrated. In case of  $r=1$  this indicates 1(one) co integration vector between those time series. For those cases where  $1 < r < n$ , may happen multiple co integration vectors among time series.

The Granger causality test is a statistical hypothesis test for determining whether one time series is useful in forecasting another. A time series  $X$

3 The unit root test shows the following model  $Y_t = \rho Y_{t-1} + u_t$ , where  $u_t$  is the stochastic error term that follow the Classical Hypothesis: zero mean, stable variance and is not correlated.

4 The new time series will have the following format:  $\Delta y_t = y_t - y_{t-1}$ .

is said to Granger-cause  $Y$  if it can be shown, usually through a series of  $t$ -tests and  $F$ -tests on lagged values of  $X$  (and with lagged values of  $Y$  also included), that those  $X$  values provide statistically significant information about future values of  $Y$ .

If a time series is a stationary process, the test is performed using the level values of two (or more) variables. If the variables are non-stationary, then the test is done using first (or higher) differences. The number of lags to be included is usually chosen using an information criterion, such as the Akaike information criterion or the Schwarz information criterion. Any particular lagged value of one of the variables is retained in the regression if: it is significant according to a  $t$ -test and it and the other lagged values of the variable jointly add explanatory power to the model according to an  $F$ -test. Then the null hypothesis of no Granger causality is not rejected if and only if no lagged values of an explanatory variable have been retained in the regression, Enders (1995).

### 3.1 Economic features of VAR model approach

Briefly a VAR model is a linear equation system on which one variable is function of this lagged variable from many periods of time and is also function of others lagged variables of the system. A relevant consideration to be taken is to specify the VAR model with variables in level or in first difference.

The specification to be applied depends on mainly the time series properties. When non stationary and non co integrated variables are detected, it is suggested to use a VAR model in first difference. Ramaswamy and Slok (1998), presented many cases the use of unrestricted VAR in comparison to restricted VAR. The main objective of the VAR model approach is not estimate model parameters but find out variables relationships Ibrahim (2005).

When we are not sure about variables exogenous nature in an equation system, in other words, if any variable is exogenous in relation to the others in a set of  $n$  variables, therefore is proposed a model that each variable system be affected for all others. This way any variable is affected by its current and past realizations as well as current and past realizations of the others variables. This situation is described as a structural VAR model, with  $n$  lags.

However, the feedback effects are performed as deterministic components, what hold the structural model solution. Besides that, this system

cannot be conceived in a reduced format for its equations. (ENDERS, 2005) This format can be obtained by algebraic manipulations, obtaining a VAR in a standard format or unrestricted VAR that has the following format:

$$\vec{x}_t = A_0 + \sum_{i=1}^m (A_i \vec{x}_{t-i}) + \vec{\zeta}_t \quad (5)$$

The unrestricted VAR, specified in equation (5) is also associated to the structural VAR model with the following format:

$$B\vec{x}_t = B_0 + \sum_{i=1}^m (B_i \times \vec{x}_{t-1}) + \vec{\varepsilon}_t \quad (6)$$

In the unrestricted VAR (performed by stationary variables), the stochastic tendency are removed by differentiations resulting in stationary time series. However, the best way to deal with non stationary variables is to find linear combinations of integrated variables that are stationary, this way are called co integrated variables. (ENDERS, 2005)

## 4 Data, stationary condition and cointegration

The monthly research data was collected from IPEADATA<sup>5</sup> and broken down into two periods of time: 2000 to 2007 labeled as Before Crisis Period (BCP) and 2008 to 2016 labeled as After Crisis Period (ACP). The macroeconomic variables collected were as follows: nominal exchange rate (E), consumer price index (IPCA), interest rate (CDI) and degree of openness (OPEN).

The stationary condition was tested in all time series in order to make possible the application of the co integration test, Johansen Test. The co integration methodology is only applicable using time series not stationary in level. The ADF and Phillips-Perron<sup>6</sup> tests were applied for BCP and ACP time series and the results are showed in Tables 1 and 2 respectively.

<sup>5</sup> Website: <www.ipeadata.gov.br>.

<sup>6</sup> The Phillips-Perron test is desirable when structural breakdown is likely. This academic work deals with data across the American Crisis and volatility was very frequent among major macroeconomic variables.



Table 1 – Stationary Tests for Before Crisis Period (BCP) Time Series

Time Series	Specification	ADF	ADF critical values	Phillips Perron	Phillips Perron critical values	Significance
CDI	Level*	-2.0010	-4.0608	-3.1031	-4.0575	1%
E	Level*	-1.5697	-4.0586	-1.4441	-4.0575	1%
IPCA	Level**	-2.671359	-2.589531	-2.473799	-2.589531	1%
OPEN	Level**	-0.225643	-2.589795	-0.224166	-2.589531	1%

Source: own research.

Legend: \*drift and linear tendency.

\*\*none.

Table 2 – Stationary Tests for After Crisis Period (ACP) Time Series

Time Series	Specification	ADF	ADF critical values	Phillips Perron	Phillips Perron critical values	Significance
CDI	Level*	-2.4882	-4.0657	-1.8744	-4.0524	1%
E	Level*	-1.3014	-4.0543	-1.3847	-4.0524	1%
IPCA	Level**	-1.745941	-2.588292	-1.602815	-2.588292	1%
OPEN	Level**	-0.482956	-2.589273	-0.164032	-2.588292	1%

Source: own research.

Legend: \*drift and linear tendency.

\*\*none.

This research will consider non stationary time series if both stationary tests reveal this condition or preferably Phillips-Perron alone. IPCA in BCP revealed stationary in ADF test and non stationary in Phillips-Perron test. Therefore a non stationary condition is chosen as the most reliable. According to ADF and Phillips-Perron Tests all time series are not stationary in level what make appropriate the cointegration analysis.

The Johansen test is the most suitable econometric test to detect time series co integration. Using the combination of all four macroeconomic variables the Johansen test was performed. All results are shown in Table 3.

Table 3 – Johansen Co-integration Test – Number of Co-integrating Relations by Model

Data Trend	None	None	Linear	Linear	Quadratic
Test Type	No intercept	Intercept	Intercept	Intercept	Intercept
	No trend	No trend	No trend	Trend	Trend
Trace Test	1*/1**	1*/1**	1*/1**	1*/1**	1*/1**
Max-Eigenvalue	1*/1**	1*/2**	1*/2**	1*/1**	1*/1**

Source: own research.

Legend: \*drift and linear tendency.

\*\*none.

According to Johansen Co-integration test the combination of all time series is stationary. This econometric test found almost the same result for all models. Considering intercept and linear trend specification for the time series set, Johansen Test found 1 co-integrating relation vector in the Trace test and also 1 co-integrating relation vector in the Max-Eigenvalue test. These results demonstrate that the combination of all macroeconomic variables, in this research, have a stable long term relationship.

Stationary tests shown indicated that all macroeconomic variables are non stationary. However, differentiating all variables the stationary condition was found. Both stationary tests were performed, ADF and Phillips-Perron, and results indicate that all time series are I(1).

Table 4 – ADF and Phillips-Perron Stationary Tests – First Difference

Period	ADF Test				Phillips-Perron Test			
	CDI	E	IPCA	OPEN	CDI	E	IPCA	OPEN
BCP	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)
ACP	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)	I(1)

Source: own research.

After the stationary condition is reached the Granger causality test may be applied. The Granger causality investigation is relevant for this research because the results may explain the cause-effect among all macroeconomic variables in two way direction. In particular, its expected cause-effect relation between nominal exchange rate and CPI, according to economic theory, at least in one direction.

In order to apply this test is crucial to find out how important the variable past is relevant to explain the present. For this purpose a lag length criteria should be observed. Using the Schwarz criteria the optimum lag number is 2 (two) for BCP and 1(one) for ACP as showed in Table 5.

Table 5 – Lag Length Criteria

Lags	BCP – Schwarz Criteria	ACP – Schwarz Criteria
0	-2.668266	-3.942575
1	-7.052239	-9.903699*
2	-7.103917*	-9.713708
3	-6.516601	-9.382623
4	-6.591595	-9.281248

Source: own research.

The Granger causality test confirmed that the pass-through process is visible in the Brazilian economy. This is particularly true during the Before Crisis Period (BCP) where p value significance is 1%. The pass-through process still continues during the After Crisis Period (ACP) with a 5% significance p value. In the opposite direction, domestic prices do not have effect into the nominal exchange rate during both periods.

Domestic prices also have effect in the interest rates only during BCP and not during ACP. Brazilian Central Bank used to increase interest rate in order to hold inflation. The exchange rate showed strong effect in the interest rates and in the degree of openness during BCP and no effect during ACP. This behavior is due to the fact that nominal exchange rate contributes to the pass-through process and Brazilian Central Bank tends to increase interest rates in order to control inflation. Nominal exchange rate should have influence in exportation and importation goods what affects the degree of openness. In ACP seems that the pass-through process has decreased and no longer would this affect interest rates. Also during ACP the world trade has decreased especially close to the economic shock, what will make smaller, or even null, effect of exchange rate in the degree of openness.

Table 6 Granger Causality Test

Variable	Variable	BCP– P value	Status	ACP-P value	Status
E	IPCA	0.0000022	Cause effect	0.04601	Cause effect
IPCA	E	0.92304	No effect	0.65311	No effect
IPCA	CDI	0.01246	Cause effect	0.15847	No effect
OPEN	IPCA	0.06417	Cause effect	0.90450	No effect
E	CDI	0.03110	Cause effect	0.19023	No effect
E	OPEN	0.00962	Cause effect	0.84282	No effect
CDI	OPEN	0.00294	Cause effect	0.81641	No effect
CDI	E	0.75515	No effect	0.09396	Cause effect
OPEN	E	0.37020	No effect	0.01716	Cause effect

Source: own research.

Interest rates and the degree of openness showed no effect in the nominal exchange rate during BCP, however during ACP presented clear cause-effect relationship. In many cases when domestic interest rates are increased, inflows of financial capital, also increases what would alter exchange rate balance. The degree of openness in Brazil is still small, especially during BCP. In ACP, this figure is slightly greater, but seems to cause effect in the exchange rate.

The Granger causality results are useful to identify variable ordering in VAR analysis. Changes in variable ordering may result drastic changes in Impulse Response Function results. The desirable ordering is from less affected to the most affected variable in VAR construction. In both periods of time, BCP and ACP, macroeconomic variables are I (1) and jointly co-integrated as previously demonstrated. This specification suggests VEC analysis instead of VAR analysis. Considering all these prerequisites in BCP a VEC (2) was built with the following variable ordering: E-IPCA-CDI-OPEN. Also in ACP a VEC (1) was built with the following variable ordering: OPEN-CDI-E-IPCA. Table 7 presents all results for Impulse Response simulations in BCP and ACP.

Table 7 – Impulse Response Function Simulations

Shock Variable	Effect Variable	BCP		ACP	
		% Shock	% Effect	% Shock	% Effect
E	IPCA	20.60	17.22 (3)	28.91	6.35 (2)
CDI	IPCA	19.64	-2.43 (2)	19.75	-2.17 (1)
OPEN	IPCA	14.89	-9.78 (2)	12.08	-8.81 (5)
CDI	E	19.64	1.26 (3)	19.75	-2.11 (10)
E	CDI	20.60	5.14 (12)	28.91	-0.63 (2)
E	OPEN	20.60	1.36 (3)	28.91	-0.09 (3)

Source: own research.

Obs.: Number in parenthesis indicates month of occurrence

According to results obtained, pass-through process has decreased after the American Crisis. An exchange rate shock in BCP of 20.60% provoked 17.22% effect in the third month over IPCA, however an exchange rate shock in ACP of 28.91% provoked only 6.35% effect in the second month over the same variable. Brazilian economy looked inside instead of increasing international trade. This behavior probably provoked the substitution effect of some imported goods making the Brazilian economy less vulnerable to external shocks.

Monetary policy still continued to face consumer inflation index almost with same dimension before and after the American Crisis. Domestic interest rates also affected nominal exchange rate in different ways. In BCP an increase in CDI of 19.64% provoked 1.26% exchange rate depreciation in the third month. On the other hand, an increase in CDI of 19.75% provoked 2.11% exchange rate appreciation in the tenth month. This behavior may be explained due to the fact that after the American Crisis international investors tried to find international markets less affected by this economic crisis and Brazil as an emerging country was in the first stage little affected by this crisis. The Brazilian Central Bank uses frequently high interest rate policy to control inflation what increases the interest rate differential in the international market. This increase in capital inflow would affect exchange rate in a year horizon.

Exchange rate depreciation provoked an increase in interest rates in BCP and particularly almost null effect in ACP, due to the fact that pass-through process is much stronger in BCP in comparison with ACP. This fashion, inflation persistence should be faced by traditional monetary policy. The degree of openness seems to contribute for inflation decreasing. In BCP an increase of 14.89% in the degree of openness provoked a decrease of 9.78% of IPCA in the second month. After the crisis, an increase of 12.08% in the degree of openness provoked a decrease of 8.81% in the fifth month. This behavior may be explained due to the fact that increasing international trade Brazil would boost supply side of the economy forcing price reduction.

#### 4.1 The exchange rate pass-through approach by Goldfajn and Werlang

According to Goldfajn and Werlang (2000), the pass-through ratio is defined as the relation between accumulated inflation between periods  $t$  and  $t+j$ ,  $\prod_{[t,t+j]}$  and accumulated depreciation of nominal exchange rate between periods  $t-1$  and  $t+j-1$ ,  $NER_{[t-1,t+j-1]}$  allowing at least one month lag between variation of exchange rate and its initial effects in inflation. Therefore, the pass-through ratio can be written as follows:

$$PT_t = \prod_{[t,t+j]} / NER_{[t-1,t+j-1]} \quad (7)$$

In general, the pass-through ratio value is between 0 (zero) to 1 (one) for the great majority of world economies. For pass-through ratio values close to zero means little or null pass-through process. On the other side,

for pass-through values close to one means maximum pass-through process. In some cases, pass-through ratio values are even greater than 1, when chronicle inflation process is visible or when fixed exchange rate regime is adopted, for example.

This research calculated BCP and ACP values for the pass-through ratio when exchange rate depreciation took place. Values of the pass-through ratio of these aggregated periods showed slightly reduction after the American Crisis. This ratio is a static measure not considering economic shock effects into the Brazilian economy. However, results suggest small pass-through process and decreasing over time. Table 8 presents all results.

Table 8 – Pass-Through Ratio by Goldfajn & Werlang

Period	PT <sub>t</sub>
BCP	0,33
ACP	0,30

Source: own research.

## 5 Final remarks

This research investigated exchange rate pass-through process across the American Crisis and its effects into the Brazilian economy. The methodology applied was VAR analysis with Granger causality and Impulse Response Function approaches.

