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Wage Distribution in the Period of Economic Growth with Income Distribution: The Case of Brazil

Summary: This paper analyses in detail the distribution of Brazilian wages in the period of economic growth with income distribution. Brazil presents a high structural heterogeneity that generates high wage inequality, and it is shown that wage differences within occupational categories are greater than wage differences between occupational categories. Higher GDP growth followed by an incomes policy that raised low wages reduced wage differences especially within occupational categories rather than wage differences between occupational categories.

Key words: Income distribution, Wage distribution, Employment.

JEL: E24, O15.

The Brazilian experience of economic growth with income distribution between 2004 and 2013 suggests that a more equal income distribution may be related to the country's economic performance. During this period, the Brazilian government implemented an incomes policy that improved the low income classes living conditions, with positive consequences for the country's income distribution (Laura Carvalho and Fernando Rugitsky 2015; Andre Calixtre and Eduardo Fagnane 2017). This period marks a more active government policy focusing on income policies, such as the minimum wage and cash transfers program, different from previous governments. During this period, the Brazilian GDP growth was higher, although it decelerates from 2011 onwards. After 2013, the government implemented a monetary constraint policy and there was a radical change in the Brazilian government policy in 2015, when the country entered in a recession. This paper focus only on the period between 2004 to 2013, when GDP growth is higher and positive and there is an incomes policy focusing on improvements in income distribution.

The theoretical literature on the relationship between economic growth and income distribution focus on two different aspects. On the one hand, economic development authors emphasize the role of changes in the country's productive structure that determines economic growth and income distribution (Paul Narcyz Rosenstein-Rodan 1943; Hans W. Singer 1950; Albert O. Hirschman 1958; Mario Cimoli et al. 2017; Dominik Hartmann et al. 2017). On the other hand, the Kaleckian literature analyses the effect of the income distribution on economic growth, considering the productive structure given (Robert Rowthorn 1982; Robert A. Blecker 1989, 2016; Amit Bhaduri and Stephen Marglin 1990).

One important aspect of this relationship between income distribution and economic growth is the wage distribution. If the economic growth process is a result of investment that alters the productive structure, the distribution of employment by occupational categories changes, affecting wage distribution. An incomes policy aiming to raise low wages' categories alters the way economic growth and occupational structures affect wage distribution. And, wage distribution also alter how wage share affects economic growth (Thomas I. Palley 2015, 2017; Carvalho and Amon Rezai 2016; Carvalho and Rugitsky 2015; Rugitsky 2017).

The aim of this paper is to analyse the Brazilian experience in the period of economic growth with income distribution, studying in more detail the distribution of wages. The hypothesis is that for an emerging economy such as Brazil, that presents a high structural heterogeneity that generates high wage inequality, wage differences within occupational categories are greater than wage differences between occupational categories. In these economies, higher GDP growth followed by an incomes policy to raise low wages reduces wage differences especially within occupational categories rather than wage differences between occupational categories. This characteristic of wage distribution in economies with high structural heterogeneity has implications for economic growth with income distribution, and increases in wages reduce wage inequality rather than increase average wage. Lower wage inequality reinforces the positive effects of increasing wage share on economic growth (Palley 2015, 2017; Carvalho and Rezai 2016). Despite the importance of the analysis of the consequences of income distribution to economic growth, this paper only discusses the distribution of wages and leave the analysis of its effects on the economic performance for future research.

The paper is organized in five sections. Section 1 reviews the literature of income distribution and economic growth, giving attention to the recent literature on wage distribution. This section also discusses the importance to consider the changes in the productive structure. Section 2 describes the Brazilian economy in the period 2004-2013. Section 3 presents some information on the Brazilian labour market. Section 4 suggests a methodology to analyse wage distribution in the case of Brazil and present the main results for this economy. Finally, Section 5 presents the main conclusions.

1. Income Distribution and Economic Growth

There is a vast literature on the relationship between income distribution and economic growth based on the contribution of Michal Kalecki (1954, 1971). This literature stresses the functional income distribution and relates wage share with economic growth. According to Kalecki (1954, 1971), the determinants of economic growth are capitalist consumption and investment, while the income distribution can intensify or reduce the effect of capitalist consumption and investment on GDP growth (Philip Arestis and Carolina Troncoso Baltar 2017a). Under this perspective, for a given behaviour of capitalist consumption and investment, there will always exist a direct relationship between wage share and GDP growth. Accordingly, an incomes policy that raises the wage share would positively affect GDP growth for a given behaviour of capitalist consumption and investment.

The previous statement assumes that the incomes policy is able to increase the wage share and, at the same time, it does not change the behaviour of capitalist consumption and investment. This assumption shows the complexity of the relationship between income distribution and economic growth. Under Kalecki's (1954) perspective, income distribution is given and the main question is whether the given wage share affects or not the capitalist consumption and investment. This question gave rise to an intense debate under Kalecki's contribution, as discussed below.

Nonetheless, it is necessary to analyse the possibility of an endogenous income distribution. Economic development pioneers, such as Rosenstein-Rodan (1943), Singer (1950), Hirschman (1958), and Joseph A. Schumpeter (1961, 1997) emphasize the role of the production structure to the economic growth process. The production structure also have a central role in determining the income distribution (Cimoli et al. 2017; Hartmann et al. 2017). Under this perspective, the evolution of wage share depends on the purchasing power of wages *vis-à-vis* increases in productivity. In this context, changes in the production structure affect employment and productivity.

Accordingly, production structures that are diversified, complex and intensive in knowledge are able to generate faster GDP growth, increase productivity and generate employment and income (Cimoli et al. 2017; Hartmann et al. 2017). The evolution of employment and productivity affect the purchasing power of workers by changing the nominal wages and prices. Thus, the behaviour of wage share depends on how changes in the production structure affect employment and productivity.

Changes in the production structure affect the level and the structure of employment. The evolution of employment is a result of the creation of new jobs and the destruction of pre-existing jobs. The purchasing power of wages and productivity are related to nominal wages *vis-à-vis* product prices as well as the access to public goods and services (Cimoli et al. 2017). Changes in the production structure that increase employment and income levels create favourable conditions for policies that expand public goods and services and improve the workers' access to these goods and services because the State can collect taxes. In this sense, income distribution is endogenous and depends on the productive structure of the economy.

