THE BRAZILIAN MANUFACTURING RATE OF SURPLUS VALUE BETWEEN 2000 AND 2017

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Abstract

This paper estimates the Brazilian manufacturing surplus value rate and its determinants (wage rate and labor productivity) between 2000 and 2017. We also build a theoretical narrative of the Brazilian economy, considering its political successions. We investigate the governments of Fernando Henrique Cardoso (during 2000–2002), Luis Inácio Lula da Silva (2003–2010), Dilma Rousseff (2011–2016), the parliamentary *coup d'état* (December 2015–August 2016), and the years 2016 and 2017 of Michael Temer's administration. We use the classical political economy approach, which considers the capital-labor struggle a key mechanism on the economic, political, and ideological disputes of society.
JEL Classification: B51; E25; N16

Keywords: Brazilian economy; manufacturing sector; rate of surplus value; capital-labor struggle; System of National Accounts

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1. INTRODUCTION

The capitalist society is marked by several contradictions, being the class struggle one of the most dynamic facets of this economic system. This struggle also translates itself into how the actors interact to reproduce their lives and the system itself. Cooperation and conflict are broad arrangements to manage the system. Hence, the historical evolution of this struggle engenders distinct patterns on capitalist development. This means that although growth and crises are endogenous phenomena, there are historical characteristics which print their marks in each historical moment. Even though the cooperative post-war welfare state is very distinct from the neoliberal conflicting society, for example, both are still capitalism.

This duality appears in each specific society by its cultural, sociological, and historical traces. In Brazil's case, the years between 2000 and 2017 showed that the inclusive decade fostered by the Partido dos Trabalhadores (Workers' Party, PT)—where poverty and income distribution indicators had improved—gave birth to an economic and political crisis, which culminated into a *coup d'état* that brought a radical neoliberal program implementation and the realignment and prominence of conservative and military values.

In this paper, we estimate the rate of surplus value for the Brazilian manufacturing sector for this 2000-2017 period. This is a key and highly dynamic sector for the accumulation process due to the amount of productive labor performed there.

Our estimates allow researchers to have an alternative narrative, using empirical data, for this historical period of Brazilian capitalist development. Following Shaikh and Tonak's methodology (1994), we contribute to the literature, therefore, by transforming the latest Brazilian official statistics into a Marxian perspective. Given the scant literature on the measurement of the surplus value rate in Brazil and developing countries, this article thus fulfills this lack of national and international literature.

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2. THE CLASSICAL POLITICAL ECONOMY FRAMEWORK AND THE RELATIONSHIP BETWEEN THE RATE OF SURPLUS VALUE, LABOR PRODUCTIVITY AND WAGE RATE

The approach used throughout this article was based on the classical political economy tradition, which sees in the capital-labor struggle a key, albeit not exclusive, conditioning of the economic, political, and ideological disputes of society.

The relevance of this topic stems from the fact that the rate of surplus value is one of the pillars of the Marxian theory of crisis, along with the organic composition of capital and the rate of capital rotation. The movements in the profit rate result from changes in one or more of these variables (Foley, 1986). For Marx, the rate of surplus value tends to grow in the long run, given that productivity increases at a faster pace than real wages. This is due to the pressure exerted on wages by the large and growing reserve army of unemployed workers. However, the increase in the rate of surplus value would not be enough to compensate for the downward trend in the profit rate due to the rise in the organic composition of capital (Moseley, 1986).

Productivity growth is effectively a measure of technical change (and its steady long-term rise corresponds to the fundamental role of technological progress in capitalist development) which is imperative for capitalist firms, rooted in the very nature of profit-driven competition. Even though one of the great strengths of developed capitalism is that real wages generally also rise over the long run, productivity growth provides only the material foundation for a potential rise in real wages. Productivity growth does not automatically lead to growth in real wages. It takes social and institutional mechanisms to create (historically hard won) linkages between the two, and these connections can always be rent asunder.

Real unit labor cost, the ratio of real wages to productivity, is of paramount importance to business. At the individual level, labor costs are an important component of total costs, and for individual firms to survive in competition, labor costs must not rise relative to that of their competitors. Competition therefore constantly impels firms to keep down their own real unit cost. At the aggregate level, a rise in real unit labor costs lowers real profit margins (Shaikh, 2016).

The category of surplus value rate is vital in Marxian economic theory, since in this category the two main forms of income appropriation are placed in direct contrast – which reflects the working and capitalist classes. The rate of surplus value, therefore, represents an index of the primary income distribution within the capitalist production, when labor-power becomes a commodity and the wage falls short of the value that labor produces. Marx (1992: 326) defined the rate of surplus value as the exact expression for the degree of exploitation of labor-power by capital. Algebraically, it can be defined as the ratio of surplus value to variable capital, the first being the surplus of the product's value over the sum of its elements of production. The variable capital is the part of capital which reproduces the equivalent of its own value and produces an excess, a surplus value, i.e., the part of capital that is continuously transformed from a constant into a variable magnitude:

$$\frac{S}{V} = Rate\ of\ Surplus\ Value \tag{1}$$

Being V the Variable Capital and $S = VA - V$, the Surplus Value (in money form)

If we break down the equation of surplus value rate, taking into account that the surplus value (S) is a residual from value added (VA) and variable capital (V), both at constant prices, and being N_p the number of productive workers; π_p and w_p the (per productive worker) real labor productivity and real wage respectively, we get:

$$Surplus\ value\ rate = \frac{S}{V} = \frac{VA-V}{V} = \left(\frac{VA}{V}\right) - 1 = \left(\frac{VA/N_p}{V/N_p}\right) - 1 = \left[\frac{\pi_p}{w_p}\right] - 1 \qquad (2)$$

We verify then that *ceteris paribus* the rate of surplus value is positively associated with labor productivity and negatively with wages.

3. METHODOLOGY

This paper aims to formulate a series for the rate of surplus value in the manufacturing sector of the Brazilian economy between 2000 and 2017, based on data from the Brazilian System of National Accounts (SNA), set by IBGE.

The rate of surplus value measured here stems from Marxian concepts and is obtained by the ratio of the mass of surplus value to the variable capital. The mass of surplus value, in turn, is achieved subtracting from the Value Added the Variable Capital. As expected, since they are variables in Marxian Categories, not presented in official statistics, it is necessary to expose the estimate methodology. It is worth noting that the methodology we follow is based on Shaikh and Tonak (1994), even though peculiarities arising from unavailability of data in Brazil, as well as specificities related to economic structures and census codes, do not allow us to state they are identical.

In this transformation of the Official National Accounting into Marxian categories, the essential starting point is the distinction between labor which is considered productive of capital and that which is not. According to Shaikh and Tonak (1994: 21-22), in the process of social reproduction it is possible to distinguish four types of social activities:

i. Production—in which objects of social use (use values) are utilized in the process of the creation of new objects;
ii. Distribution—in which objects of social use are utilized in order to transfer such objects from their immediate possessor to those who intend to use them;
iii. Social Maintenance and Reproduction—in which use values are used up in the private and public administration, maintenance, and reproduction of the social order by the government, the legal system, the military, corporate security personnel etc. and
iv. Personal Consumption—in which the objects of social use are consumed directly by individual consumers.