Nominal exchange rate depreciation provoked a considerable increase in domestic prices especially in BCP. In this period, a 20.60% shock (depreciation) in nominal exchange rate provoked an effect (increase) of 17.22% of domestic prices in the third month already. However, the pass-through process during ACP showed a smaller effect. During ACP, 28.91% shock (depreciation) in nominal exchange rate provoked an effect (increase) of only 6.35% of domestic prices in the second month.

Results also suggest that interest rate effects on domestic prices seem to be unchanged when interest rates shocks are applied into the Brazilian economy. However, monetary policy seems to be more sensitive to nominal exchange rate in ACP, when interest rate increase would provoke nominal exchange rate appreciation. On the other hand, the degree of openness showed a considerable tool for inflation reduction. An increase of 14.89% of the degree of openness provoked a reduction of almost 10% in IPCA

during BCP. Moreover, an increase of 12.08% of the degree of openness provoked a reduction of almost 9% in IPCA during ACP.

Nominal exchange rate shocks showed reasonable effects in interest rate and the degree of openness only during BCP and very little or null effect during ACP. The main reasons for this behavior is due to the fact that the pass-through process decreased from BCP to ACP, inducing less domestic price increases and consequently smaller needs for interest rate increase. For the degree of openness, during ACP, Brazilian economy looked inside for domestic market and became less sensitive for nominal exchange rate fluctuations.

All results indicate that nominal exchange rate, interest rate and domestic prices in the Brazilian economy are fully interlinked. The reduction of the pass-through process contributes for greater trade competitiveness. Even high nominal exchange rate depreciation will not induce high inflation provoking real exchange rate depreciation for domestic currency.

Using the pass-through model proposed by Goldfajn and Werlang (2000), this research found slightly reduction from BCP to ACP, however this approach does not consider any economic shock and may consider many other economic factors for inflation not only exchange rate depreciation but also domestic factors. Even though, results corroborate for conclusion previously presented. In other words, the pass-through process in Brazil is declining over time.

Making use of the research review, this paper confirms Pereira and Carvalho (2000), Ito and Sato (2006), Edwards (2006) and Almendra, Portugal and Macêdo (2015) findings. Particularly with respect the following topics: effects of exchange rate pass-through to CPI after economic crisis were low but positive and statistically significant like the first; exchange rate depreciation shock of 50% provoked 8.2% inflation in CPI found in the second work in comparison to this paper findings of close 30% exchange rate depreciation provoked 6.35% inflation in CPI; in the third work the effectiveness of nominal exchange rates as shock absorbers and in the last reference results suggested a lower pass-through since the adoption of a floating exchange rate regime.

This research contributed for economic understanding with respect the exchange rate pass-through process across the American crisis into the Brazilian economy. Relevant findings should be underlined such as: the pass-through mechanism is declining over time especially after the American crisis. This behavior makes Brazilian economy less sensitive to external economic shocks and this fact particularly increases export competitiveness; the degree of openness should be increased in order to

keep inflation under control; effects of the monetary policy would remain unchanged with respect to domestic inflation and inflation targeting approach after American crisis is not responsible for inflation misalignment.

Finally for all results collected, Brazilian economy should take advantage for major findings and not pointing out external economic crisis for domestic economic disordering.

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# Financing of private investment in the view of Keynes-Minsky

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**Abstract:** The primary goal of this paper is to analyze the financing of investment and its effects on the structure of liabilities and the portfolio of a company or family and the pace of financing corporate investment assets, taking as a basis for this understanding of Keynes and Minsky. This will be described a vision of the relations of financial capitalism in terms of cash flow, and analyzed how they are related to the valuation of assets and financing of positions in the portfolio and, finally, the assumptions and elements should be implemented microeconomic analysis to macroeconomic analysis by aggregation method.

**Keywords:** Financing of investments. Keynes and Minsky. Financial capitalism.

**JEL Classification:** E00. E12. E62.

Financiamento de investimento privado na visão de Keynes-Minsky

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**Resumo:** O objetivo fundamental do presente artigo é analisar o financiamento dos investimentos e seus efeitos sobre a estrutura de passivos e de ativos do portfólio de uma empresa ou família e o ritmo do financiamento dos investimentos das empresas, tendo como base para isso o entendimento de Keynes e Minsky. Para isso, será descrita uma visão das relações do capitalismo financeiro em termos de fluxo de caixa, e analisa-se como estão relacionados à valorização dos ativos e o financiamento das posições do portfólio. Por fim, deverão ser transpostas as hipóteses e os elementos da análise microeconômica à análise macroeconômica pelo método da agregação.

**Palavras-chave:** Financiamento dos investimentos. Keynes e Minsky. Capitalismo financeiro.

**Classificação JEL:** E00. E12. E62.

## I Introduction

It is in section IV of chapter 11 of the *General Theory*, where they outlined the foundations of a theory of private investment in capitalism, Keynes emphasized the importance of financing investment in an economy with a modern financial system. Although Keynes did not enter into the technical details of how funding affects the investment and therefore the behavior of the economy, the issue of funding wins a very special importance. Indeed, the association of the relationship between funding and investment is made by Keynes through two types of financial risks – often not differentiated, but should be distinguished – that affect the volume of private investment spending.

Keynes had already dealt with the financial institutions in his *Treatise on Money (TM)*, so maybe this question has not developed in the *General Theory*, as it deserves. Nevertheless, there are enough elements in the *General Theory*, and in other writings of Keynes, which allows us, following the trail of Minsky, organize the main ideas about the problem of financing the investment in a monetary production economy in which financial institutions are in an advanced state of organization. Minsky notes that, except in some passages and quotes, Keynes did not develop a theory of the evolution of the structure of liabilities of companies, banks and other

financial institutions, and takes place as the endogenous generation of money and your financial closer substitutes.

This article is organized into three sections: first, the types of risks and the safety margin of financing of private investments as well as asset prices, in the second, we discuss the microeconomics of investment financing from the point of view of valuation of assets and financing of portfolio positions, and the third, we discuss the macroeconomics of financing with the transposition of assumptions and elements of microeconomic analysis to macroeconomic level of aggregation.

## 2 Margin of safety risks and finance private investment

Keynes identifies three types of risks when a businessman accessing credit from a bank. The first is the risk of the entrepreneur or the risk of the borrower and this arises the doubt that it has on the likelihood of getting really expected retribution your business in the future. "It is clear that if the entrepreneur risks his own capital financing new investment, this is the only risk that is relevant to him", Keynes (1982, p. 121, own translation) recalls. To Keynes (1982, p. 121, own translation):

When a capitalist economy there is an advanced financial system that lends and borrows – but that the granting of credit is secured by certain degree of real or personal safety – then appears a second type of risk that Keynes called the banker or venture risk lender. The risk of the lender can originate in two ways: 1) a possible moral (moral hazard) risk, ie, a voluntary default or otherwise found, maybe cool, to escape the length of the obligation to pay the loan with database, 2) a possible failure of the safety margin (margin of security) ie, involuntary non-compliance (involuntary default) the non-payment of duty committed by contract with the bank, this breach caused by disappointment expectancy rate expected profit of the entrepreneur business borrower.

There is a third type of risk, which could be called currency risk, which arises from the possibility of an unfavorable change in the value of

the standard coin, caused by price inflation, which thus makes the loan less money safe, as rises the rate of inflation, than the possession of a real asset, although all or the largest portion of this risk caused by inflation of the currency should have already been incorporated in the prices of durable goods.

## 2.1 Forms of financing and margin of safety against the risk

In a developed economy, with a modern financial system, the financing of the activities of businessmen not only restricted to bank loans. Indeed, securities, mortgages, public debt securities, debentures and shares are the currencies of the financial affairs of the companies used, directly or indirectly, immediately after converting them into cash (currency) to buy assets in the financial markets capital or to invest in the purchase of new capital equipment.

In addition, to offset the prospective yields,  $Q$ , through the increase of its capital assets, companies that are financed by debts incurred undertake to pay, by contract,  $CC$ , interest and repayment of borrowed capital in a sequence of periods in the future thus increasing their charges. Except those involving funding share issues, the promises of debt payments must be included in the grant of credit signed contracts between parties – borrowers and lenders – who, as legal instruments, shall contain clauses with severe penalties for noncompliance with the agreed between the parties. In case of financing the company, involve emission of shares traded in the capital market, any deviation from the expected payment by shareholders dividends affect stock prices.

Each purchase of a capital asset, both in financial markets and in the production of a new capital asset, when financed by the sale of debentures and/or actions involve a safety margin. Firms finance their investment expenditures for the purchase of new equipment fixed capital partly with their own funds (internal financing) and in part with funds borrowed from third parties (external funding).

It is clear that beyond the difficult decision to invest in buying a particular asset of financial capital and/or production, another essential speculative decision must take a firm is how to finance the control over capital assets you need: or is, as should be financed from own resources (self-financing) and how through making third-party resources. The decision of how to finance investment spending is one of those variables determining both the size of the company, measured by means of the volume of

purchase of capital goods or of its sales, the company's growth as measured by the rate of expansion of their property capital and its sales.

## 2.2 Financial capitalism and the prices of capital assets

The Finance capitalism is a historical product of the most advanced stage of industrial capitalism in the domain of financial institutions (central banks, commercial banks, savings banks or savings banks, investment banks, multiple or universal banks, mortgage banks, pension funds, mutual funds, financial lending organizations and financing, insurance and pension fund leasing agencies, factory).

In this institutional environment, uncertainties and risks associated with the decisions of investors and lenders involved in the performance of the capitalist economy directly affects the financial structure through the interrelationships of the various economic units portfolios. In a capitalist financial savings, borrow money or take and how to buy and sell stocks or bonds are natural activities for financing production and investment. Financial organizations enter the investment process in two stages: a) the determination of the prices of real and financial assets, b) in providing money to finance investment expenditures. Financial innovation to increase the funds available to finance the purchase of assets, goods and services will produce two effects that tend to increase investment. The first is the marked price of existing assets will increase. These increases raise the demand price of the goods that serve as investment assets. The second is that the fall in the cost of production financing, financial innovations can lower the bid price of the investment good.

If financial relationships are examined within a structure capable of allowing the excess demand for funding in the existing interest rates to drive interest rates and higher financial innovations, then theories that highlight the importance of economic variables, ignoring monetary and financial relations are not defensible. For a theory to be useful for the standard financial capitalist economy, the accumulation process should be the basic interest and currency should be entered in the argument from the beginning.

According to the authors, Elton and Gruber (1995, p. 2) and Minsky (1975, p. 69), "a monetary production economy, any economic unit – business, families, banks, other financial institutions and governments – can in a sense, be characterized by its portfolio". The effects of uncertainty about the desired portfolios and portfolios of own expansion into new desired

future portfolios may be such that the trajectory of the system's equilibrium trend not only is always changing, but it can change very quickly.

A portfolio consists of assets (real and financial) owned by a unit of one hand, and financial debt (liabilities) that must be paid, redeemed or transferred in exchange for something on the other side. For example, contracts of lease (leasing) of real assets (machinery and/or equipment) for use by third parties and contracts for rental of properties are debts and financial assets. In the view of Minsky (1975, p. 69-70):

It is very natural that the business unit that owns a portfolio that consists of the ownership and control of assets and incurred liabilities (debt) to finance the acquisition of the right ownership and / or control of assets, involving the existence of crucial decisions taken in units of a current position that reflects on past and current views about future expectations of economic units, as well as the economy.

In the case of capitalist enterprises, assets and liabilities are recorded on the balance sheet. In principle, the real and financial assets held businesses are salable and companies can take on new debt. Each individual company or corporative, productive, commercial or financial, makes decisions portfolios (portfolio value). A decision-making portfolio has two interdependent aspects: the first relating to the assets that are held, controlled and acquired, and the second relating to the position (inventory) of these assets – owned or controlled – that are financed through debt. That said let us analyze the sources of cash flows.

### **2.3 The sources of cash flows**

In the terminology of Keynes, assets and liabilities (debts) are acquired rights that generate revenue (assets) or expenses (liabilities) in cash in a fixed or variable period of time in the future. Typical sources of money of the various classes of activities are called cash flows or cash flows, and anyone can come from productive, commercial and financial operations. The cash flows of the business at any time have three functions: 1) they signal the decisions of past investments were adequate, they provide the funds through which borrowers may or may not fulfill the promises of



payments on the dates of their salaries, and they help determine the condition of investment financing. In the conception of Minsky (1984, p. 7):

In an analysis of cash flow of the economy, the crucial relationship that determines the performance of the economic system is that between the flow of payment commitments (interest and repayments) of debt and revenue stream operations and contract compliance.

This is because the relationship between cash income and cash payment commitments of assumed debt determines the course of investment and thus employment, output and profits. The ability to fulfill promises of payments depends on the normal functioning of the industrial system produce income. In addition, “the generation of cash flows from sale of assets by dealers or other financial intermediaries – that could allow the owner of the assets honor its debt obligations – produces a drain money from the payment of charges of past debts through the issuance of new debt”. (MINSKY, 1984, p. 126) This second source of money is called the refinancing positions.

The settlement, or rotation from a position of financial assets is the third possible way to get money some units. This is exactly what retailers and wholesalers are selling their liquid stocks (seasonal retailers really make settlement by selling their inventory positions). In designing Misky (1984, p. 126): “financial assets and debts of an economic unit can be turned into contracts with a temporal sequence of cash receipts and cash payments”. The various items listed under these contracts of receipts and payments in cash dependent on national income: the fulfillment of the commitments contained in the terms of mortgage contracts depends on consumer disposable income and therefore the performance of the economy.

Estimates of the direct and indirect economic impact of fluctuations of national income on ability to pay the economic units (firms, households, banks, other financial institutions, and governments) of an economy used to settle (pay) financial debts sectors can be derived from uncertain future behavior of the macroeconomic. Each unit has its economic or financial reserves and precautionary emerging sources of money. For many units the emergency source consists of positions of salable inventory or redeemable assets. Savings Bonds and deposits are typically patterns of money for consumers and small firms sources.

A corporation may carry a public treasury bill or even other money market instruments to meet payment flows of cash or additional unforeseen cash demands the need for a windfall. Reservations at idle money also serve this purpose to all economic units.

The money (full liquidity) has a special virtue is its availability does not depend on the normal functioning of any market. In principle, the primary (normal) and secondary sources of money for all units can be identified and their relationships with the commitments of debt can be estimated". (MINSKY, 1984, p. 127).

Certainly, a much larger number of economic units use their rents received to settle (pay) their commitments to financial debt.

Payments of interest and repayment of loans taken by entrepreneurs can usually be funded by cash flows derived from corporate earnings. Moreover, the replacement of a deposit from a customer for the deposit of a client B, a debt structure (passive) on a seat is seen as a position refinancing. A typical financial unit gets money to settle (pay) their commitments, as set out in its liability structure, not some of their cash flow or assets derived from the sale of its assets, but instead the issue of surrogate debts.

