State-owned financial institutions as an arm of public policy for sustainable development

Tese de Doutorado

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Para Lena e Rafael

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É muita sorte minha! Apesar dele! Apesar da pandemia!

Summary

Acronyms

BNB - Banco do Nordeste do Brasil

BNDE - National Bank for Economic Development

BNDES - Bank for Economic and Social Development

DAs - Development Agencies

DBs - Development Banks

DFIs – Development Financial Institutions

FAT - Worker Support Fun

FGTS - Service Time Guarantee Fund

Finame - Special Agency for Industrial Financing

IHCD - Hybrid Capital and Debt Instruments

LDS - Local Developmental State

MCMV – My houwe, my life (Minha Casa Minha Vida)

NDS - National Development System

NIB - National Investment Board

PAC - Growth Acceleration Program

PND - II National Development Plan

PNMPO - National Oriented Productive Microcredit Program

Pronaf - National Program for Strengthening Family Agriculture

Proer - Program to Stimulate the Restructuring and Strengthening of the National Financial System

Proes - Program to Encourage the Reduction of the Presence of the State in Banking Activity

Proef - Federal Financial Institutions Strengthening Program

PSI - Investment Support Program

RDFIs - Regional Development Financial Institutions

SFIs - State-owned financial institutions

TJLP - Long-Term Interest Rate

TLP - Long-Term Rate

Abstract

The role of State-owned financial institutions (SFIs) has been a recurring topic of discussion in the scholars, political, and economic spheres. Financial services are essential in the economy for the supply of liquidity, which is imperative for financing investment and growth. Economic development is made possible by the financial systems capable of funding production. However, the instability inherent in the financial system may limit investors' ability to promote sustainable growth. The financial institutions' behaviour, operating in an environment of non-probabilistic uncertainty, can create instability in the economic system and obstacles to its progress.

This thesis highlights the essentiality of SFIs, especially development banks, working as public policy arms and intelligence centres, capable of financing the catching-up process, regional and national development, and the green transition. That is, operating as what we call a "big government smart bank". This structural approach attributes a more significant role to SFIs and recommends that they work beyond market failures, address alternative ideas, and not amass around a single theoretical framework. Their performance should not be limited to complementing private institutions or acting countercyclically. In this sense, their position should be perennial, not transitory. Inserted in a broader context of "sustainable development convention", promoting development, SFIs must operate while embracing a mission, supporting the structural transformation, and following government guidelines.

This thesis compiles four articles on State-owned financial institutions as part of research on credit, cathing-up, and sustainable development. The chapters are "Regional State-owned financial institutions and the challenges of the National Development System"; "Regional credit distribution in Brazil: the role of State-owned financial institutions"; "Development banks as an economic policy arm – promoting sustainable structural change"; and "The green transition and the need for a sustainable development convention".

Thesis Introduction

The role of State-owned financial institutions (SFIs)[1] has been a recurring topic of discussion in the academic, political, and economic spheres. Financial services are essential in the economy for the supply of liquidity, which is imperative for financing investment and growth. Economic development is made possible by the financial systems capable of funding production. As Keynes said, banks are responsible for the transition from a lower to a larger productivity scale. Thus, financial institutions, through the supply of liquidity, determine the economy's investment level. However, the instability inherent in the financial system may limit investors' ability to promote sustainable growth. The financial institutions' behaviour, operating in an environment of non-probabilistic uncertainty, can create instability in the economic system and obstacles to its progress. Thus, the State's effort to provide liquidity to the system through public institutions or direct expenses is justified (KREGEL, 2017).

However, the degree of the consolidation of financing systems, particularly the supply of long-term credit, can be restricted by macroeconomic, legal, or structural obstacles, making its institutional format differ between countries and intertemporally. The form depends on many factors, including economic development, the evolution of the financial systems themselves, the legal configuration, and the macroeconomic policy tradition.

This thesis highlights the essentiality of SFIs, especially development banks, working as public policy arms capable of financing the catching-up process, regional and national development, and the green transition. Economic development is closely linked to the evolution of articulated and complex financial systems. This structural approach attributes a more significant role to SFIs and recommends that they work beyond market failures, address alternative ideas, and do not amass around a single theoretical framework. Their performance should not be limited to complementing private institutions or acting countercyclically. In this sense, their position should be perennial, not transitory. Inserted in a broader context of "sustainable development convention," promoting development, SFIs must operate while embracing a mission, supporting the

[1] Currently, the Brazilian National Development System comprises State-owned financial institutions such as federal banks, development banks, regional commercial state-owned banks, and development agencies.

structural transformation, and following government guidelines. To this end, they must offer a range of products differentiated from the private sector regarding cost, term, and operationality. Hence, they are institutions that direct credit and pursue a public policy orientation, being executors of government policies.

SFIs assume different formats and functions depending on the countries' development levels and institutional, structural, legal, macroeconomic, and political frameworks. To fulfil its mission and act effectively as a public policy arm, an SFI must be coordinated with macroeconomic policies. In uncoordinated action, the SFIs would serve only as punctual agents, unable to facilitate structural changes but demanding financial resources for an extended period. In this way, SFIs should be thought of as members of Big Government.

This thesis compiles four articles on State-owned financial institutions as part of research on credit, cathing-up, and sustainable development. The chapters are "Regional State-owned financial institutions and the challenges of the National Development System"; "Regional credit distribution in Brazil: the role of State-owned financial institutions"; "Development banks as an economic policy arm – promoting sustainable structural change"; and "The green transition and the need for a sustainable development convention".