Of these activities, only the first three are considered labor. And only the first activity (production) qualifies as productive labor. It is important to point out that all economic theories distinguish production and consumption, recognizing that only production creates new use values (the wealth of nations). The particularity of Classical and Marxian theories, therefore, lies in the fact that they classify (as opposed to Neoclassical and Keynesian theory) activities of distribution and social maintenance in the sphere of nonproductive activities (Shaikh and Tonak 1994). A fundamental point in Shaikh's and Tonak's methodology is the distinction between primary and secondary sectors:

> Sectors (such as production and wholesale /retail trade) which are directly involved in the production and domestic realization of the total commodity product will be called *primary* sectors. Those (such as finance, land rental and sales, and general government) involved in the subsequent recirculation of the value and money streams originating in the primary sectors will be called *secondary* sectors (Shaikh and Tonak, 1994: 39)

Due to this sectoral distinction, secondary sectors incomes are considered as transfers (denominated royalties) originated from primary sectors. For these reasons, these incomes (such as interests and land rent) cannot be included in the measure of the total value of production, which is restricted to production and trade.

Given that, Shaikh and Tonak (1994) develop the following accounting identities from a Marxian perspective:

$$TV = GOp + GOt \quad (3)$$

$$GOp = Mp' + RYp + VAp \quad (4)$$

$$GOt = Mt' + RYt + VAt \quad (5)$$

Where TV is Total Value; GOp the Gross Output of production and GOt the Gross Output of distribution (Trade). Mp' being the intermediate inputs of productive sectors; RYp the Royalties paid in these sectors, and VAp the gross Value Added in productive sectors. On the other hand, Gross Output of trade (GOt) is the sum of intermediate inputs of trade sector, Royalties of trade sector and gross Value Added by trade sector. Constant Capital estimate in monetary terms is given by the intermediate inputs of productive sectors:

$$C = Mp' \quad (6)$$

Marxian gross Value Added in money form is obtained subtracting from the Total Value of production the intermediate inputs of productive sectors:

$$VAm = TV - C \quad (7)$$

This way, Marxian gross Value Added can be rewritten as:

$$VAm = Mp' + RYp + VAp + GOt - Mp' \quad (8)$$

$$VAm = RYp + VAp + GOt \quad (9)$$

That is, the Marxian gross Value Added is the sum of the gross Value Added of productive sectors, plus Royalties paid and the Total Value of trade sector. Including Total Value of Trade in the VAm means that intermediate inputs and wages of this sector (besides profits) are considered as part of the surplus value.

Within the set of economic activities which integrate the Brazilian SNA, the following sectors would be considered as productive: (i) Agriculture, forestry and fishing; (ii) Mining industry; (iii) Manufacturing industry; (iv) Public Utilities (production and distribution of electricity and gas, water, sewage and urban cleaning); (v) Construction Industry and (vi) Productive services, such as: Transport; Storage; Post; Telecommunication and information services; Repair services; Restaurants, Hotels and other lodging places; Health and Education private services.

In contrast, the sectors considered as unproductive from capital's standpoint are: (i) Wholesale and Retail Trade; (ii) Finance, insurance and related services; (iii) Real estate and rental activities; (iv) Other services and (v) Public Administration, Health and Education, and Social Security. In this article we will analyze only one productive sector, the Manufacturing industry.

From a theoretical standpoint, an important principle in Marxian theory is not to compare the rate of surplus value with the profit-wage ratio obtained by conventional National Accounts. As a matter of fact, for example, Shaikh (1978) and Shaikh and Tonak (1994) criticize even Marxists (such as Glyn and Sutcliffe, 1972), who assume that the rate of surplus value could be approximated by the profit-wage ratio, so that the level and trend of the former could be presumed from those of the latter. Shaikh and Tonak (1994) empirically calculate that the rate of surplus value in the United States is four to five times greater than the profit-wage ratio, and that over the period 1948-1989 the average annual growth of the surplus value rate in the United States increased 0.9% while the profit-wage ratio fell 0.8%.

Our estimates for the Brazilian economy in the period 2000-2017 also indicate that comparing the Wage Share in GDP with the Variable Capital share in Marxian Value Added, for instance, can be problematic. As shown in Figure 1, the level of the rate of surplus value in the Brazilian manufacturing industry, throughout this period, is on average 2.47 times higher than the level of the conventional profit-wage ratio for the same industry. Furthermore, in case it was only a matter of level, we would expect that the gray solid line in Figure 1 presented below would be constant over time. Nonetheless, as can be also seen in Figure 1, the ratio of the rate of surplus value to the conventional profit-wage ratio rises after 2010. While in the period 2000-2010 this ratio was on average 1.27, during 2011-2017 it increased to 1.77. That is to say both the level and the movements of the rate of surplus value have significant differences when compared to their naïve orthodox counterpart.

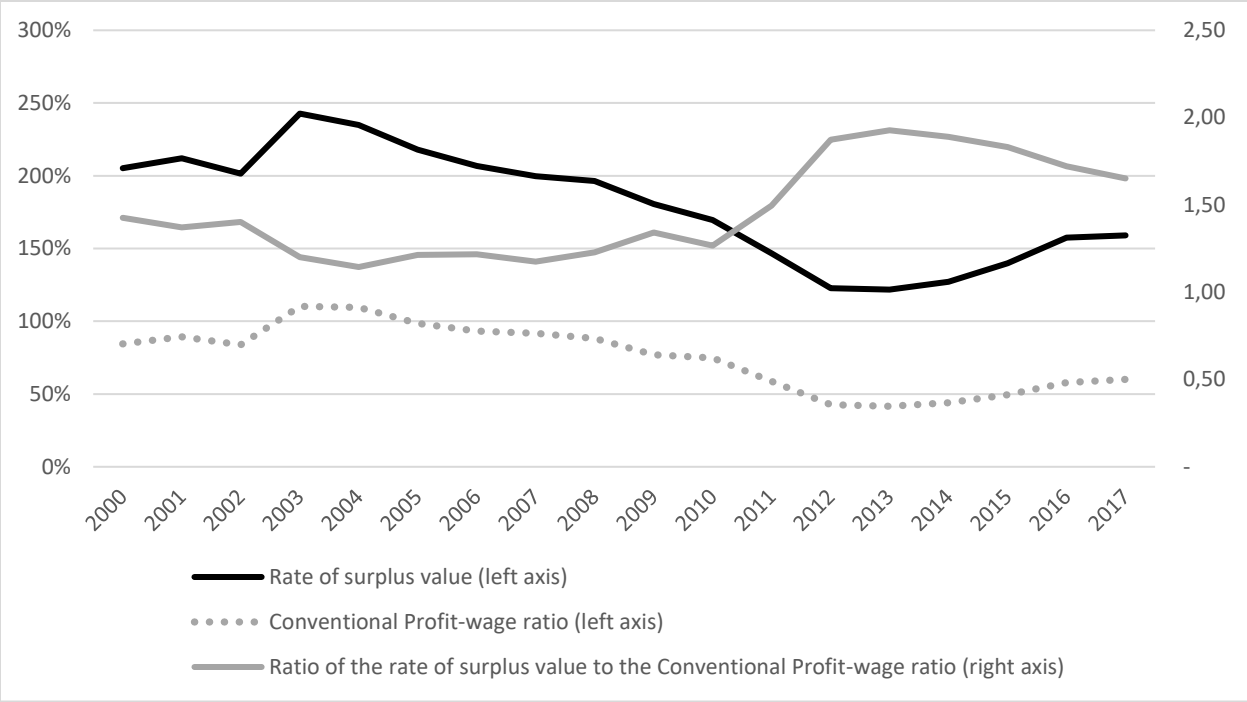


Figure 1 – Differences between the Rate of Surplus Value and the Conventional Profit-Wage ratio in the Brazilian manufacturing industry, 2000-2017
Source: Authors' elaboration

Another important aspect to be analyzed in the Brazilian economy, from a Marxian perspective, is the productive labor , that is, the one capable of producing surplus value.