"The only financial organizations seem to use the cash flows of financial assets to make the payment flows of cash debts, both leveraged or not, are the investment trusts", remember Minsky (1984, p. 127). When a financial or non-financial that normally settles its financial obligations for withdrawals (withdrawals) of the cash flows generated by an income unit – to meet your needs, or want to refinance your position (inventory) – additional pressures can be found in financial institutions borrowing loans.

Some financial relationships are based on periodic liquidation of positions - as is the case of seasonal inventory at retail. The dealers of the capital or insurance agencies market liquidate positions in a set of assets in order to acquire new assets. "But if organizations that typically fund their payments using money from income or refinancing of positions rather than trying to sell their positions, this may indicate that the market for asset position is limited", remember Minsky (1984, p. 127). As a result, a sharp fall in asset prices with a small increase in supply occurs.

In the housing market, the sale of residences is not normally a compulsory sale; in addition a large number of sellers of dwellings are rentiers of other. In this case, if homeowners – as representatives of an economy class

– try to sell their homes, this class ends up not being able to manipulate the market without meaningful price concessions. Occurs that significant concessions in house prices mean a drop in net worth – not just the sale of a unit, but all units of this asset. “More specifically, a decline in prices means that the units offered may be unable to raise the money demanded or expected sales of the affected assets”. (MINSKY, 1984, p. 127)

Almost all commitments debts are settled through two sources of money: income flows and positions refinancing. For most units – especially those that have fixed assets like their real assets – selling their positions in the portfolio is not feasible because there is no organized market for a quick sale, for other assets, the share of marginal adjustments in the way particular financial markets, they are not a normal source of money.

A generalization, one can say that asset prices – prices of stocks – may fall much more rapidly than the prices of the factors rents - prices flows. Thus, any need or desire to acquire money leading to attempt to sell positions reproducible assets will result not only in a large drop of the carrying value of these assets, but also on market prices of reproducible assets that are well below their costs of production chains. Even in the presence of a wide dissemination of the need or desire to acquire money by selling assets, not all assets are allowed a fall in their prices. The prices of some assets will be stabilized by the purchases made by the central bank or loans – refinancing position – such assets may be denominated assets protected.

## 2.4 The types of cash flows of assets and liabilities

In the language of contemporary, financial assets and liabilities generate a sequence-dated expectations of cash flows (cash flows), ie, cash inflows (receipts) and cash outflows (payments). It should be emphasized that all the different types of cash flows arising from the productive, commercial and financial transactions – income factors, rotation of inventory and financial contracts – can be considered as a function of national income. The various assets and liabilities differ in the nature of cash flows, which gives them some independence.

The various types of flows of cash assets or liabilities can be pre-dated, serial or contingent; cash flows of the companies can be conditional or not may depend on the functioning of the economy; cash flows may be associated with the possession or use of assets or the purchase or sale of assets. The diversity of cash payments of an enterprise in a modern capitalist economy is great. All types of payments of factors of production – wages,

rents, interest and profits – generate cash flows. Are also tax payments and transfers, payment of final and intermediate goods and payments of financial instruments.

Cash flows also vary in the degree confidence. The cash flows that generate an industrial company, when it is in operation, depend on the revenue and costs determined by the market. These cash flows in turn, depend on the strategic position of the company in the industry and industry in the economy. Thus, in principle, a real asset, such as an industrial plant or capital equipment, can generate a cash flow arising from its outright sale or sale of it for use by third parties through the collection of rent (leasing).

The sale of a real asset specialized as a plant producing industrial chemicals, is rare because there is no organized for these types of asset markets. To Minsky (1975, p. 71):

Although when there are transactions involving transfers of undertakings operating subsidiaries – a subsidiary is a company-related to each other (parent company) by ties of ownership, common management, or by lease (leasing) for long-term use of company type its properties or with other control devices – are taken into account, the use of these tangible assets to raise liquidity (amount of money) of the parent company, may not be as rare as soon as the contingency (uncertainty) may even be neglected in terms of their value.

Minsky (1975, p. 71) affirms:

As a result of the economic crisis in the late 60s, emerged in America the craze for formation of conglomerates – mergers and acquisitions between companies that result not only in the group (union) mass of several companies, but also in diversification that should not be confused with the processes of vertical or horizontal integration in supply chains – with many of them looking to increase liquidity (cash) by selling their financial assets or reducing its cash commitments (debt) through divestment (sale or lease) of its subsidiaries.

Therefore, there are less extreme alternatives to increase the flow of money than just sales of real capital assets. The increase in liquidity (money) of a company can be obtained through transfers – via pledge (upon delivery of an object, usually mobile, personal property as security for payment of some debt, which is subject to go to the lender if the borrower fails to meet the combined) or via mortgage (transfer of a salable property as security for a debt or redemption of a bond) – or through the sale of tangible assets of the common stock of subsidiaries that are operating. “These cash flows (cash flows) produced by sale or mortgage of tangible assets of subsidiaries are subject to variability (inconsistency) of large transactions”. (MINSKY, 1975, p. 71)

At any time the amount of money (liquidity) which may be increased by such a transaction expected by a company – for example, a company producing chemical goods – depends on the expectations of future business that make competing companies (established and potential) and the chemical industry (commercial and investment) banks on the ability of the chemical industry to generate cash flows in the current administration or another alternative administration, within an expected economic scenario. Minsky (1975, p. 71) says:

The success of a given joint venture, or even a large corporation does not only depend on the behavior of the market for goods and services and the terms under which it may have to employ inputs, but also the behavior of financial markets, in terms of the which such company may borrow, sell assets or issue shares.

In contrast to the dependent nature of the cash flows that a chemical company can obtain through the sale or lease (leasing) of its tangible assets that are operating, the cash flows that a debt – such as treasury bonds – will generate when the terms of a financial contract are satisfied are guaranteed (insured) in monetary terms. Is this prior knowledge in the contract exceeds reasonable doubt that the possessor of the title of the commitment of the federal government (or even by a trusted private debtor) when established in the legal instrument (contract) will be honored.

Thus, an advanced capitalist economy, possessed of a modern financial system, all debt securities, government bonds and short-term in particular, have very broad, deep and great recuperative power markets, that is, there are many owners the turnover is great and the prices of the instruments

(debt securities) will vary due to the excesses of supply and demand in the public and private securities markets.

A quick sale, one owner title of short-term debt can increase your amount of money just on its face value. For all securities long-term debt, despite the satisfaction of the terms of the contract be guaranteed, these debt securities are speculative or conjectural elements that go into making the decision to own such debt securities. This is because changes in the price level may affect the purchasing power of cash flows, and the market price of a long-term instrument at some date reflect the current interest rate of appropriate maturity.

Money as the currency of high purchasing power and means of payment to settle debts is a particular and special monetary-financial asset from the perspective of cash flows and a world with complex financial commitments. Unlike savings accounts and debt securities, money is a financial asset that does not produce this when net cash flows (interest) when maintained. The currency and other financial assets fixed in nominal terms can be assessed in terms of real value when the prices of goods and services fall is not relevant at this point in the argument.

In fact, one can say that the special value of money that is in the form of currency – as a social institution and general acceptance of currency provided by the higher law – the money can be used to make payments. If a cash payment needs to be done and the paying company has debt securities of the treasury, then, almost always, the debt securities of governments need to be sold so that the resulting product can be used to make the required payment. The possession of money eliminates the need to perform this transaction. Indeed, a paying company that has enough money not to do this transaction. Therefore, it is appropriate to maintain currency and liquids to settle debts in future financial assets.

In a world of private debts denominated in foreign currency, the currency is a safe asset to settle repurchase obligations (debts) in financial contracts. This is because money always has a ready market, for those companies with contractual obligations to pay cash must employ in activities to get money. Currency is not an asset with a constant with respect to income value because the price level of this product may change. Thus, the value of currency in terms of other assets, including those of real capital, is not invariable – the money prices of real and financial assets may change. “Currency has a value only invariant with respect to currency contracts and payments made in cash – whether these committed payments are due to debts, taxes or current transactions”. (MINSKY, 1975, p. 71)

Since the financial interrelationships are admitted to be of vital importance as determinants of how a capitalist economy works, currency and monetary system become the natural starting point for an economic theory. The special importance of money in a capitalist economy does not follow from the fact that money is the means of payment. Currency is also an important means of payment in a socialist economy, but money does not a key variable in the determination of output, employment, investment and prices in a socialist economy. Minsky (1975, p. 71) defends:

This is because in a socialist economy lack the financial interrelationships of a modern capitalist economy in which speculation on the value of financial assets, but also on the value of productive assets is a characteristic of a capitalist economy and not a socialist economy.

Moreover, the relevance to the analysis of a capitalist economy paradigm is not a cooperative economy; the relevant paradigm is a financial system with a City or Wall Street where the loading of assets as well as current transactions are financed through debt. Clower (1969) is an aphorism that the main feature of the capitalist economy is the fact that the “currency to buy goods and goods buy money, but goods do not buy goods”. However, this maxim Clower failed when he wanted to highlight the paper money in a capitalist economy. Indeed, in a capitalist economy in which private financial debts are used to acquire control or ownership of companies, financial debts are also used to “buy” the real capital assets.

These private financial debt commitments generate cash flow. The money to pay off debts of households and firms commonly flows of income (wages, rents and gross profits) arising out of productive activities. For Minsky (1975, p. 73):

The ownership of money and financial assets that are close substitutes for money – like savings deposits, certificates of deposits and other financial innovations – work as an ‘insurance’ against the uncertain future of the economy or of natural markets, making it is an inappropriate way, i.e. a way such that the cash flows from the productive capacity or to increase the amount of money to finance current operations transactions are insufficient to meet the needs.

Besides, the modern capitalist economy has financial companies such as banks and insurance companies, whose normal function implies that these institutions receive money both compliance with the terms of their financial contracts, as the sale of financial assets, in organized financial markets, or new debt created recently.

For such financial drives – also for companies and families – the retention of money acts as a guarantee to supplement the money not received due to default of debt instruments or even poorly functioning financial market those assets sold or taken loans. (MINSKY, 1975, p. 73)

It must be said that financial crises occur because businesses and families require or desire more money than is available in their usual sources (gross wages and profits) and so they direct their efforts to increase the availability of money for non-usual sources. Under pressure from several financial and non-financial firms can exit – a need for more money or because of a defensive financial policy – some financial markets. For Minsky (1984, p. 125):

Such clearances not only affect the potential change in market prices, but can also collapse the connections of business: both ways of doing business and financial reserves and implement a defensive policy of traditional sources of money may be affected.

The constraints on the supply of financial markets can press the demand for money from companies that were not under particular pressure, and were not directly affected by the shortage of money, to pay attention to the new financial connections. The initial impact of a recession can spread through a third party or not reach the nearest businesses. The financial market events that disrupt the established financial channels and affect the present value of the cash flows not directly affected economic units.

For most consumers and nonfinancial companies the largest source of money is from their current budgets. Wages and salaries are the main sources of money for major consumers and sales of goods and services are the main sources of productive enterprises. “For financial intermediaries and more dealers – merchants active agents who buy for resale – money flows most common of these financial firms can be derived from the sale of financial assets”. (MINSKY, 1984, p. 126)



For dealers of financial markets revenues in cash commonly result more sales than its financial commitments set out in its asset inventory assets. Under normal circumstances, the dealers when conducting their activities do not expect to sell only their financial positions, when they sell a number of assets they continue to get a new set of assets.

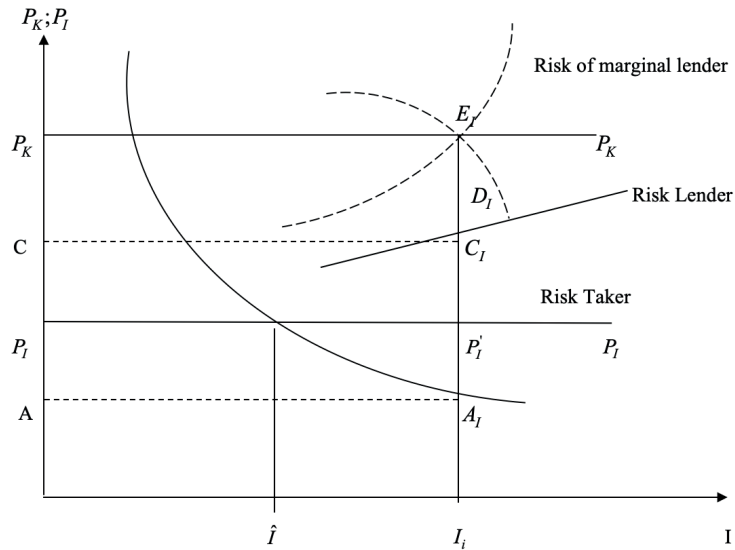
### 3 The microeconomics of investment financing

In this section, we seek to analyze the financial performance of a given investor company representative. Suppose that this company wait for the next coming period that your gross profits after the payment of taxes due, and then to pay its creditors and dividends to shareholders, either  $\hat{Q}_i$ . This expected gross profit (which also includes the depreciation reserve),  $\hat{Q}_i$ , is independent of the level of investment the company itself, although the level of aggregate investment spending, to affect aggregate income, end also affecting the expected aggregate proceeds  $\hat{Q}$ . "This expected the company's gross profit, after deducting the payment of taxes and debts, is your source of funding whose availability expected for the coming period". (MINSKY, 1975, p. 107) Minsky (1975, p. 107) argues:

Suppose now that the offer price of the fixed capital ( $P_i$ ) the company expects to buy – this offer price determined by the manufacturer and fixed capital – is independent of the quantity that will be bought by this company, which means that this company is not as big as purchasers of capital equipment to the point of their demand affect the price of the fixed capital.

Therefore, the volume of investment that the company can finance is internally  $I_i = Q_i / P_i$ ; whence it follows that  $Q_i = P_i \cdot I_i$ : which corresponds to the expected capacity limit of funding within the company representative, based on expected discounted gross profit taxes and debts, can be represented by a rectangular hyperbola as shown in Figure 1.

Figure 1 – Behavior of a financial company representative



Source: own elaboration.

This diagram shows that if the company expects to acquire a volume  $\hat{I}$  investment at a fixed offer price capital goods,  $P_I$ , she could fully self-finance the total volume of capital equipment you wish to purchase. However, if a company expects to purchase a greater volume of capital goods, such that  $I_I > \hat{I}$  investment at a bid price of the fixed capital. Then spending additional investments,  $P_I \cdot I_I - \hat{Q}$ , should be financed with debt, i.e., with external funding. In this case, "assuming that the representative firm will borrow, it must undertake to pay his debt in cash in the future, in the form of multiple streams,  $CC$ , current in exchange for money to finance the increase in investment spending,  $P_I I_I - \hat{Q}$ ". (MINSKY, 1975, p. 107)

There is, however, one exception: the company may have a surplus of purchasing power – in the form of currency current course or securities marketable on organized markets – which the company can use to finance their additional purchases of investment goods. In a world of uncertainty, there are reasons why a company or family as debts also has currency and other financial assets, ie other units of debt.