The Kaleckian literature, although recognising the endogeneity of the income distribution, considered the production structure given when analysing the effects of income distribution to economic growth. Kalecki (1954, 1971) considered that workers have a subordinated role in the dynamics of the capitalist system under the effective demand perspective. According to Karl Marx (2014), workers sell their labour force to be able to buy the necessary for their subsistence, while capitalists buy labour force and other means of production to produce and sell with profit, reproducing and increasing the power asymmetry between workers and employers in the labour force negotiation. However, the subordinated role of workers in the effective demand dynamic is related to a specific hypothesis made by Kalecki (op. cit.) that workers only have their labour force and they do not have wealth neither have access to credit. This means that workers' consumption is related only to their wages (workers' consumption is considered equal to their wages). Under this hypothesis, the determinant of effective demand is the capitalist consumption and investment and not workers' consumption.

So, the higher the wage share in relation to capitalist consumption and investment, the higher will be the effective demand and, consequently, GDP.

The positive effect of higher wage share on effective demand is possible even if the Kaleckian hypothesis of workers' propensity to consume equal to one does not hold. The same outcome is possible with a worker's propensity to consume below one, as long as it is higher than the capitalist propensity to consume (Amitava Krishna Dutt 1984). However, in this case, the workers' consumption regardless their wage level also becomes a determinant of the dynamics of effective demand along with capitalist consumption and investment.

The direct relationship between wage share and effective demand supposes that the determinants of a higher wage share does not affect negatively capitalist consumption and investment. The analysis of this relation goes beyond the simple idea of effective demand and requires considering the determinants of capitalist consumption and investment in the perspective of effective demand.

There are two main approaches about this issue based on the contribution of Kalecki (1954, 1971), known in the literature as *Neo-* and *Post-Kaleckian* approach (Eckhard Hein 2014; Marc Lavoie and Engelbert Stockhammer 2014). The basic difference between the two approaches is associated to the relationship between income distribution and investment. The *Neo-Kaleckian*¹ approach follows the idea of Kalecki that income distribution does not affect investment, while the *Post-Kaleckian*² approach emphasizes the effect of income distribution on investment decision.

The analysis of investment decision under the effective demand perspective abstracts the potential of investment to transform the production structure. In this context, investment only increases production capacity and the decision to investment is simply a response to the expectation of increased sales, without major changes in market structures. So, given the economic structure, higher wage share positively affects investment, because it increases the use of the existing production capacity. A more complete analysis of the relationship between income distribution and investment should consider possible changes in the production structure. But, in this context, it is not enough to consider that investment reacts to current profitability, since the innovations introduced by the investment increase the profitability. So, considering no change in the production structure, a positive relationship between income distribution and economic activity always takes place.

Blecker (1989) introduces in the discussion the possibility of an inverse relationship between wage share and economic growth when the economy is open to the external trade, even in the *Neo-Kaleckian* approach. Higher wage share means higher costs and higher possibilities of consumption. Higher wage share would have a positive effect on economic growth if the positive effect of higher wage share on consumption is greater than the negative impact on net exports.

The *Post-Kaleckian* approach goes beyond (Blecker 1989) and assumes that higher wage share has negative implications to investment decision. According to Bhaduri and Marglin (1990), higher wage share positively affects consumption and it negatively affects investment, the main determinants of GDP. The authors change the

¹ The first *Neo-Kaleckian* authors are Rowthorn (1982), Dutt (1984) and Lance Taylor (1985).

² The main *Post-Kaleckian* authors are Bhaduri and Marglin (1990).

investment function suggested by Kalecki (1954) and incorporate the profit margin as a determinant of investment decision. This inclusion increase the possibility of an inverse relationship between wage share and economic growth³.

The possibility of diverse relationships between income distribution and economic activity opened up a wide field of research related to the characteristics of an economy and its relationship with their income distribution and economic growth. There is a consensus on the effect of income distribution on consumption and the main question in the debate focus on the relationship between income distribution and investment. This is a very complex topic and, as mentioned, an adequate treatment requires an analysis of changes in the economic structure, considering innovation introduced by investment.

Recent advancements in the Kaleckian literature on income distribution and economic growth have highlighted the role of personal income distribution, in particular the distribution of wages. Palley (2015, 2017) shows that the distribution of wages, and not only the wage share, affects economic growth. The effect of wage share on consumption is a result of a propensity to consume of wages higher than the propensity to consume of profits. The magnitude of the propensity to consume of wages depends on the distribution of wages, considering that the propensity to consume of lower wages is greater than the propensity to consume of higher wages. In the same line, Carvalho and Rezai (2016) show that the personal income distribution affect the aggregate demand, emphasizing that more equal distribution generates higher GDP growth. All these contributions highlight the necessity to complement the considerations of functional income distribution incorporating the personal income distribution, in particular the distribution of wages.

Palley (2015) develops a three-class model of economic growth and income distribution. The classes are: workers, middle management (or middle class) and “top” management (capitalist or upper class). According to the author, “a two-class world generates simplistic class conflict. A three-class world is characterised by more complicated political conditions in which the middle class is pulled between siding with workers and siding with capitalist top managers, and the middle class has conflicts with both” (Palley 2015, p. 222).

Palley (2015) shows that increases in workers’ wage share improve the personal income distribution as well as the average propensity to consume out of wages. In this sense, increases in wage-share have a higher impact on consumption, intensifying the relationship between functional income distribution and economic growth, even if the wage share has negative effects on investment. On the other hand, an increase in the middle managers’ income in relation to workers reduces the average propensity to consume, because middle managers have lower propensity to consume. In this case, the effect of wage share on the economic activity will be lower and it can be negative if the higher wage share is followed by lower investment. So, a decrease in income inequality through increases in the share of workers’ wage may have positive effects on economic growth through consumption.

³ For a critical discussion of this approach, see Tracy Mott and Edward Slattery (1994), Blecker (2016) and Arestis and Baltar (2017a).

The analysis of the wage distribution is more complicated for developing countries. In these countries, it is not enough to separate middle managers and workers in general because the wage inequality of workers is very high. First, the structural heterogeneity of the developing economy implies the reproduction of very low productivity activities that employ high share of the work force. Second, production development in these countries was not followed by the development of an institutional bargain system able to reduce wage inequality. The latter would be important to avoid sharp differences in wages according to activities, nature of employers (public, private and international corporation), personal characteristics (age and gender), and regions of the country. In economies with structural heterogeneity and without an institutional system able to curb wage inequality, these causes of wage differentiation are responsible for the high wage differences for the same type of occupation (Jacqueline Aslan Souen 2018). Because of this, wage dispersion tends to be very high in each type of occupation compared to the wage difference between types of occupation. Middle managers wages are generally higher than workers' wages and there are differences in the propensity to consume among them. However, it is not enough to separate middle managers and workers in general and it is necessary to distinguish category of workers to be able to analyse changes in wage inequality and their impact on economic activity.