Theoretically, once it is recognized that non-production labor is a form of social consumption, then the equivalence between an increase in employment and enhanced capital accumulation, does not, necessarily, hold anymore. While an increase in the employment of production workers will imply a corresponding rise in the production of net output, an increase in the employment of nonproduction workers will actually absorb a portion of the net output and hence decrease the amount available for personal consumption or further production and investment (Shaikh, 1980: 6).

Empirically, the Brazilian economy cycles seem to be approaching this pattern. As we can see from Figure 2, the change rates of productive labor (as the ratio to total labor in manufacturing) and the change rates of value added in manufacturing are much correlated. The Value added in manufacturing follows with a delay the movements of the Productive labor in manufacturing.

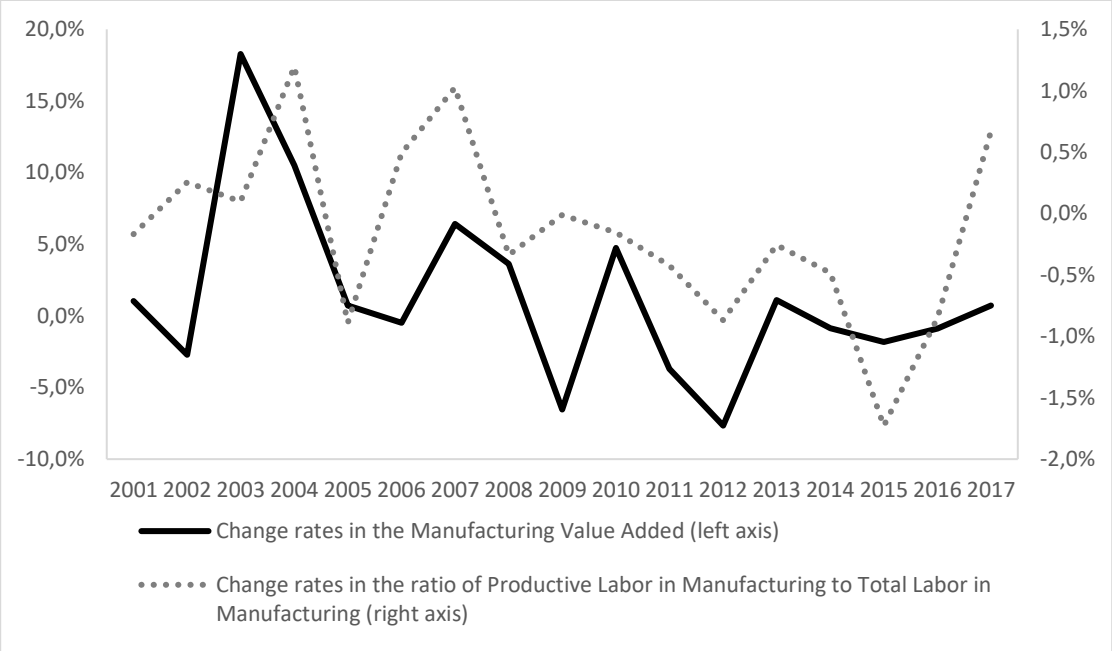


Figure 2 – Change rates of Productive Labor (as the ratio to total labor in manufacturing) and change rates of Value Added in Manufacturing, Brazilian Economy, 2000-2017
Source: Authors' elaboration

4. THE ESTIMATES OF RATE OF SURPLUS VALUE AND ITS DETERMINANTS

We present the estimate results for the Brazilian manufacturing rate of surplus value in Table 1, besides its annual rate of change and index.[3]

Brazil experienced neoliberalism more deeply from the 1990s to 2003, most of which under President Fernando Henrique Cardoso's administration (1995-2002). As we can see from Table 1, from 2000 to 2003 the rate of surplus value in manufacturing accumulated a growth of 18.5% in just three years, which meant a 4.3% compound annual growth rate.

Table 1 – The rate of Surplus Value in Manufacturing, Brazilian economy, 2000-2017

	Rate of Surplus Value	Annual rate of change (%)	Index (2000 = 100)
2000	2.05		**100.00**
2001	2.12	3.34%	103.34
2002	2.01	-5.03%	98.15
2003	2.43	20.51%	118.28
2004	2.35	-3.20%	114.50
2005	2.18	-7.19%	106.26
2006	2.07	-5.22%	100.71
2007	2.00	-3.34%	97.35

[3] For estimates of the Brazilian economy rate of surplus value before the 2000s, we are aware of only two studies. Rosinger (1988) used the input-output tables and estimated a 48.04% growth in the overall Brazilian rate of surplus value between 1970 and 1975. Marquetti (1994), on the other hand, estimated the rate of surplus value of the Brazilian manufacturing between 1949 and 1985. He computed that there was an accumulated increase of 84% in this whole period, showing that there was a rise of 22% between 1966 and 1985 (which corresponds to almost the entire period of the Brazilian military regime).

2008	1.96	-1.66%	95.74
2009	1.81	-8.10%	87.98
2010	1.70	-6.02%	82.68
2011	1.47	-13.57%	71.46
2012	1.23	-16.34%	59.78
2013	1.22	-0.74%	59.34
2014	1.27	4.35%	61.92
2015	1.40	10.16%	68.22
2016	1.58	12.57%	76.79
2017	1.59	0.95%	77.52

Source: Authors' elaboration

The high level in the labor-power exploitation of the Brazilian manufacturing continued up to 2004 though. The estimates found here for the Brazilian manufacturing rate of surplus value are in line with results obtained by the few studies in the literature. Guedes Pinto (2010), for example, analyses the overall Brazilian economy rate of surplus value for the period 1990-2004, and Araújo (2013) for the period 1990-2007. Both report an increase in the rate of surplus value throughout the 1990s up to around 2004.[4]

From then on, the Brazilian manufacturing rate of surplus value declined until 2013, under different phases and intensities, however. If we take the whole 2003-2013 period, this rate fell at an annual average rate of 6.7%. Under President Lula's government (2003-2010), the rate of surplus value decreased 2.1%—in his first term (2003-2006) having increased at a pace of 0.7% while in his second term (2007-2010) it decreased 4.8%.