"In part, the position of these currency reserves and financial assets isolates the normal business operations of the vicissitudes of the market caused by uncertainty". (MINSKY, 1975, p. 107) When the position of such financial and monetary assets outlines some fall, there is less protection of the company against unforeseen market changes, remember Carvalho (2014).

From the analytical point of view of the structure of the portfolio of the representative firm, reducing reserves of financial and monetary assets – which acts as a “cushion” cushion impact of unforeseen changes in the financial market – corresponds to a rise in the stock of liabilities (debts) company: both changes imply that there is a set of events in the external environment that can seriously affect the financial capacity of the company to meet its contractual commitments or to meet its investment plans. For Minsky (1975, p. 108): “this means a reduction of the safety margin of the company, which makes it vulnerable financially to take foreign loans to finance the purchase of new property investments”.

The company capitalizes on its prospective earnings,  $Q_i$  – which includes dividends, interest and other cash payments on debt, but excludes taxes – a rate  $\hat{K}$ . This rate indicates a value of the stock of capital assets of the company,  $\hat{P}_{K_i} \cdot K_i = \hat{K}(Q_i)$ , which is independent of the financial structure of the company. The company also capitalizes on its cash flows (cash flow) committed, DC, with their debts, dividends. Now, following the theoretical track Minsky, it is assumed that the capitalization rate on the debt of the company is higher than about prospective earnings, Q. “This is so because for a policyholder cash inflows (cash flows) to receive for the debt, the CC’s are seen as certain, while inflows of money (cash flows) of fixed assets, the Q’s are uncertain”, supports Minsky (1975, p. 108).

For the decision to invest in the purchase of fixed equipment that must occur is  $P_{K_i} > K(Q_i)/K_i \geq P_I$ , i.e., that the price of a unit of fixed capital is greater than or equal to the price of a unit of investment. In the absence of financing the investment with debt, investment expenditures will be lower because only covered with self-financing, so that will be the level of investment spending,  $\hat{I} = \hat{Q}_{io}/P_I$ , as seen in Figure 1.

For the acquisition of fixed assets is financed by retained earnings,  $\hat{Q}_i$ , or debts, it is necessary that  $\hat{K}(Q_i - CC_i) > 0$ . An alleged abstract world, the assumption that the supply of finance for a business is infinitely elastic, that all prices and prospective yields are independent of the sheer scale of operation of the firm and that the realities of risk and uncertainty are never introduced, if flows CC debts needed money to finance the purchase of a unit of capital good are greater than the prospective earnings, then a company with such prospects, might want to buy an unlimited amount – even more, infinite – capital goods.

But common as the borrower’s risk and lender’s risk realities, allowing monopolistic positions, penetrate, even in this abstract world, such that even if  $\hat{K}(Q - CC) > 0$  the company will acquire only a limited amount of fixed assets.

### 3.1 The risk taker in a world of uncertainty

The risk of the entrepreneur or as it is also called the borrower's risk arises from doubts about the likelihood of getting really profitable retribution that awaits the future. In fact, the risk of the entrepreneur who takes loan is, in a sense, a real cost. This risk is likely to decrease by mean of its distribution or effect of greater accuracy in predictions. Still, in an environment of uncertainty about the future, the predictions made by the best that are subject to the state of confidence of economic agents. From the perspective of Minsky (1975, p. 109):

The risk of the borrower is twofold: First, in a world of uncertainty, where the fates of various types of capital and the various firms in the future may differ goods, the entrepreneur-borrower who is risk averse should diversify its business. This means that beyond a certain point, that for the individual entrepreneur or a corporation depends on the size of their wealth, the capitalization rate for any type of the capital goods, which should be used in any particular branch of industry, declines when the amount of capital assets owned by the company increases.

Second, since the entrepreneur-borrower look at the influx of money due to debt incurred (CCs) for granted; and inflows of money from the prospective income (Q's) as uncertain, then the increase in the rate of investment is financed by debt decreases the margin of safety and that lower the capitalization rate that the borrower applies about prospective earnings, Q's. To Minsky (1975, p. 109):

Because of the risk taker, the demand price of a fixed capital good may decline and move away from the offer price of that capital good,  $P_k$ ; and if this decline continue, it is expected that this deviation may become more pronounced the greater the commitment to payment of the debt (which was used to finance the purchase of that particular type of capital asset) and the higher the proportion of borrowed funds.

Typically, this point of detachment, as a result of the sharp fall in demand price relative to the offer price of that particular type of the capital

goods, may occupy a position somewhere to the right  $\hat{I}$ , with the amount of investment being financed with internal funds, but the level of investment may also occupy a position to the left  $\hat{I}$ , as seen in Figure 1.

This last position of the volume of investment occurs if the perception of the entrepreneur is that the degree of impairment inherited as a result of debts incurred to finance this particular type of capital good, is too high – just a desire to diversify or divest themselves becomes dominant – or if the entrepreneur realize that the financial balance inherited from your company also contains a lot of debt.

These “new” visions can emerge as a result of developments in a world of uncertainty. Nevertheless, depending on the future scenario, favoring symmetrical visions can develop more expertise and more debt. Finally, it is noteworthy that the risk of the borrower is subjective because it does not appear in the signed contracts. Consequently, the risk of the borrower is the focal point for the fears and tremors of uncertainty and surprises high impulse pet point (*animal spirit*). In the words of Carvalho and Carvalho (2018, p. 241, own translation):

It is noted that investment expenditures depend on the expectations of the entrepreneurs or what Keynes called the animal spirit, since both in the short term and in the long term investment spending can not be a function of current aggregate income and, therefore, of the volume of employment.

### 3.2 The risk of the lender in a world of uncertainty

The risk of the lender is in addition to investment spending, which would not exist if cost lender and borrower are the same people. Furthermore, the risk the lender assumes, in part a duplication of a portion of the risk of the entrepreneur, which is added twice the rate of pure interest, which is compared with the expected minimum income, which induces the entrepreneur to invest. If a business is risky, the entrepreneur who borrows money to build it will require a larger margin of safety between their expectations regarding the expected rate of profit and the interest rate that seems advantageous in the eyes of the entrepreneur to go into debt; while precisely the same reason will lead the lender to demand a greater margin of safety between their pay and the interest rate which is

sufficient to induce him to lend unless the power and wealth of the debtor are so significant that enable it to provide a margin exceptional warranty.

The risk of the lender appears in the clauses of contracts between banks with business borrowers. For any set of market conditions, the risk of the lender, when applied to a particular company, takes the form of greater demands on debt signed contract to release the flow of money to the borrower, the ratio increases when the debt and total assets of the company. In fact, the risk of the lender appears in financial contracts in several ways: high interest rates, periods of lower salary requirements to undertake specific assets as collateral in addition to restrictions on the payment of dividends and the granting of new loans and more.

The lender's risk increases with the increase of the ratio between debt and financing on share issues or the ratio between the flow of money committed to the contract debt and the total flow of money from the prospective borrower company. According to Minsky (1975, p. 110), in a significant sense,

The bid price of a well fixed capital is one that the manufacturer of capital equipment - or its owner - offers to sell it plus a capitalized value of the excess of cash commitments of the financial contract on commitments that would be implied if the investment had been financed by the internal resources of the company.

This additional value is the monetary value of the inverse of capitalized insurance. The higher the leverage (ratio of own internal capital and external loan capital) of a company for the purchase of a new unit of investment, i.e., the larger the ratio between the cash value of external financing (debt owed) and domestic financing (own resources), then the greater will be the contractual requirements that compel the company to release the money borrowed.

The curve of demand price ( $P_I$ ) has a discontinuity in the volume of investment ( $\hat{I}$ ) that can be self-financed with internal funds of the company. After a positive increase in the amount of investment financed with external financial funds, it is expected that the curve  $P_I$  begins to rise and the climb is done at an increasing rate of increase in the effective price of capital good that the company wants to buy. Therefore, when the rate of contractual debt grows, all debts incurred by a given company will, from refinancing, conform to the legal requirements set out in marginal

agreement. Thus, with a lag, a marginal curve upward supply curve, equivalent to a monopsony curve becomes a crucial respect the decision that incorporates the risk of the lender, says Minsky (1975, p. 110).

The essential fact of the risks of the borrower and the lender is that they reflect subjective valuations in an environment marked by uncertainty. Two businessmen faced in similar circumstances, but with different temperaments, could build scenarios on the risk of the borrower very different: where one takes the decision to invest,  $I_1$ , the other can decide more or less. The risk of the lender leads to observable patterns of lending rates, such as those that appear in the “ratings” of municipal debts and corporations of various services or premium on the prime rate that companies have to pay the banks.

During this particular time, “financial market” seems to operate with a consensus on the extent of operations that can be financed with debt for a particular rating, but this consensus may extend longer or simply change: the acceptance and observance of the ratio of debt and actions vary systematically over the business cycle fluctuations. The intersection of the demand curve, consented to by the borrower’s risk, and the supply curve, adjusted for the risk the lender determines the scale of investment. As can be seen in Figure 1, with the intersection of the demand and supply curves incorporating the risk of the borrower and the lender in point  $D_1$ , the level of investment  $I_1$  will be at a price  $P_1$  per unit of capital good.

In this context, the total investment spending, in Figure 1 the perimeter  $OP_1P_1'I_1$ , a party represented by  $OAA_1I_1$ , will be financed internally with the company’s own resources; and the other party, represented by  $AP_1P_1'A_1$ , will be externally financed with debt in the financial market, remember Minsky (1975, p. 111). Of prospective yields per unit capital asset, borrowing results in proportional commit money  $A_1C_1/I_1E_1$ , and the owners expect to receive stock of proportionate cash flow  $(IA_1 + C_1E_1/I_1E_1)$ .

After the capital goods are integrated with the production process, and these capital assets generate income  $Q$ ’s expectations, then the capitalization rate  $\hat{K}$ , the capital goods  $OI_1$  are valued in  $P_K$ . Their total value is represented  $OP_K E_1 I_1$ ; the investor will have a capital gain. Debts with more guarantees, generate cash flows proportional to  $A_1C_1$ , but will be capitalized at a lower rate of interest than they were originally, because the lender’s risk premium will also be proven to be excessive, as Minsky (1975, p. 111) notes.

The initial value of shareholders’ investments,  $\hat{Q}_1$ , equal representation  $OAA_1I_1$ , will be  $OAA_1I_1$  plus  $CP_K E_1 C_1$ . This should be reflected in the prices of shares traded. The risk of the lender and the borrower, as limiting factors

that ensure the success of the productive operations of capital goods may lead to capital appreciation to the lender and the borrower.

### 3.3 Sensitivity of investment to the risk of the borrower and the lender

The pace of investment is more sensitive to the risks of borrowers and lenders. If the curves of risk of the borrower and the lender fall markedly below the capitalized value of Q's income and rises sharply above the price of investment goods, then the expense of investment will be funded internally; if they are flat rather than sloping, the financing of investment spending will be heavily leveraged. In each period a firm inherits a structure of your past debts (liabilities) and a set of capital goods (assets). For Minsky (1975, p. 112):

The resulting effects of experience on preferences and expectations about the future are those that reduce the risk of the borrower and lender, so that  $I_2 > I_1$  of investment spending to take effect for a given curve  $\hat{Q}$ , as can be seen in Figure 2, then a corresponding change should occur in the acceptable ratio of external financing (debt) by issuing shares to the existence of the stock of capital assets owned by the company.

This will reveal the great turning radius and the ability of the company to finance their investments by borrowing money on the capital market based on the property of his inherited stock of capital goods. That is, for a given stock of capital goods owned by a company, the relationship between CC, the cash flows for payments of debts in the form of dividends and interest, and Q, the cash flows of the present and expected gross income after-tax, shall be reduced in accordance with the new standards.

The leverage of investment financing in a monetary production economy, based on the expected profit gains in the future can be very high during a period of declining risk aversion because the valuation or revaluation of fixed assets reveals the debt capacity company, i.e. its power to borrow. However, if a decrease in risk aversion affects the families who own shares in the same manner that affects the bankers and business man, which perform changes in the relations of acceptable debt to cover assets and investments of capital goods, households are more willing to

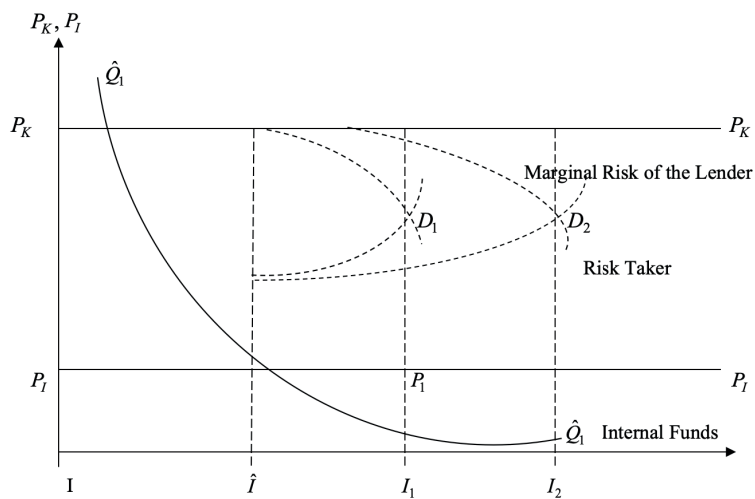


finance such purchases “marginal” shares. Such behavior will lead to a rise in stock prices.

This rise in the market price of the shares was played by Keynes with involving an increase in the marginal efficiency of capital corresponding class type, which according to the terms used by Minsky raises the  $P_K$  for the data  $Q$ 's. Keynes (1982) noted that when the shares of a listed company are very high, so that the same company can increase its capital by issuing shares on favorable terms, the ensuing results are the same as if she could obtain loans at a reduced rate interest. For Keynes (1982, p. 126, own translation):

Now, I would describe this fact saying that a high price for existing shares implies an increase in the marginal efficiency of capital corresponding type and therefore has the same effect as a decrease in the interest rate (since investment depends on a comparison between the marginal efficiency of capital and the interest rate).

Figure 2 – Sensitivity of the estimates of investment risks



Source: own elaboration.

In fact, the hope of a positive outcome very favorable in the future of an expense of productive investment, which in the mind of the entrepreneur

can compensate for the risk the lender is not appropriate to reassure the lender. Hence why the double precaution with a portion of the risk cannot be neglected.

