Strategies for economic development in Brazil: A Structuralist-Keynesian approach[1]

Luiz Fernando de Paula[*] and José Luís Oreiro[**]

1st draft – 4 October 2022

Abstract: This paper aims at analyzing the main reasons for the tendency toward stagnation of the Brazilian economy and to discuss a strategy of sustained development to overcome such tendency from a Keynesian-Structuralist approach, more specifically adopting a New-developmentalism green agenda. A sustained development strategy requires the reconstruction of the manufacturing industry not only to meet domestic demand but to conquest a larger and increasing share of world manufacturing exports. This goal have to be accomplished side to side with a sustainable environmental agenda, aimed at decarbonization and accelerated change in the environment.

Key-words: economic development; economic policies; Structuralist-Keynesian approach; Brazilian economy

1. Introduction

The Brazilian economy is currently stagnant: after an average growth rate of 4.0% in 2004/2013, followed by an acute recession in 2014-2016 (-2.1% p.a.), the economy has an average growth of only 1.1% p.a. in 2017-2022 (with a forecast growth of 2.2% in 2022, according to BCB/FOCUS, 9/23/2022), while the unemployment rate has been above 11% since 2016, with some decline more recently. Thus, the economy has lost the capacity for accelerated output growth and formal employment growth. Our assessment is that economic stagnation is the result of both structural factors, such as the strong premature deindustrialization, which resulted among other factors from the falling profitability of the manufacturing industry and a wrong economic policy mix (fiscal austerity and monetary tightness), all of that combined with institutional changes directed towards a more liberalized labor markets and reducing government expenditure in infrastructure due to the adoption a constant ceiling in real terms for primary

[1] This paper was prepared for the 26th FMM Conference that takes place in Berlin on 20-22 October 2022.

* Associate Professor of Economics at Institute of Economics of Universidade Federal do Rio a Janeiro (IE/UFRJ), Voluntary Professor at Institute of Social and Political Studies of Universidade do Estado do Rio de Janeiro (IESP-UERJ), and CNPq and FAPERJ researcher. Email: luiz.fpaula@ie.ufrj.br

** Associate Professor at Economics Department of University of Brasília (UnB), Professor at PhD Program in Economic Integration of the University of Basque Country (Spain), Level I researcher of the National Council for Scientific and Technological Development and Leader of the Structuralist Development Macroeconomics Research Group (SDM/UnB). E-mail: joreiro@unb.br.

expenditures. Such reforms produced a structural lack of effective demand combined with over-exploitation of labor force due to reducing both real wages and the job security, and also an increase in the informal share of workers in the total employment, a clear signal of regression of employment structure.

The main objective of this paper is to analyze the main reasons for the tendency toward stagnation of the Brazilian economy and to discuss a strategy of sustained development to overcome such tendency from a Keynesian-Structuralist approach, more specifically adopting a New-developmentalism agenda.

A sustained development strategy requires the reconstruction of the manufacturing industry not only to meet domestic demand but to conquest a larger and increasing share of world manufacturing exports. This goal had to be accomplished side to side with a sustainable environmental agenda, aimed at decarbonization and accelerated change toward an environmentally sustainable development. This asks for the implementation of a set of coordinated policies, giving rise to a new cycle of structural change in the economy, the only way to create formal and modern jobs of high productivity. We call this strategy as *green new-developmentalist agenda*: the implementation of an export tax over primary goods will also be essential for fighting Dutch-disease and to reduce the rate of deforestation of Amazon Forest by reducing the profitability of brown activities; flexibility in the inflation targeting regime and de-indexation of the contracts to broke the inertial inflation trend; change in the fiscal rule towards a target for cyclically adjusted primary deficit, making room for increased public investment in infrastructure; and the implementation of a competitive stable and sustainable real exchange rate over time with capital controls.

This paper is divided in five sections, besides this introduction. Section 2 presents a Keynesian-Structuralist approach of the economic development (including ecological structural change), while section 3 analyzes some recent stylized facts of the Brazilian economy. Section 4 discusses some reasons for the stagnation of the Brazilian economy. In the sequence, section 5 presents a Structuralist-Keynesian agenda for sustained growth for the Brazilian economy, that is a New-Developmentalist green strategy. Finally, section 6 concludes the paper.

2. Keynesian- Structuralist approach of economic development

2.1. Development as a process of structural change

One of the main objectives of development economics is to assess the components that lead to structural change. This analysis focuses on the movement of industrial employment and the mobility of resources across sectors of the economy. Manufacturing industry plays a prominent role in economic growth and its expansion generates increasing returns to scale and an improvement in productivity in the economy (Furtado, 1964; Kaldor, 1966).

Developing economies suffer from the concentration of output in sectors with low and medium-low technological intensities, which is often the result of premature deindustrialization. Deindustrialization can be caused by internal or external effects (Rowthorn, 1994; Rowthorn and Ramaswany, 1997). Regarding to internal effects two features must be emphasized: the income elasticity of goods and the industrial productivity gap with respect to the service sector.

In industrialized countries, the service sector concentrates efforts to meet the demands of the manufacturing industry. In this configuration, the service sector is diversified, has a greater share of the labour force, and generates high added value in the economy. The deindustrialization process of mature economies is inevitable since the income elasticity of services becomes greater than the ones observed of industrial goods after some threshold level of per-capita income is reached. This deindustrialization is, so to speak, "natural" (Oreiro and Feijó, 2010). In many developing economies, however, this process occurred prematurely, that is, they did not reach the maximum per capita income that economic development can provide. This occurs because many developing economies are increasingly concentrating on activities that combine low value added per capita and low and/or medium-low technological intensity due to premature deindustrialization (Rodrik, 2016). This fact triggers the process of premature deindustrialization and the "middle-income trap", especially in Latin America, according to the New Developmentalism approach (Oreiro et al., 2020).

This regressive structural change in underdeveloped economies had profound impacts on the employment structure of these countries, which is shifting towards less technologically intensive activities. Even though developed countries also exhibit some deindustrialization (Rodrik, 2016; Palma, 2005), there is a widening of the technological gap between developed and developing economies. This reflects in increasing social

inequality, great differences in per capita income and a potential decline in the capacity of underdeveloped economies to innovate. These developing and underdeveloped economies have been deindustrializing for decades, a trend that is particularly visible when one observes the share of the manufacturing industry in total employment.

Rodrik (2016) points out that deindustrialization reflects on the quality and decline of employment. It is low-skilled workers who bear most of the impact of recent changes in commerce and technology in the manufacturing industry. Countries that have had a strong comparative advantage in manufacturing products using new technologies have avoided the steady decline in manufacturing jobs over the past few decades as a proportion of total employment.

The observed differences in the income elasticities of demand for exports and imports reflect the non-price characteristics of goods and, therefore, the structure of production (Thirlwall, 1997). Several other authors claim that structural changes can affect the income elasticities of imports or exports in constrained balance-of-payments models (Setterfield, 1997, McCombie and Roberts, 2002). An important contribution to demand-oriented theories of output growth is the structural economic dynamics approach developed by Pasinetti (1983; 1993). For Pasinetti, changes in the production structure led to changes in the output growth rate, due, for example, to different sectoral demand growth rates that could be produced by differences in sectoral income elasticities. And yet structural change impacts human learning.

The international diffusion of technology and the relationship with human learning is slow and uneven across countries (Prebisch, 1949). A few countries take the lead in innovation and technology, while the vast majority lag, being just innovation takers, without learning and appropriating the invention. As technical change is closely associated with structural change and the emergence of new sectors, goods and skills, the productive structure of a few countries diversifies, undergoes major transformations, while most other countries remain stagnant or even decline, being the result, for example, of under accumulation of human capital. As a result, most countries end up specializing in a few sectors, generally traditional sectors, which generate low-quality employment. Sectors with low or negligible technological intensity maintain a high share of workers employed and exhibit extreme difficulty in generating good quality jobs, which should be reflected in higher wages. In the literature on economic growth, the problem of asymmetry generated by the concept of technological gap between rich and poor countries emerges.

Although the high value added per unit of work employed can also be seen in high technology-intensive services and agriculture, recent empirical evidence presented by Gabriel et al. (2020, p. 63) show that a greater share of the primary sector in the added value is associated with lower growth rates of GDP per capita, even after controlling the level of the technological gap. Thus, for developing countries, a greater share of the service sector is also associated with a lower GDP growth rate. Therefore, the composition of output is important for long-term growth.

Complementarily, for Oreiro et al. (2019), the sectoral composition or productive structure of a country matters, influences labor productivity and affects the level of per capita income. It is not possible to measure the so-called total productivity of production factors without looking at the employment structure, the structure of technological domain, the share of sectors in GDP (industry, agriculture, and services). These ideas are even one of the fundamental propositions of the New-Developmentalist School, as described in Bresser-Pereira et al (2015) and Gala (2017). The low growth of undeveloped and some developing economies is a result of the production structure since there is an increase in the share of the output in the less dynamic sectors and with less technological intensity in the added value generated in the economy.

2.2 Structuralist approach of productive and financial asymmetries of peripheral economies

One way of assessing degree of financial subordination is through its connection with productive structure, especially in developing economies' ability to export higher value-added products in the very nature of the productive structure of each country. This theoretical relationship can be understood initially from Latin American structuralism's contribution around the "center-periphery" concept. Prebisch (1949) regarded the international division of labor as characterized by two poles in which peripheral countries concentrated on producing primary goods; advanced central countries, on manufactured goods. This dichotomy between central and peripheral economies is expressed in a structural asymmetry between these economies' productivity levels, resulting from a tendency for the terms of trade to deteriorate as a result of the higher long-term income elasticity of manufactured goods as compared with primary goods. In other words, this persistence of the center-periphery dichotomy can be considered to derive from the different driving forces underlying its dynamics: while economic growth in the central countries is driven by technical progress, on the periphery it is determined predominantly

by external demand for commodities. In that context, the heterogeneity of productive structures is at the heart of the explanation for underdevelopment and the establishment of the "peripheral condition" (Bielschowsky, 2009).

According to the ECLAC structuralist approach, peripheral subordination is related to a productive structure specialized in the production of commodities, such as oil, copper, soybean, corn, meat, etc. As we have already pointed out, in recent years particularly, there has been significant evidence that a significant number of developing economies are increasingly dependent on commodities, causing a process that some authors have called "premature deindustrialization" that it is, a process in which the share of the manufacturing sector in employment and GDP shrinks before such economies have attained high levels of per-capita income (Rodrik, 2016; Correa and Feijó, 2022). One of the causes of this phenomenon is "Dutch disease", a phenomenon associated with a change in the composition of a productive structure in which growth comes to be led by the sector based on natural resource exports, while the industrial sector declines[2]. In the New Developmentalism approach, it is considered a market failure that leads to a long-term cyclical trend of appreciation of the real exchange rate. This results in a competitive disadvantage, which reduces the profitability of the manufacturing sector that produces tradable products (Bresser-Pereira et al., 2015). Botta (2015) highlights this relationship in relation to Colombia in a theoretical model with financial causation: the discovery of mineral resources is seen to attract speculative capital flows and foreign direct investment (FDI), which strongly appreciates nominal and real exchange rates, as well as diminishing international investors' perceptions of risk posed by the country. However, this leads to continuous long-term reduction in industrial sector competitiveness, greater exchange rate volatility, rising current account deficits, and external vulnerability via foreign currency debt. This analysis arrives at results like those found on the New Developmentalism approach (Bresser-Pereira et al., 2015), according to which commodity-exporting peripheral economies tend to currency appreciation deriving both from the Dutch disease phenomenon and from the differential interest rates that attract external capital to developing economies.