In President Dilma Rousseff's first government (2011-2014), the annual average rate for the manufacturing labor-power exploitation was -7%, that is to say, a greater reduction than that of any Lula's governments.

It was only around 2012-2013 that the manufacturing rate of surplus value started to rise again. Not surprisingly, this was precisely the same moment as Dilma's government confronted the monopolistic Brazilian banking sector, in an attempt of reducing interest rates, and most of all, the banking spreads. Among other things, Dilma's government defeat showed how powerful and financialized the Brazilian industrial sector is. In 2012, for instance, the net interests paid by the Public Sector, in percentage of GDP, reached 4.4%, the lowest value recorded at the historical series. By 2015, however, that percentage had already reached 8.4%. This turning point also highlighted president Dilma's loss of support from the Federation of Industries of the State of São Paulo (FIESP)—federation which later on would support the parliamentary *coup d'état* on President Dilma. From 2013 to 2017, the compound annual growth rate (CAGR) of the rate of surplus value was 6.8%.

Having said that, we now aim to analyze the factors that determined the rate of surplus value, i.e., the labor productivity and wages rate.

4.1 Labor Productivity

Labor productivity was computed as the ratio of Value Added to productive labor in manufacturing (that is, those workers in manufacturing whose job is connected only to production).

[4] For the period 2000-2004, our estimates of the manufacturing rate of surplus value are in an intermediate position relative to the works mentioned. While our rate of surplus value rises 14.6% between 2000 and 2004, in Guedes Pinto (2010) this rate is 8% and in Araújo (2013) 18%.

Value Added was deflated by GDP deflator (implicit price deflator). Table 2 shows the (per worker) labor productivity evolution.

Table 2 – Labor productivity in Manufacturing, Brazilian economy, 2000-2017

	Labor productivity	Annual rate of change	Index (2000 = 100)
2000	0.091		100.00
2001	0.094	2.5%	102.52
2002	0.088	-6.3%	96.08
2003	0.100	13.8%	109.32
2004	0.101	0.8%	110.14
2005	0.095	-5.9%	103.65
2006	0.094	-1.1%	102.50
2007	0.095	1.1%	103.66
2008	0.095	0.8%	104.48
2009	0.090	-5.3%	98.93
2010	0.089	-1.1%	97.84
2011	0.085	-4.6%	93.29
2012	0.078	-8.2%	85.63
2013	0.078	-0.1%	85.55
2014	0.079	1.3%	86.69
2015	0.084	6.2%	92.03
2016	0.089	5.8%	97.38
2017	0.088	-1.3%	96.11

Source: Authors' elaboration

The whole period cannot be characterized as highly dynamic. Between 2000 and 2017 the per worker labor productivity CAGR was -0.2%. During 2000-2002 (under FHC's administration) it declined 2% annually as the economy had been stagnated. Even under Lula's government per worker labor productivity growth was not great. Between 2002 and 2010, for instance, it raised only 0.2% per year as real value added grew a little bit faster than productive labor.

Under Dilma's first term labor productivity declined 3%. This is one of the reasons why capitalists started to feel threatened by her government in that her administration did not provide surplus value growth but at the same time did not make wages the adjustment variable, as we will see in the next section. Between 2013 and 2017 per worker labor productivity increased (3% annually) only because productive labor slumped down (Figure 3).

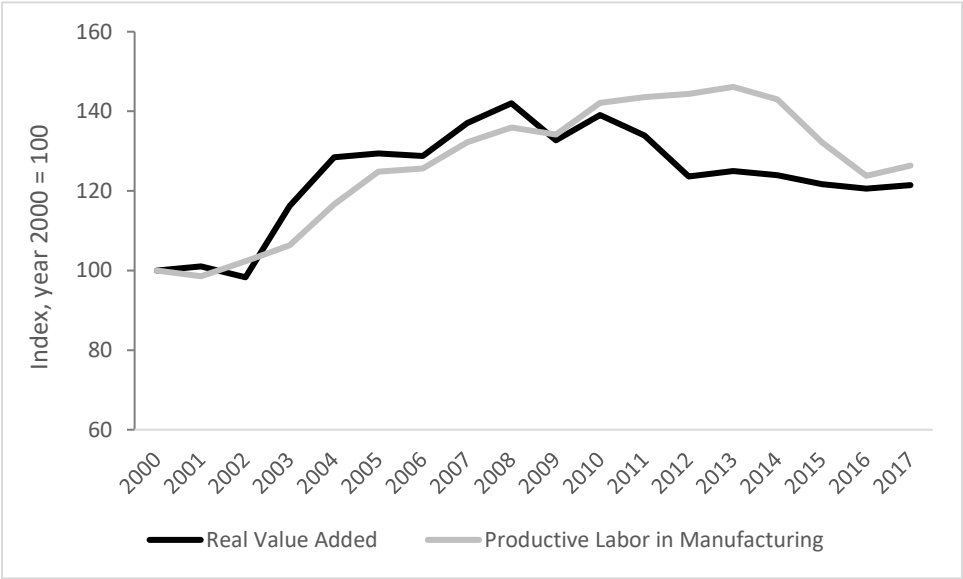


Figure 3 – Index of Real Value Added and productive labor in manufacturing, Brazil, 2000 = 100
Source: authors' elaboration

4.2 Wages rate

The wages rate in manufacturing was computed as the ratio of Variable Capital to productive labor. Variable Capital, like Value Added, was deflated by GDP deflator. Table 3 shows the evolution of the wages rate of productive workers in manufacturing.

Table 3 – Wages rate of productive workers in Manufacturing, Brazilian economy, 2000-2017

	Real average wage of productive workers	Annual rate of change (%)	Index (2000 = 100)
2000	0.030		100.00
2001	0.030	0.26%	100.26
2002	0.029	-2.97%	97.29
2003	0.029	0.07%	97.35
2004	0.030	3.09%	100.36
2005	0.030	-0.89%	99.46
2006	0.031	2.56%	102.01
2007	0.032	3.46%	105.54
2008	0.032	1.92%	107.56
2009	0.032	0.06%	107.63
2010	0.033	2.89%	110.74
2011	0.035	4.25%	115.45
2012	0.035	1.66%	117.37
2013	0.035	0.32%	117.74
2014	0.035	-1.03%	116.52

2015	0.035	0.44%	117.04
2016	0.035	-1.41%	115.39
2017	0.034	-1.88%	113.22

Source: Authors' elaboration

Comparatively, the manufacturing real average wages of productive workers had a much more dynamic evolution between 2000 and 2017. Its index showed a 13.2% cumulative growth. However, during the austerity period of Fernando Henrique's government wages declined, on average, 1.4%. This trend was reversed at PT management. Under Lula's government (2003-2010), for example, the CAGR of wages was 1.6%. In fact, wages rate in the Brazilian manufacturing sector had a boom from 2005 to 2015 (also growing at 1.6% annually). As we can see more clearly from Figure 4, under Dilma's first term (2011-2014) even though productive labor in manufacturing almost did not grow (0.2% on average), real Variable Capital grew at 1.4%. From 2014 to 2015 it is true that both variables already declined due to austerity measures implemented by Dilma's administration. Since the annual rate of change of productive labor (-7.5%) was greater than that of the real variable capital (-7.1%), real average wages still increased from 2014 to 2015. We can analyze the parliamentary coup on President Dilma therefore as a demand from the Brazilian bourgeoisie to make wages the adjustment variable provided that her administration for many reasons had not pumped surplus value. In fact since the subprime crisis the Brazilian manufacturing surplus value did not recover quite well. From 2008 to 2017, for instance, it declined 2.6% annually. Since President Michael Temer took place therefore it is not surprising that real average wages decreased. From 2015 to 2017 it declined 1.6% on average.