Keynes (1982) notes that in boom periods, the alleged right opinion about the magnitude of the two risks embedded in the interest rate on loans – the risk of the borrower and the risk of the lender – may represent an abnormal and dangerously low underestimation that could bring serious consequences for the financial system. “This implies that during the boom the rate of borrowing to finance investment increases: thus indicate the available data of the debts of corporations”. (MINSKY, 1975, p. 113)

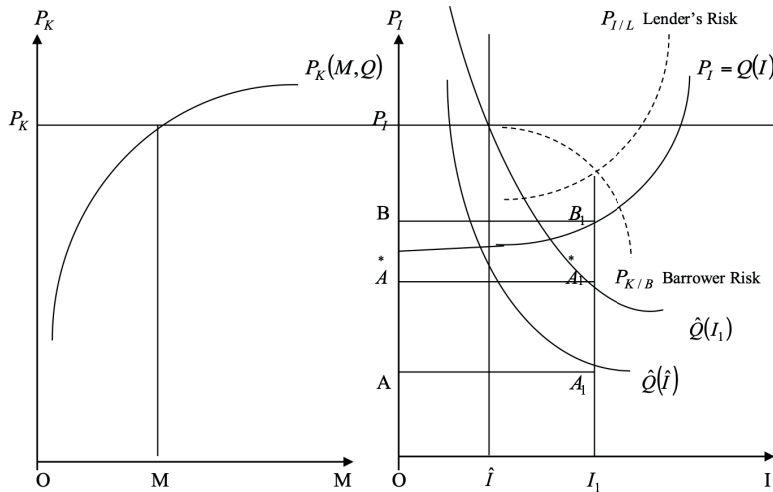
## 4 The macroeconomics of investment financing

The argument was developed for a hypothetical company or a hypothetical family. Now to extend the argument to the economy as a whole is necessary to give an aggregate treatment. Initially, we carry the previous analysis the proposition that, for a given stock of capital goods, the preference for financial assets portfolio (portfolio value) generate a list price of market supply of money for capital goods in general such that the market price of a good existing capital ( $P_K$ ) is positively related to the quantity of money ( $M$ ) and the present and expected ( $Q$ ) yields.

This function,  $P_K = P_K(M, Q)$ , incorporates three relationships identified by Keynes: 1) between the currency and the interest rate on the debt; between the interest rate on debt and the marginal efficiency of capital, i.e., the factors capitalization of capital assets; and between the marginal efficiency of capital (expected rate of profit) and prospective earnings of capital goods, remember Minsky (1975, p. 113).

Given the amount of money, this relation determines a price of demand for investment goods. The demand curve for capital goods is upward, upward sloping with respect to the money supply. The Figure 3 illustrates the relationship between aggregate investment and financing. The supply curve of investment goods is an increasing function of the volume of investment. Besides that, the funds provided from internal financing are represented by the downward curve  $\hat{Q}(\hat{I})$ .

Figure 3 – Funding and aggregate investment



Source: own elaboration.

The point of intersection of the supply price of investment good conditioning to the risk of the lender  $(P_{I/L})$  curve with the curve of the demand price of the same good investment conditional on the borrower's risk of the entrepreneur  $(P_{K/B})$  determines the effective pace of investment the economy. (MINSKY, 1975, p. 114).

The total amount of spending on investment  $OBB_1I_1$ ,  $OAA_1I_1$  internal funds are expected corporate and external funds  $ABB_1A_1$  are expected loans from financial institutions. Let us assume that the financing plan for the level of investment spending  $I_1$  was based on the expected profits of companies they expect to obtain in the future if the aggregate income would be sufficient to fund the aggregate investment,  $\hat{I}$ .

Indeed, the aggregate investment is  $I_1$ , and how this excess investment leads to a higher expected income aggregate, it will also lead to internal flow of funds  $\hat{Q}(I_1)$ , which is higher than expected. As a result, after that, the internal cash flows are such that  $O^*AA_1^*I_1$  investment is financed with internal funds and  $^*AB_1^*A_1$  is financed with external funds.

In the case illustrated above, the increase in gross profits realized from companies partially reduces funding through debt of planned business investment and simultaneously reinforces the layout, and bankers with new debt to finance spending increases investment. The ability to leverage (the ratio of established internal fund equity of companies and external fund

capital loans of financial institutions) not used and charged by companies becomes available to fund new investments in the future.

Moreover, as the charges of impaired debts are lower than forecast, then the profits from sales of shares are higher. As a result, “stock prices in organized markets respond favorably to these increases in cash flows of the internal funds of companies”. (MINSKY, 1975, p. 114)

Minsky (1975) developed a very unique way to see the investment that the conventional estimate for calculating the risk of the lender and borrower risk, admittedly influenced by the performance of the economy in the past, acts as an immediate regulator of the rate of business investment and extension of the economy.

When the provision of investment financing through debt increases and entrepreneurs realize their intentions in practice, as shown in Figure 2, then the ratio between the flows of the propensity to pay debts (CC) and the flows of the prospective income increases. When CC's increase relative to Q's, then the gross profits expected after-tax and payments of commitments made in contracts of debt will begin to grow less rapidly than the rate of investment and financing contracted by debt.

In these terms, lenders and borrowers seek innovative ways of financing investments, meaning that borrowers increasingly on margin, seek new sources of funds possessing much higher funding liquidity – and, with a result, contractual debt requirements will increase. This implies that the demand for money in the short term through debt will surpass the money generated through prospective earnings, the Q's businesses. This is mainly due to the short term nature of many debts incurred in periods of booms growth of economies, which require payment of the principal at a faster than revenue in cash generated by business operations basic rate.

The companies that use this type of short-term debt require refinancing your debts as they come due their payment terms set out in the contracts. In a monetary production economy, the duration of the period of “boom” of the economic cycle, once initiated, is uncertain. Indeed, “the duration of the ‘boom’ depends on the realization of the optimistic expectations of expected returns, such that capitalists’ profits increase for both debt and equity investors for investors as capital goods”. (MINSKY, 1975, p. 114)

Among the many possible causes – rising wages or retro – feeders production costs of the rise in interest rates of past long-term debt, repayment of high cost debt preterit – a large number of companies may be forced to try to simultaneously raise the monetary liquidity in exchange for financial liquidity taking advantage presumably have some of their financial assets, i.e., trying to sell their liquid assets.

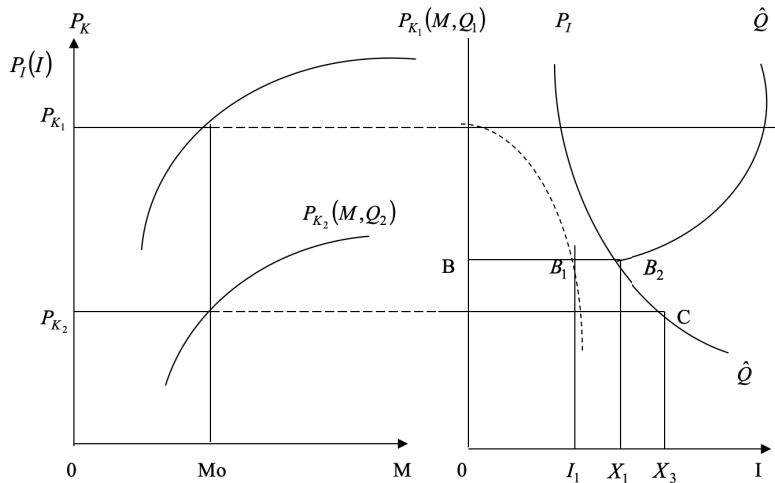
## 5 Conclusion

It is noticed that some companies, however, the burden of past debts, in the form of commitments to pay money, may become so heavy that such companies may be forced to sell or even compromise their capital assets in new contracts debts for money to settle its debt commitments. That situation can occur with both joint ventures – individual and limited – as with large corporations the corporation type.

The principle of scarcity of Keynes, the assets are liquid when there is no preponderance of sellers over buyers. Therefore, whenever the need for position by selling assets becomes too widespread, then, unless there is support broad market for reserves, as a conscientious central bank, asset prices can fall abruptly. For Minsky (1975, p. 115), “when prices fall in net assets – including shares – corresponding marginal efficiency of capital or the corresponding demand price of capital goods also fall”.

In Figure 4, we try to portray the situation after a “crisis” or a reconsideration of the structure of desirable corporate debt. With  $P_K(M, Q)$  and  $M_0$  money, the market price of capital goods is quite high for a positive funding can through debts occur. However, “the recent experience has compelled the potential borrowers consider their risks so that only  $OI_1$  investment is desirable”. (MINSKY, 1975, p. 116)

Figure 4 – Effects of a change in the function



Source: own elaboration.

This will occur if management begin to consider too risky debt structure. In this case, a conservative restructuring of the balance sheet is therefore desirable: for example, the prospective internal funds of these companies, generated by  $Q$ 's, a party represented by  $OBB_1I_1$  can be spent on the purchase of capital goods and other represented by  $I_1B_1B_2X_2$  can be used to settle debts or to acquire financial assets.

In this situation, if the income that could generate internal funds expected  $Q$  required an aggregate investment beyond  $I_1$ , then internal funds realized would be lower than expected. Thus, "the desired improvement of the structure of the balance between assets and liabilities would not be achieved and this could trigger a recurring process of deflation of income and debt". (MINSKY, 1975, p. 116)

If  $P_K$  is the relationship that determines the price of capital goods, the total expected from internal funds of firms will be used to settle debts or to purchase financial assets. In the set of figures used to illustrate the investment ratio, Figure 4 shows the state of liquidity trap. The impotence of monetary policy illustrated here to do not have the interest rate on public debt remains constant when increasing the money supply.

Lastly, the impotence of monetary policy illustrated here to do not have the interest rate on public debt remains constant when increasing the money supply. Indeed, as illustrated in Figure 4, even if the interest rate on financial assets continue to fall when the money supply increases, "the capitalization rate applied to investment property may not rise enough to induce new investment". (MINSKY, 1975, p. 116)

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# Impactos das políticas de segurança sobre os indicadores de criminalidade no Rio de Janeiro

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**Resumo:** Nas últimas décadas, a segurança pública tornou-se um crescente desafio para as grandes metrópoles e é uma pauta constante na agenda de seus governos. Desde os anos finais da década passada o estado do Rio de Janeiro enfrenta a questão a partir de dois grandes programas, o das Unidades de Polícia Pacificadora (UPP) e o do Sistema Integrado de Metas (SIM). O objetivo principal deste artigo é avaliar os impactos desses dois programas na criminalidade do Rio de Janeiro, utilizando os métodos OLS e GMM. A avaliação utiliza, como indicadores da criminalidade, os homicídios dolosos e as mortes decorrentes de intervenção policial. Os resultados mostram que o SIM contribuiu para a redução dos indicadores, mas as UPPs, ao contrário, contribuíram para a elevação da criminalidade.

**Palavras-chave:** Economia do Crime. Segurança Pública. Unidades de Polícia Pacificadora. Sistema Integrado de Metas.

**Classificação JEL:** E24; E26; H40.

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## Impacts of security policies on crime indicators in Rio de Janeiro

**Abstract:** In the last decades, public safety became a rising challenge to big metropolis and it is a constant subject in its government agenda. Since the final years of the last decade, the Rio de Janeiro state confronts the question with two great programs, the Pacifying Policy Units (UPPs) and the Integrated Goals System (SIM). The main objective of this article is to evaluate the impacts of those programs in the Rio de Janeiro criminality, using the OLS and GMM methods. The evaluation uses, as indicators of criminality, the murders and death from police intervention. The results shows that the SIM reduced the indicators, but the UPPs, in contrast, rose them.

**Keywords:** Economics of Crime. Public Safety. Pacifying Police Units. Integrated Goals System.

**JEL classification:** E24; E26; H40.

## I Introdução

A crescente preocupação com a segurança pública observada nos grandes centros urbanos nas últimas décadas ganhou, no estado do Rio de Janeiro, o *status* de prioridade diante da proximidade de grandes eventos internacionais. Aliada ao sentimento de insegurança de grande parte da população, tornou indispensável a adoção de medidas capazes de reduzir a criminalidade. Foi nesse contexto que o governo do estado do Rio de Janeiro adotou o programa de Unidades de Política Pacificadora (UPP), com a inauguração da primeira unidade em 19 e dezembro de 2008, e o Sistema Integrado e Metas (SIM) iniciado no segundo semestre de 2009.

As UPP têm como objetivo estabelecer a ordem pública e a pacificação em áreas urbanas ocupadas por populações de baixo nível de renda, até então dominadas por poder paralelo ao estado. Por sua vez, o SIM insere um modelo de gestão por resultados, no qual são estabelecidas metas de redução dos Indicadores Estratégicos de Criminalidade (IEC) de forma integrada para as polícias civil e militar.

Com base no artigo de Gary Becker (1968), que introduziu a ideia de que os criminosos agem de forma racional e que suas ações respondem a estímulos econômicos, o presente trabalho busca verificar se os impactos

dos programas das UPP e do SIM de fato colaboraram para a redução da criminalidade no estado do Rio de Janeiro. A análise utiliza dados mensais e faz uso dos métodos dos Mínimos Quadrados Ordinários (OLS) e Método Geral dos Momentos (GMM).

Na literatura empírica existem inúmeros trabalhos que abordam os impactos das variáveis socioeconômicas na criminalidade, tais como os de Sjoquist (1973), Block e Heineke (1975) e Zhang (1997). Entretanto, poucos trabalhos avaliam as UPPs com a utilização de modelos econométricos, cabendo citar os de Borges e colaboradores (2012) e Frischtak e Mandel (2012), e não se conhecem trabalhos que avaliem os impactos do SIM utilizando modelos econométricos.

## 2 Os determinantes da criminalidade

A questão da segurança pública é objeto de estudo de pesquisadores de diversas áreas do conhecimento, como, por exemplo, a criminologia, a psicologia, a sociologia, o direito, a ciência política e a ciência econômica. Por isso, a literatura apresenta correntes teóricas distintas com diferentes explicações para o fenômeno da criminalidade. Existem as que explicam a criminalidade como uma patologia individual, as que entendem o crime como um resultado da desordem social e as que entendem como um problema econômico. (OLIVEIRA, 2005)

Na literatura econômica, um dos trabalhos de maior relevância sobre a criminalidade é o artigo de Becker (1968), que trata a criminalidade como uma escolha racional do indivíduo. Seu modelo da teoria econômica do crime considera que o indivíduo compara as utilidades entre a prática criminosa e o mercado de trabalho legal. O retorno esperado com a prática criminosa tem que compensar os custos de planejamento e execução, o custo de oportunidade por estar fora do mercado de trabalho, a possibilidade de ser punido e o custo moral em praticar o ato criminoso.

Dentro desse contexto, surgiram vários trabalhos empíricos baseados na teoria econômica do crime: Sjoquist (1973), Block e Heineke (1975), Zhang (1997) e Entorf e Spengler (2000) propõem que o crime pode ser entendido como uma atividade econômica e que, portanto, o indivíduo ao incorrer em práticas criminosas assume todos os riscos de um empreendimento, agindo de modo racional. Desse modo, podemos observar que as variáveis incluídas no modelo podem exercer uma influência negativa (*deterrence – dissuasão*) na criminalidade, como, por exemplo,

a severidade das punições, a eficiência policial e da justiça criminal, ou positiva, como, por exemplo, a desigualdade social e o desemprego.