[2] Bresser-Pereira writes (2013, p. 372), "The Dutch disease is a country's chronic exchange rate overvaluation caused by the exploitation of abundant and cheap resources, whose production and export is compatible with a *more appreciated* exchange rate than the exchange rate that makes internationally competitive the other business enterprises in the tradable sector that use the most modern technology existing worldwide. It is a structural phenomenon that creates obstacles to industrialization or, if it was neutralized and the country industrialized, but later ceased to be, provokes deindustrialization."

Akyuz (2020) shows that capital flows are pro-cyclical in the global financial cycle and correlate strongly with commodity prices listed on the international market, a relationship that he denominated as the "commodity-finance nexus". One important factor that influences this nexus is how the central developed economies' monetary policies are conducted. The United States' monetary policy plays a particularly key role because most commodities are quoted in dollars and most commodity contracts are settled in dollars (Akyuz, 2020). For instance, low-interest rates and a weak dollar tend to encourage capital flows to peripheral economies in search of short-term gains in operations called "carry trade"[3].

Changes in developed economies' interest rates also affect commodity prices by influencing the rate at which non-renewable resources, such as oil and minerals, are exploited: "when interest rates fall, producers would be more willing to leave them underground for exploitation later than raising production and investing the proceeds in interest-earning assets. Thus, lower interest rates tend to reduce commodity supply and increase commodity prices" (Akyuz, 2020, p. 6). Commodity and financial cycles tend to move together and reinforce each other, because a common set of global macroeconomic factors influences both capital flows and commodities prices in the same direction. On the one hand, booms in international commodity prices stimulate capital inflows to developing economies, whereas increased capital inflows tend to raise commodity demand and prices; bust, on the other hand, cause this commodity-finance nexus to operate in the opposite direction: this may result in a vicious circle in which falling commodity prices lead to capital outflows in the event of a global crisis, which would, in turn, produce a recessionary adjustment of aggregate demand, further weakening the economic growth of peripheral commodity-exporting economies (Akyuz, 2020).

Ocampo (2001a, 2001b) takes up the Structuralist center-periphery approach, according to which the economic opportunities of the periphery, either through international trade or on financial markets, are largely determined by its asymmetric integration into the international economy. In this connection, the manner of peripheral developing economies' international financial integration may exacerbate inequalities between center and periphery in the development process.

Peripheral developing economies thus face two overlapping asymmetries – monetary asymmetry and financial asymmetry – which reduce their policy space and

[3] There are two types of carry-trade operations: (i) *canonic carry trade*, characterized by loans in currencies with low interest rates and investment in currencies with high-interest rates; and (ii) *derivative carry trade*, characterized by taking leveraged positions on the foreign exchange derivatives market (Bortz and Kaltenbrunner, 2018).

shape their subordinate role in international financial integration. Ultimately, these two asymmetries result in macroeconomic asymmetry, as explored in the Structuralist approach by Ocampo (2001a, 2001b). This approach builds on the center-periphery concept developed originally by Raúl Prebisch, in which the periphery needs to adjust its economic activity levels in response to the effects of shocks produced at the center, which cause commodity prices to collapse. Developing economies lack productive diversification and are prone to trade shocks as well. Productive asymmetry between center and periphery results in a tendency for the terms of trade to deteriorate (Prebisch, 1949). In addition to productive asymmetry, however, there is also a financial asymmetry that reinforces the economic disparities between center and periphery, as it engenders macroeconomic instability and reduces domestic policy space. Ocampo (2001a) argues that, while central economies are "business cycle makers", peripheral economies are "business cycle takers", that is, the center has more policy autonomy and is "policy making", while the periphery is essentially "policy taking".

2.3 Ecological structural change

The beginning of Industrial Revolution in Great Britain in the second half of XVIII century had two long-term effects over the world. The fist effect was the occurrence of the so-called "great divergence", defined as a cumulative process of international dispersion of per-capita incomes (Pomeranz, 2000). According to Prichett (1997) the ratio of GDP per-capita of the richest to poorest countries rose from 8.7 in 1870 to 51.6 in 1985. In 2008, for a sample of 87 countries, Ros (2013) showed that the ratio of the richest country (Norway) to the poor country (Zimbabwe) was 274:1.

The second long-term effect was the cumulative increasing of CO2 levels in the atmosphere. According to Aghion et al. (2021, p. 173) until the beginning of the nineteenth century the concentration of carbon dioxide in the atmosphere was stable, at levels of 280 parts per million (ppm). In 2018 the atmospheric concentration of carbon dioxide had reached 410 ppm. This rapid increase in the CO2 levels created the greenhouse effect, which is the source of global warming and climate change that will have devastating economic effects in the next decades if it was not controlled in time.

After the end of Second World War many countries that had fallen behind in economic development relative to European countries and the United States had started a process of state-led industrialization by import substitution. Countries as Brazil, Mexico and South Korea industrialized at a very fast rate reaching the status of middle-income

countries at the end of 1970's and the beginning of the 1980's. From that time on, however, Latin American Countries like Brazil become stuck in a middle-income trap (MIT hereafter) while East Asian countries continued its development path, reducing their income gap to the developed economies.

As we have already pointed out, according to new-developmentalist theory (NDT hereafter) the main reason for the stagnation of Latin American Economies compared to the East-Asian countries is that the former experienced a process of premature deindustrialization , i.e., a reduction of the share of manufacturing industry in output and employment before the "Lewis's point" is reached (Lewis, 1954), that is, before all labor force is transferred from the traditional or subsistence sector to the modern sector of the economy (Bresser-Pereira, Oreiro and Marconi, 2015). In other words, the MIT was a result of an incomplete structural change of Latin American economies. This was precisely the case of Brazil.

One of the causes of premature deindustrialization for NDT is the overvaluation of real exchange rate caused by the Dutch-Disease (DD hereafter), that means the exchange rate overvaluation caused by the production and export of commodity goods that are intensive in the use of natural resources. Exchange rate overvaluation reduced the price competitiveness of Latin-American manufacturing firms in both external and domestic markets thus reducing the profitability of investment in manufacturing sector and hence increasing the technological gap with manufacturing firms of developed economies since new technologies are, in general, embedded in new machines and equipment (Kaldor, 1957). Over time the combined effects of real exchange rate overvaluation and increasing technological gap reduced the share of Latin-American manufacturing firms both on world exports of manufacturing goods and in GDP.

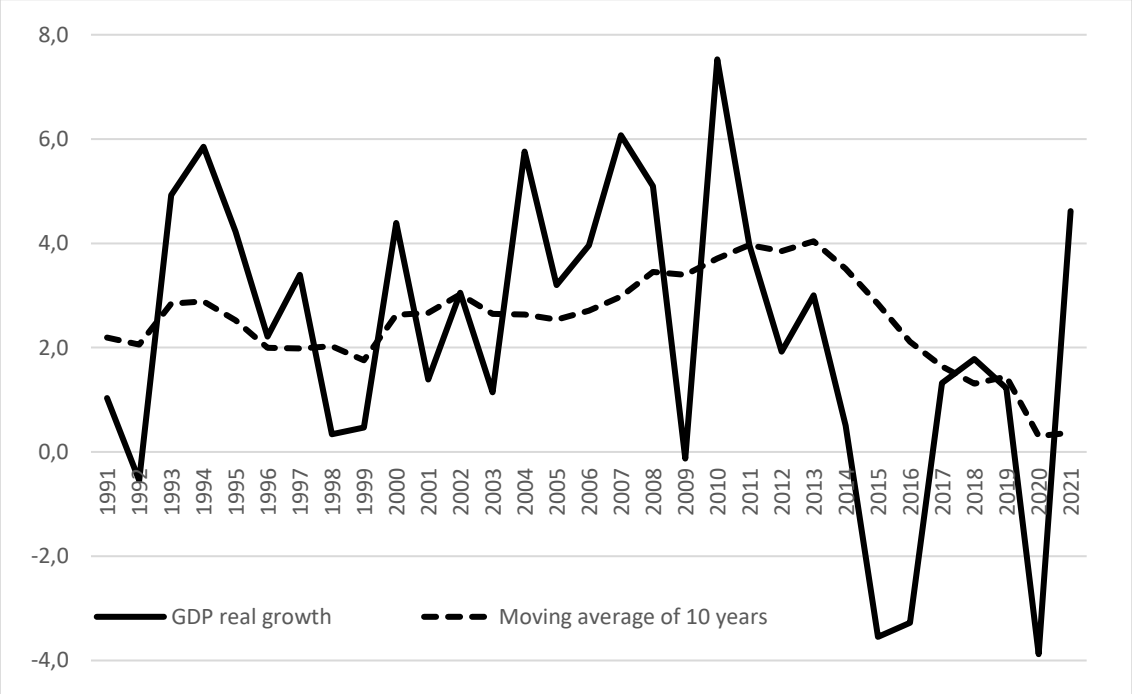
If industrialization was the cause of climate change and premature deindustrialization was the cause of stagnation of Latin-American countries like Brazil how it is possible for then to resume growth without converting into "pollution havens"? To answer this question, we had to notice that the necessary transition from a fossil fuel-based economy to a low-carbon economy - which the European Commission (2019) denominates as ecological transition - is compatible not only with industrialization but also with reindustrialization of the countries that get stuck in the MIT due to DD. Economic development is structural change, and what is needed now is an Ecological Structural Change defined by the increase of the share of green activities in output to

reduce the emissions of CO2 into the atmosphere by each unit of output produced, that is to increase the environmental efficiency of the economic system[4].

3. Some stylized facts of the Brazilian economy

As we have already pointed out, after an average growth rate of 4.0% in 2004/2013, followed by an acute recession in 2014-2016 (-2.1% p.a.), the Brazilian economy has an average growth of only 1.1% p.a. in 2017-2022, characterizing a situation of economic stagnation: per capita GDP growth was -0.6% p.a. on average in 2012-2020! Figure 1 also shows the moving average of 10 years of GDP real growth in 1990-2021 period, allowing a more long-term view of the performance of the Brazilian economy. The decline in GDP growth in Brazil is particularly acute from 2013.