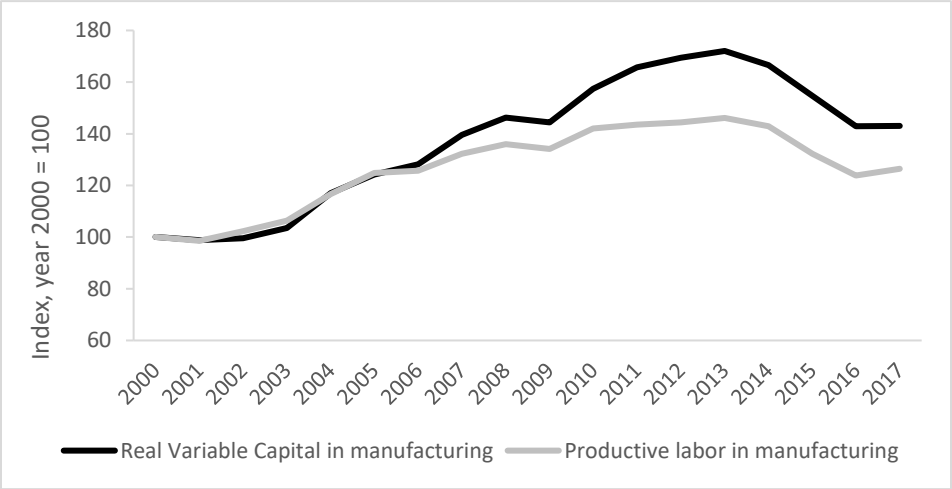


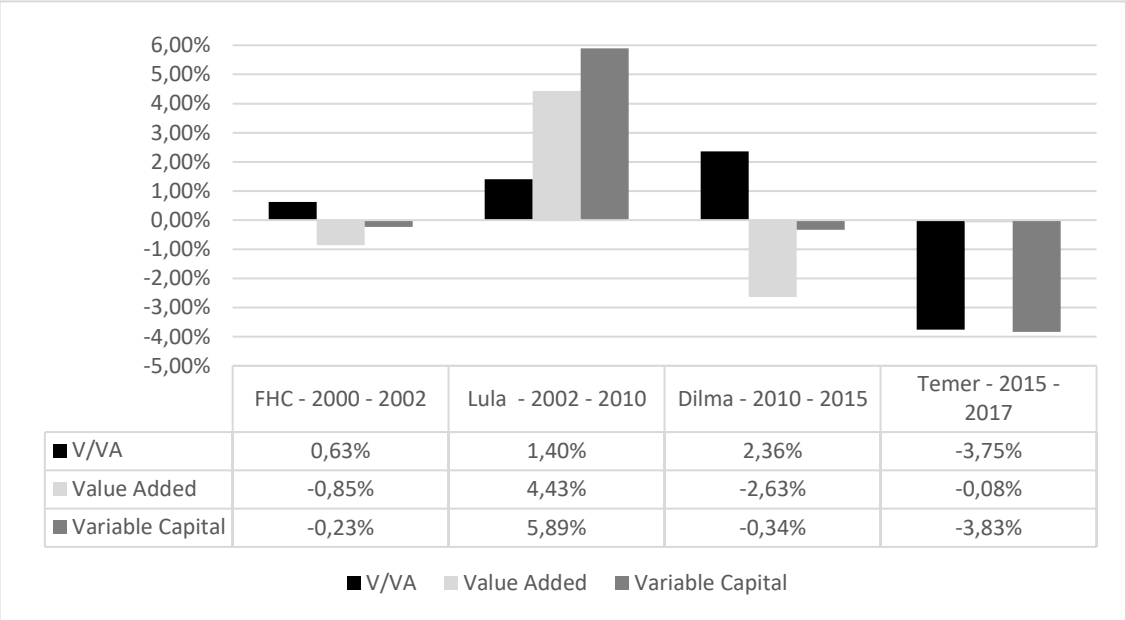
Figure 4 – Index of Real Variable Capital and Productive labor in manufacturing, Brazil, 2000 = 100
Source: authors' elaboration

5. THE HISTORY OF BRAZILIAN POLITICAL ECONOMY FROM 2000 TO 2017: THE CASE OF MANUFACTURING INDUSTRY

The period presented in this work may be divided into several different ways. However, we chose to present the data highlighting the elected governments to shed some light on the overall economic performance during each period, aiming to analyze the political economy of capital-labor. Furthermore, we will correlate the rate of surplus value with some macroeconomic variables (such as GDP, inflation, the productive employment rate, trade balance, the debt-to-GDP ratio, and the primary result).

We will analyze the manufacturing rate of surplus value in terms of the participation of productive workers in the value added $\left(\frac{V}{VA}\right)$. This is so because the reader is more used to these numbers. Algebraically, we have $\frac{V}{VA} = 1/\left(1 + \frac{S}{V}\right)$.

A general depict of the period shows that the CAGR of the rate of surplus value reduced 1.49% from 2000 to 2017. This happened because the capital variable growth (2.1%) was greater than that of the value added (1.2%), which corresponded to a 0.97% rise on the participation of productive workers in the value added.



	FHC - 2000 - 2002	Lula - 2002 - 2010	Dilma - 2010 - 2015	Temer - 2015 - 2017
V/VA	0,63%	1,40%	2,36%	-3,75%
Value Added	-0,85%	4,43%	-2,63%	-0,08%
Variable Capital	-0,23%	5,89%	-0,34%	-3,83%

Figure 5 - Compound Annual Growth Rates (%) - Brazil, 2000 – 2017
Source: Authors' elaboration

The period starts with the effects of neoliberal policies under FHC's first term. His government is distinctive in terms of orthodox prescriptions applied to Brazil, such as privatizations, deregulation of labor market, and an overall openness of the economy. FHC's understanding regarding economic development was that to overcome the Brazilian economy dependent characteristic, it would be necessary to let the market rules, through automatic stabilization mechanisms brought by the application of a set of policies, such as the floating exchange rate, primary surplus, and the inflation targeting regime.

The result for this period was that due to the anti-worker policies, the average real wage of productive workers reduced 1.37% from 2000 to 2002. In this period, the rate of surplus value reduced only because the reduction in labor productivity was greater than the reduction in wages. Labor productivity decreased from 9.1% in 2000 to 8.8% in 2002. Not surprisingly, plotting the rate of surplus value along with its tendency we can see there was an upward trend during FHC's neoliberal period, which corresponds to the last years before Brazil entered into its so-called inclusive decade (2004-2014).