Cerqueira e Lobão (2004a) destacam que, embora a teoria econômica da escolha racional apresente um enfoque microeconômico, baseado na escolha individual, quase todas as pesquisas empíricas utilizam dados regionais agregados. Com essa abordagem podemos destacar os trabalhos de Fajnzylber, Lederman e Loayza (1998, 2000, 2002) que utilizam dados em painel e seção transversal. Nos resultados encontrados, as variáveis com maior significância são: a taxa de criminalidade nos períodos anteriores e a distribuição da renda, ambas com sinal positivo, e o nível da atividade econômica (PIB), com o sinal negativo.

Uma das variáveis utilizadas na literatura é a desigualdade social. Os trabalhos de Fleisher (1966), Ehrlich (1973), Kelly (2000), Mendonça (2000), Pratt e Godsey (2003), Cerqueira e Lobão (2004b) e Cruz e Araújo (2012) encontram uma correlação positiva entre a desigualdade social e os índices de criminalidade. Nesse caso, os indicadores sociais permitem captar a insatisfação do indivíduo com a sua condição social.

A capacidade de esclarecer os casos e de punir os infratores também é observada como determinante da criminalidade. Os estudos observam que, quanto mais severa e eficiente são as punições, menor é a probabilidade de sucesso na prática do crime. Ehrlich (1981), Grogger (1991) e Levitt (1996, 1997) concluem que os criminosos possuem aversão ao risco de serem capturados. O trabalho de Wolpin (1978) envolve um grande número de variáveis relacionadas à punição, como: tempo médio da sentença, multas, aprisionamento, taxa de reconhecimento, taxa de esclarecimento dos crimes e taxa de condenação. O estudo foi realizado com dados em série temporal para a Inglaterra e Reino Unido entre os anos de 1894 e 1967.

A eficiência policial e a alocação de recursos na área de segurança pública também foram observadas na literatura. Ervilha e colaboradores (2013), utilizando a análise envoltória de dados, avalia a eficiência dos gastos com segurança pública nos municípios de Minas Gerais. O estudo concluiu que a maioria dos municípios apresenta baixa eficiência na alocação dos gastos.

Nos últimos anos, tem-se observado a presente preocupação dos governantes em relação às políticas públicas de segurança. A questão da prevenção, do ordenamento urbano e da eficiência policial tem feito parte da agenda das autoridades. Por isso, analisa-se a seguir os impactos de algumas políticas públicas adotadas no combate à criminalidade.

## 2.1 O impacto das políticas públicas na criminalidade

Os problemas causados pela criminalidade têm se agravado nos últimos anos. Segundo Fajnzylber e Araújo (2001), os custos com as vidas perdidas e os gastos com segurança pública afetam a economia regional. Além deles, há também os custos intangíveis sobre a produtividade, a acumulação de capital humano e social e os investimentos.

Desse modo, o desafio dos governantes passou a ser a formulação e implementação de políticas públicas de segurança. Para tal, as pesquisas sobre os determinantes do crime e as avaliações de programas passaram a ser fundamentais para permitir melhorias na área de segurança pública. Cruz e Araújo (2012) argumentam que as causas da criminalidade são de grande complexidade e que o Estado deve procurar compreender essas questões para a formulação adequada e eficaz de políticas públicas de segurança.

Como exemplo trabalhos que analisam políticas públicas, Vergara (2009) analisa os impactos de dois programas de segurança pública no Chile. Um sobre a melhora na qualidade do trabalho dos policiais e o outro sobre o envolvimento da comunidade na elaboração de projetos destinados a reduzir os índices de criminalidade. A conclusão é que apenas o primeiro parece ter resultados positivos para a redução da criminalidade.

Um dos programas de maior destaque na área de segurança pública surgiu com base no ordenamento do espaço urbano. O programa tolerância zero,<sup>4</sup> aplicado na cidade de Nova York, apresentou o conceito de que, a omissão com relação a pequenos delitos gera um ambiente propício para a prática de delitos mais graves. Belli (2004) destaca o fato de não bastar ao Estado o simples ato de reprimir e exercer as funções policiais e carcerárias para resolver a questão da criminalidade. Outros estudos observaram os resultados obtidos em Nova York pelo programa tolerância zero. Shecaira (2009) aborda os impactos negativos, nos quais na visão do autor, mesmo com a redução da criminalidade, o programa apresentou características discriminatórias e preconceituosas.

No Brasil, alguns programas tiveram seus resultados avaliados. Moura (2010) avaliou o programa denominado Operação Bares, implantado entre agosto de 2004 e agosto de 2006, em bairros da zona sul de São Paulo. O programa visava reduzir os crimes relacionados ao consumo de álcool com o fechamento voluntário dos bares após as 22 horas. Segundo Cano (2006), essas ações preventivas podem se dividir em três grupos: (i) minimizar as condições propícias para a prática delituosa, por exemplo, promovendo reparos na iluminação e restaurando áreas degradadas;

<sup>4</sup> Tolerância zero: o programa é baseado na teoria das janelas quebradas ou "broken windows theory".

(ii) promover assistência social e de projetos educacionais, culturais e profissionalizantes para jovens; e (iii) patrulhar espaços públicos por meio da guarda municipal.

No Rio de Janeiro, um dos programas mais estudados é a política de pacificação. Alguns estudos observaram os aspectos qualitativos como, por exemplo Cunha e Mello (2011), Banco Mundial (2013) e Andrada (2013), que analisam os benefícios do retorno do Estado nas comunidades que receberam as UPP. Por outro lado, no trabalho de Jesus, Gomes e Ângulo-Meza (2014), a operacionalidade das UPP foi avaliada utilizando a metodologia Análise Envoltória de Dados. O objetivo do estudo é avaliar a eficiência operacional das UPP implantadas até o final do ano de 2010. O modelo foi estruturado com a finalidade de medir o desempenho do efetivo policial de cada unidade em relação a indicadores de criminalidade. Por fim, o trabalho sugere que seja remanejado o efetivo policial nas unidades que ficaram fora da fronteira da eficiência.

### **3 As políticas públicas de segurança do estado do Rio de Janeiro**

Durante um longo período as políticas de combate à violência no estado do Rio de Janeiro foram orientadas no confronto policial, com o Estado respondendo às ações criminosas por meio do uso da força. O estabelecimento das UPP e do SIM representam, então, uma mudança de estratégia, na medida em que procuram atuar de forma preventiva. A presente seção tem por finalidade descrever os objetivos e as características das políticas em destaque.

#### **3.1 As unidades de Polícia Pacificadora**

No final do século XIX, o estado do Rio de Janeiro passou a enfrentar o problema da ocupação desordenada do espaço urbano. Esses espaços se caracterizam pela precariedade das condições e de serviços básicos para a população como, por exemplo, água, luz, saneamento, calçamento, entre outros. A ausência do Estado nessas localidades se perpetuou por um longo período, segundo Silva (2004), gerando um ambiente de desordem social. Ainda dentro desse contexto, a análise realizada por Almeida e Guanzioli (2013) considera que essa desordem social deve ser percebida como um

decréscimo dos princípios de comportamento, no qual as pessoas, ao se distanciarem dessas regras, causam a desorganização social.

Diante de um cenário de constante aumento da violência, as ações do Estado passaram a ser reativas. Ao longo de 30 anos, o que se observou foi o aumento gradual do uso da força por parte do crime organizado, o que teve como resposta as ações do Estado centradas no enfrentamento.

A tentativa de modificar esse contexto somente ocorreu quando a Secretaria de Segurança do Rio de Janeiro deu início, em dezembro de 2008, ao projeto das Unidades de Polícia Pacificadora (UPP). Com o intuito de preparar a cidade do Rio de Janeiro para os grandes eventos (Copa do Mundo 2014 e Olimpíadas 2016), as UPP surgiram com o propósito de constituir um novo método de policiamento voltado para questões sociais, procurando estabelecer uma relação de proximidade com as comunidades até então ocupadas por facções criminosas. Esse modelo de policiamento apresentou um resultado positivo em Medellín, na Colômbia. De acordo com Cabeleira (2013), a cidade que foi considerada a mais violenta do mundo na década de 1990 hoje é conhecida como o laboratório da paz.

Para Cunha e Mello (2011), o projeto do governo consiste em estabelecer um novo modelo de policiamento, no qual o objetivo principal é estabelecer uma relação de interação entre polícia e população, recuperando assim o território e levando a paz para as comunidades. Ao recuperar o território e permitir que o Estado tenha acesso a áreas até então ocupadas pelo crime organizado, o programa tem por objetivo atingir a pacificação dessas localidades. Outra observação importante é que, no Rio de Janeiro, o programa de pacificação se concentrou na capital.<sup>5</sup>

### 3.2 O sistema integrado de metas

Fundamentado na gestão pública moderna, o estado do Rio de Janeiro adotou um sistema de meritocracia na área de segurança pública. Dessa forma, no segundo semestre de 2009, a Secretaria de Segurança adotou um sistema baseado na gestão por resultados, o Sistema Integrado de Metas<sup>6</sup> (SIM).

5 Até dezembro de 2015, o estado do Rio de Janeiro contava com 38 Unidades de Polícia Pacificadoras sendo oito unidades na zona sul, 23 unidades na zona norte, três unidades na zona oeste, três no centro da cidade e uma unidade na baixada fluminense.

6 Em 2009, o Decreto Estadual nº 41.931 instituiu o Sistema de Definição e Gerenciamento de Metas para os Indicadores Estratégicos de Criminalidade no estado do Rio de Janeiro, regulamentado pela Resolução SESEG 305/2010.

Trata-se de um modelo de gestão por resultados no qual o principal objetivo é promover ações integradas entre as polícias civil e militar e estabelecer metas comuns de redução dos Indicadores Estratégicos de Criminalidade (IEC). O Sistema compreende na definição de metas para os IEC a sistemática de reuniões de monitoramento de resultados e o modelo de premiação das unidades operacionais consoantes às metas estabelecidas.

O SIM encontra-se estruturado em quatro segmentos: padronização territorial entre as polícias; metodologia de melhoria contínua baseada no PDCA (*Plan, Do, Check, Act*); rotina de reuniões periódicas para o acompanhamento dos resultados; e um contrato de gestão atrelado à premiação variável por resultado. Em relação aos IEC, a proposta do Estado foi de incluir os crimes que apresentavam um maior impacto no sentimento de segurança da população fluminense. Foram definidos três Indicadores Estratégicos de Criminalidade: (i) letalidade violenta; (ii) roubo de veículos; e (iii) roubo de rua.

Cabe destacar que as mortes decorrentes de intervenção policial (Auto de Resistência) não faziam parte do indicador letalidade violenta no começo do sistema. O Decreto Estadual nº 42.780, de 2010, entre outras medidas, incluiu as mortes decorrentes de intervenção policial no indicador. Com ela, o Sistema Integrado de Metas reorienta as ações policiais, uma vez que esse conceito contraria antigas políticas até então utilizadas como, por exemplo, a “premiação por bravura”, estabelecida entre 1995 e 1998, que premiava policiais envolvidos em confrontações letais.

O sistema foi concebido para completar um ciclo a cada seis meses, ou seja, após o semestre todas as Áreas Integradas de Segurança Pública e Regiões Integradas de Segurança Pública que atingirem suas metas são premiadas conforme os seus resultados. Com isso, o Sistema estimula que seja realizada uma análise do fenômeno criminal, na qual os gestores locais busquem respostas para a questão da criminalidade nas suas regiões. Logo, o SIM visa melhorar o desempenho das polícias quanto aos indicadores estabelecidos, além de estabelecer prioridades e realizar uma avaliação e monitoramento do fenômeno criminal.

Outro ponto que merece destaque é a questão da transparência. Com a implementação do programa, os dados oficiais do Estado passaram a ser divulgados mensalmente pelo Instituto de Segurança Pública (ISP). Os dados são divulgados no *site* da instituição e também estão disponíveis por Áreas Integradas de Segurança Pública, o que permite o controle por parte da sociedade e até mesmo a realização de estudos na área acadêmica.



## 4 Metodologia e resultados

A base de dados da análise contempla 166 observações. Os dados apresentam periodicidade mensal entre março de 2002 e dezembro de 2015. A escolha do período está baseada na publicação dos dados oficiais no *site* do Instituto de Segurança Pública (ISP). Durante o período analisado, o Estado apresentou uma tendência de redução no total de vítimas de homicídios dolosos. A taxa de homicídios por 100 mil habitantes que foi de 46,9 em 2002 chegou a 25,1 em 2012.

As séries utilizadas como variável dependente foram a AUTO, que representa o número de homicídios decorrente de intervenção policial no estado do Rio de Janeiro por cem mil habitantes (dados do ISP), e a HOM, que indica o número de homicídios dolosos no estado do Rio de Janeiro por cem mil habitantes (dados do ISP). A série homicídio doloso foi escolhida por apresentar uma menor probabilidade de subnotificação. (FAJNZYLBBER; LEDERMAN; LOAYZA, 1998, 2000, 2002)

Como variáveis de controle, utilizamos a variação mensal dos gastos *per capita* com segurança pública no Estado (GSEG). A série é obtida pela divisão dos gastos com segurança pública (portal de transparência do Estado) pela projeção da população mensal do estado do Rio de Janeiro (IBGE). Ademais, foi utilizado o filtro HP<sup>7</sup> (Hodrick-Prescott Filter), com o objetivo de suavizar o impacto dos gastos e extrair a tendência de longo prazo da série. (HODRICK; PRESCOTT, 1981) De acordo com Santos e Santos Filho (2011), se os gastos com segurança forem bem alocados, a probabilidade de evitar crimes aumenta. Sendo assim, espera-se que a variável apresente um sinal negativo, ou seja, quanto maior os gastos com segurança, menor a criminalidade. A série é inserida no modelo com três períodos de defasagem, que representam o tempo para o gasto realizado ser efetivo na prática.

Como *proxy* da produção policial, utilizamos a série de Cumprimento de Mandado de Segurança no estado do Rio de Janeiro (CM), retirada do ISP. Wolpin (1978) indica que o aumento da produção policial e a capacidade punitiva reduzem os níveis de criminalidade, não só por evitar a reincidência, como também por desestimular novas práticas criminosas, por isso utilizamos um período de defasagem nas estimações.

Como medida de distribuição de renda, utilizamos o Índice de Theil (THEIL), retirado do Ipeadata, que possui valores mais próximos de zero

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7 O filtro HP busca extrair a tendência, que é considerada estocástica, mas com variações suaves ao longo do tempo e não correlacionadas com o ciclo.

quanto mais homogênea for distribuição de renda. Como os dados do índice são anuais e a mudança do índice de um ano para o outro não é imediata, foi aplicado o filtro HP (Hodrick-Prescott) com a finalidade de suavizar as variações. Segundo Ehrlich (1973), quanto maior a desigualdade, maior a tendência de práticas delituosas.