Figure 1. GDP real growth and moving average of 10 years – 1990-2021 (%)



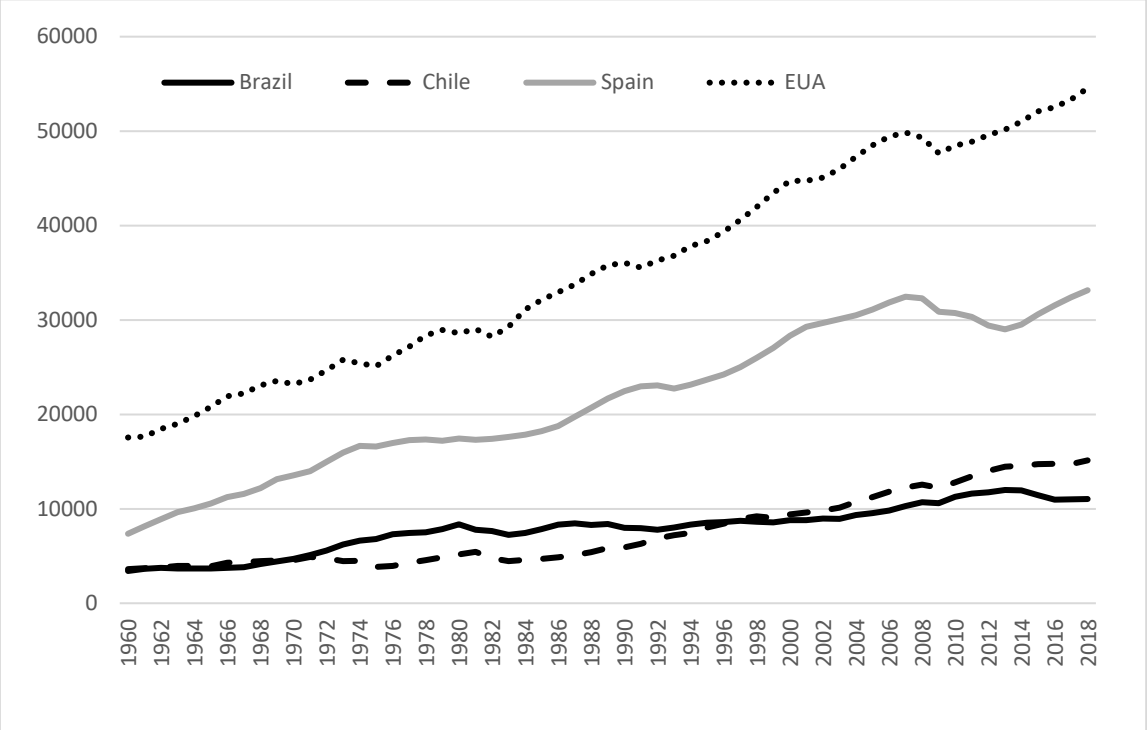
Source: Authors' calculation based on IPEADATA (2022)

More import to assess the economic performance of a county is to compare the evolution of per capita income of Brazil with other economies. As we can see in Figure 2, Brazil and Chile have had a very moderate growth of per capita income compared to USA and Spain, so that the gap has increased dramatically at least since the beginning of

[4] We go deeper on these issues in section 4.

the 1960s. This characterizes a situation to some authors have called “falling behind” (Bresser-Pereira, 2020).

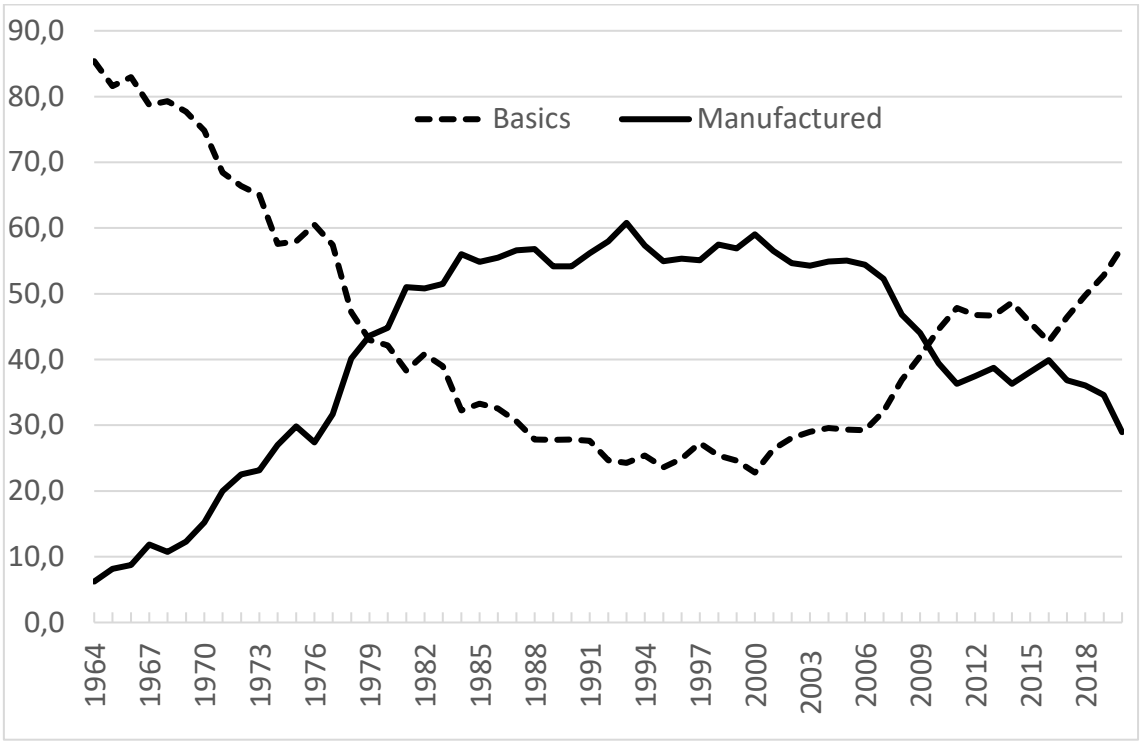
Figure 2. Evolution of Per Capita Income in US$ 2010 for Brazil, Chile, Spain, and the USA



Source: World Bank (2022)

As we will see in the next section, one of the main reasons of the stagnation of the Brazilian economy is the huge production regression due to the process of premature deindustrialization. One of the consequences of this process is the “re-primarization” of the exports of goods and services. As we can see in the Figure 3 the share of manufactured goods over the total of exports that was more than 50% in 1981-2007 fell to 29% in 2020, while basics goods, consisting mainly of natural resource commodities (such as iron ore and crude petroleum) and agricultural commodities (soybean and derivatives, corn, raw sugar, bovine meat, poultry meat, coffee, etc.), have increased symmetrically. Therefore, the Brazilian economy is returning to be an economy specialized in the production of commodities for export, as Prebisch (1949) had once characterized the Latin American economies in the middle of the XX century.

Figure 3. Share of basic and manufactured products in Brazilian exports– 1964-2020(%)

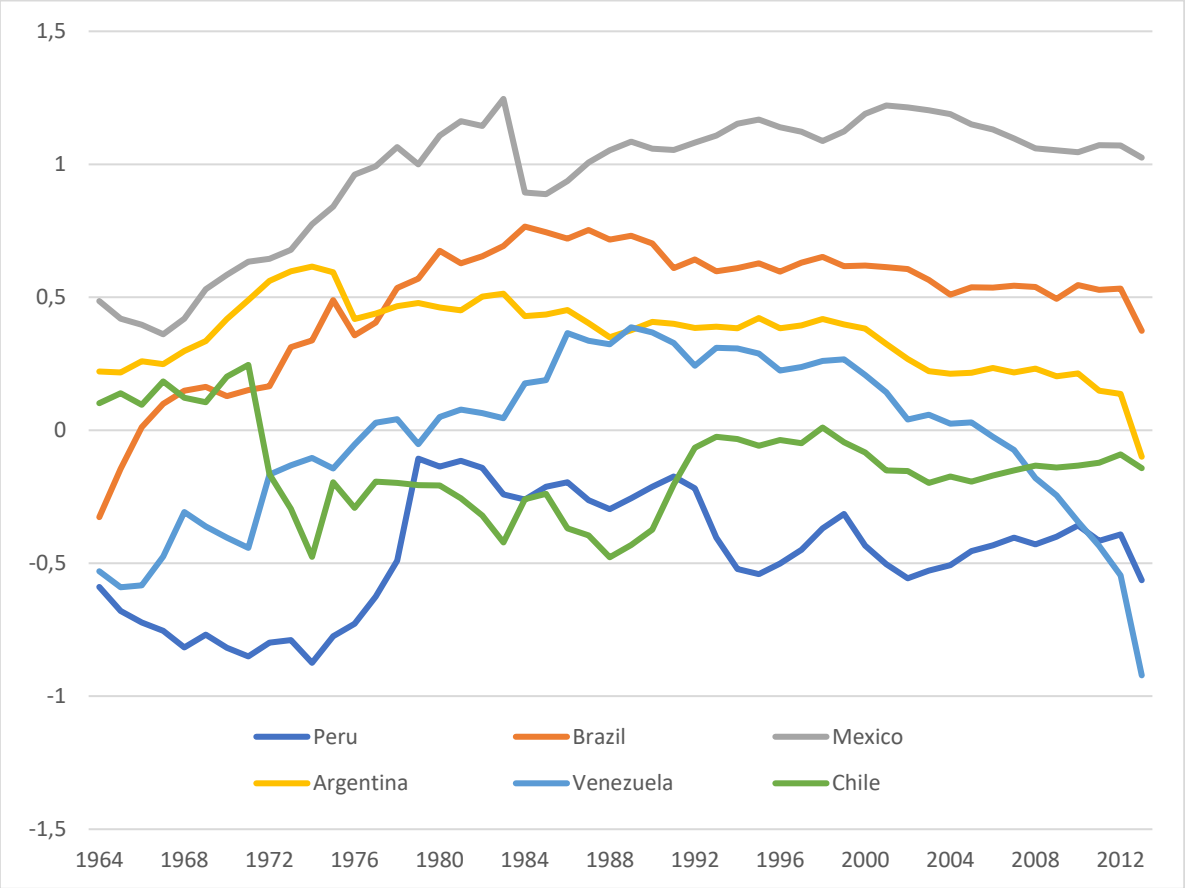


Source: FUNCEX and Secretaria do Comércio Exterior

Figure 4 presents the economic complexity index[5] extracted from the Observatory of Economic Complexity (OEC) database (2021). Economic complexity matters because it helps explain differences in the level of income of countries and more important because it predicts future economic growth. In most of the big Latin American economies the Economic Complexity Index (ECI) increased since the mid-1960s until the beginning of the 1980s, that is during the period known as import substitution industrialization until the external debt crisis. ECI stagnated or even reduced since then in part due to the trend toward deindustrialization in the region (Palma, 2005). Brazil and Mexico have the highest ECIs among countries in the region, expressing a greater diversification of their productive structure compared to the other economies. In particular, the ECI has been gradually reduced in Brazil.

[5] To determine the degree of productive complexity of any given country, Hausmann et al. (2011) introduced an algebraic methodology to build an index that reflects the degree of diversification of the export mix, its interaction with global value chains, and its ubiquity or rarity, i.e., the number of other countries in the world with the capacity to replicate the production of a specific good. In this respect, airplanes are rarer than sugar cane, because only a few, technologically more sophisticated countries can produce them.