The first article, "Regional State-owned financial institutions and the challenges of the National Development System", was published in Economia e Sociedade in 2019. It investigates Brazilian regional SFIs, their history, and the scope of action compared to federal SFIs. It highlights the challenges faced by SFIs in Brazil as essential players in financing economic development, emphasizing long-term credit for sustainable investment, innovation, and catching up. It highlights that through their period of greater activism, regional SFIs were working in cooperation with federal SFIs in a convention of growth where the State, its institutions, and economic agents worked in accordance to promote economic growth.

The article is divided into five parts besides an introduction and conclusion. The second section discusses the reasons for the existence of SFIs, endorsing their role as a public policy arm. The third section addresses the formation of SFIs in Brazil, including the apogeal, restructuring, and decline periods. It also covers the reforms attempting to reduce

SFIs centrality in the Brazilian financial market. The two major reforms performed in the period did not reduce the need for SFIs to provide long-term funding. The fourth section highlights the attempt to bring back SFIs protagonism as a tool of the State. It emphasizes the importance of regional SFIs supporting the controller states and partnering with federal SFIs to promote regional development. The final section suggests a few actions to overcome the main obstacles to strengthening regional SFIs and increasing their effectiveness. To complete their missions, institutions must have the financial, technical, and management capabilities to regularly offer financial products by the appropriate deadlines and with costs falling under sustainable risk conditions. Ideally, they should combine development agents, financial autonomy, low liquidity, and interest risks.

The second article, "Regional credit distribution in Brazil: the role of State-owned financial institutions," was published in Area Development Policy in 2021. It discusses Brazil's regional credit distribution, addressing regional SFIs deconcentration in the last two decades. During the financial crisis of 2007–2008, SFIs were employed as instruments to minimize the damaging effects that private credit crunches have widened. Brazil has a mature State-owned financial architecture. It comprises four development banks, nine commercial banks with a development portfolio and earmarked credit operations, and 16 development agencies. These banks and agencies include national and regional State-owned institutions.

The article is divided into three sections besides its introduction and conclusion. The second subdivision provides a brief theoretical review of the relevance of SFIs for economic development. More specifically, it disputes that SFIs are necessary for promoting structural change to enhance economic growth rates. Further, SFIs are essential to promote local development, assuming that an uneven supply of credit among regions with different degrees of development can set up a vicious growth cycle. The third section outlines the evolution of Brazilian SFIs, starting with their consolidation after World War II, moving to the financial reform of the 1990s that reduced their share in total credit and, ending with their revival in the 2000s. The last section analyzes the regional distribution of credit and the role of national and regional SFIs in reducing inequality in the 2000s and 2010s. The article concludes that despite regional disparities, Brazil's credit distribution remains high. The indicator improved between 2004 and 2015, mainly because of the North and Northeast regions' performances. This enhancement was related to the recovery of SFIs actions after 2008. Particularly, it suggests that regional SFIs still play a role in regional development due to their chief mandate of supplying credit. The strengthening of regional SFIs is a public policy choice. When such a choice is integrated with developmental policies, as suggested by this empirical analysis of the regional distribution of credit in Brazil, it can help reduce regional disparities by providing credit for projects that may boost local potentialities.

The third article, "Development banks as an economic policy arm – promoting sustainable structural change," was published in the International Journal of Political Economy in 2021. It argues that the 2007/2008 international financial crisis displayed the essentiality of SFIs, especially in acute liquidity crises. SFIs are a necessary instrument for public policies and should be part of the macroeconomic toolkit. Using SFIs as a credit policy is more efficient than public spending and would enhance fiscal policies. The argument for directing a credit policy through SFIs broadens the understanding of their role beyond their countercyclical function. Thus, SFIs would be part of a permanent toolkit for managing aggregate demand. The article proposes that among SFIs, development banks that fund long-term credit are essential to promoting the structural change of peripheral economies and boosting the catching-up process. This is to say that SFIs, especially development banks, can be used to fund investments in addition to acting countercyclically, ensuring that productive investment is not held hostage to private financial sector liquidity preference.

However, the intentionality of promoting economic development requires the alignment of investment and macroeconomic policies for this purpose. State planning, its institutions, and the strategies adopted—fiscal, monetary, foreign exchange, and industrial, together with credit policy—must ensure longevity and sustainability of the catching-up process. SFIs are public policy arms, but their effectiveness will only be guaranteed if conventional macroeconomic policies are concatenated to promote development.

The article analyzes the Brazilian Development Bank (BNDES) by demonstrating the bank's actions and contributions to the country's economic development in different macroeconomic contexts and under changing domestic policy spaces. The hypothesis is that the BNDES's performance was more successful for its development when coordinated with other economic policies. In this sense, its functionality to promote the structural change should consider its articulation with monetary, fiscal, exchange rate, and industrial policies.

This article is divided into two sections besides an introduction and a conclusion. The first section reviews credit's role in economic growth and its essential function of injecting liquidity into the economy, sustaining market transactions, and funding investment and economic growth. The second discusses the policy space of peripheral economies, such as Brazil, which depend highly on foreign capital. It examines BNDES's operations as the leading development bank in the country, dividing its actions into periods.

The main conclusions are that development banks' primary purpose should be to expand the policy space to promote structural transformation toward a more sustainable, complex, and technologically sophisticated productive structure, especially in peripheral economies.