Para medir o impacto da atividade econômica, utilizamos a Taxa de Desocupação da Região Metropolitana<sup>8</sup> do Rio de Janeiro (DES), retirada do Ipeadata. De acordo com o modelo econômico estabelecido por Becker (1968), entende-se que o custo da prática criminosa aumenta com a melhora nas condições do mercado de trabalho formal, pois quanto maior a taxa de desocupação, menor é o custo de oportunidade da prática delituosa.

Em relação às políticas de segurança, criamos quatro variáveis. A primeira é um índice elaborado com base na data de inauguração de cada Unidade de Polícia Pacificadora ao longo dos meses da análise (UPP\_IND). Desse modo, o índice variou ao longo da análise de zero até 38. A segunda consiste em acumular a população atendida pelas UPP ao longo dos meses (UPP\_POP). Para o sistema integrado de metas foram criadas duas variáveis *dummy*, pois o auto de resistência não fazia parte do sistema inicialmente. Assim, no período de março de 2002 e junho de 2009 foi atribuído valor (0), por sua vez, no período entre julho de 2009 e dezembro de 2013 foi atribuído o valor (1) para a variável SIM\_HOM. Já a variável SIM\_AUTO teve seu início em janeiro de 2010. Espera-se que o programa de gestão por resultados estimule a redução dos indicadores de criminalidade.

A análise empírica foi realizada utilizando os métodos OLS e GMM. As estimações por OLS<sup>9</sup> são eficientes para obter uma primeira evidência dos sinais das variáveis. Uma vez que séries de tempo<sup>10</sup> tendem a apresentar problemas de heterocedasticidade e autocorrelação, utilizamos a matriz de correção de Newey e West (1987).

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8 A série histórica da taxa de desocupação é divulgada mensalmente pelo IBGE. O estudo considera a percentagem de pessoas desocupadas em relação à População Economicamente Ativa (PEA). A área de abrangência da pesquisa é a região metropolitana, e foi utilizada como um *proxy* da taxa de desocupação do Estado.

9 Testes de diagnóstico de resíduo no apêndice. O método OLS foi estimado com matriz Newey e West (1987) para obter resíduos robustos à presença de heterocedasticidade e autocorrelação serial de forma desconhecida.

10 Para observar a presença de estacionariedade nas séries foram utilizados três testes: ADF (Augmented Dickey-Fuller), PP (Phillips-Perron) e o KPSS (Kwiatkowski-Phillips-Schmidt-Shin). A série é considerada estacionária se dois deles indicarem este resultado. Foi considerado um intervalo de confiança de 10% para os testes ADF e PP e no caso do teste KPSS o intervalo de confiança utilizado foi de 1%. Os resultados estão no Apêndice B.

Por sua vez, as estimações pelo método GMM buscam solucionar os problemas relacionados à endogeneidade e simultaneidade entre as variáveis do modelo. Bueno (2011) recomenda a utilização do método GMM por sua total ausência de hipótese sobre a distribuição do erro. O GMM tem por objetivo oferecer estimadores consistentes na presença de autocorrelação e heterocedasticidade de formas desconhecidas, endogeneidade e não linearidade, o que são fatores comuns quando trabalhamos com séries temporais. (HANSEN, 1982) Os instrumentos foram selecionados conforme a metodologia elaborada por Johnston (1984), que utiliza as mesmas variáveis do modelo com mais defasagens para garantir a exogeneidade dos mesmos. A sobreidentificação do modelo é um fator importante nas estimações por GMM, como pontuado por Cragg (1983). Dessa forma, utilizamos o teste J para garantir que o modelo está sobreidentificado. Ademais, estimamos também o GMM com dois estágios, utilizando a matriz proposta por Windmeijer (2005), que apresenta resíduos robustos para pequena amostra. Por fim, apresentamos o teste de endogeneidade construído com base em Durbin (1954), Wu (1973) e Hausman (1978).

Sobre a especificação das equações, cabe ressaltar que a escolha das defasagens foi realizada do método geral para o específico, ou seja, além de considerar a significância estatística, os testes de diagnóstico também foram observados, visando garantir a capacidade explicativa do modelo, como sugerido por Hendry (2001).

Na primeira análise, o modelo verificou o impacto das políticas públicas adotadas pelo estado do Rio de Janeiro sobre os casos de homicídios decorrentes de intervenção policial no Estado. Para a análise foram utilizados como variável de controle somente os gastos com segurança pública e o cumprimento de mandado. Do mesmo modo, o modelo buscou explicar os impactos das UPP e do SIM nos casos de homicídios dolosos no estado do Rio de Janeiro. As variáveis de controle utilizadas foram os gastos *per capita* com segurança, os cumprimentos de mandado, a taxa de desemprego na região metropolitana do Rio de Janeiro e o índice de desigualdade de Theil. As equações estimadas para a variável AUTO foram as seguintes:

$$AUTO_t = \alpha_{11} + \alpha_{12}D\_SEG_{t-3} + \alpha_{13}CM_{t-1} + \varepsilon_1 \quad (1)$$

$$AUTO_t = \alpha_{21} + \alpha_{22}D\_SEG_{t-3} + \alpha_{23}CM_{t-1} + \alpha_{24}SIM_t + \varepsilon_2 \quad (2)$$

$$AUTO_t = \alpha_{31} + \alpha_{32}D\_SEG_{t-3} + \alpha_{33}CM_{t-1} + \alpha_{34}UPP\_POP_t + \varepsilon_3 \quad (3)$$

$$AUTO_t = \alpha_{41} + \alpha_{42}D\_SEG_{t-3} + \alpha_{43}CM_{t-1} + \alpha_{44}SIM_t + \alpha_{45}UPP\_POP_t + \varepsilon_4 \quad (4)$$

$$AUTO_t = \alpha_{51} + \alpha_{52}D\_SEG_{t-3} + \alpha_{53}CM_{t-1} + \alpha_{54}UPP\_IND_t + \varepsilon_5 \quad (5)$$

$$AUTO_t = \alpha_{61} + \alpha_{62}D\_SEG_{t-3} + \alpha_{63}CM_{t-1} + \alpha_{64}SIM_t + \alpha_{65}UPP\_IND_t + \varepsilon_6 \quad (6)$$

Para a variável HOM, as seguintes equações foram estimadas:

$$HOM_t = \beta_{11} + \beta_{12}D\_SEG_{t-3} + \beta_{13}CM_{t-1} + \beta_{14}DES_{t-6} + \beta_{15}D\_THEIL_t + \eta_1 \quad (7)$$

$$HOM_t = \beta_{21} + \beta_{22}D\_SEG_{t-3} + \beta_{23}CM_{t-1} + \beta_{24}DES_{t-6} + \beta_{25}D\_THEIL_t + \beta_{26}SIM_t + \eta_2 \quad (8)$$

$$HOM_t = \beta_{21} + \beta_{22}D\_SEG_{t-3} + \beta_{23}CM_{t-1} + \beta_{24}DES_{t-6} + \beta_{25}D\_THEIL_t + \beta_{26}SIM_t + \eta_2 \quad (9)$$

$$HOM_t = \beta_{41} + \beta_{42}D\_SEG_{t-3} + \beta_{43}CM_{t-1} + \beta_{44}DES_{t-6} + \beta_{45}D\_THEIL_t + \beta_{46}SIM_t + \beta_{47}UPP\_POP_t + \eta_4 \quad (10)$$

$$HOM_t = \beta_{51} + \beta_{52}D\_SEG_{t-3} + \beta_{53}CM_{t-1} + \beta_{54}DES_{t-6} + \beta_{55}D\_THEIL_t + \beta_{56}UPP\_IND_t + \eta_5 \quad (11)$$

$$HOM_t = \beta_{61} + \beta_{62}D\_SEG_{t-3} + \beta_{63}CM_{t-1} + \beta_{64}DES_{t-6} + \beta_{65}D\_THEIL_t + \beta_{66}SIM_t + \beta_{67}UPP\_IND_t + \eta_6 \quad (12)$$

Os resultados são reportados na Tabela 1 (AUTO) e na Tabela 2 (HOM). Os modelos estimados por OLS, considerando um nível de significância de 5%, rejeitam a presença de problemas de especificação e a significância conjunta dos coeficientes é confirmada pela estatística F. Para as estimações por GMM, o teste J indica a adequação da escolha dos instrumentos em relação à ortogonalidade aos resíduos, e o teste de Durin-Wu-Hausman indica que os regressores selecionados são exógenos.

Os resultados encontrados para as variáveis de controle inseridas no modelo apresentam os sinais esperados. Com relação à D\_SEG, os resultados apontam que as elevações dos gastos *per capita* contribuíram para a redução da criminalidade no período analisado. Do mesmo modo, para a variável CM, os resultados sugerem que o acréscimo da produção policial contribuiu para a redução dos índices de criminalidade no estado do Rio de Janeiro. Os cumprimentos de mandado caracterizam a eficiência do trabalho policial. A importância de se punir os criminosos é de evitar a reincidência e de desestimular a prática delituosa na sociedade.

Tabela 1 – Estimações por OLS e GMM (variável dependente: AUTO)

	OLS						GMM											
	esp.1	esp.2	esp.3	esp.4	esp.5	esp.6	esp.1	esp.2	esp.3	esp.4	esp.5	esp.6						
CONSTANTE	113.046*** (4.587)	108.739*** (4.647)	110.364*** (6.873)	107.575*** (6.657)	108.679*** (7.415)	107.079*** (7.015)	113.057*** (4.796)	108.529*** (6.620)	122.328*** (7.221)	118.095*** (7.247)	117.470*** (8.418)	106.009*** (4.455)	110.666*** (7.171)	110.185*** (8.175)	121.994*** (9.472)	118.420*** (13.344)	125.056*** (12.056)	118.633*** (12.274)
D_GS6(3)	-8.542*** (1.625)	-6.966*** (1.811)	-8.159*** (1.602)	-6.835*** (1.785)	-7.737*** (1.807)	-6.717*** (1.873)	-7.775*** (0.938)	-3.863*** (1.648)	-8.181*** (1.059)	-6.251*** (1.288)	-8.282*** (1.256)	-6.155*** (1.317)	-7.552*** (1.468)	-4.176 (1.468)	-7.888*** (2.577)	-5.608*** (1.590)	-8.593*** (2.340)	-5.947*** (1.675)
CN(-1)	-0.023*** (-3.989)	-0.017*** (-3.844)	-0.020** (-5.090)	-0.016 (-3.827)	-0.018* (-4.281)	-0.015 (-3.584)	-0.026*** (-8.283)	-0.018** (-2.343)	-0.038*** (-7.724)	-0.031*** (-4.852)	-0.032*** (-6.591)	-0.015*** (-4.673)	-0.025*** (-5.141)	-0.022** (-1.620)	-0.039*** (-4.960)	-0.033** (-2.396)	-0.040*** (-5.127)	-0.035 (-2.574)
SIM_AUTO	-11.874* (6.329)	-11.440* (6.259)	-11.440* (6.259)	-11.440* (6.259)	-11.018** (6.350)	-11.018** (6.350)	-23.487*** (10.082)	-23.487*** (10.082)	-13.917* (7.585)	-13.917* (7.585)	-18.206** (7.118)	-18.206** (7.118)	-17.550 (15.386)	-17.550 (15.386)	-16.560 (14.835)	-16.560 (14.835)	-15.236 (12.200)	-15.236 (12.200)
UPP_POP			-0.011 (0.018)	-0.005 (0.016)			0.024* (0.013)	0.024* (0.013)	0.023* (0.013)	0.023* (0.013)	0.250 (0.300)	0.250 (0.300)	0.027* (0.016)	0.027* (0.016)	0.031* (0.018)	0.031* (0.018)	0.438 (0.372)	0.438 (0.372)
UPP_IND					-0.278 (0.335)	-0.125 (0.315)											0.590 (1.175)	0.590 (1.175)
R <sup>2</sup> ajustado	0.606	0.612	0.605	0.609	0.606	0.610	0.606	0.602	0.595	0.602	0.597	0.607	0.601	0.603	0.588	0.590	0.590	0.587
Teste F	115.982	79.446	77.162	59.243	77.501	59.277												
Rank de instrumentos	0	0	0	0	0	0												
Durbin-Wu-Hausman (p-valor)																		
Teste J (p-valor)																		
Ramsey-RESET(1)	1.147	1.858	0.878	1.719	0.720	1.665												
p-value	0.253	0.065	0.381	0.087	0.472	0.098												

Fonte: elaborada pelo autor.

Notas: Coeficientes em negrito, desvio padrão entre parênteses e estatística t entre colchetes.

\* 10% de significância, \*\* 5% de significância e \*\*\* 1% de significância.

Resíduos de OLS e GMM com um estágio calculados com a matriz de covariância de Newey e West (1987), GMM com dois estágios calculado com a matriz de covariância de Windmeijer (2005).

Em relação às variáveis de controle inseridas somente nas estimações da variável HOM, a variável DES apresenta sinal positivo e significância estatística em quase todas as estimações. Esse resultado indica que uma elevação na taxa de desemprego, após um período de seis meses, justificado pela existência de políticas de seguridade social, elevam os índices de criminalidades. Isso é reflexo da piora nas condições econômicas, que elevam os incentivos à prática delituosa. Já para a variável D\_THEIL, os resultados indicam uma relação positiva. Contudo, só é observada significância estatística nas especificações 7 e 8, que não possuem as variáveis relacionadas à UPP.

Em relação às políticas, os resultados obtidos indicam que o SIM contribuiu para a redução dos casos de homicídios no Estado. Todos os valores encontrados apresentaram sinal negativo e significância estatística. Quanto à política de pacificação (UPP), podemos observar algumas questões. Primeiro, que os sinais são positivos e com significância, ou seja, quanto mais UPP maior as taxas de criminalidade no Estado. Esse resultado indica um efeito de transbordamento da criminalidade para regiões não atendidas pelas UPP. As unidades se concentram próximas à capital, deixando parte do Estado não atendido, o que elevou os índices de criminalidade nessas regiões. Esse fenômeno pode ser observado nas Tabelas 3 e 4 a seguir, que apresentam a variação dos indicadores de criminalidade para cada região do estado durante o período de implementação das UPP.

Outro fator importante é que o projeto contemplava a presença do Estado em questões sociais para a localidade ocupada, o que não ocorreu. Nesse contexto, fica evidente que as questões socioeconômicas são fundamentais para a redução da criminalidade, o que foi demonstrado pelo modelo estimado.

#### **4.1 Análise do efeito deslocamento das UPP**

As evidências encontradas na seção anterior indicam que as inaugurações de novas Unidades de Polícia Pacificadoras causaram um efeito não conclusivo nos índices de criminalidade no Estado.