Figure 4. Economic complexity index, selected Latin American economies - 1964-2013

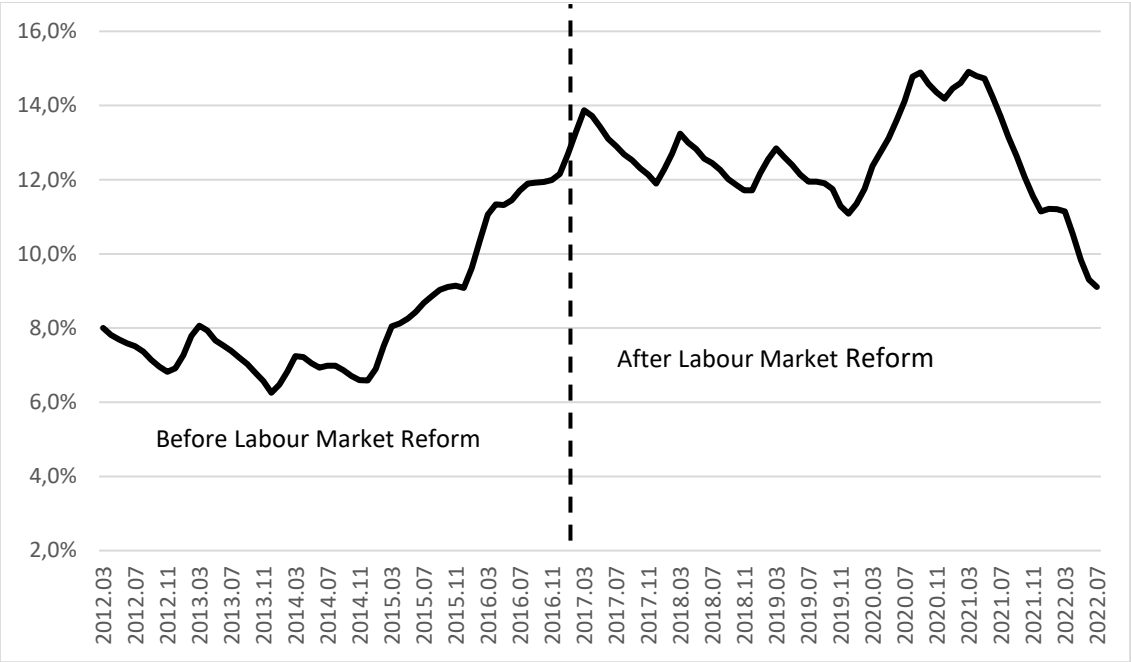


Source: OCE (2021), elaboration of the authors.

Unemployment rate, that was less than 8% before 2015, increased sharply since 2015 reaching level of more than 12% in the end of 2016. During the pandemic year of 2020 this rate increased to more than 14%, as it was expected. In fact, many unemployed workers decided to stop looking for work in the coronavirus pandemic: the percentage of "discouraged" population – those who do not seek work immediately because they think they will not get a suitable job – in the total of the economically active population increased from 4.2% to 5.4% in the from the fourth quarter of 2019 to the third quarter of 2020 (for more, see Paula, 2021). Since middle of 2021 unemployment rate reduced sharply from 14.7% in May 2021 to 9.1% in July 2022. Therefore, the recover of employment had been more pronounced than that consistent with the evolution of modest GDP real growth. Indeed, the reopening of the economy is causing the services sector to recover and start hiring again. The decisive factor is the growth in occupation rather than in compensation. This pattern of expansion of the salary mass and of consumption, therefore, depends mainly on the increase in occupation that has occurred since mid-2021.

But, to the extent that the effect of overcoming the pandemic is exhausted (resumption of mobility), this pattern will lose momentum.

Figure 5. Unemployment rate in Brazil – 2012.03-2022.07

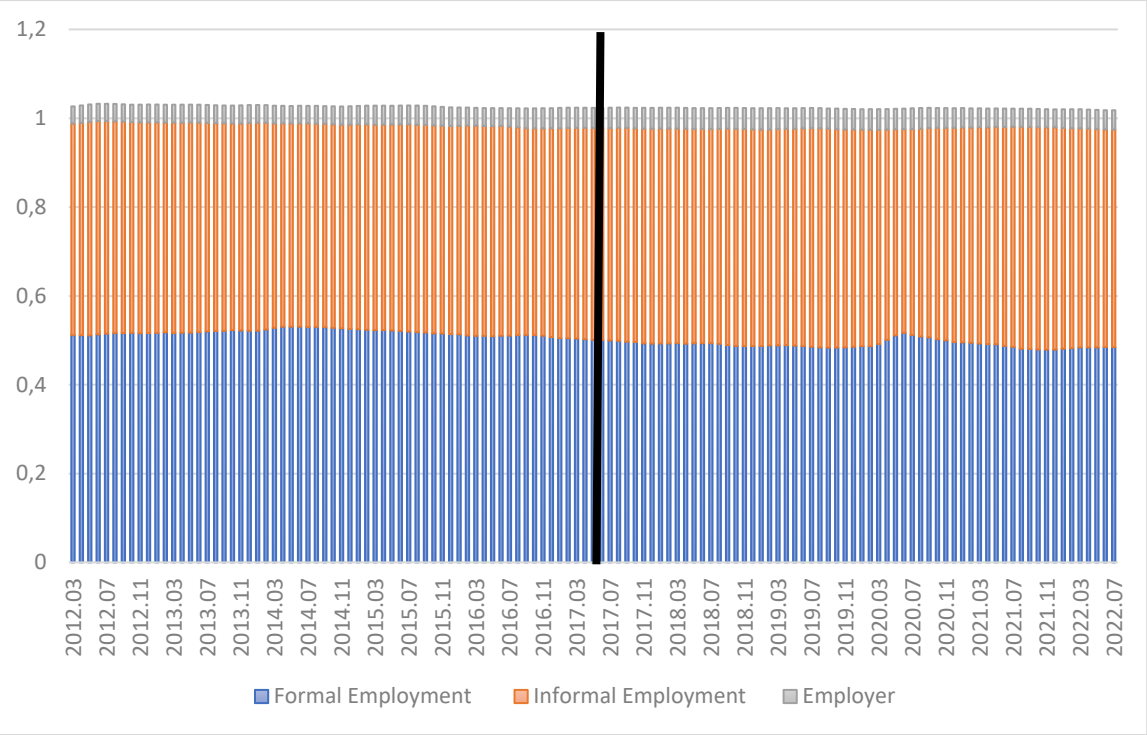


Source: IPEADATA (2022)

However, due to the coronavirus crisis and labour reform of July 2017[6], that has resulted partially in the change of work to temporary work or outsourced work and put pressure on wages, mainly in unskilled work, due to the reduction in the bargain power of workers. Indeed, the number of occupied workers earning up to one minimum wage and 1 to 2 minimum wages, i.e., the base of the wage pyramid, increased from 28.8% and 28.4%, respectively, in September 2020 to 35.6% and 31.2% in June 2022 (O Globo, 2022). There is a clear precariousness of labour relations in Brazil: informal employment (without a formal employment contract) increased from 46.0% in January 2015 to 49.0% in July 2022, involving around 50% of the total employment. (Figure 6)

[6] Labor reform included the implementation of intermittent work, the possibility to outsource the core business, became the annual Union contribution is optional, as for attorney feed Labor Reform established that the losing party should pay attorney fees to the other party in an amount from 5% to 15% of the condemnation or economic benefit, among other measures.

Figure 6. Composition of employment in the Brazilian labor market - 2012.03-2022.07



Source: IPEADATA (2022)

4 Reasons for stagnation of the Brazilian economy: a Keynesian-Structuralist view

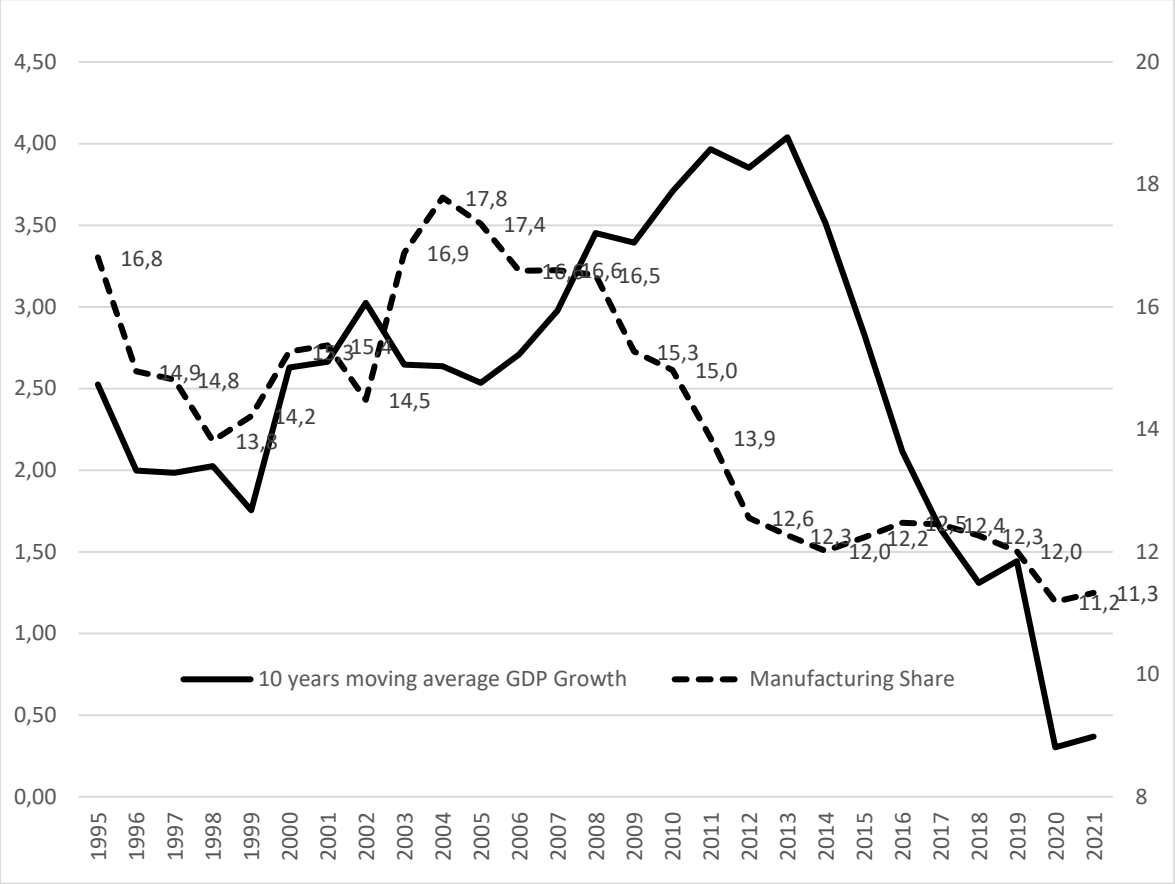
In this section we analyze the main reasons of the stagnation trend of the Brazilian economy. For this purpose, we consider two set of factors: (i) structural factors, that include premature deindustrialization, profit squeeze, and financialization of the economy; (ii) and conjunctural factors, that is related the implementation of a orthodox economic policies.

4.1. Structural factors

One of the main structural reasons of the stagnation of the Brazilian economy is the premature deindustrialization, as we have already told it is a process in which the share of the manufacturing industry in employment and GDP shrinks before such economies have attained high levels of per-capita income. This occurs because many developing economies are increasingly concentrating on activities that combine low value added per capita and low and/or medium-low technological intensity. As we can see in Figure 7, the manufacturing share (share of the manufacturing sector over GDP) fell from 17.8% in 2004 to 11.3% in 2021. Although correlation does not mean necessarily causality, from

our theoretical/analytical framework developed in section 2 we can infer that the decline in the *GDP growth trend* is at least partially associated to the fall of the manufacturing share in Brazil.