In this sense, for the case of developing countries, it is necessary a more detailed study of the wage distribution separating middle managers and workers in general, but distinguishing different categories of workers. This paper contributes to the literature discussing the distribution of wages in the case of Brazil in the period of economic growth with income distribution and suggesting a methodology to analyse worker's wage distribution. The analysis of the impact of wage distribution on economic growth is left for future work.

2. Brazilian Economy during the Period of Growth with Income Distribution between 2004 and 2013

The Brazilian economy in the period 2004 to 2013 is an example of GDP growth followed by increases in wage share and decreases in wage inequality. The Brazilian economy presented a better economic performance between 2004 and 2010, when the Brazilian GDP growth was high compared to the previous two decades of low and unstable economic growth rates. The international scenario was favourable to the Brazilian external trade after 2003 due to the increase in demand and price for commodity goods. Brazilian exports and imports increased considerably in the period. Table 1 shows information for the Brazilian external trade, but since the data is in Brazilian Real, it does not show the actual intensity exports and imports increased. This is because the nominal exchange rate (US dollar price in national currency) decreased significantly in this period. Exports and imports growth rates were much higher when measured in US dollar. The country presented consecutive surpluses in trade that generated surpluses in the current account of the balance of payments (Baltar 2013). The external debt reduced (Francisco Luiz C. Lopreato 2008) and international reserves increased. Under this improved scenario, the government was able to implement an incomes policy focusing on increases in the minimum wage and cash transfers,

changing the focus of previous years government policies (Arestis and Baltar 2017b; Calixtre and Fagnane 2017). Inflation reduced in the period and the purchasing power of workers improved (Paulo Baltar and Eugenia Tronsoco Leone 2015). In short, the period 2004-2010 can be characterized as a period of economic growth with income distribution.

Table 1 Brazilian Economic Activity (in %)

Year	GDP growth	Household consumption growth	Investment growth	Investment rate	Exports growth	Imports growth	Government consumption growth
2004	5.8	3.8	9.1	16.1	15.3	13.3	3.9
2005	3.2	4.5	3.6	15.9	9.3	8.5	2.0
2006	4	5.2	9.8	16.4	5.0	18.4	3.6
2007	6.1	6.1	13.9	17.4	6.2	19.9	4.1
2008	5.1	5.7	13.6	19.1	0.5	15.4	2.0
2009	-0.1	4.4	-6.7	18.1	-9.1	-7.6	2.9
2010	7.5	6.9	21.3	19.5	11.5	35.8	3.9
2011	4	4.1	4.7	19.3	4.5	9.7	2.2
2012	1.9	3.2	-4	18.2	0.5	0.2	2.3
2013	3	2.3	5.2	18.2	2.5	8.3	1.5

Notes: All data are in Brazilian Real, base 2010.

Source: Own calculations based on information provided by the Central Bank of Brazil (2019)⁴ and IPEADATA (2019)⁵.

The incomes policy⁶ implemented by the government had positive consequences for the country's income distribution. The more active minimum wage policy during the period led to the creation of a policy rule, established in 2011 and renewed in 2015, in which the minimum wage is adjusted every year to cover inflation and the GDP growth of the previous two years, guaranteeing the nominal value of the minimum wage (Carvalho and Rugitsky 2015). The cash-transfer program introduced in 2003, named *Bolsa Família*, aimed to ensure a minimum monetary income to poor and indigent families (Lena Lavinás 2013). Although the government changed the incomes policy, the macroeconomic tripod (inflation targeting, floating exchange rates and primary surplus) was kept. Real interest rates have fallen, although they were still very high for international standards. This monetary policy might have negative effects on income distribution as discussed by Jérôme Creel and Mehdi El Herradi (2019).

Household consumption growth and investment had an important role for the Brazilian GDP growth in this period (Nelson Barbosa and José Antonio Pereira Souza 2010; Ricardo de Medeiros Carneiro and Milko Matijascic 2011; Calixtre, André Martins Biancarelli, and Marcos Antonio Macedo Cintra 2014; Arestis, Baltar, and Daniela Magalhães Prates 2016). GDP growth followed the same path as consumption growth (Table 1) and an important part of investment was induced by consumption. Formal

⁴ **Central Bank of Brazil.** 2019. Statistics. <http://www.bcb.gov.br/?TIMESERIESEN> (accessed September 02, 2019).

⁵ **IPEADATA.** 2019. Database. <http://www.ipeadata.gov.br/Default.aspx> (accessed September 02, 2019).

⁶ For a discussion of the meaning of an incomes policy under a Post-Keynesian approach, see Jesús Ferreiro and Carmen Gómez (2014).

employment increased in the period at the same time the purchasing power of wages increased. However, the minimum wage raised more than the average wage, contributing to reduce wage differences (Carvalho and Rugitsky 2015; Calixtre and Fagnane 2017). As a result, low-income families were incorporated to consumption, reinforcing household consumption growth (Baltar and Leone 2015; Leone 2017).

The global financial crisis of 2007/2008 affected Brazil and the country's GDP decreased in 2009 (Table 1). With high international reserves and low public debt in US dollars, the exchange rate increased due to capital flights. This increase did not deteriorate the public finance and the government was able to dampen the fall in GDP and the economic activity recovered. Despite this, GDP growth has been slower since 2011 compared to previous years. The Brazilian government was able to intervene in the economy, sustaining the incomes policy and increasing credit, avoiding an even lower economic growth rate (Arestis, Baltar, and Prates 2016; Calixtre and Fagnane 2017).

During this period, the government implemented some programs to stimulate investment, such as the Growth Acceleration Program (PAC)⁷ and Brasil Maior Government Program⁸. According to Calixtre and Fagnane (2017), these programs shows the commitment of the government to boost the Brazilian economic activity trying to reinforce the role of the State to coordinate public and private investment. Besides that, it also shows the State awareness of the negative effects of the international scenario for the Brazilian economy and the necessity to reinforce the domestic manufacturing production to sustain economic growth with income distribution. Despite this, the government attempts have failed, because the investment rate did not achieve the desired level and it did not surpass the 20% level (Table 1).