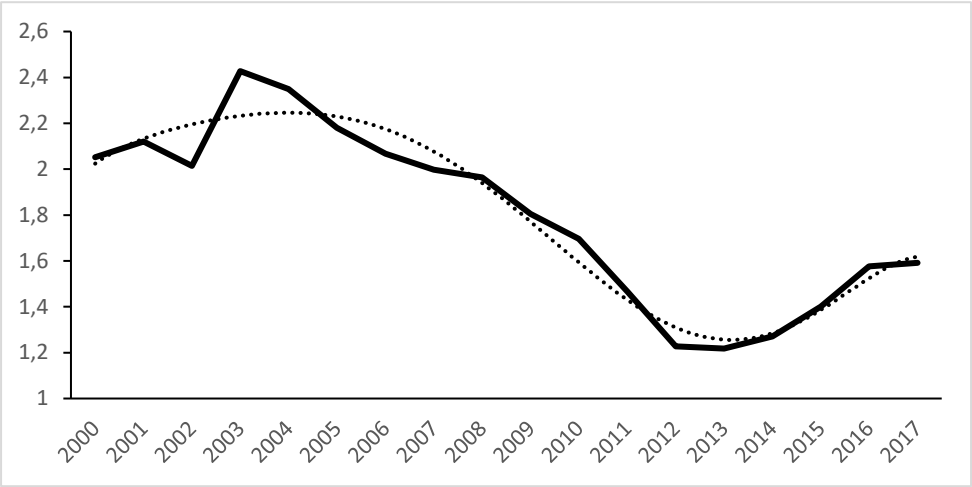


Figure 6 – the rate of surplus value in manufacturing and its tendency, Brazil, 2000-2017
Source: authors' elaboration

From 2000 to 2002 the GDP reduced, inflation increased (at the end of 2002 due to expectations of a left-wing politician to be elected), and the debt-to-GDP ratio increased from 46.97% to 59.93%. The primary result also increased.

	2000	**2001**	**2002**
Rate of surplus value	2.052	2.121	2.014
Labor Productivity	9.10%	9.40%	8.80%
Real wage of productive workers in manufacturing	3.00%	3.00%	2.90%
GDP growth	4.11%	1.38%	3.05%
Inflation	5.97%	7.67%	12.53%
Employment Rate	8.1%	7.9%	7.9%
Trade Balance	-24,794	-23,721	-8,097
Debt/GDP	46.97%	51.49%	59.93%
Primary Result (% GDP)	1.75%	1.65%	2.12%

Table 4 – selected variables, Brazil, 2000-2002
Source: authors' elaboration

The failure of neoliberal policies to achieve growth and distribution in favor of workers led the Brazilian society to vote in PT in October 2002, electing Luiz Inácio Lula da Silva twice (2003-2006 and 2007-2010). During the beginning of this period, Lula's government followed some austerity and neoliberal policies as the former government. At the same time, however, we should not lose sight of the fact that PT during its campaign mentioned the fight for reforms in land ownership, income distribution, and for the creation of more formal jobs. Hence, a coalition between the interests of workers and capitalists was formed as an emerging new social pact. Brazil also started benefiting from the commodities boom and the Chinese growth since 2004, while it strengthened its domestic market through the consumption circuit via credit. The rate of surplus value peaked in 2003 and started to fall since then.

This atypical scenario was possible because GDP and profitability were increasing due to this external bonus that pumped Brazil's demand along with the expansion of credit (Marquetti, Hoff, and Miebach, 2020).

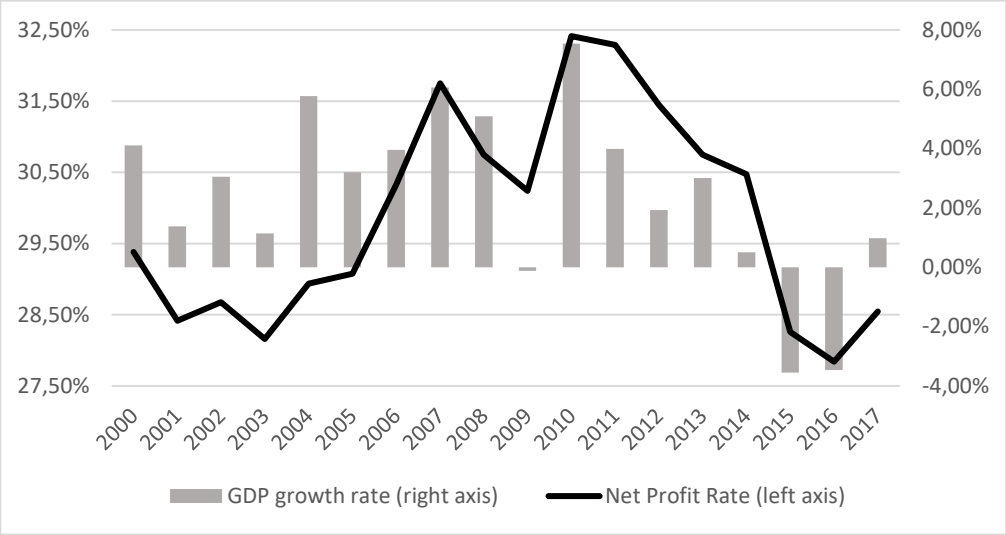


Figure 7 – GDP Growth and Profit Rate, Brazil, 2000-2017
Source: Authors' elaboration

Lula's government implemented several policies to reduce inequality (*Bolsa Família, Fome Zero, Meu Primeiro Emprego*) but as his government was also austere from the fiscal standpoint, the elites started to see it positively, favoring Lula's reelection in October 2006. In his 2nd term, a more Keynesian set of fiscal policies was implemented, increasing expenditures and effective demand. The economy performed well until the Great Recession, which affected countries worldwide. Seemingly, however, Brazil had a relatively good performance during the subprime crisis and just after it. Its profitability, for example, peaked in 2010 while its rate of surplus value was reducing rapidly. The primary result was roughly stable around 2% during this time, while the debt-to-GDP ratio reduced from 54.2% to 38%. Due to external demand and the formalization of labor market, both the labor productivity and real wages increased, along with a rise in the employment rate, and a decreasing inflation. The reasonable GDP growth summarizes the good result of this period, achieving the peak of the series in 2010 when it increased 7.5%.

	2003	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**	**2010**
Rate of surplus value	2.43	2.35	2.18	2.07	2.00	1.96	1.81	1.70
Labor Productivity	10.00%	10.10%	9.50%	9.40%	9.50%	9.50%	9.00%	8.90%
Real wage of productive workers in manufacturing	2.90%	3.00%	3.00%	3.10%	3.20%	3.20%	3.20%	3.30%
GDP growth	1.14%	5.76%	3.20%	3.96%	6.06%	5.09%	-0.13%	7.54%
Inflation	9.30%	7.60%	5.69%	3.14%	4.46%	5.90%	4.31%	5.91%
Employment Rate	8.1%	8.4%	8.8%	8.6%	8.9%	9.0%	8.8%	9.2%

Trade Balance	3,760.05	11,347	13,547	13,030	408	-30,640	-26,261	-79,014
Debt/GDP	54.26%	50.19%	47.92%	46.49%	44.55%	37.57%	40.88%	37.98%
Primary Result (% GDP)	2.27%	2.52%	2.43%	2.02%	2.12%	2.30%	1.18%	2.00%

Table 5 – selected variables, Brazil, 2000-2017
Source: authors' elaboration

PT's performance and relative success, mainly through the figure of its leader Lula, paved the way for PT to remain in power in the next election. Dilma Rousseff was thus elected in October 2010 as the first woman to be president of Brazil.