DBs are vehicles of credit policies guided by the State's intentionality in promoting sustainable development and directing long-term funding. Consequently, they should be part of the macroeconomic policy toolkit, as they are as essential as monetary and fiscal policies.

Adopting developmental policies is only possible through aligning powerful development banks with the State's planning program. Liberalizing policies in the macroeconomic sphere proved incompatible with the promotion of structural changes. In the context of neoliberalism, where fiscal constraints and monetary policy are subordinate to controlling inflation and attracting foreign capital, credit policy is the only macroeconomic tool left for the State to manoeuvre toward having economic structural change. In this sense, the recommendation is to transform the DB into a "Big Smart Government Bank" that interacts with other economic areas, operating as a bridge between the productive and government sectors, aligning economic strategy and production plans. The DB should be a smart and dynamic organism, in direct line with the State administration. As part of the economic toolkit, the DB's president should have a minister of State's status in planning decisions.

The fourth article is titled "The green transition and the need for a sustainable development convention." It brings a perspective about curbing global warming by creating a sustainable development convention, ensuring the green transition—the passage from a high-intensity carbon dioxo economy to a low-intensity one. It claims that the green transition required in the world was evidenced by the COVID-19 pandemic's economic crisis, which, combined with the environmental, social, and sanitary disaster, showed the inherent instability of the current production and consumption models. It confirmed the necessity of having new public policy instruments because the current ones reproduce the same economic system that caused the complications—underdevelopment, deforestation, environmental impact, poverty, and inequality, to name just the most evident ones (STIGLITZ, 2019). It argues that the green transition requires a long-term investment plan in new sectors and innovation from State plans focused on promoting structural changes, social and regional inequality reduction, and sustainable development. It is necessary to rethink the State's role and the economic policies and toolkits available.

The article is divided into three sections with an introduction and conclusion. The second section discusses the importance of a sustainable development convention guided by the State and its institutions. The green transition needs to have production restructured, plus swift and profound changes in consumption that will require societal changes. Therefore, State, its institutions, economic policies, civil society, NGOs, the private sector, and the financial sector must coordinate their actions toward the same goal by rearranging behaviours and expectations. Section three states the risks of the green transition for the financial sector. The green transition requires new, greener sectors with fewer greenhouse emissions, meaning that most of the existing economic leading industries will be extinct or will have to be readapted. The green transition presents an inherent risk to the financial system's stability provided the growth amount of stranded assets. The final section highlights a few proposals to fund the green transition, focusing on development banks' functionality, central banks' roles, and the sustainable development convention.

Long-term planning requires synergy and coordination among policymakers in charge of short-term economic policies and State policies. This is so, especially if we consider reducing carbon emissions once a shift in the productive structure and the consumption pattern is required. The Paris Agreement aims to constrain the increase in global temperature to less than 2ºC, above pre-industrial levels, by 2050, leading to zero CO2 global net emissions. A conversion to environment-friendly production processes and behaviours and new technologies and infrastructure are necessary to achieve this goal. In this context, it is up to the State to signal growth resumption, generating positive expectations to change the productive structure for future recovery and even [re]launching the historical process of developing State, focusing on sustainable development, green transition, and social inclusion.

A sustainable development convention proposes a change in State's mission and actions by coordinating its policies, institutions, and tools toward a green and just transition. It also signals to the private market and society that policies will ensure sustainable development despite the green transition's risks.

The article's main conclusion is that SFIs, particularly development banks, are essential public policy instruments that, along with the Central Bank, can ensure the green transition and innovation necessary to develop and promote sustainable economic and social structural change. It is up to the State to plan and lead this process. Only the State can act as a long-term planner to guide private decisions to build and consolidate the sustainable development convention.

Article 1 - State-owned financial institutions and the challenges of the National Development Financial System[2]

[2] A short version of this article was published in Portuguese in *Economia e Sociedade* in 2019.

Abstract

Brazil has always had a strong presence of State-owned financial institutions (SFIs) in its financial system. The group of SFIs, also known as the Brazilian National Development Financial System (NDS), maintains very distinct operation phases depending on the economic development stage, macroeconomics policies, conventions in vogue, and institutional formation. The challenges SFIs face in Brazil as essential players in financing economic development are highlighted in this article, emphasising regional SFIs. Development agencies and the states' development banks are the main regional SFIs covered in this analysis. To promote the cathing up process, SFIs must act as a public policy arm operating in a broader context of the developmental State. This article addresses the formation of SFIs, encompassing periods of expansion, restructuring, decline, and the recent attempt to bring back SFIs' importance as part of the State's toolkit. It explains the significance of regional SFIs working in accordance with the controlling states and federal SFIs to promote regional development, essential for the catching-up process. Finally, this article proposes a few measures to overcome what we identify as the main obstacles to strengthening regional SFIs and increasing their effectiveness. First, these institutions must have funding and technical and managerial capabilities to regularly offer financial products with appropriate deadlines and costs under sustainable risk conditions to fulfil their missions. Second, SFIs should be justified from a structural approach beyond market failures. They are essential because long-term decisions are driven by non-probabilistic uncertainty. Their performance is not limited to complementing private institutions or acting countercyclically. In this sense, their position is permanent, not transitory.

1. Introduction

Brazil has always had a strong presence of State-owned financial institutions (SFIs) in its financial system. The group of SFIs, also known as the Brazilian National Development Financial System (NDS), maintains very distinct operation phases depending on the economic development stage, macroeconomics policies, conventions in vogue, and institutional formation. The first financial institution in Brazil was Banco do Brasil, dating back to 1808. Many other federal and regional SFIs were created afterwards, playing an essential role in the countries growth regime and economic policies – to a greater or lesser extent/some more actively than others.