Although investment increased in some years, its growth rate was not sustained and investment decelerated faster than household consumption. Between 2003-2010 and 2011-2013, the average growth rate of investment reduced from 8.9% to 1.9%, while household consumption growth reduced from 5.2% to 3.2% in the same period. The government was not able to stimulate investment to improve the country's infrastructure neither the manufacturing production, but at least they were able to lower the decrease in household consumption growth after 2010. The latter avoided a stronger deceleration of the Brazilian GDP growth. However, the radical change in the government policy in 2015 had a negative impact on investment and household consumption, what, in turn, reduced GDP in 2015 and 2016 (Luiz Gonzaga de Mello Belluzzo and Pedro Paulo Zahluth Bastos 2015). The difficulties to sustain the economic growth rates of the period 2004-2008 suggest that continued GDP growth with income distribution without favourable international conditions depends on changes in the production structure able to sustain economic growth with increased wage share and less imports of manufacturing goods.

⁷ The Growth Acceleration Program (PAC) was an infrastructure program of the Federal Government of Brazil with the objective of accelerating economic growth. The program was launched in 2007 under President Luiz Inácio Lula da Silva's government and continued in President Dilma Rousseff's administration, being called PAC-2.

⁸ Brasil Maior Government program is a federal program created to increase the competitiveness of the domestic industry. It was launched in 2011 and the aim was to connect industrial, technological and foreign trade policy sectors.

The minimum wage policy, wage increases above inflation achieved by trade unions and higher credit were crucial to raise consumption and improve the Brazilian economic performance in the 2000s. The minimum wage increased two-thirds in the period 2004-2013 and the share of credit in relation to GDP that was 25.5% in 2004 increased to 50.9% in 2013 (Table 2). The proportion of collective negotiations that managed to readjust wages of workers above inflation increased considerably, surpassing 90% in 2012.

Table 2 Income Inequality, Wages and Credit

Year	Household consumption growth	Wage share	Credit/GDP	Minimum wage change	% change wages above inflation	Formalization	Gini index
2004	3.8	44.0	25.5	2.0	54.9	38.6	0.572
2005	4.5	44.9	28.0	9.8	71.7	38.8	0.569
2006	5.2	45.4	30.4	13.5	86.3	39.2	0.563
2007	6.1	45.6	34.7	3.2	87.7	40.2	0.556
2008	5.7	45.8	39.7	2.5	76.6	41.9	0.546
2009	4.4	47.4	42.6	7.6	79.5	43.3	0.543
2010	6.9	46.4	44.1	3.0	88.2	44.2	-
2011	4.1	46.8	46.5	0.7	86.8	48.1	0.531
2012	3.2	47.6	49.2	7.5	94.6	48.7	0.530
2013	2.3	48.2	50.9	3.3	84.5	49.4	0.527

Notes: The Gini Index calculates the inequality in family income distribution. The minimum wage change was calculated based on monthly real minimum wage index. The share of wage readjustment above inflation refers to the National Index of Consumer Price (INPC). Wage share was calculated using wages in relation to GDP with base in 2010. The value of credit in relation to GDP refers to December. Formalization refers to employees with formal work contract, including domestic work.

Source: Own calculations based on information provided by the Inter-Union Department of Statistics and Socio-Economic Studies (2018), Central Bank of Brazil (2019) and IPEADATA (2019).

Increases in the minimum wage and increases in wage above inflation achieved by trade unions reduced wage inequality at the same time it increased the purchasing power of wages faster than the increase in GDP per worker. The result was an increase in wage share from 44% in 2003 to 48.2% in 2013 (Table 2). High increase in the purchasing power of wages, especially in wages close to the minimum wage, raised the income of families with low income and decreased family income inequality (João Saboia 2010). Consequently, the Gini index decreased from 0.572 in 2004 to 0.527 in 2013.

José Gabriel Palma (2016) argues that a more informative statistic of inequality is the ratio of the income received by the 10% people with the highest income in relation to the income received by the 40% people with the lowest income. The author shows that there is a homogeneity in the middle and upper middle across countries and the distributive conflict is played basically by the top 10% and the bottom 40% that struggle for their income share. In the case of Brazil, the *Palma Ratio* reduced from 2004 to 2013, also indicating a decrease in income inequality⁹. But in this case, not

⁹ Using household income data from the National Sample Household Survey, the *Palma Ratio* (share of the income of the top 10% in relation to the share of income of the bottom 40%) was 3.8 in 2004 and reduced to 3.1 in 2013.

only the bottom 40% increased their income share, but the middle 50% also had an improvement¹⁰.

In short, household consumption had an important role for the Brazilian economic growth with income distribution and the increase in wage share and the decrease in wage inequality reinforced the consumption cycle. The latter is explained by credit that tend to present a short cycle due to the high levels of interest rates that prevails in Brazil. Consumption growth decelerated after 2010, despite the sustained improvements in wage share. The impact of increases in wage share on household consumption was reinforced by a decrease in wage inequality, when lower wages increased faster than higher wages. However, continued economic growth with income distribution, under unfavourable international circumstances, requires the development of domestic manufacturing production and the government failed to articulate the public and private investment necessary for this development. Nevertheless, the increase in wage share and the decrease in wage inequality contributed to smooth the deceleration of household consumption, helping to avoid a stronger deceleration of GDP until 2013¹¹.

3. Brazilian Labour Market

An important aspect of the Brazilian economic growth with income distribution period was the improvement in the country's labour market. The unemployment rate (ratio of the unemployed to the working age population) decreased considerably, but the employment rate (ratio of the employed to the working age population) had a slight reduction (Table 3). This means that the number of employed people increased less than the economically active population. The expansion of total jobs during the considered period was relatively modest. Labour productivity increased, especially between 2004 and 2010, when GDP growth accelerated and the investment rate increased from 16 per cent to 19 per cent (see again Table 1).

Since the employment rate decreased in the period, the reduction in the unemployment rate is related to the decrease in the labour force participation rate (labour force divided by the total working-age population). According to Leone (2017), the labour force participation rate decreased in the 2000s because young people postponed their entry in the labour market and spent more time studying, adult women's participation has increased slower than before and the adult men's participation decreased. This decrease in the labour force participation rate had an important role in reducing the unemployment rate during the period of economic growth with income distribution.

¹⁰ Using household income data from the National Sample Household Survey, the share of income from the bottom 40% was 10.9% in 2004 and increased to 12.5% in 2013 and the share of the middle 50% was 47.7 in 2004 and increased to 49.3% in 2013, while the top 10% reduced their share from 41.4% in 2004 to 38.2% in 2013.