Considering she was coming from the same party as Lula, one would expect that the same atmosphere would be carried on. However, Dilma's government faced the reduction of the Chinese growth (the end of the commodities' boom), a decreasing performance of Brazil's main trade partners, the Eurozone crisis, and some external shocks such as the quantitative easing policy applied by the US government, implying a devaluation of the Brazilian currency.

In the attempt to revert this downward trend, Dilma's government started to implement policies that began to break the bond of the social pact that strongly held Lula's government cycle. In the belief that affecting some key-prices, the Brazilian economy could grow through private investment, Dilma's government tried to reduce SELIC (the interest rate that remunerates public bonds) in an environment of a devaluated currency. This new low SELIC level implied a reduction on the banking sector profitability, while the devalued exchange rate had a negative impact on the cash flow of domestic enterprises indebted in dollars—despite giving a competitive price advantage for domestic exports. Dilma's government also implemented other measures which deepened this process: e.g., negotiation of the rates of return of the public bidding processes; policy of exemptions from the payroll and the damming of administered prices such as energy. As of 2011, Dilma's government granted subsidies to specific economic groups to build the so-called "national champions". In parallel, credit was directed by the National Bank for Economic and Social Development (BNDES) at a rate below the long-term interest rate because it was believed that with all these incentives (devalued exchange rate, reduced interest rate, exemptions from payroll, subsidies, targeted credit, and administered prices) companies would increase private investments. This in turn would be responsible for improving tax revenue and thus restore the fiscal balance. Summing up, the reduction of economic activity was decreased from both external factors and some government's choices. As a result, at the end of Dilma's first term government the capital-labor conflict intensified and the win-win momentum, which had been in place during most of Lula's government, was challenged. This was so because between 2011 and 2014, the rate of surplus value continued to decline, but then under a different arrangement. In this period, there was a decrease in labor productivity (on average -2.9% per year). The accumulation rate, for example, peaked in 2011 (17.69%) but started to fall since then. Brazil ended the year of 2014 having a meager 16.19% accumulation rate. On the other hand, real average wages of production workers were still increasing (1.5%).

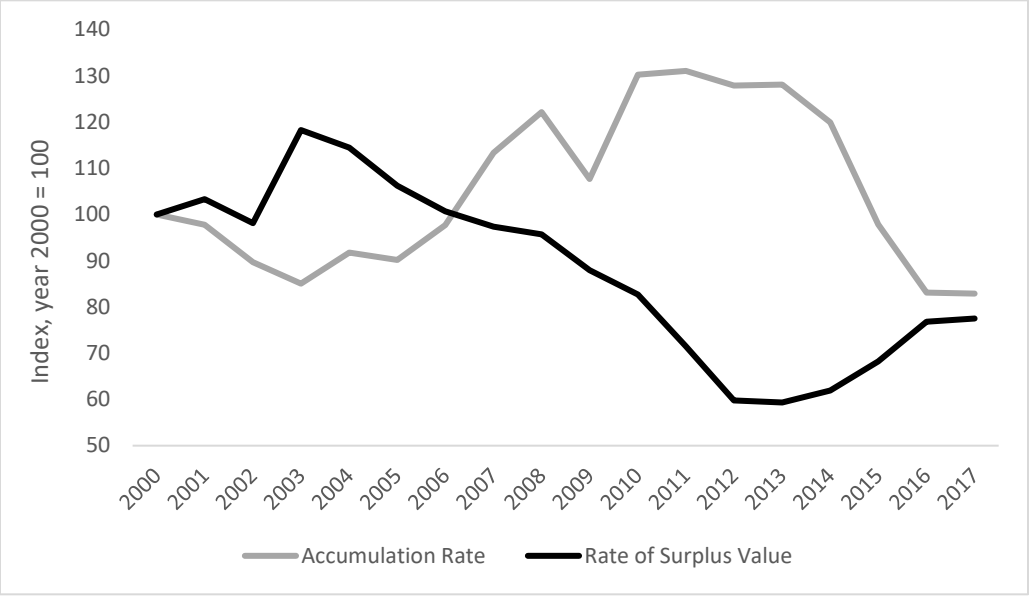


Figure 8 – Rate of Accumulation and Surplus Value. Index 2000 = 100. Brazil, 2000-2017
Source: Authors' elaboration

The *quasi-developmentalist* attempt to influence the economy, via interest rate and exchange rate (together with discretionary credit measures), implied a slowdown of the economic activity. At this point, however, Dilma's popularity was already at stake. Given that she still had Lula's support, and focused her campaign for re-election on the fight against elites and the banking-sector (in order to bring money from the finance sphere to the production one), she was elected in October 2014 for her second term in what was considered the fiercest election of modern Brazil. At this moment, although Dilma's government used some developmentalist tools (and had an industrial policy concern), there was no long-term strategy to Brazil.

The primary result in terms of GDP percentage fell from 2.1% in 2011 to -0.41% in 2014. To regain the private sector confidence right after Dilma's re-election, her government brought Joaquim Levy as the Finance Minister because he was a well-known orthodox economist (Ph.D. from the University of Chicago) and had origins in the banking sector. Under Levy's management an austerity program focusing on the primary surplus was conducted, but the result for 2015 was yet negative (-2.01%). At the same time, while the trade balance had already been negative since 2008, it achieved a lower bound in 2014. Not only the primary result was not restored by the austerity policies, but the nominal interest burden peaked in 2015, computed either with respect to GDP or the level of nominal interests. Furthermore, in 2015 inflation was on the rise again, which put the Brazilian economy into stagflation.

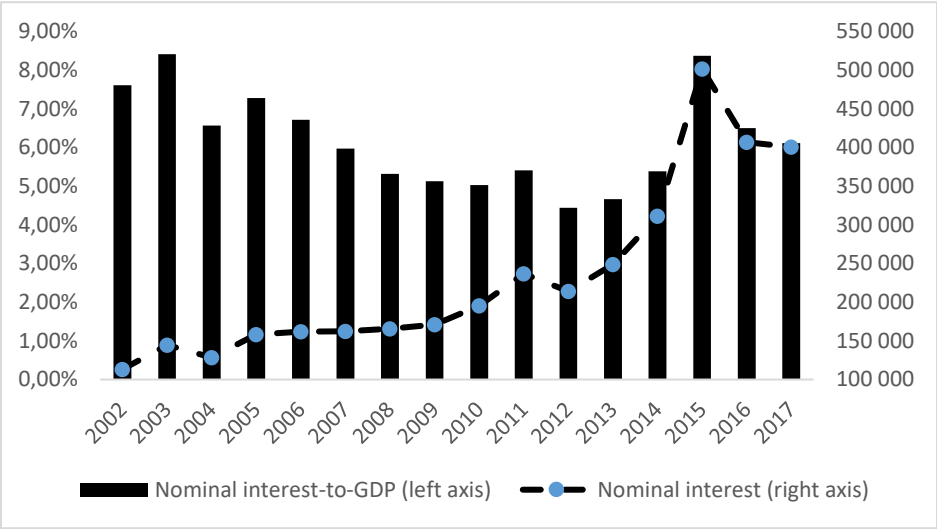


Figure 9 – Nominal interest burden, Brazil, 2000-2017
Source: Authors' elaboration