Despite the early existence of SFIs in Brazil, the system's fundamental mission of funding long-term investment and incipient industrial production became more apparent after World War II. This was a period in which many countries established SFIs as part of their reconstruction process. According to (LUNA-MARTINEZ; VICENTE, 2012), 49% of development banks worldwide were created between 1946 and 1989. This boom period was followed by a phase of financial liberalisation and State reduction in the economy. Notwithstanding, by 2008, SFIs still represented 30% of total assets worldwide. During the global financial crisis that began in 2007/2008, most SFIs played a critical countercyclical role in providing liquidity to the economy. The greater involvement of SFIs triggered a growth in the literature, wherein theoretical frameworks were reviewed, and the importance of SFIs explained, most notably concerning the financing of fixed capital formation and the characterisation of the countercyclical actions of SFIs.

The regional State-owned financial institutions, however, still need more in-depth treatment about their current performance, challenges, and potentialities. This article aims to analyse the performance of Brazilian SFIs, highlighting the importance of the regional SFIs operating in association with federal SFIs. More specifically, this article seeks to identify the scope of action of regional SFIs, presenting recent performance indicators, and systematising their dilemmas and conditions for improving their activity in order to strengthen the funding of the national and regional apparatus in Brazil. The challenges SFIs face in Brazil as essential players in financing economic development are also highlighted, emphasising long-term credit for sustainable investment, innovation, and the catching-up process. As will be pointed out, through their period of greater involvement, regional SFIs were working in cooperation with federal SFIs, promoting a consensus for growth where the State, its institutions, and economic agents worked in consonance to stimulate economic growth (CASTRO, 1993). Development agencies and the states' development banks are the main regional SFIs covered in this analysis. It should be highlighted that in Brazil, investment in the productive sector is strongly related to the SFIs. The SFIs that currently make up the Brazilian NDS are federal banks, development banks, regional commercial State-owned banks, and development agencies.

The remainder of this article is divided into six parts. The second section discusses the reasons for the existence of SFIs, endorsing their role as a public policy arm that, when put in a broader context of the developmental State, can promote the cathing up process and sustainable development. The third section addresses the formation of SFIs, encompassing periods of expansion, restructuring, and decline. It also covers the reforms that tried, albeit unsuccessfully, to reduce SFIs centrality in the Brazilian financial market. The fourth section highlights the recent attempt to bring back SFIs' importance in the State's toolkit. It explains the significance of regional SFIs working in accordance with the controlling states and federal SFIs to promote regional development, which is essential for the catching-up process. The development agencies — the newest members of SFIs, which came about during the restructuring of the financial system in the 1990s — and the development banks are the focus of this section. The fifth section offers a few measures to overcome what we identify as the main obstacles to strengthening regional SFIs and increasing their effectiveness. This section asserts that these institutions must have funding and technical and managerial capabilities to regularly offer financial products with appropriate deadlines and costs under sustainable risk conditions to fulfil their missions. Ideally, they should combine their mission as development agents and financial autonomy with low liquidity and interest risks. The sixth and final section provides the concluding remarks.

We conclude that SFIs should be justified from a structural approach beyond market failures. They are essential because long-term decisions are driven by non-probabilistic uncertainty. Their performance is not limited to complementing private institutions or acting countercyclically. In this sense, their position is permanent, not transitory. SFIs are public policy arms with a mission to promote development through structural transformation, following government guidelines. To this end, they must offer a range of products differentiated from the private sector concerning cost, term, and operationality. SFIs must be part of the state's toolkit for planning and operating following a defined mission. Specifically, in Brazil, where there is a heterogeneous network of SFIs — both regional and federal — there must be coordination between themselves, the states, and the national development plans. The broader goal is to endorse a structural change to promote cathing-up, innovation, and sustainable development. Nonetheless, to fulfil their purpose satisfactorily and act effectively as a public policy arm, SFIs must also be coordinated with macroeconomic policies for sustainable development. Otherwise, SFIs would serve only as momentary agents in uncoordinated actions, unable to facilitate structural change, all the while demanding financial resources for an extended period.

2. The main role of State-owned financial institutions

SFIs are the State's financial arms focused on economic and social sustainable development. National States respond to challenges arising from opportunities and restrictions resulting from their country's development trajectories. Therefore, the characteristic of SFIs as public policy instruments raises discussions about the general problem of the State's role in the economy (HERMANN, 2011). The institutional format of the various national financial systems differs according to a set of factors, such as the degree of economic development, the evolution of the national financial system, the legal configuration, and the tradition of the country's macroeconomic policy. But what the historical experiences in forming successful, diversified, and competitive economic structures have in common is the State's active participation in creating favourable development conditions. The extent of a financial system's maturity and its ability to finance in the long term are essential economic development constraints (CUNHA; PRATES; CARVALHO, 2016).

SFIs maintain an important stake in total banking assets worldwide despite privatisation, liberalisation, and the financialisation processes that have occurred from the 1980s on (LUNA-MARTINEZ *et al.*, 2018). SFIs remain essential due to their benefits for economic policy. Their main functions most referenced in the literature are (i) mitigating market failures; (ii) optimising long-term funding; (iii) financing projects with positive externalities; (iv) promoting economic and regional development; (v) financing areas where the private sector typically does not, such as innovation; and (vi) promoting countercyclical actions (HERMANN, 2011; MAZZUCATO; MACFARLANE, 2019; STIGLITZ, 1994).