¹¹ The purpose of this paper is not to assess the possibility of a sustained economic growth with income distribution. This assessment requires a deeper analysis of the interaction between income distribution and economic growth. Notwithstanding, it is possible to say that the continuity of an economic growth with income distribution, especially after the new international situation from 2008 onwards, requires high investment rate and high productivity growth. For a deeper analysis of this topic, see José Luis Oreiro (2017) and Oreiro and Luciano D'Agostini (2017).

Improvements in the labour market are not related only with the decrease in the unemployment rate. The ratio of employees in total employment increased from 63.6% in 2004 to 69% in 2013 (Table 3). Formal employment¹² raised considerably as showed by the increase in the ratio of formal employees to total employees, and the ratio of domestic work to total employed decreased (Table 3). So, although the expansion of total employment was modest, the labour market improved considering the lower unemployment rate, higher share of employees, higher share of formal employees and lower share of domestic work.

Table 3 Brazilian Labour Market (Workers with 15 Years Old and More)

Variables	2004	2013
Labour force participation rate	68.6	65.5
Unemployment rate	8.9	6.5
Employment rate	62.5	61.2
Employees / Employed	63.6	69.0
Formal employee / Employed	62.3	72.1
Domestic work / Employed	12.1	9.7

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019)¹³.

The increase in the ratio employees in total employment occurred together with the increase in the purchasing power of wages (Table 4). Average income for employees increased 128.9% in nominal terms and inflation, measured by the National Consumer Price Index (INPC), increased 59%. This means that the purchasing power of wages increased 44% in a period of nine years, what corresponds to an average improvement of 4.1% per year. This increase in the purchasing power of wages was faster than productivity¹⁴, explaining the improvement in wage share presented in Table 2.

Table 4 Labour Market and Average Income

	2004	2013	Δ%
Employees average income	649.13	1483.70	128.9
Coef. of variation	1.477	1.270	-14.0
Formal employee average income	816.31	1695.82	107.7
Coef. of variation	1.342	1.163	-13.3
Informal employee average income	372.75	936.83	151.3
Coef. of variation	1.546	1.603	3.7
Minimum wage (MW)	260.00	678.00	160.8
Inflation (INPC)	2424.40	3853.68	59.0
Average wage in MW	2.49	2.19	-12.2
Formal average wage in MW	3.14	2.50	-20.4
Informal average wage in MW	1.43	1.38	-3.6

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019).

¹² Formal employment corresponds to workers that have an employment contract according to the country's law.

¹³ **Brazilian Institute for Geography and Statistics**. 2019. National Sample Household Survey. <https://www.ibge.gov.br/estatisticas/sociais/populacao/9127-pesquisa-nacional-por-amostra-de-domicilios.html?=&t=o-que-e> (accessed September 02, 2019).

¹⁴ Productivity may have increased slowly because investment rate has been relatively low in Brazil.

The increase in the purchasing power of wages occurred together with a decrease in wage inequality. The coefficient of variation¹⁵ (ratio of standard deviation to average income) decreased from 1.48 to 1.27. The decrease in wage inequality was significant, but in 2013 this inequality was still very high. There were three factors behind the high increase in average wage followed by a decrease in wage inequality. First, the increase in the share of formal employees, considering that formal employees have higher average income and lower wage inequality compared to informal employees¹⁶ (see again Table 4). Second, average wages of formal employees increased significantly at the same time their wage inequality decreased. Third, although wage inequality for informal employees increased, their average income increased more than the average income for formal employee (Table 4).

A higher share of informal employees earns an income close to the minimum wage, explaining why the increase in average wage for informal employees was slightly slower than the increase in the minimum wage. In terms of purchasing power (discounted inflation), the increase in the minimum wage was 5.7% per year, while the increase in average income for informal employee was 5.2% per year. The minimum wage is the lowest wage for formal employee. Many informal workers receive less than the minimum wage, but their salary has as a reference the minimum wage, especially those that receive a salary close to the minimum wage (Baltar and Leone 2015). But, the high increase in the average wage for informal employees occurred at the same time wage inequality increased, suggesting an informalization of jobs of high wages during this period (José Dari Krein et al. 2018).

The increase in the purchasing power of the average income for formal employee was much lower, around 3% per year. Even though, this increase might have been higher than the Brazilian economy productivity. Nevertheless, it is a characteristic of the period of the Brazilian economic growth with income distribution that formal employee increased faster than informal employee and, at the same time, the difference between formal/informal average incomes reduced. Both movements, as already mentioned, contributed to the expressive reduction in wage inequality in Brazil in the considered period.

Thus, the main improvement in the Brazilian economic growth period with income distribution was the high increase in formal employment at the same time the purchasing power of the average wage increased and wage inequality reduced. Total employment growth has been modest, which means that the high increase in formal employment is a result of the formalization of economic activities and employment contracts.

The reduction in wage inequality suggests that the formalization of economic activities and employment contracts has mainly increased formal jobs with wages close to the median, helping to reduce wage inequality. The rise in the minimum wage affected a relatively small number of formal employees. The rise in wages obtained by the trade unions was more important than the increase in the minimum wage to raise the average wages, reducing wage inequality. The increase in wages achieved by the

¹⁵ The coefficient of variation is used to measure wage inequality.

¹⁶ Informal employment corresponds to workers that do not have an employment contract according to the country's law.

trade unions was lower than the rise in the minimum wage. As a result, the average wages of formal employment was 3.1 minimum wages in 2004 and 2.5 minimum wage in 2013, although the purchasing power of the average wages of formal employment has increased 3% per year.

The decrease in average wage of total employees, measured in minimum wage, was much smaller than in the case of formal employee (decreased from 2.5 to 2.2 minimum wages). The share of informal employees in total employment declined in the period, but it was still 26.9% in 2013. Compared to the minimum wage, the average wages of informal employees did not decrease significantly, remaining at 1.4 minimum wage. The intense increase in the average wages of informal employees, as mentioned, occurred with an increase in inequality. The proportion of informal employees earning much less than the minimum wage has decreased, and the increase in inequality of these wages reflects the increase in the number of relatively high paid informal employees, as it will be seen in the next section.