Tabela 2 – Estimações por OLS e GMM (variável dependente: HOM)

	OLS							GMM										
	esp. 7	esp. 8	esp. 9	esp. 10	esp. 11	esp. 12	esp. 7	esp. 8	esp. 9	esp. 10	esp. 11	esp. 12	esp. 7	esp. 8	esp. 9	esp. 10	esp. 11	esp. 12
CONSTANTE	465.342*** (61.271)	553.879*** (63.559)	381.816*** (60.902)	470.188*** (62.188)	391.256*** (63.553)	480.441*** (62.861)	458.664*** (62.861)	558.690*** (61.813)	332.780*** (67.529)	490.172*** (109.938)	344.784*** (74.323)	513.936*** (70.789)	417.683*** (157.943)	539.874*** (136.131)	308.788*** (136.131)	501.912*** (135.271)	321.276*** (135.271)	606.988*** (138.124)
D_G_5EG(3)	-10.552*** (3.800)	-3.827 (1.119)	-17.976*** (3.746)	-11.276*** (3.635)	-20.936*** (4.679)	-14.347*** (3.489)	-14.733*** (3.354)	-4.421 (2.664)	-17.476*** (4.275)	-10.611*** (3.398)	-23.108*** (4.033)	-15.417*** (4.443)	-16.623*** (5.788)	-5.956 (1.069)	-17.027*** (4.502)	-11.127*** (3.552)	-21.591*** (5.509)	-13.147*** (6.587)
CM(1)	-0.050*** (0.020)	-0.047*** (0.017)	-0.093*** (0.020)	-0.095*** (0.017)	-0.098*** (0.021)	-0.096*** (0.021)	-0.034* (0.018)	-0.040 (0.027)	-0.092*** (0.032)	-0.117*** (0.051)	-0.122*** (0.040)	-0.115*** (0.032)	-0.030 (0.063)	-0.040 (0.057)	-0.092 (0.061)	-0.128** (0.054)	-0.065 (0.053)	-0.126** (0.060)
DES(6)	11.575* (6.412)	1.002 (2.751)	26.669*** (4.912)	16.065** (5.350)	25.481*** (4.556)	15.016** (4.436)	11.188* (6.737)	0.180 (7.940)	33.737*** (2.873)	16.174 (2.277)	33.934*** (3.038)	12.927* (3.566)	16.267 (0.482)	2.656 (-0.709)	34.959** (1.506)	16.017 (-2.369)	31.868*** (1.233)	2.691 (-2.078)
D_THEIL	37834.66** (14955.68)	36231.09*** (12480.45)	10176.11 (14492.70)	8754.231 (11329.69)	17122.67 (4902.64)	14809.18 (10317.05)	44933.20*** (12726.53)	31237.09*** (3481)	6112.434 (11184.78)	8886.896 (15506.98)	3638.004 (11264.73)	12811.15 (9502.666)	36163.74* (19725.74)	31459* (17986.13)	-1963.628 (23015.666)	7930.078 (15457.71)	16659.35 (17936.74)	12622.11 (15913.51)
SIM_HOM	-72.051*** (18.455)	-71.509*** (17.253)	-71.509*** (17.253)	-71.509*** (17.253)	-74.121*** (15.632)	-74.121*** (15.632)	-91.961*** (20.160)	-91.961*** (20.160)	-67.419*** (24.569)	-67.419*** (24.569)	-77.738*** (18.057)	-77.738*** (18.057)	-82.152*** (25.677)	-82.152*** (25.677)	-70.481*** (25.677)	-70.481*** (25.677)	-102.510*** (43.964)	
UPP_POP	0.242*** (3.904)	0.242*** (4.144)	0.242*** (4.144)	0.242*** (4.144)	0.241*** (4.743)	0.241*** (4.743)	0.265*** (4.561)	0.265*** (4.561)	0.276*** (2.744)	0.276*** (2.744)	0.276*** (4.305)	0.276*** (4.305)	0.270* (2.405)	0.270* (2.405)	0.276*** (2.744)	0.276*** (2.744)	0.276*** (2.331)	
UPP_IND	3.863*** (3.485)	3.863*** (3.819)	3.863*** (3.819)	3.863*** (3.819)	3.977*** (3.344)	3.977*** (3.344)	5.391*** (3.286)	5.391*** (3.286)	5.391*** (2.526)	5.391*** (2.526)	4.211*** (3.181)	4.211*** (3.181)	3.367* (1.855)	3.367* (1.855)	3.779* (2.922)	3.779* (2.922)	3.779* (2.020)	
R <sup>2</sup> ajustado	0.680	0.715	0.723	0.758	0.714	0.751	0.662	0.698	0.719	0.747	0.716	0.749	0.655	0.701	0.725	0.752	0.713	0.731
Teste F	79.286	74.919	78.053	78.043	74.498	75.221	19	0.632	0.774	0.984	0.967	0.985	0.798	0.707	0.962	0.872	0.887	0.670
Rank de instrumentos	0	0	0	0	0	0	0.302	0.543	0.332	0.543	0.171	0.560	0.208	0.285	0.204	0.457	0.441	0.209
Durbin-Wu-Hausman (p-valor)																		
Teste J (p-valor)	0.035	0.568	1.279	0.290	1.703	0.867												
Ramsey RESET (1)	0.9720	0.570	0.202	0.771	0.090	0.387												
p-value																		

Fonte: elaborada pelo autor.

Notas: Coeficientes em negrito, desvio padrão entre parênteses e estatística t entre colchetes. \* 10% de significância, \*\* 5% de significância e \*\*\* 1% de significância.

Resíduos de OLS e GMM com um estágio calculados com a matriz de covariância de Newey e West (1987), GMM com dois estágios calculado com a matriz de covariância de Windmeijer (2005).

Ao observar os indicadores separados por regiões, apresentado nas Tabelas 3 e 4, é perceptível que as regiões mais beneficiadas pelas UPP (Capital, 1ª e 2ª RISP) obtiveram resultados mais satisfatórios que as demais regiões do Estado. A redução dos indicadores de criminalidade foi geral, em razão do aumento dos gastos com segurança, aumento da produção policial e implementação do SIM. Dessa forma, é preciso analisar se a melhora foi proporcional em todas as regiões do Estado.

Em relação aos autos de resistência, a média do estado é uma redução de 43% do ano de início da UPP para a última observação, referente a 2015. A 1ª RISP apresentou redução de 73% nas ocorrências, e a 2ª RISP 26%. Regiões como a 4ª RISP (Niterói e São Gonçalo) e a 5ª RISP (Centro Sul) apresentaram aumento das ocorrências de 76% e 128% respectivamente, indicando uma piora considerável nos indicadores. As outras regiões apresentaram resultados perto da média, com exceção da 7ª RISP, que obteve a maior redução observada devido à baixa casuística.

Tabela 3 – AUTO\_RES por RISP

LOCALIZAÇÃO	REGIÃO	AUTO (2008)	AUTO (2015)	VARIAÇÃO PERCENTUAL
CAPITAL	1ª RISP	438	115	-73.74%
CAPITAL	2ª RISP	261	192	-26.44%
BAIXADA	3ª RISP	311	153	-50.80%
NITEROI E S. G	4ª RISP	90	159	76.67%
CENTRO SUL	5ª RISP	7	16	128.57%
NORTE FLUMINENSE	6ª RISP	10	7	-30.00%
SERRANA	7ª RISP	20	3	-85.00%
TOTAL		5717	4200	-26.53%

Fonte: elaborada pelos autores a partir de dados do ISP. Disponível em: <[www.ispdados.rj.gov.br/estatistica.html](http://www.ispdados.rj.gov.br/estatistica.html)>. Série histórica do número de homicídios decorrentes de intervenção policial.

Para o índice de homicídios, a média para o Estado foi uma redução de 26,5%. As duas regiões referentes à capital apresentaram reduções maiores que a média. A 7ª RISP também apresentou melhora substantiva, superando as regiões beneficiadas pelas UPP. Contudo, as outras regiões apresentaram melhora inferior às da capital. Os resultados da 3ª RISP e da 5ª RISP, em particular, mostram que os indicadores reduziram em valor muito pequeno.



Tabela 4 – HOM por RISP

LOCALIZAÇÃO	REGIÃO	HOM (2008)	HOM (2015)	VARIAÇÃO PERCENTUAL
CAPITAL	1ª RISP	743	392	-47.24%
CAPITAL	2ª RISP	1390	808	-41.87%
BAIXADA	3ª RISP	1818	1507	-17.11%
NITEROI E S. G	4ª RISP	865	853	-1.39%
CENTRO SUL	5ª RISP	338	285	-15.68%
NORTE FLUMINENSE	6ª RISP	431	283	-34.34%
SERRANA	7ª RISP	132	72	-45.45%
TOTAL		5717	4200	-26.53%

Fonte: elaborada pelos autores a partir de dados do ISP. Disponível em: <[www.ispdados.rj.gov.br/estatistica.html](http://www.ispdados.rj.gov.br/estatistica.html)> . Série histórica do número de homicídios dolosos por 100 mil habitantes.

Em suma, o sinal positivo encontrado para as variáveis relacionadas à UPP mostra que o programa pode ter contribuído para um efeito deslocamento dos indicadores de criminalidade do Estado, sendo reflexo da concentração da política em regiões específicas, o que eleva o custo de oportunidade da prática delituosa nessas regiões. Dessa forma, isso pode induzir um deslocamento dos criminosos para outras regiões que apresentam um menor custo de oportunidade da prática delituosa, elevando a criminalidade nesses locais. É possível observar que as regiões que apresentam pior resultado no período são as mais próximas à capital e que não foram beneficiadas pelo programa.

## 5 Conclusão

O presente trabalho analisou os impactos das Unidades de Polícia Pacificadora (UPP) e do Sistema Integrado de Metas (SIM) na criminalidade do estado do Rio de Janeiro. A questão da violência ganhou destaque devido ao alto índice de criminalidade e o tema passou a figurar entre os assuntos mais importantes da agenda do Estado.

O trabalho, por meio de estimações econométricas pelos métodos OLS e GMM, buscou apresentar variáveis de controle amplamente utilizadas na literatura para avaliar o impacto das políticas públicas de pacificação e

de gestão por resultados nos índices de criminalidade do Estado. Portanto, conclui-se que variáveis socioeconômicas impactam nos índices de criminalidade. Por exemplo, a questão da desigualdade de renda e a criação de oportunidades no mercado de trabalho são fatores relevantes.

Os resultados obtidos indicam que o sistema de gestão por resultados contribuiu para a redução dos indicadores analisados no período observado. O SIM contribuiu desestimulando a ação da polícia que resulta em homicídios por intervenção policial, uma vez que a premiação está atrelada à diminuição dessas ocorrências. Ademais, os resultados também foram significantes em relação aos homicídios, justificando adoção dessa política de eficiência policial. Em relação à UPP, os sinais positivos indicam que a política não produziu uma redução proporcional em todas as regiões do Estado, uma vez que a redução da criminalidade nas regiões beneficiadas foi maior do que nas regiões não contempladas com o programa, indicando um possível efeito deslocamento da criminalidade. Estudos futuros devem buscar analisar a existência desse efeito deslocamento, com uma análise mais centrada nesse fenômeno.

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## Apêndice A – Data de inauguração das Unidades de Polícia Pacificadora

UPP	DATA DE INAUGURAÇÃO	POPULAÇÃO ATENDIDA
Santa Marta	19/12/2008	3,913
Cidade de Deus	16/02/2009	47,021
Batan	18/02/2009	28,000
Chapéu Mangueira e Babilônia	10/06/2009	3,740
Pavão-Pavãozinho e Cantagalo	23/12/2009	10,338
Tabajaras	14/01/2010	4,243
Providência	26/04/2010	4,889
Borel	07/06/2010	12,815
Formiga	01/07/2010	4,500
Andaraí	28/07/2010	9,704
Salgueiro	17/09/2010	3,345
Turano	30/10/2010	12,218
Macacos	30/11/2010	19,082
Quieto/São João/Matriz	31/01/2011	6,966
Fallet/Fogueteiro/Coroa	25/02/2011	9,013
Prazeres/Escondidinho	25/02/2011	5,586
São Carlos/Mineira/Querosene	17/05/2011	15,244
Mangueira	03/11/2011	17,946
Vidigal/Chácara do Céu	18/01/2012	10,372
Fazendinha	18/04/2012	12,399
Nova Brasília	18/04/2012	28,661
Adeus/Baiana	11/05/2012	4,354
Alemão	30/05/2012	15,094
Chatuba	27/06/2012	10,205
Fé/Sereno	27/06/2012	3,574
Vila Cruzeiro	05/09/2012	17,170
Vila Proletária da Penha	05/09/2012	18,661
Rocinha	20/09/2012	71,085
Lins	16/01/2013	8,850
Camarista Méier	16/01/2013	16,300
Manguinhos	18/01/2013	35,000

Jacarezinho	18/01/2013	36,000
Barreira do Vasco/Tuiti	22/05/2013	10,404
Caju	22/05/2013	16,000
Arará/Mandela	22/05/2013	9,315
Cerro-Corá	25/07/2013	4,500
Mangueirinha	02/04/2014	21,415
Vila Kennedy	02/04/2014	41,500

Fonte: elaborado pelos autores a partir de dados do site da UPP-RJ.  
Disponível em: <[www.upprj.com/index.php/historico](http://www.upprj.com/index.php/historico)>.



## Apêndice B – Testes de raiz unitária

	ADF				PP				KPSS			
	Leg Lenght	Forma	Teste	Prob	Bandwidth	Forma	Teste	Prob	Bandwidth	Forma	Teste	1%
<i>AUTO_RES</i>	0	CT	-5.77	0	7	CT	-5.781	0	8	CT	0.285	0.216
<i>HOM</i>	0	CT	-5.394	0	2	CT	-5.404	0	7	CT	0.124	0.216
<i>GSEG</i>	0	N	1.622	0.974	4	N	1.751	0.98	10	CT	0.268	0.216
<i>D_SEG</i>	0	N	-12.334	0	1	N	-12.334	0	4	C	0.223	0.739
<i>CM</i>	1	CT	-4.463	0.002	6	CT	-7.609	0	7	CT	0.204	0.216
<i>DES</i>	0	CT	-5.886	0	8	CT	-5.568	0	6	CT	0.056	0.216
<i>THEIL</i>	0	N	-0.426	0.528	0	N	-0.426	0.528	9	CT	0.191	0.216
<i>D_THEIL</i>	0	N	-12.288	0	0	N	-12.288	0	7	C	0.11	0.739

Fonte: elaborado pelos autores conforme informações constantes na seção metodologia.

Nota: Tendência (T) e intercepto (C) foram incluídos de acordo com o critério de Schwarz. ADF – a escolha final de lags foi baseada no critério de Schwarz. PP – método de estimação espectral é Bartlett kernel e o Newey-West Bandwidth foi utilizado.

## Colofão

Formato	17 x 24 cm
Tipologia	CG Omega   Lydian BT
Papel	75 g/m <sup>2</sup> (miolo) Cartão Supremo 250 g/m <sup>2</sup> (capa)
Impressão	EDUFBA
Capa e Acabamento	Cian gráfica
Tiragem	150 exemplares