The **market failure** approach argues that money creation through credit and the efficient transfer of resources from lenders (saving agents) to borrowers are among the financial market's primary functions. The financial system selects and monitors investment projects, guarantees contracts, manages market risks, and ensures the proper functioning of resource allocation. It is a high-risk market, highly dependent on information, and financial institutions are the most capable economic agents to obtain the necessary information to improve their assets (STIGLITZ; WEISS, 1981).

It is based on the idea that borrowers have more information about expected returns than lenders (banks). However, due to the asymmetric information between the economic agents involved in financial operations, the credit market is subject to failures. That is to say, the information available on the market is not perfect as it is asymmetrically distributed among economic agents. This imperfect or asymmetric information leads to credit rationing. Hence, asymmetry in information prevents the financial market from functioning efficiently.

Accordingly, if there is a higher credit demand than supply, the adjustment would not be made by increasing the interest rate (FERRAZ; ALÉM; MADEIRA, 2013). However, in the advent of high-interest rates, agents willing to pay a higher premium for loanable funds are generally the most risk-prone, which raises the chances of default. In the credit market, the supply (of resources) is not directly proportional to the increase in the price (interest rate). The phenomenon of attracting borrowers more prone to risk motivates the damming of the resources of financial institutions. Thus, the returns expected by credit operations are not directly proportional to interest rates, meaning they do not play the simple allocative role attributed to the conventional economic paradigm. The functioning of the financial market is, therefore, associated with structural failures due to information asymmetry between agents. Incomplete, costly, and difficult-to-obtain information can cause adverse and morally hazardous selections before the transaction is completed (STIGLITZ; WEISS, 1988).

Additionally, given that the credit market is associated with uncertainties and that investments are based on agents' expectations of future gains, decisions on the long-term supply of credit, essential to sustainable economic development, are considered riskier than short-term credit offerings (FERRAZ; ALÉM; MADEIRA, 2013). Furthermore, the private sector has no interest in those projects that combine low private return and high risk, regardless of externalities or the social return of projects, such as infrastructure projects.[3] This shows how the very reality of the financial system contributes to its "incompleteness". Long-term funding, which requires extended deadlines and other

[3] Infrastructure is essential to support development and economic growth, employment, exports and hosehold income (MAZZUCATO; WRAY, 2015)

conditions usually associated with higher risk and/or lower return, tends to be the most affected as a result.

Incompleteness in the credit market also creates gaps in financing specific segments, especially those that demand long-term credit and creates impediments to reducing regional, sectoral, and social inequalities. (STIGLITZ, 1994).

Regional or subnational economies differ from each other according to numerous aspects, including access to credit. Private financial institutions tend to provide a more substantial supply of credit to regions with a higher degree of economic development, usually associated with lower uncertainty and a liquidity preference. This reinforces the cumulative process of regional inequalities. This natural tendency of the financial system generates a concentrating effect, becoming an instrument that stimulates regional imbalances precisely because of the development characteristic. Urban conglomeration determines a greater concentration of financial institutions and credit supply and a greater degree of sophistication of the financial services offered (DOW, 1987a; JAYME JR; CROCCO, 2010).

On the other hand, investments in innovation have the potential to increase economic complexity and create new cycles of capital accumulation, promoting catching up. Since decisions related to innovation are subject to uncertainty, the forces of innovation in the financial sector are disruptive. In this process, the financial system plays a central role in driving the investments that generate such structural changes (PAULA, 2011). However, despite increasing the economy's productivity, investment in innovation means betting on new sectors, new forms of production, and new materials. Innovations break paradigms, generating resistance from economic agents, workers, capitalists, and consumers. The financial system tends to direct its loans to sectors with a higher rate of return and less uncertainty. In this sense, investments in innovation tend to be disfavoured by the private financial system. (MAZZUCATO; WRAY, 2015)

Finally, SFIs can fulfil a countercyclical role, acting to minimise the effects of the retraction of private credit during an economic slowdown and thus avoiding drastic investment financing disruptions. The private financial sector operates in a pro-cyclical manner, expanding credit in times of economic boom when the agents' confidence is high. Financial markets' competitive nature causes institutions to take less conservative behaviour to avoid market share losses. When the economy is expanding, expectations are favourable, and agents tend to invest despite their future earnings projections. In this context, financial institutions lend more boldly, with less risk aversion, while maintaining their credit supply high. On the other hand, in times of crisis or economic instability with the possibility of a recession, financial institutions increase their liquidity preference and restrict credit supply. This behaviour of financial institutions deepens the downturn, creating a vicious cycle where the retraction of credit generates default and further depreciation of assets, aggravating the pessimistic scenario and generating greater credit retraction. The behaviour of banks exacerbates crises by reducing the system's liquidity exactly when it is most needed (MINSKY, 1992, 2008). This means that the financial institutions' preference for liquidity is directly related to agents' expectations throughout the economic cycle. The expansion of credit in periods of growth and its contraction in times of crisis are inherent characteristics of banking activity, especially in the private sector that follows a profitability logic.[4]

In addition to the abovementioned functions, this article highlights another essential role of SFIs: SFIs are essential public policy instruments fundamental to financing the catching-up process and development. Economic development is closely linked to the evolution of articulated and complex financial systems. The channelling of funding resources in the productive investment is a *sine qua non* condition for this process's success. The financial system creates and directs liquidity, not merely transfers resources from surplus agents to deficit agents (PAULA, 2011). The failures inherent in the functioning of financial systems and the capital importance of this market for the economic development process are strong reasons that justify State-owned financial institutions' existence focused on sustainable development.