The rise in the minimum wage played an important role in reducing wage inequality, affecting formal and informal wages. However, in 2004, the average wage of formal employees was more than 3 minimum wages and the proportion of these employees earning close to the minimum wage was small. At the same time, the asymmetry of the wage distribution of formal employees was very high. So, the average wage was much higher than the median wage for formal employees. Formal job creation with wages close to the median and increases in wages higher than inflation due to trade union's negotiations raised average wage, reducing inequality and the asymmetry in the distribution. However, the average wage for formal employment is still low, compared to the GDP per employee, and the inequality and the asymmetry of wage distribution remain very high. Increases in wages reduced more the asymmetry and inequality of wage distribution than raised the average wages, smoothing the expansion of the wage share in total income.

4. Distribution of Wages in Brazil

The increase in the average wage and the wage share in total income was significant between 2004 and 2013. The real average wage increased 4.1% per year and wage employment increased 2.3% per year. Thus, total wage increased 6.5% per year, contributing to raise the share of labour income in total income, although the increase in total self-employment income was much smaller than the increase in total wages. The median wage increased more than the average wage (Souen 2018). Increases in wages obtained by trade unions were more important than the minimum wage to raise the median wage. However, trade unions had wage increases from 1 to 2% above inflation and the increase in the purchasing power of the median wage was much higher. So, job creation with wages higher than median wages was very important to increase the median wages.

It is, then, necessary to deepen the analysis of this increase in average wage at the same time wage inequality reduced during the period of economic growth with income distribution. To further analyse this, a methodology to classify workers according to their occupation is suggested. Occupation constitute a fundamental aspect of class structure and it is one important facet to explain wage inequality (Harley L.

Browning and Joachim Singelmann 1978; ChangHwan Kim and Arthur Sakamoto 2008; Erik Olin Wright 2015). So, employees are grouped in different categories according to the average income for each occupational group. The Brazilian occupation classification identify 510 occupations. These occupations are categorized in 12 groups according to the average income of 2013. In one extreme, there is category *A* that corresponds to the highest average income and to more complex types of occupations; on the other extreme, there is category *L* that corresponds to the lowest average income and to elementary occupations and domestic service workers. Table 5 presents the most important occupational groups for each category. These categories help to describe the structure of the working class in Brazil to verify what happened to the Brazilian wage distribution in the period of economic growth with income distribution.

Table 5 Main Occupational Group for Each Category

Category	Occupational group
A	Judges, Public prosecutors and defenders, Company solicitors, Directors
B	Doctor, Civil engineer, Mining engineer, University lecturers
C	Mechanical engineer, Accountants and auditors, Lawyers
D	Production managers, Upper-level nurses, Computer programmers
E	Aeronautics military, Police, Supervisors of transport service, Army military
F	Teachers in secondary education, Earthmoving workers, Finance clerks, Social assistant
G	Transportation technicians, Production technicians, Electricity technicians
H	General clerks, Security guards, Secretaries, Woodworker
I	Vehicle drivers, Health agents, Warehouses, Store sellers
J	Receptionist, Telephone operators, Teachers in early childhood education
K	Waiter, Cooker, Workers in livestock, Cargo workers
L	Civil construction assistant, Domestic work, Agricultural workers

Source: Author's compilation.

The extreme inequality in wage distribution in Brazil indicates the necessity to group workers in 12 categories to better describe the structure of wage employment in the country. For a more synthetic presentation, it is possible to group some of the categories into five groups (see Table 6). There is a high concentration of labour in the lowest category (*L*). The average wage using this category is slightly higher than the minimum wage, a high proportion of these workers have no formal employment contract and the wage gap between formal and informal job is very high.

For the other two categories (*K* and *J*), the average wage is 60 to 90% higher than the minimum wage. These two categories bring together a slightly smaller number of workers than category *L*. In these categories, the share of formal employment is much higher, exceeding 2/3, and the wage gap of formal and informal jobs is slightly smaller than the previous group. Two other categories (*I* and *H*) have average wage between 2 and 3 minimum wage. These two categories bring together near 1/5 of total wage employment and the average income of these employees is similar to the overall average wage. In this group, the share of formal jobs reaches 3/4 and the wage gap of formal and informal jobs is slightly smaller than the previous group.

The other seven categories have higher average wages than the total average wage and cover 1/5 of total wage employment, confirming the extreme asymmetry of

wage distribution in Brazil, where about 3/4 of the employees earn less than the average wage. However, the average wage differences of these 7 categories are very high and it is necessary to form at least two groups.

Table 6 Structure of the Working Class in Brazil in 2004

Category	Average wage in MW	Employee	Coef. variation	% formal	Formal wage / Informal wage
L	1.077	31.200	0.637	36.500	1.658
K	1.603	12.600	0.682	66.900	1.504
J	1.899	15.600	0.731	70.400	1.591
K+J	1.767	28.200	0.724	68.800	1.562
I	2.172	5.700	0.801	67.200	1.547
H	2.699	13.700	0.797	78.900	1.483
I+H	2.545	19.400	0.807	75.500	1.537
G	3.239	4.000	0.866	80.600	1.716
F	3.856	5.700	0.844	75.600	1.414
E	4.694	3.800	0.839	83.300	1.487
C+F+E	3.912	13.500	0.867	79.300	1.510
D	7.303	5.800	1.190	79.600	1.608
C	9.743	1.000	0.818	86.700	1.657
B	11.489	0.800	0.809	74.600	1.137
A	27.446	0.100	0.941	78.600	1.356
D+C+B+A	8.317	7.700	1.144	80.000	1.485
Total	2.497	100.000	1.477	62.300	2.190

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019).

Three categories (*G*, *F* and *E*) have average wage between 3 and 5 minimum wage. These three categories cover about 2/3 of the total employees of the 7 categories with average wage higher than the total average wage. In this group, the share of formal jobs is around 80% and the wage gap between formal and informal jobs is slightly smaller than the previous group.

Finally, the four categories (*D*, *C*, *B* and *A*) of highest average wage covers less than 10% of total employees and only category *D*, that has the lowest average wage of the group, has a significant share of the country's total employees, comprising 3/4 of the employees of this group.

Briefly, the five category groups describe the structure of wage employment in Brazil, highlighting not only the average wage differences between groups but also the wage inequality within each group measured by the coefficient of variation. Table 6 shows that the higher the average wage of the group, the greater the wage inequality, measured by the coefficient of variation. High wage differences within higher income groups occurred even though these groups have a higher share of formal employment and a smaller wage gap between formal and informal jobs.