Figure 7. 10 years moving average of real GDP growth and manufacturing share (percentage of GDP) in Brazil (1995-2021)



Source: Authors' calculation with data from IPEADATA (2022)

New-developmentalist economists have argued that the fall in the investment rate in Brazil since 2014 is related to the sharp decline in the net profitability rate of the corporations, mainly manufacturing firms, that resulted in the phenomenon known as "profit squeeze", following the long expansion that started in 2003 (Oreiro and Paula, 2021; see also Martins and Rugitski, 2021). The fall in profit margins in the industrial sector stemmed, in turn, from the increase in the unit labor cost (ULC), generated by the increase in wages above the growth in labor productivity; together with the overvaluation of the exchange rate, which prevented the transfer of the increase in the ULC to the prices of industrial products due to competition from imported products. Another factor that explains the fall in investment spending in 2014 was the sharp retraction in investments by the Petrobras Group. Due to the combined effects of the high debt coefficient

(measured by Ebitda), the fall in the price of oil on the international market and the implications of the "Lava-Jato" operation; the Petrobrás Group reduced its investment spending from 1.86% of GDP in 2013 to 1.41% of GDP in 2014, a contraction of 0.45 p.p of GDP. We can also see that with exception of the pandemic year of 2020, profitability rate increased in 2017-2021. The rise in commodity prices in the international market as Brazil is an important commodity exporter as we have already seen, as well as the wave of mergers and acquisitions between companies, which have further concentrated the market and reduced competition, and mainly the reduction in labor costs due to the labor reform are the main reason of the high profitability under a context of stagnation of the economy.

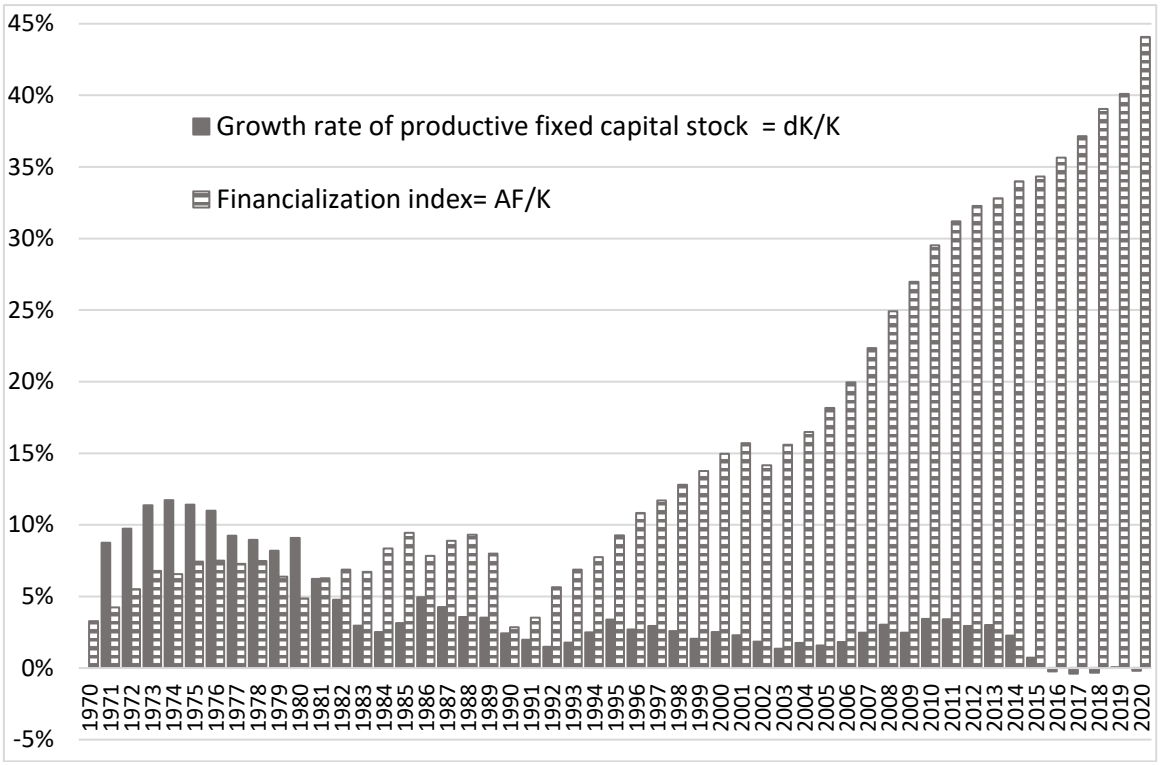
Figure 8. Net profitability rate r, and net investment, I, Brazil: 2000-2021

Source: Marchetti and Miebach (2022)

Figure 9 shows the series of the growth rate of the productive fixed capital stock (the capital accumulation rate) together with the financialization index, defined as the ratio between the total stock of non-monetary financial assets and the total stock of fixed capital. In the 1970-1980 subperiod, a period of high growth of the Brazilian economy, the fixed capital accumulation rates are higher than the financialization rates, and it is not possible to characterize the prevalence of financialization in this subperiod. From the

1980s until 1994 (when the Real Plan, a successful monetary stabilization plan, was implemented), the rates of financialization exceed the rates of fixed capital accumulation, expressing the emergence of a macroeconomic environment where financial allocations became more attractive than real assets. In this subperiod, the financialization process is initiated by the inflationary gains made possible both by the appropriation of the inflation tax by the banks and by the existence of "indexed money' (daily liquidity investments with returns at the Selic rate, the Central Bank policy rate). Starting in the 1990s, stimulated by financial liberalization in terms of capital inflows and outflows, and by the speculative nature of capital flows from residents and non-residents alike, the financialization rate enters a clear and strong expansion, with the stock of financial assets representing in 2020 more than 44.1% of the total stock of fixed capital. Due to the high levels of interest rates practiced and the high level of public debt in Brazil (which part are indexed to Selic rate), financialization remained, but increased to a new level in which the interest gains appropriated by the big banks and capital holders were drastically amplified by the high cost of financing and loans granted by the financial market to Brazilian households and companies (Bresser-Pereira et al, 2020). The behavior of these two series in this third subperiod also expresses a disconnection between the capital allocated to financial assets and that allocated to gross fixed capital formation. Financialization becomes explicit and starts to be reproduced by high real interest rates, instead of the inflationary gains in the previous period (Bruno, 2022).

Figure 9. Rentier-financier accumulation vs. Fixed capital accumulation–1970-2020(%)



Source: Bruno (2022, p. 51) based on data from BCB (2020) and IBGE (2022).
Note: The accumulation rate was calculated based on growth rate of productive fixed capital stock over GDP while financialization rate is calculate based on total financial assets (M4-M1) over the stock of fixed capital.

So, financialization of the Brazilian economy has contributed for the reduction of the productive accumulation rate, and consequently, for a low economic growth in the long term. Indeed, Paula and Meyer (2019) show that since the 1990s the reduction in the accumulation rate in Brazil was followed by a gradual and sharp increase in the financialization rate, that is there is some evidence that financialization is underway in Brazil after the process of capital account liberalization. These findings are in connection with the literature on financialization. For instance, Davis (2017) did a broad review on the relationship between financialization and productive investment reporting that a large body of empirical work suggests a robust and negative relationship between financialization and fixed capital investment[7].

[7] Orhangazi (2007) highlights two main channels in which financialization negatively affects productive investment. The first is related to the allocation of internal funds available for investments in financial assets when they offer larger short-term returns (besides being reversible unlike fixed assets). The second channel is related to the pressure exerted by the shareholders on the managers of the firms in obtaining greater short-term returns and greater dividends payments, making them prefer financial investment. Another incentive factor for the investment in short-term financial assets is the management policy of modern firms, where managers have fixed salaries and extra remuneration linked to the performance of the firm, as well as shareholders pursuing larger short-term yields, by the maintenance of stock prices at high levels and greater dividends payments.

4.2 Conjectural factors: macroeconomic policies

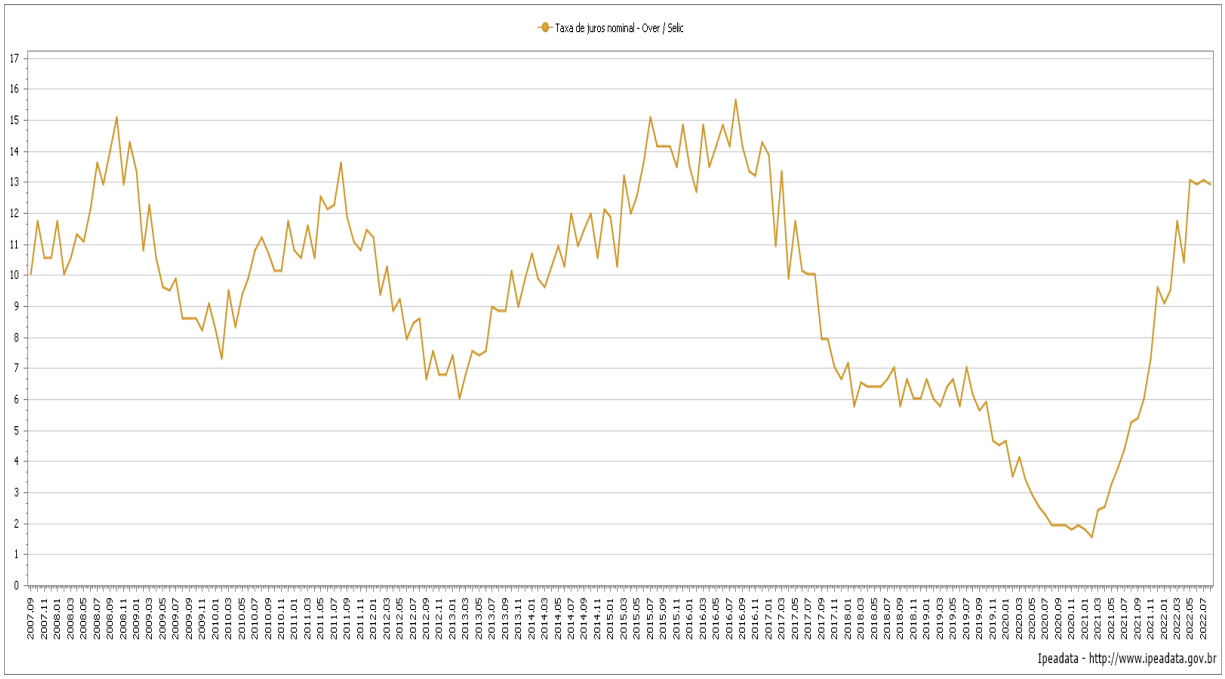
Besides the structural factors, there are a set of conjunctural factors that have contributed to the stagnation trend of the Brazilian economy, in particular related to the implementation of an orthodox and conservative economic policy and some liberal reforms (Constitutional Amendment imposing the spending cap and labor reform).

As for the implementation a conversative economic policy, the modus operandi of monetary policy under an inflation target regime has produced two problems in Brazil. The first one is related to the fact that Brazil implemented a framework of inflation targeting regime that can be considered rigid, as the target horizon - the period during which monetary policy actions are expected to return inflation to target – is the calendar year; However, most countries use a longer term of two years or more, or a moving period that allows a short-term divergence between the inflation target and higher current inflation due the shocks that affect the economy, allowing central bank to accommodate smoothly such shocks in a medium horizon. It should be emphasized that Brazil, in this particular regard, is one of the few countries that use a calendar year as the target horizon, the calendar year as the target horizon (Paula and Saraiva, 2015).