Due to her fiscal results and confrontation with the banking sector, Dilma Rousseff was considered excessively interventionist. From then on, the social pact established between workers and capitalists (especially the finance-banking fraction) was broken. As a result, Dilma found herself in a situation of a stagnating economy while lacking support both from the bourgeoisie, due to the downward trajectory of the rate of surplus value, and workers due to an opposite agenda than the PT's usual ideas. This broken bond induced the discussion of an impeachment in the Legislative, creating a narrative of her administration as being a corrupt government. Much attention was given to her personal character and her government's fiscal policy choices and mechanisms—which made her to lose the politicians support. She was then removed from power by a parliamentary coup in a process that started in December 2015 and ended in August 2016. With all the political chaos, already in 2015, GDP growth was -3.55%, inflation reached a two digits rate, there was low employment, and the primary result was -2% of GDP.

	2011	2012	2013	2014	2015
Rate of surplus value	1.47	1.23	1.22	1.27	1.40
Labor Productivity	8.50%	7.80%	7.80%	7.90%	8.50%
Real wage of productive workers in manufacturing	3.50%	3.50%	3.50%	3.50%	3.50%
GDP growth	3.99%	1.93%	3.01%	0.51%	-3.55%
Inflation	6.50%	5.84%	5.91%	6.41%	10.67%
Employment Rate	9.2%	9.1%	9.1%	8.6%	8.2%
Trade Balance	-76,288	-83,800	-79,792	-101,431	-54,472
Debt/GDP	34.47%	32.19%	30.50%	32.59%	35.64%
Primary Result (% GDP)	2.10%	1.77%	1.35%	-0.41%	-2.01%

Table 6 – selected variables, Brazil, 2011-2015
Source: Authors' elaboration

After the *coup d'état*, Michael Temer (Dilma's vice president), assumed the government up to 2018. The availability of data allows us to evaluate only the two first years of this period (2016 and 2017). In terms of political agenda, Temer represented the opposite of any workers agenda. In his short government, a series of neoliberal measures aimed at expanding profitability and controlling the fiscal deficit was introduced, such as the reduction of labor costs, the change in the minimum-wage indexation rule, the reform of labor laws, the social security reform, the elimination of constitutional rules on spending on education and health, besides privatization and trade openness. There was also an authoritarian escalate on the type of response to public security, which started to use more frequently the Army to intervene in Rio de Janeiro's slums. In a short period, Temer changed the route the government was trying to follow since Lula's first term. Even though several orthodox choices had been made since then, never a government was actually elected having such a conservative program.

From a different perspective however, we cannot say Michael Temer was not a good spokesperson for the bourgeoisie. Despite being in power for just a short period, his government managed to reverse the downward profitability trend, which had been decreasing since 2010. In addition, between 2015 and 2017, the CAGR of the manufacturing rate of surplus value increased 6.6%. Between 2015 and 2017, the workers' rate of exploitation raised because coming from a low-level, labor productivity increased 2.2%, while wages of productive workers decreased 1.64%.

	2016	**2017**
Rate of surplus value	1.58	1.59
Labor Productivity	8.90%	8.80%
Real wage of productive workers in manufacturing	3.50%	3.40%
GDP growth	-3.47%	0.98%
Inflation	6.29%	2.95%
Employment Rate	7.8%	7.9%
Trade Balance	-24,230	-15,015
Debt/GDP	46.16%	51.39%
Primary Result (% GDP)	-2.57%	-1.89%

Table 7 – selected variables, Brazil, 2000-2017
Source: Authors' elaboration

FINAL REMARKS

This paper estimated the Brazilian manufacturing surplus value rate through a Marxian and Classical approach to understand some elements of the Brazilian economy during the period 2000–2017.

Throughout this period, the rate of surplus value presented three phases. It grew between 2000 and 2003, and from then on, it declined until 2013. Between 2013 and 2017, however, it increased again. An important element for future research, therefore, will be to investigate to what extent this increase in the rate of exploitation is sustained in the long run.

The fall of the surplus value played a key role in the loss of political support of the PT's governments among the Brazilian bourgeoisie. In most of the period covered by this paper (2004–2014), Brazilian per-capita income expanded at a reasonable pace, with substantial gains captured by the

Brazilian capitalists—especially the richest among them. However, since Lula and Dilma occupied the executive of the Brazilian state representing a workers' party (and their policies contributed to a modest reduction in extreme social inequality and mass poverty), the capitalists, with the full support of international capital and the US, showed a bias against them, most overtly by impeaching Dilma in 2015–2016.

The party of Vice President Michel Temer—PMDB—was the historical player responsible for offering what the Brazilian bourgeoisie demanded. Not surprisingly, in the short government of Temer, a series of neoliberal measures aimed at expanding profitability were introduced, such as the reduction of labor costs, the change in the minimum-wage indexation rule, the reform of labor laws, the social security reform, the elimination of constitutional rules relative to spending on education and health, besides privatization.

From a structural point of view, it is interesting to note that President Dilma's impeachment came at a time when the cycle of center-left governments in South America seemed to end. In Brazil, in particular, the coalition that then gained prominence has combined conservative features from the moral standpoint, religious fundamentalism, growing military eminence, and neoliberal aspects in the economic sphere. And yet it is still too early to determine whether this conservative wave will persist in South America during the twenty-first century's third decade, there is no doubt that resistance from the working class remains.

METHODOLOGICAL APPENDIX

Besides the SNA, the main source used in this research come from the Annual Industrial Survey (PIA). The necessary data were provided by the Supply-Use Tables (TRU) of the Brazilian System of National Accounts.

Regarding the Variable Capital estimates, ideally this should be based only on the remuneration of workers who effectively contribute to surplus value production. Within the availability of data provided by the Brazilian Accounting System, the following procedures were adopted:

(i) For the productive sector of manufacturing, the SNA holds information about the remuneration of workers connected only to production. PIA surveys comes from the automatic recovery system (SIDRA) of IBGE. The ratio of the remuneration of workers connected to production to the remuneration of all workers, offered by SIDRA, therefore, was multiplied by the value of the remuneration of the manufacturing sector (in this case values coming from the SNA), thus arriving at the estimate of the Variable Capital for this sector.

(ii) Furthermore, we consider remunerations (which includes not only wages but also Social Security—*FGTS* and private pensions). This is because we are concerned about having a proxy for labor costs from capital's point of view, rather than a proxy for consumption from workers' point of view. In regards to the gross mixed income in turn, we adopted Gollin's Adjustment II (Gollin, 2002). That is to say, besides remunerations, a portion of the gross mixed income was attributed to the Variable Capital.

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