The variance analysis allows decomposing wage variance in two parts: the variance of average wage of the 12 categories (variance between categories); and the average of variances of wages inside each category (variance within categories). This decomposition shows whether the wage dispersion is a result of differences between the different categories or inside each category. The variance between categories corresponds to 31% of total variance, while the variance within categories corresponds to 69% of the total variance of wages. So, most of the wage dispersion correspond to the variance inside each category, especially in categories of high wages. The wage dispersion can be caused by differences between sectors of activity, the nature of the employers (it can be a public, private and foreign company), the characteristics of workers

(sex and age), the regional distribution of employers, and so on (Souen 2018). These causes of wage differentiation are superior in categories with higher average wage.

The main change in the composition of wage employment according to occupational categories in the period of economic growth with income distribution was a decrease in the share of the category with the lowest income (category *L*)¹⁷. The number of employees in category *L* in 2013 was 4.1% lower than in 2004 and their share in total wage employment was 32.1% 2004 and it reduced to 24.5% in 2013 (Table 7). The categories of the next higher income group (*K* and *J*) increased their share in total employment, but the increase in the share of categories *H*, *G*, *E* and *D* raised the overall average wages. In all these last categories, the average wage in 2004 was higher than the overall average wage (see again Table 6).

Table 7 Evolution of Wages for All Categories

Category	Employees		Average wage growth	Coefficient of variation	
	2004	2013	2004-2013	2004	2013
L	31.2	24.5	5.4	0.637	0.550
K	12.6	13.9	3.5	0.692	0.498
J	15.6	15.7	3.6	0.731	0.622
K+J	28.2	29.6	3.5	0.724	0.585
I	5.7	5.4	3.8	0.801	0.570
H	13.7	17.5	2.9	0.797	0.693
I+H	19.4	22.9	3.2	0.807	0.675
G	4.0	4.6	2.7	0.866	0.699
F	5.7	5.4	2.9	0.844	0.758
E	3.8	4.4	3.2	0.839	0.726
C+F+E	13.5	14.4	3.0	0.867	0.760
D	5.8	6.7	2.5	1.190	0.933
C	1.0	0.9	3.8	0.818	0.681
B	0.8	0.9	5.7	0.809	0.902
A	0.1	0.1	2.2	0.941	0.684
D+C+B+A	7.7	8.6	3.1	1.144	1.000
Total	100.0	100.0	4.1	1.477	1.270

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019).

The overall average wages increased 4.1% per year in the period 2004-2013, but only category *L*, which has an average wage close to the minimum wage, increased faster than the overall average wage. The average wage increased more for the lower income occupational categories and wage inequality decreased for all categories.

As a result, average wage differences between categories decreased over the period, but the reduction in wage inequality within the categories was higher than the decrease in average wage differences between categories. The coefficient of variation of average wages of categories was 0.827 in 2004 and 0.781 in 2013, but the share of the variance between categories in total variance increased from 31.3% to 37.9% (Table 8).

The result indicates that the decrease in wage inequality that took place in Brazil during the period of economic growth with income distribution occurred due to the decrease in wage differences within each category more than differences between categories. This particularity of wage dispersion is related with the important role of increases in the minimum wage and the trade union's wage readjustments above inflation

¹⁷ See Waldir Quadros, Denis Gimenez, and Davi Nardi Antunes (2013) for the implications of changes in wage distribution according to occupational categories to the Brazilian social structure.

that contributed to reduce wage inequality, especially the wage inequality inside each category.

Table 8 Variance Analysis

	2004	2013
Between categories	31.3	37.9
Inside categories	68.7	62.1
Total	100.0	100.0

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019).

Increases in the minimum wage were higher than trade union's wage readjustments and all categories of workers had an improvement in the purchasing power of wages lower than the increase in the minimum wage. Consequently, the average wage in terms of minimum wage decreased for all categories, except for category *L* (see again Table 6). Category *L* is the category that the average wage is closer to the minimum wage and it was the category most affected by the increase in the minimum wage.

However, the increase in the purchasing power of average wages was greater than the increase verified for each category of workers, except category *L*. In this last case, the high increase in the purchasing power of wages was a result of the high share of employment in this category that earns an average wage close to the minimum wage, and the changes in the distribution of employment that reduced the share of category *L* and increased the share of categories with average wage equal or higher than the average wage. Nevertheless, these changes in the distribution of employment according to occupational categories had a greater impact on the median wage than on the average wage. This is because wage inequality reduced in all categories due to both the increase in the minimum wage and the increase in wages obtained by the trade unions.

To understand the behaviour of wages within each category of workers, it is important to consider the evolution of the formal employment and the wage difference between formal and informal jobs (Table 9).

Table 9 Formal and Informal Employment

Category	% formal		Formal wage / Informal wage		Δ informal employment
	2004	2013	2004	2013	2004-2013
L	36.5	45.5	1.658	1.520	-17.6
K	66.9	74.3	1.504	1.338	5.0
J	70.4	79.4	1.591	1.417	-13.8
K+J	68.8	77.0	1.562	1.394	-4.8
I	67.2	75.6	1.547	1.270	-13.6
H	78.9	84.0	1.483	1.387	18.0
I+H	75.5	82.0	1.537	1.368	5.6
G	80.6	85.4	1.716	1.515	0.5
F	75.6	82.9	1.414	1.321	-18.4
E	83.3	83.8	1.487	1.243	35.8
C+F+E	79.3	84.0	1.510	1.322	0.7
D	79.6	84.4	1.608	1.353	6.4
C	86.7	88.4	1.657	1.605	2.6
B	74.6	79.5	1.137	1.002	14.8
A	78.6	88.6	1.356	1.425	-25.9
D+C+B+A	80.0	84.4	1.485	1.262	6.7
Total	62.3	72.1	2.190	1.810	-9.4

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019).

For all categories of workers, except for category *B*, the share of formal contracts increased and the average wage of informal employment increased more than the average wage for formal employment, except for category *A*, reducing the difference between formal and informal wage. In category *L*, informal employment reduced considerably, affecting wages that were much lower than the minimum wage. However, these low paid informal jobs remain a high share of jobs in this category.

For other categories, informal employment wages is not so low and the impact of the minimum wage on average wage for informal employment was high due to the high share of informal workers with an income close to the minimum wage. In categories with high average wage, the substitution of some formal employment to informal employment was more important than the influence of the minimum wage. In the period 2004-2013, two process took place at the same time: informal employment with relatively low income became formal, and formal employment with relatively high income became informal, as highlighted by Krein (2013) and Krein et al. (2018).