Furthermore, Bresser-Pereira at al (2020) develops the hypothesis that the prevalence of high real interest rates in Brazil for decades has led to the formation of a coalition of rentier-financier interests for keeping interest rates high. The maintenance of high real interest rates, within the context of the presence and maintenance of an overnight circuit, led to the creation of a conventionally “safe” interest rate. Thus, was formed a belief in or conviction of continued high rates. Such a vicious cycle greatly contributed to the development of a process of financialization of the Brazilian economy through interest income (see above). Figure 10 show the behavior of Selic policy rate in 2012-2022, where we can see that interest rate has been maintained in high levels (more than 6.0% p.a.), with exception of mid-2019-2020, and has been of the highest of the world. On the other hand, Figure 11 compares the expected Selic rate as estimated by Central Bank of Brazil - BCB Focus Report, by means of which the BCB surveys the financial market’s forecasts inflation and interest rates, and the effective (12-month lagged) Selic rate to show that, generally speaking, the expected rate is higher than the effective one, which seems to suggest that the financial market tends to overshoot its interest estimates in the Focus Report in hopes that the BCB will endorse such expectations. Therefore, the

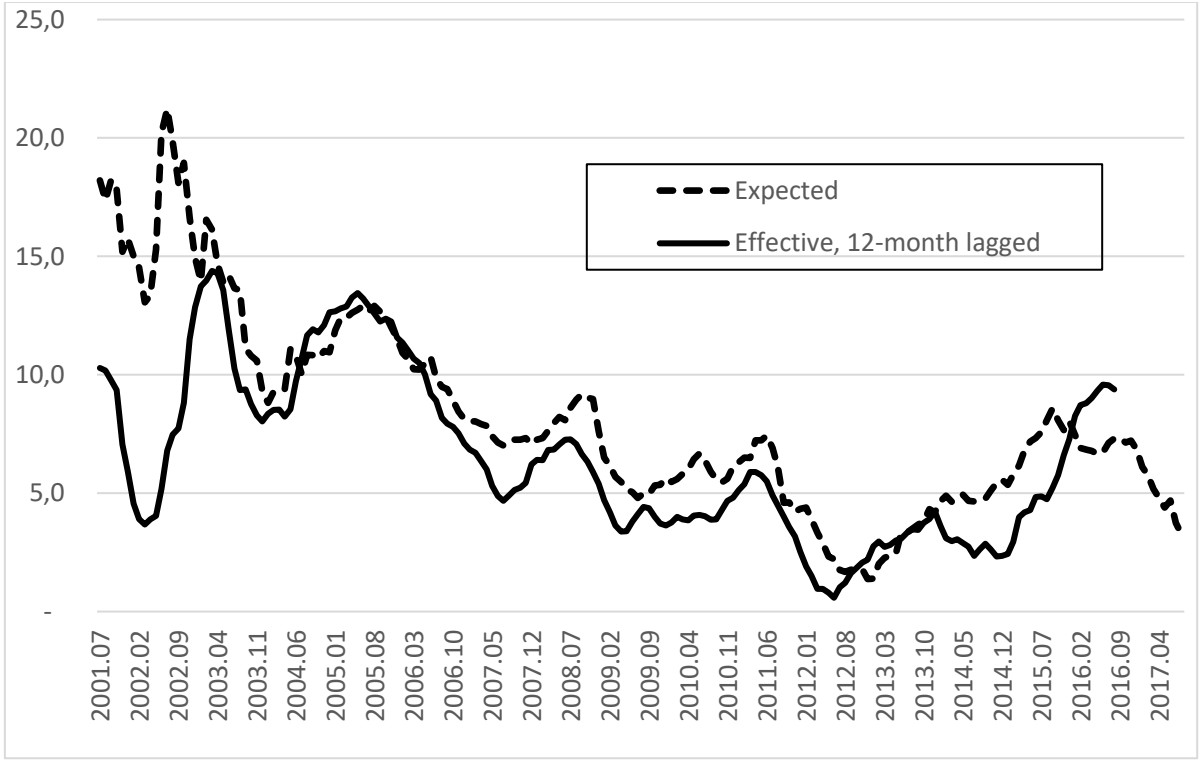
financial market has an upwards bias for its expected interest rate and inflation rate that puts pressure on the BCB to endorse their expectations (Bresser-Pereira et al, 2020).

Figure 10. Selic policy rate (% p.a.) – 2012-2022



Source: IPEADATA (2022).

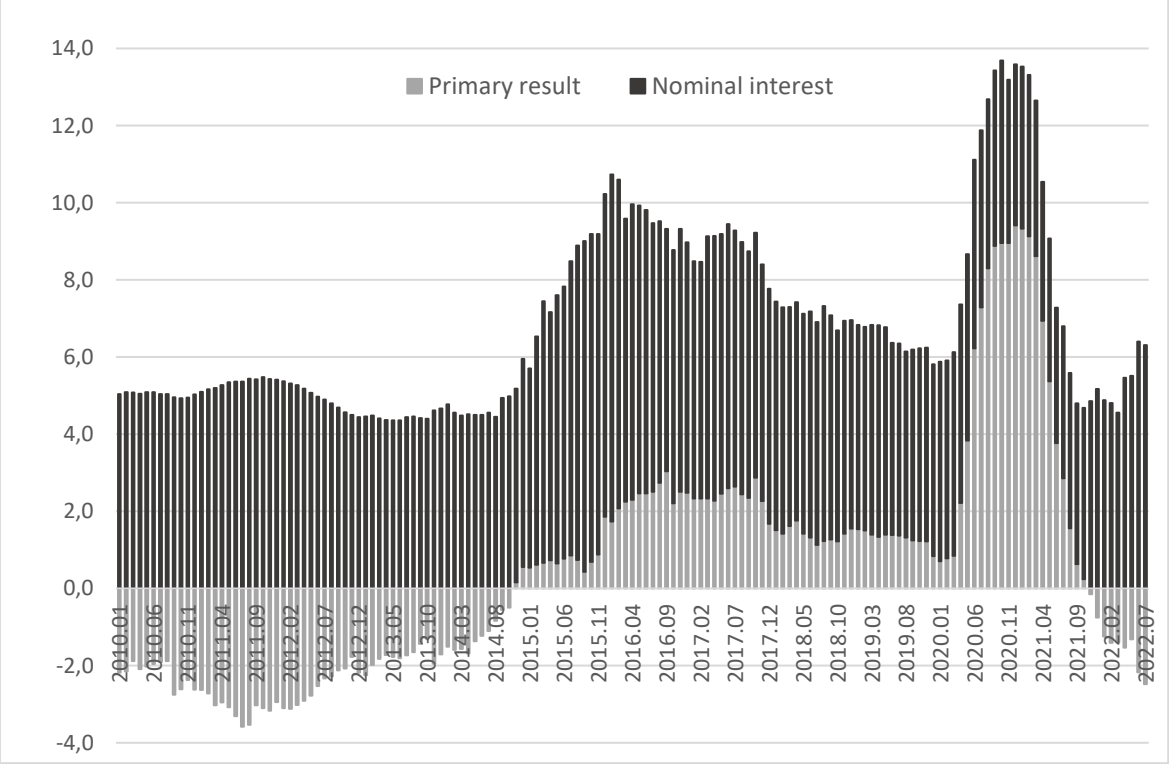
Figure 11. Expected (Focus) and effective Selic rates (% p.a.). 07/2001-07/2018



Source: Bresser-Pereira et al (2020), from BCB, IPEADATA and BM&Bovespa data.

One of the consequences of the high level of interest rates in Brazil is its impact on the financial burden of the public debt. As we can see in the Figure 12, the high level of nominal fiscal deficit is mainly determined by the impact of interest rate on the public debt, except for the 2020/mid-2021 pandemic period due to the emergency fiscal expenditures to face economic and social effects of the COVID-19 crisis[8]. In 2022 primary fiscal surplus (the difference between government expenditures and tax revenues, excluding interest on public debt) was possible due to combination of the temporary increase in the tax collection in consequence of the effects of the inflation and high commodity prices combined with the increase of GDP nominal growth.

Figure 12. Nominal fiscal deficit in Brazil (percentage of GDP), 2010-2022



Source: Central Bank of Brazil (2022).

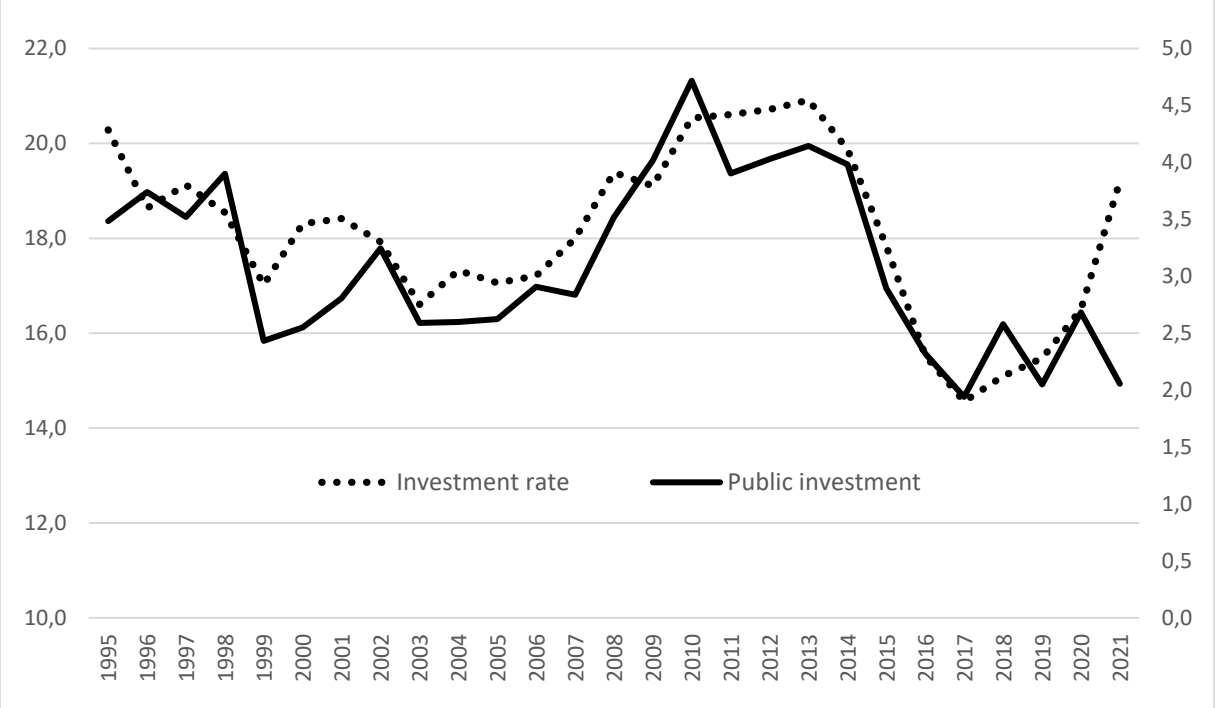
Last, but not the least, we must consider that a constitutional ceiling on public spending, proposed during the Temer Government, was approved by the National Congress in the end of 2016, becoming effective from 2017, which (in real terms) freezes

[8] According to Paula (2021), the countercyclical actions in Brazil in 2020, especially those relating to emergency aid, had strong countercyclical effect on the economy and also reduced poverty and social inequality in a significant way during the coronavirus crisis. Compared to other major Latin American economies, Brazil performed better in both economic and social indicators.

government spending for 20 years, since public spending is adjusted only by the previous year's inflation, a type of fiscal rigidity that exists only in Brazil. Constitutional Amendment 95 imposing the spending cap prevents any fiscal policy management, which is a fundamental tool for smoothing out the economic cycle: if the economy grows faster than expected, government revenues will rise more than forecast, but it will be unable to spend the surplus, because its expenditures are limited by the rule just introduced; on the other hand, as the spending cap rule requires zero real growth in total spending, any real increase in mandatory expenditures entails reducing discretionary spending in the same amount, so that total primary expenditures remain constant and do not exceed the target (Barbosa, 2019).