Therefore, a structural approach attributes a more significant role to SFIs, defending them beyond market failures. They are essential because long-term decisions are driven by non-probabilistic uncertainty. Their performance is not limited to complementing private institutions or acting countercyclically. In this sense, as already stated, their position is permanent, not transitory. SFIs are public policy arms with a mission to promote

[4] A theory known as the "financial instability hypothesis" of Minsky.

development through structural change, following government guidelines. To this end, they must offer a range of products differentiated from the private sector concerning cost, term and operationality. They are, in other words, institutions that direct credit following a public policy orientation, being executors of government policies (ANDRADE; DEOS, 2009).

The interpretation of structural change addresses alternative ideas complementary to the theory of market failures and are not aggregated around a single theoretical framework. SFIs assume different formats and functions, depending on the country’s development level and the institutional, structural, legal, macroeconomic and political framework (FEIL; FEIJÓ, 2019). SFIs must be proactive, endowed with a mission, and act as a vector of structural change in the economy.[5] In this interpretation, SFIs correct market failures and create demand by encouraging new technologies. Thus, it is not market failures but the development of the capitalist system itself that gives SFIs an organic function in the development process. Even so, in order to fulfil that role, SFIs must have a strategic vision of structural change and be provided with a mission (MAZZUCATO; MACFARLANE, 2019).

To carry this out satisfactorily and to act effectively as a public policy arm, SFIs must also be coordinated with macroeconomic policies. Otherwise, SFIs would serve only as momentary agents in uncoordinated actions, unable to facilitate structural change, all the while demanding financial resources for an extended period. From this perspective, SFIs should be thought of as members of the Big Government. In Minsky's interpretation, this public structure would develop stabilising institutions, which would have a primary function to sustain the generation of profits to validate debt contracts, maintaining aggregate demand.[6] (ANDRADE; DEOS, 2009) suggest that in Minsky's vision, SFIs, development banks in particular, could be called Big Government Banks.

In this context, SFIs should be integrated into a **sustainable development convention** led by the State and its institutions. It represents a change in the State's mission and actions by coordinating its policies, institutions, and instruments towards sustainable

[5] For more information see Mazzucato and Macfarlane (2019); Mazzucato and Penna (2015); Wray (2009)

[6] "With Big Government, a move towards a deep depression is accompanied by a large government deficit that sustains or increases business profits. With profits sustained, output and employment are sustained or increased" (MINSKY, 2008, p. 330).

development and should involve social and regional development that supports a just and green transition in addition to the catching-up process. SFIs, integrated into this new convention, have the ability to direct investment following their mission. The direct action of the State through SFIs and their possible systemic coordination can increase the availability of credit to the economy in general. More specifically, it can direct credit to those sectors that, despite the multiplier power and its scope in promoting the structural change required for economic development, are subject to credit scarcity when left exclusively to the private risk and return considerations. With the presence of SFIs, investments planned by States, in the context of development policies, are not restricted to those made directly by public administrations, whose financing depends on tax resources and the issuance of public debt, or by the non-financial corporations controlled by them.

3. SFIs in Brazil: From the boom to the reduction in State presence in the financial sector

In Brazil, the experience with SFIs has distant origins in Banco do Brasil's establishment in 1808. The bank was the first national financial institution and was created because of the Portuguese court's presence in the country. This early version lasted until 1833 — the royal family's return to Portugal ten years earlier began a wave of looting that led to its bankruptcy. However, a need remained for a financial institution that would serve the government and promote the financing of the country's modernising process. In 1851, the baron of Mauá reopened the institution, which two years later merged with a private institution: the Commercial Bank of Rio de Janeiro. It functioned for 40 years as a mixture of a public and private bank, joining the Bank of the Republic of the United States of Brazil in 1893 to form the Banco da República do Brasil. Despite this long history, it was only in 1905 that the institution assumed its current format, with the government holding more than 50% of its capital and exercising administrative control. Even in its initial formation, Banco do Brasil was granted the right to issue currency, which justified the strong influence of the State in its administration. Since its creation, the institution has undergone a series of legal and institutional modifications. However, its priority was usually the financing of economic activity. Banco do Brasil, by being an issuer of currency, was granted a hybrid condition with central bank attributes until 1986. In the 21st century, the Bank acts both as an instrument of public policy and as a commercial bank (BANCO DO BRASIL, 2010).

State participation in the Brazilian financial system is not limited to the history of Banco do Brasil. In 1861, the Caixa Econômica Federal do Rio de Janeiro and Monte de Socorro, a precursor of the present Caixa Econômica Federal (Caixa), was created to encourage the savings of low-income families. From this experience, the central government implemented similar institutions in the states, including agencies and branches in smaller cities, which operated autonomously and were linked to the Ministry of Finance. In 1951, the first attempt was made to blend these regional units, which totalled 22 institutions distributed throughout the national territory. However, it was only in 1969 that such institutions were unified under the aegis of the Caixa Econômica Federal (ALCÂNTARA JR., 2006). Caixa played an essential role in allowing lower-income populations to access financial services and became an important real estate financier. Financial institutions such as Caixa, which acted as savings banks, had different regulations from commercial banks (that is, until the financial system reforms of 1962 to 1964). They were allowed to carry out specific credit operations such as pawnbroker's lodge, financing of public services, and the funding of real estate (LAFER, 1948). In the first decade of the 21st century, Caixa was responsible for the implementation of most of the government's economic and social development programmes, like the payment of the Bolsa Família aid, the financing of the Growth Acceleration Program (PAC), the implementation of the Social Integration Programme (PIS), the management of the Guarantee Fund for Time of Service (FGTS) and the operational management of the My House My Life programme, among others.