As already mentioned, the share of formal employment increased and the difference between formal and informal average wage decreased. These different movements of employment and income changed the distribution of wages for formal and informal employment. In 2004, although the income inequality for informal employment was higher than that for formal employment, the variance decomposition is similar for both types of employment (Table 10). The variance between categories represented around 30% of total wage variance for both formal and informal employment. Between 2004 and 2013, the variance inside categories was kept around 70% of total variance for informal employment, but it decreased from 70.5% to 61.4% in the case of formal employment.

Table 10 Variance Analysis for Formal and Informal Employment

	Formal		Informal	
	2004	2013	2004	2013
Between categories	29.5	38.6	30.2	29.1
Inside categories	70.5	61.4	69.8	70.9
Total	100.0	100.0	100.0	100.0

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019).

In the period 2004-2013, the decrease in wage inequality occurred only for the case of formal employment (the coefficient of variation decreased from 1.342 in 2004 to 1.163 in 2013, as showed in Table 11). The high increase in formal employment was followed by a moderate increase in the purchasing power of these wages and a reduction in its income inequality. The opposite takes place for the case of informal employment, in which employment decreased, the average wage increased faster and the inequality increased (the coefficient of variation increased from 1.546 to 1.603 in this case). Wage inequality for informal employment increased between categories, but mainly inside categories (Table 11). In the case of formal employment, wage inequality between categories did not increase and the inequality inside categories decreased.

However, wage inequality for informal employment increased only in the categories of high average wage and wage inequality and the main cause of the greater inequality within categories was the increase in the share of informal employment in

the categories of high wages and wage inequality (Table 12). Informal employment has only declined in the lowest wage category and it raised significantly in categories *H*, *E* and *B*, in which wages and inequality were relatively high for informal employment.

Table 11 Coefficient of Variation (CV) for Formal and Informal Employment

	CV total		CV between		CV inside	
	2004	2013	2004	2013	2004	2013
Formal	1.342	1.163	0.729	0.723	1.126	0.912
Informal	1.546	1.603	0.849	0.864	1.292	1.350
Total	1.477	1.270	0.827	0.781	1.223	1.001

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019).

Table 12 Informal Employment

Category	Informal employment		Average wage in minimum wage		Coefficient of variation	
	2004	2013	2004	2013	2004	2013
L	52.6	47.8	0.868	0.851	0.681	0.670
K	11.1	12.8	1.199	1.068	0.784	0.675
J	12.2	11.6	1.341	1.193	0.766	0.739
K+J	23.3	24.4	1.274	1.128	0.777	0.713
I	4.9	4.7	1.588	1.539	0.885	0.686
H	7.7	10.0	1.954	1.608	1.010	0.797
I+H	12.6	14.7	1.811	1.586	0.984	0.766
G	2.0	2.4	2.053	1.746	1.214	0.804
F	3.7	3.3	2.938	2.412	0.955	0.893
E	1.7	2.5	3.338	3.167	0.985	0.740
C+F+E	7.4	8.2	2.786	2.451	1.035	0.859
D	3.2	3.7	4.920	4.271	1.119	1.139
C	0.3	0.4	6.207	5.392	1.269	0.809
B	0.5	0.7	10.425	11.492	1.043	1.281
A	0.1	0.1	21.447	14.758	0.895	1.346
D+C+B+A	4.1	4.9	5.985	5.469	1.254	1.426
Total	100.0	100.0	1.434	1.382	1.546	1.603

Source: Own calculations based on information provided by the Brazilian Institute for Geography and Statistics (2019).

In short, increases in the minimum wage and trade union's wages adjusted above inflation, changes in job distribution increasing the share of better paid categories and formalization of activities and employment contracts were crucial for the increase in the purchasing power of average wages and for the decrease in wage inequality that occurred mainly inside worker's categories. Besides that, inside categories, formal employment increased faster than informal employment and the former have higher average wages. However, average wages for informal employment increased faster than the average wage for formal employment, reducing the wage differences for both types of employment. At the same time, informal employment decreased in the lowest wage categories and continued to increase in the intermediate categories, in which wage inequality for informal employment is very high, increasing the inequality for informal employment.

5. Concluding Remarks

Brazil was an example of an economy in which increases in wage share and decreases in wage inequality contributed to intensify the behaviour of GDP, increasing the country's GDP growth in the expansion phase of the business cycle and dampening the

deceleration of GDP growth in the declining phase. The causes of the cyclical behaviour of GDP are investment behaviour and consumption related to household indebtedness. Increasing wage share and reducing wage inequality only changed the intensity of the cycle.

The rise in the minimum wage and increases in wages above inflation achieved by trade unions were fundamental to raise wage share and reduce wage inequality. However, changes in the distribution of employment according to occupational categories were also important.

Changes in a country's occupational structure reflect changes in the distribution of production by sector of activity and changes in the way production is structured within each sector of activity to attend increased demand for products. In Brazil, the higher economic growth since 2004 was followed by a higher investment rate, but the evolution of the economic and occupational structures was affected by an international situation of high liquidity and a commodity boom (Souen 2018; Arestis and Baltar 2019).

National currency appreciated and limited the development of production, affecting negatively the share of tradeable goods and favouring non-tradable goods. At the same time, the development of non-tradable goods and services was followed by the formalization of activities and employment contracts. These changes in economic and occupational structures affected the distribution of wages, reducing wage inequality.

The main change in the distribution of wage employment according to occupational categories was a decline in the share of the category with the lowest income and an increase in the share of categories with income close to the average wage. In all occupational categories, the dispersion of wages is very high. However, the increase in the minimum wage and the wage increases above inflation achieved by trade unions reduced wage inequality in all occupational categories and it affected median wages more than average wage.

In short, the increase in the minimum wage, increases in wage above inflation achieved by trade unions and changes in economic and occupational structures reduced wage inequality rather than increased average wage. However, wage share increased and the decline in wage inequality reinforced the positive effect of a higher wage share on the Brazilian economic performance. But, as already said, increasing wage share and declining wage inequality only modified the intensity of the business cycle, increasing the GDP growth in the expansive phase and dampening the deceleration of GDP growth in the declining phase. The causes of the cyclical behaviour of GDP are the investment behaviour and consumption related to household indebtedness.

The Brazilian experience between 2004 and 2013 shows the necessary interaction between incomes policy and productive development policy. The incomes policy is necessary to generate higher GDP growth improving the country's socioeconomic conditions for the population. However, the productive development policy is also necessary to enable the incomes policy to reinforce GDP growth without generating higher inflation and disequilibrium in the balance of payments and in the public accounts. The latter would end up creating conflict in the income appropriation without increasing GDP growth.

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