One of the consequences of the spending cap rule - which makes fiscal policy permanently pro-cyclical, being prevented from being used as an instrument to stabilize the economic cycle - is the reduction of the public investment that became the adjustment variable of the fiscal budget, due to the difficulties of the federal government in compressing mandatory spending (education, health, etc.). Indeed, since 2015 public investment declined and has been maintained in very low levels (less than 3% of GDP), what has contributed at least partially for the fall in the investment rate (Figure 13). As the literature shows (IMF, 2014) there is a strong complementarity between private investment and public investment, particularly regarding infrastructure investments, which have high externality for other sectors of the economy.

Figure 13. Investment rate (left) and public investment (right) as percentage of GDP, 1947-2021



Source: Observatório de Política Fiscal (2022) for public investment (includes all levels of government and state-owner firms) and IPEADATA (2022) for investment rate (gross fixed capital formation over GDP)

In conclusion, one of the main problems of the Brazilian economy is the lack of demand and not an eventual problem of supply. According to Borges (2018) the lack of demand is a result of an "overkill" arising from excessive conservatism of economic policy. The maintenance of a contractionary monetary policy for a very long period, with the maintenance of a Selic rate above the neutral interest rate of the economy, in a context in which fiscal policy in most time have been contractionary, have contributed greatly to the economy having a slow recovery with a tendency to stagnation.

5. A Structuralist-Keynesian agenda for sustained growth in Brazil: The Green New-Developmentalist strategy

The ecological structural change can depend positively upon the weight of green activities thanks to many channels. Technological green activities can increase the *price competitiveness* of the industries by reducing the unit raw material and energy costs of production and they can increase the *non-price competitiveness* of manufacturing industries, thanks to the fact that the environmental sustainability of goods production increase the quality perceived by international consumers (Galindo et al. 2020; Guarini and Porcile, 2016; Althouse et al. 2020). There are also important technological advantages that can derive from green activities concerning the technological complementarities between standard and green technologies (Horbach, 2008; Guarini, 2015), economies of scope (Johnstone et al., 2008), knowledge spillovers generated from green activities, typically high knowledge intensive (Jaffe et al., 2003; Rennings, 2000). Green activities can open the room for new sources of competitiveness and business for activities driven by innovation and high added valuing (ECLAC, 2016), but also for sectors such as “ecotourism”: it can represent a stimulus for industrialization in developing countries that give double externalities in terms of protection of natural resources, but at same time to develop important businesses (Jones, 2018).

Higher is the share of green activities and higher is the demand for new goods and services generated by backwards and forwards linkages theorized by Hirschman and that can be reinterpreted by a green perspective (Lenzen, 2003). Green innovations stimulate the networking and open innovations process, favoring linkages across sectors and in turn increasing returns (Fabrizi et al., 2018; Ghisetti et al., 2015). Eco-industries generate

territorial economic spillovers because the installation and maintenance of appliances is strictly linked at local context (Görlach et al., 2014). Investments in renewable energy activities has a multiplier effect on value chain, and reduces the external vulnerability of economy for the substitution of the fossil fuel imports, this also reduces the uncertainty of the refueling in terms of the international prices volatility of fossil energies due to financial speculations in the energy market (Kyritsis and Serletis, 2018; Creti and Nguyen, 2015; Ahmad, 2017; Rizvi, 2021) and the unpredictable supply interruptions due to political instability (ECLAC, 2020). Circular economy favors industrialization by promoting a production diversification in the activities of as waste management, repair, maintenance, remanufacturing, and recycling and by reducing the raw material unit costs (Abelaideio et al. 2021). Share of green activities represents the preference for capital investment with respect of financialized speculation because green innovations reflect the strategic long-term goals, instead of short-term strategies typical of corporate financialization (Huang, 2021). The green activities can also have a positive impact on current account of the balance of payments: they can increase international both price and non-price competitiveness (Guarini and Porcile, 2020) as well as they can cause import substitution concerning fossil sources (ECLAC, 2020), and finally they can enlarge the exports opportunities by producing secondary raw materials and high value-added industrial waste (Abeladeio et al., 2021).

Moreover, Dutch disease had a *clear environmental side* that is, up to now, not considered by New Developmentalism theory. This is precisely the case of Brazil. We explain. Production of soybeans and cattle are land intensive, but extremely profitable in Brazil because land is abundant. The increasing production of soybeans and cattle leaves to the expansion of land used by this kind of production to the borders of amazon forest. Marginal producers had no option instead of putting down the forest to occupy new spaces for soybeans and cattle which had a clear and negative effect over the CO2 emissions. The traditional economic solution to the problem is to reduce the profitability of such kind of activities - this where the export tax over primary goods fits in.

Brazilian economy had a chance to reindustrialize if an ecological structural change is adopted to increase the share of green activities in GDP. One first necessary step is to eliminate the Dutch Disease which is the simultaneous cause of premature deindustrialization due to exchange rate overvaluation and of CO2 emissions associated with the production and exports of primary goods. To eliminate DD the introduction of an export tax over primary goods is required. The objective of the export tax is precisely to reduce the after-tax profits of the primary goods sector relative to the after-tax profits

of manufacturing share, thus stimulating the redirection of private investment from the production of commodities to production of manufacturing goods. The tax rate over primary goods exports should not be constant, but dependent of the stage of the commodity prices cycles. In the periods when commodity prices are higher than the long-term average, tax rate can be an increasing function of this difference to reduce the extra-normal profits that would be obtained by commodity exporters. When the prices are lower than the long-term average than the tax rate could be set in zero to avoid disruptions in the supply of primary goods.

Manufacturing sector, however, can have a large share of brown activities. So, an ecological structural change must also be stimulated inside the manufacturing sector or, in the words of Mazzzucato (2014, pp.162-164), a *green manufacturing revolution* must be achieved. The idea of a green industrial revolution is to radically change the manufacturing sector for it to be ecologically sustainable, which requires a transition of the energy matrix to the production of clean energy that does not depends on fossil combustibles. This transition will demand a lot of investments in new power production plants based in solar and wind energy. Since these sources of energy are "diffuse" and "intermittent", then a lot of investment will be necessary to create an "intelligent electrical network", that is a network of software integrated power-plants designed to optimize the flexibility, the performance, and the efficiency of energy production. Due to the huge uncertainty in the initial stages of the green manufacturing revolution, the Lion´s share of the required investment must be done by the government (Ibid, p. 165).

A substantial increase in public investment in Brazil cannot be done under the current fiscal rules, mainly the expenditure ceiling. This fiscal rule had promoted a huge squeeze in public investment in Brazil over the last six years as we had seen in section 4. The financial and monetary asymmetries of Peripheral developing economies like Brazil do not allow the absence of any fiscal rule that prevents an ever-increasing path for the public debt to GDP ratio. The challenge for Brazil is to define a fiscal rule that allowed the required increase in public investment for the green industrial revolution to occur while make it possible for the debt to GDP ratio to be reduced in the medium to the long-term. One possibility would be the adoption of a target for structural primary surplus, that is, for the primary surplus of central government at a situation of zero output gap. The target should be set in a level that allowed the reduction of the debt to GDP ratio from the current level, more or less 78% of GDP, to less than 60% of GDP in 15 years. When the Brazilian economy would be operating with a negative output gap, the actual primary surplus will be lower than the target, making fiscal policy counter-cyclical. When output

gap is positive, then the actual primary surplus will be higher than the target, which means that the extra government revenues derived from the overheating of the economy must be saved by the government instead of used to finance new government expenditures.

The size of the structural primary surplus depends on the level of real interest rate as well as the level of real GDP growth. As we had seen in section 4, Brazil had very high nominal and real interest rates over the last 25 years. Something had to be done to reduce the long-term value of interest rates in Brazil.

We had already said that one of the causes of the high level of short-term interest rate in Brazil is the Institutional Arrangement of the Inflation Targeting Regime in Brazil that it is too rigid. Empirical evidence presented by Rocha and Oreiro (2009) had show that a less flexible inflation targeting regime is associated with lower GDP per-capita growth for a sample of 23 countries in the period 1991-2004. One possible explanation for this finding is precisely the interest rate channel: a less flexible inflation targeting regime promotes a higher level for short-term interest rate that had negative impact over aggregate demand and investment, reducing the rate of economic growth.

A reform of the Inflation Targeting Regime in Brazil is necessary to make it more flexible without compromising price stability in the medium to the long-term. This reform includes the adoption of core inflation instead of headline inflation as the target to be reached by monetary policy, the adoption of escape clauses for dealing with unpredictable and large supply shocks as the COVID-19 pandemics and the War in Ukraine and also a large time horizon for the actual inflation to converge to the target. This reform should be complemented by the elimination of the remaining indexation of contracts in the Brazilian economy which is responsible for a high level of inflation inertia, demanding higher levels of short-term interest rate for the inflation target to be achieved. The empirical evidence for the Brazilian economy presented in Oreiro and Costa Santos (2023) showed the existence of a high autoregressive coefficient in the time series of Brazilian inflation index due to the continuing existence of inflation indexation. So, a monetary reform demanding the use of the legal tender in Brazil (Real) to be the only unit of account in all contracts is also part of the strategy to reduce the long-term average of short-term interest rate in Brazil, allowing a lower structural primary surplus.

Finally, to Brazil increases its policy space – mainly the capacity to manage the real exchange rate – some kind of capital controls should also be adopted. One possibility is to introduce a tax over all capital inflows – including Foreign Direct Investment – in order to increase the autonomy of monetary policy, making possible for the Central Bank

to set the interest rate at the same time it manages the fluctuations of nominal and real exchange rate around a competitive level in the long-term.

6. **Conclusion**

This paper aimed at analyzing the main reasons for the tendency toward stagnation of the Brazilian economy – that we divide in structural factors (mainly desindustrialization and financialization of the economy) and conjunctural factors (mainly the implementation of an orthodox conservative economic poliy) and to discuss a strategy of sustained development to overcome by adopting a New-developmentalism green agenda. For this purpose, we developed initially a Keynesian-Structuralist approach of economic development, that has its focus in the structural change as the driver of the development.

A sustained development strategy requires the reconstruction of the manufacturing industry not only to meet domestic demand but to conquest a larger and increasing share of world manufacturing exports. This goal must be accomplished side to side with a sustainable environmental agenda, aimed at decarbonization and accelerated change in the environment. As we pointed out in the paper, Brazilian economy have the chance to reindustrialize if an ecological structural change is adopted to increase the share of green activities in GDP, implementing its own green manufacturing revolution.

Such strategy demands a political consensus in order to make possible the implementation green developmentalist agenda. Of course, this is not an easy task, and depends on the correlation of political forces and political leaders with commitment with such agenda. This paper showed that green developmentalist agenda can be an opportunity window for the difficult task to overcome the stagnation trend of the Brazilian economy. Without any doubt, this is an enormous challenge!

References

Aghion, P; Antonin, C; Bunel, S. (2021). "The Power of Creative Destruction: economic upheaval and the wealth of nations". Harvard University Press: Cambridge (Mass.).

Ahmad, W. (2017). On the dynamic dependence and investment performance of crude oil and clean energy stocks. *Research in International Business and Finance, 42,* 376–389.