Despite the presence of two important federal SFIs, Brazil reached the end of the 1940s on the eve of a trajectory of accelerated growth, suffering from an important structural bottleneck — its financing capacity. The government found that the national banking system sought profit without considering its purpose, was unstable and cyclical, and was concentrated and poorly distributed socially, sectorally, and regionally (LAFER, 1948).

To address this bottleneck, the federal government created financial institutions that were oriented to foster long-term funding. Thus, in 1952 the National Bank for Economic Development (BNDE) was created, established as an autarky linked to the Ministry of Finance, and later (1982) transformed into the National Bank for Economic and Social Development (BNDES). Its creation was preceded, since the second half of the 1930s, by a broad discussion and detailed studies on the problems and perspectives of the Brazilian economy and the elements necessary to induce sustainable development. This discussion involved various government agencies and international missions andrivate entities, such as the National Confederation of Industry (BNDES, 2002).

Given the national economy's disparities, BNDE managed the financial resources mobilised domestically and abroad and organised the measures to implement sustainable development projects (COSTA NETO, 2004). The institution initially operated to provide funds for rail, energy and steel investment. In 1964, BNDE began to finance private sector investment in general through a series of programmes. Finame — the Special Agency for Industrial Financing — was created to support industrial development. In 1965, the Bank also started to function as a second-tier institution, funding other financial institutions.

The goal was to increase its capillarity, allowing a better distribution of funding throughout the national territory. From 1974 on, with the Second National Development Plan (PND), BNDE began to act in line with the government's political orientation, essentially financing capital goods and basic goods (FEIL; FEIJÓ, 2019).

In the mid-twentieth century, the increased importance of regional planning required specific actions aimed at lower relative income regions. The Banco do Nordeste do Brasil (BNB 1952) was set up with this aim, and, later, the Banco da Amazônia. Both are federal banks with regional operations. BNB is part of a vision of promoting development by mobilising resources guaranteed in the Constitution to combat drought and incentivise dynamic activities in line with the national economy. Banco da Amazônia was initially conceived in 1942 as a Rubber Credit Bank in order to finance rubber production and was owned in partnership by the Brazilian and US governments. In 1950, the government created Banco de Crédito da Amazônia S.A., expanding its goals to financing other activities. Despite its early creation, the bank assumed its current format only in 1966 (HORN; FEIL; TAVARES, 2015).

The expansion of BNDES activities and the creation of Finame in 1966 stimulated the formation of other regional SFIs, especially since the 1960s, which began to act in a complementary way to the federal bank. A total of 45 regional SFIs were created throughout the 20th century, with 67% of them formed after the establishment of BNDE (see Table 1 in the appendix), between 1952 and 1992. The analysis on the importance of regional SFIs should consider their coordination with the federal government through the transfer of resources from federal banks and individual state governments. These institutions occupied a privileged position in the receipt of official deposits and the management of financial resources from the public sector, not to mention being crucial public policy instruments of regional states (LOPREATO, F. L., 1994). Many of these institutions were privatised or simply defunct in the 1990s. In contrast, others gave rise to a new type of non-bank financial institution, the development agencies, in a process described further on in this article.

3.1 The first major national financial system reforms

Despite their importance for the Brazilian industrialisation process, the strong presence of SFIs in the financial system has been a permanent point of contention in academic and political debates. Throughout the development of the financial system, there have been many attempts to increase long-term credit supply from private financial institutions and stimulate the capital market. Two government initiatives, the financial reforms of 1964-65 and the 1990s, focused on structuring and eventually changed the functioning of the national financial system more deeply. However, they failed to modify the standard of long-term financing, which remained the responsibility of SFIs, the external sector and self-financing.

The first financial reform aimed at strengthening private institutions occurred in the years 1964-65 when the federal government promoted a broad banking reform to reduce public sector participation in the financial system, which, in turn, boosted the capital market (HERMANN, 2002). The plan provided incentives for the development of the capital market and the internationalisation of the private sector through (i) the indexation of national treasury bonds with the intent to become more attractive to private banks; (ii) the revitalisation of the capital market; (iii) the reduction of disparities in the credit market due to the inflexibility of interest rates, which had caused financial repression; (iv) the increase in unforced domestic savings to match international levels; (v) the development of financial innovations; and (vi) the creation of tax incentives to stimulate the private financial sector; among others (COSTA NETO, 2004; HERMANN, 2002; KORNIS, 1983).

The reforms created the Central Bank of Brazil and the National Monetary Council. The stimulus to private savings was seen as essential in lengthening financial institutions' maturities and stimulating higher credit volumes. Banco do Brasil underwent a profound modification in this context and no longer worked as a monetary authority. Nevertheless, the institution was instrumentalised with the "movement account", which allowed it to overdraw within the Central Bank of Brazil. BNDE continued with long-term financing. The regional development banks mainly operated with transfers from BNDE and Finame. (LEMBRUGER, 1978).