Akyüz, Y. (2020), 'The commodity-finance nexus: Twin boom and double whammy', *Journal of Contemporary Economics*, 24 (1), 1-13. DOI: http://dx.doi.org/10.1590/198055272418.

Althouse J. and Porcile G. (2020) "Ecological macroeconomics in the open economy: Sustainability, unequal exchange and policy coordination in a center-periphery model" Ecological Economics, 172

Barbosa, N. (2019) "O problema das três regras fiscais". *Observatório da Economia Contemporânea, Le Monde Diplomatique Brasil*, 30 May.

Bielschowsky, R. (2009), 'Sixty years of ECLAC. Structuralism and neo-structuralism', *CEPAL Review*, 77, 171-192.

Botta, A. (2015), 'The macroeconomics of a financial Dutch disease', *The Levy Economics Institute Working Paper*, 850, October.

Bortz, P.G. and A. Kaltenbrunner (2018), 'The International Dimension of Financialization in Developing and Emerging Economies', *Development and Change*, 49 (2), 375–393. DOI: 10.1111/dech.12371.

Bresser-Pereira, L.C. (2013), 'The value of the exchange rate and the Dutch disease', *Brazilian Journal of Political Economy*, 33 (3), 371-387.

Bresser-Pereira L.C.; Oreiro J.L..; Marconi, N. (2015). *Developmental Macroeconomics: New Developmentalism as a Growth Strategy*, London: Routledge.

Bresser-Pereira, L.C.; Paula, L.F.; Bruno, M. (2020). "Financialization, coalition of interests and interest rate in Brazil". *Revue de la Regulation: Capitalisme, institutions, pouvoirs* 27(1): 1-24.

Bruno, M. (2022). "A financeirização como limite estrutural ao desenvolvimento brasileiro: fundamentos teóricos, indicadores e diagnósticos". In Marques, R. and Cardoso Jr, J.C. (ed.). *Dominância Financeira e Privatização das Finanças Públicos no Brasil*. Brasília: Fonacate.

Corrêa, M. F. and C. Feijó (2022), 'Connecting fnancialisation and structural change: a critical appraisal regarding Brazil', *Cambridge Journal of Economics*, 1-20. DOI: https://doi.org/10.1093/cje/beac036.

Davis, L.E. (2017). "Financialisation and investment: A survey of the empirical literature". *Journal of Economic Surveys* 31(5): 1332-1358.

ECLAC (Economic Commission for Latin America and the Caribbean) (2020), "A big push for sustainability in Brazil's energy sector: input and evidence for policy coordination", Project Documents (LC/TS.2020/51; LC/BRS/TS.2020/3), Santiago.

European Commission (2019) The European Green Deal, Brussels, 11.12.2019 COM(2019) 640 final.

Fabrizi, A., Guarini, G., Meliciani, V., 2018. Green patents, regulatory policies and research network policies. Research Policy 47 (6) 1018–1031.

Fagerberg, J (1988). “International Competitiveness”. *Economic Journal*, Vol, 98, pp. 355-374.

Furtado, C. (1964). “Development and underdevelopment: A structural view of the problems of developed and underdeveloped countries”, University of California Press, Berkeley.

Gabriel L.F.; Ribeiro L.C.S.; Jayme Jr, F.G.; Oreiro J.L. (2020). “Manufacturing, economic growth, and real exchange rate: empirical evidence in panel date and input-output multipliers”. *PSL Quarterly Review*, 73 (292), pp. 51-75.

Gala, P. (2017). *Complexidade Econômica: uma nova perspectiva para entender a antiga questão da Riqueza das Nações*, Rio de Janeiro: Contraponto.

Galindo L., Guarini G., Porcile G. (2020) “Environmental innovations, income distribution, international competitiveness and environmental policies: a Kaleckian growth model with a balance of payments constraint”, Structural Change and Economic Dynamics 53:16-25.

Ghisetti, C., Marzucchi, A., Montresor, S., (2015). The open eco–innovation mode. An empirical investigation of eleven European countries. Research Policy 44 (5), 1080–1093.

Görlach B., Porsch L., Marcellino D., Pearson A. (2014) *How crisis-resistant and competitive are Europe’s EcoIndustries?* Ecologic Institute, Berlin.

Guarini, G., (2015). Complementarity between environmental efficiency and labour productivity in a cumulative growth process. PSL Quart. Rev. 68 (272), 41–56.

Guarini G., Porcile G. (2016) “Sustainability in a post-Keynesian growth model for an open economy” Ecological Economics 126: 14–22.

Horbach, J., (2008). Determinants of environmental innovation – new evidence from german panel data sources. Res. Policy 37 (1), 163–173

Huang Z., Li X., Chen S. (2021) Financial Speculation or Capital Investment? Evidence From Relationship Between Corporate Financialization and Green Technology Innovation. *Front. Environ. Sci.* 8:614101. doi: 10.3389/fenvs.2020.614101

IMF - International Monetary Fund (2014). *World Economic Outlook: Legacies, Clouds, Uncertainties*. Washington, October.

Jaffe, A., Newell, R., Stavins, R., (2003). Technological change and the environment. In: Maler, K.G.,Vincent, J.R. (Eds.), Handbook of Environmental Economics. Elsevier, Amsterdam, pp. 461–516.

Johnstone, N., Labonne, J., & Thevenot, C. (2008). Enviromental policy and economies of scope in facility-level environmental practices. Environmental Economics and Policy Studies, 9, 145-166.

Jones G. (2018) “Sustainability and Green Business in Latin America during Globalization Waves**”**

Kaldor, N. (1966). “Causes of the Slow Rate of Economic Growth in the UK” in King, J. (Ed.). *Economic Growth in Theory e Practice: A Kaldorian Perspective*. Edward Elgar: Cheltenham.

Kaldor, N. (1957). “A Model of Economic Growth”. *Economic Journal*, v. 67.

Kyritsis, E., & Serletis, A. (2018). The zero lower bound and market spillovers: Evidence from the G7 and Norway. Research in International Business and Finance, 44, 100–123.

Lanzen M., (2003) “Environmentally important paths, linkages and key sectors in the Australian economy” *Structural Change and Economic Dynamics*, 14 (1): 1-34.

Lewis, W.A. (1954). “Economic development with unlimited supplies of labor”. The Manchester School, v. 22, pp. 139-191.

Marchetti, A. and Miebach, A. (2022). “Economia brasileira: quatro décadas de ‘quase’ estagnação”, mimeo.

Martins, G.K. and Rugitski, F. (2021). “The long expansion and the profit wqueeze: Output and profit cycles in Brazil (1996–2016)”. *Review of Radical Political Economics* 53(75):048661342098208.

Mazzucato, M. (2021). *O Estado Empreendedor*. Editora Schwarcs: São Paulo.

McCombie, J. S. L.; Roberts, M. (2002). “The role of the balance of payments in economic growth”. In: Setterfield, M. *The economics of demand-led growth: challenging the supply-side vision of the long run*. Cheltenham: E. Elgar. p. 87-114.

Ocampo, J.A. (2001a), ‘International asymmetries and the design of the international financial system’, CEPAL, *Temas de coyuntura*, 15, April.

Ocampo, J.A. (2001b), ‘Raúl Prebisch and the development agenda at the dawn of the twenty-first century’, *CEPAL Review*, 75, 23-37, December.

Oreiro, J.L. (2020). “New Developmentalism: beyond competitive exchange rate”. *Brazilian Journal of Political Economy*, Vol. 40, N.2, pp. 238-242.

Oreiro, J.L; Feijó, C. (2010). “Desindustrialização: conceituação, causas, efeitos e o caso Brasileiro”. Brazilian Journal of Political Economy, Vol. 30, n.2, pp. 219-232.

Oreiro, J.L; Costa Santos, J.F. (2023). “The unfinished stabilization of the Real Plan: an analysis of the indexation of the Brazilian economy” at *Central Banks and Monetary Regimes in Emerging Countries: Theoretical and empirical analysis of Latin America*, edited by F. Ferrari Filho and L.F. Paula, Cheltenham: Edward Elgar [forthcoming]

Oreiro, J.L.; Gala, P.; Filho, H.L.F.; Silva, L.P. (2019).” Taxa real de câmbio e mudança estrutural: teoria e evidência para o caso brasileiro”. *Boletim do Observatório da Indústria do Centro Internacional Celso Furtado de Políticas para o Desenvolvimento*, v.3, n.3, p.47-52.

Oreiro, J.L.; Paula, L.F. (2021). *Macroeconomia da Estagnação Brasileira.* Rio de Janeiro: Alta Books.

Oreiro, J.L; Feijó, C.A; Punzo, L.F; Machado, J.P.H. (2021). “Peripherical Financialization and Premature Industrialization: A Theory and the case of Brazil (2003-2015). *Post Keynesian Economics Society Working Paper Series 2103*, February.

Orhangazi, O. (2007), “Financialisation and capital accumulation in the non-financial corporate sector: A theoretical and empirical investigation of the U.S. economy: 1973-2003.” *Working Paper PERI*, n.149.

Palma, J.G. (2005). “Four sources of deindustrialization and a new concept of the Dutch disease” In J.A. Ocampo (ed.), *Beyond reforms: Structural dynamics and macroeconomic vulnerability*, pp. 71-116, Stanford University Press and World Bank, New York.

Pasinetti, L. L. (1983). Structural change and economic growth: a theoretical essay on the dynamics of the wealth of nations. Cambridge, UK: Cambridge University Press.

Pasinetti, L. L. (1993). *Structural economic dynamics – a theory of the economic consequences of human learning*, Cambridge, UK: Cambridge University Press.

Paula, L.F. (2021). “The coronavirus crisis and counter-cyclical policies in Brazil”. *European Journal of Economics and Economic Policies: Intervention,* 18(2): 177-197.

Paula, L.F. and Meyer, T.R. (2019). “Financialisation, growth and investment in Brazil”. In Levy, N. and Bustamante, J. (ed.). *Financialisation in Latin America: Challenges of the Export-Led Growth Model*. London: Routledge.

Prebisch, R. (1949). El desarrollo económico de América Latina y sus principales problemas, New York, United Nations.

Pomeranz, K. (2000). “The Great Divergence: China, Europe and the Modern World Economy”. Princeton University Press: Princeton.

Pritchett, J. (1997). “Divergence, big time”. *Journal of Economic Perspectives*. 11(2): 3-17.

Rennings, K., (2000). Redefining innovation -Eco-Innovation research and the contribution from ecological economics. Ecol. Econ. 32 (2), 319–332.

Rocha, M; Oreiro, J.L. (2009). “A Experiência internacional de regimes de metas de inflação: uma análise com painel dinâmico”. *Nova Economia,* 18(2), pp: 267-291.

Rodrik, D. (2016). “Premature deindustrialization”. *Journal of Economic Growth*, 21(1), 1-33.

Rowthorn, R.; Ramaswamy, R. (1997). “Deindustrialization: Causes and implications”, IMF Working Paper no. 97/42, International Monetary Fund, Washington, DC.

Rowthorn, R.; Ramaswamy, R. (1999). “Growth, trade, and deindustrialization”. IMF Staff papers, 46(1), 18-41.

Setterfield, M. (1997) “History versus equilibrium and the theory of economic growth”. *Cambridge Journal of Economics*, vol. 21, no. 3, 1997, pp. 365–378.