Despite the effort, the reform did not trigger considerable changes in domestic funding. Brazil undertook a rapid industrialisation process marked by State planning. Regional SFIs were essential instruments to induce economic development in the face of the shortcomings of the private financial sector to finance the process. Therefore, despite the extensive reform, the private sector's responses to the various incentives were insufficient such that, in practice, the consolidation of SFIs, both federal and regional, continued. Not only did the creation of regional SFIs continue (18 were inaugurated after the reforms), but their credit operations were bolstered, with considerable growth in BNDES disbursements destined to the productive private sector and the strengthening of development banks controlled by federation units. (STUDART; HERMANN, 2001).

BNDES maintained its long-term funding role. However, it changed its main objective from financing infrastructure to finance the national industry. The bank was designed to primarily finance national infrastructure, a sector covered by 69.4% of the operations approved between 1952 and 1960. In the following ten years, between 1961 and 1970, the amount allocated to industry rose to 70.6% of the total and stood at 67.4% in the next decade, between 1971 and 1980 (BARBOSA; SOUZA, 2010). BNDES's new strategy also sought to increase its regional capillarity through financial transfers to regional institutions. In this sense, the creation of regional SFIs was part of a federal government strategy to deconcentrate the financial development system. In addition, it was associated with the individual state governments' quest to encourage the (HORN; FEIL; TAVARES, 2015).

The institutional changes initiated in the 1960s generated concentration, centralisation, and the internationalisation of the banking market. It was also the beginning of the process of financial opening that would intensify in the 1980s. The mechanisms that allowed access to the international credit market were preserved (VIDOTTO, 2002). It is worth noting that, although it did not leverage the participation of the private sector in long-term financing, the 1964-65 reform allowed the expansion of the economy's global credit operations (HERMANN, 2002).

3.2 A new regulatory framework for SFIs

The role of Brazilian SFIs started to change during the 1980s, when, amid the external debt crisis and inflationary acceleration, they provided resources to finance their controlling states' deficits, not however always following best management practices (SALVIANO JR, 2004). The Central Bank's monitoring and controlling capacity had limited scope over SFIs. Due to the fiscal crises that hit many states, the structure of SFIs' balance sheets was severely affected, reducing the share of credit operations in total assets to the detriment of short-term government securities. State governments used SFI bonds to function as "near-currency" issuers. As a result, SFIs presented liquidity problems, forcing the Central Bank to impose financial aid programmes. In a high and rising inflation period, official financial institutions functioned to withhold inflationary tax and served as managers of the states' tax revenues. This deficit coverage role would contribute to the gradual deterioration of the institutions' equity situation, which eventually underwent a long restructuring in the following decade (GAMA NETO, 2011; LOPREATO, F. L., 1994; LOPREATO, F. L. C., 2002; SALVIANO JR, 2004).

Between the second half of the 1980s and the Real Plan implementation in 1994, the federal government waged a battle against high inflation through a series of economic plans. In a short period, the country lived through six economic plans and four different currencies. In terms of economic paradigms, the period marked an inflexion in economic theory worldwide. The late 1970s and early 1980s corresponded to the revival of neoclassical theories. Such policies preached a reformulation of the State and the undertaking of functions by private entities. Thus, public policies acted towards deregulation, trade and financial openness, and the free market apology. This process changed the understanding of the State's importance in financial intermediation, again significantly decreasing the participation of the State (CARVALHO, F. C. DE et al., 2019).

Combining the external and domestic liberalisation processes, the Real Plan provided monetary stability to the Brazilian economy, forming a new economic and regulatory context for the financial system. With the end of inflation, financial institutions lost profitability, as many had a vital revenue source in inflationary gains. As a result, many financial institutions, public and private, faced severe financial difficulties and many financial institutions broke down.

The liberalisation process of the mid-1990s expanded foreign capital in the banking segment. It was proclaimed an essential structural change in the Brazilian financial sector after several decades of "market reserve" for the national capital and SFIs. The process was defended as a necessary measure to expand and cheapen the supply of credit in Brazil, with microeconomics justifications through increased competition. The outcome of the opening diverged widely from what was promised in the official statements. It reinforced the interpretation that the determinants of foreigners' decision to enter Brazil were linked to exploring opportunities already offered by the Brazilian market structure despite the difficulties of expanding the business in its market of origin. The government, in turn, prioritised the entry of foreign capital to address problems faced by the banking sector with the Real Plan and the 1995 crisis, an objective masked by justifications aimed at increasing "competition" and the "efficiency" of the system (CARVALHO, C. E.; VIDOTTO, 2007).

This new political and economic configuration, domestically and abroad, led to the second major reform of Brazil’s financial sector, which occurred in the 1990s. The federal government approved three programmes: the Programme to Stimulate the Restructuring and Strengthening of the National Financial System (Proer), the Programme to Encourage the Reduction of the Presence of the State in Banking Activity (Proes), and the Federal Financial Institutions Strengthening Programme (Proef).

Reinforced by the liberalising wave that was already consolidated in the world sphere, the process of monetary stabilisation of the 1990s formed a new regulatory space. Policy guidelines pointed to the reduction of State participation in the banking sector, impacting SFIs. Financial institutions faced difficulties in promoting the necessary adjustments for their survival in this new environment, and several banks broke down, generating enormous economic and social costs. To avoid a banking crisis with the potential to cause a systemic crisis, the federal government implemented the Proer.

Proer, launched in 1995, sought mergers and acquisitions planning and assured the Central Bank the prerogative to intervene in financial institutions, preventing a possible systemic crisis. Its main objective was to guarantee the liquidity and solvency of the national financial system (BANCO CENTRAL DO BRASIL, 2012). The creation of Proer accelerated mergers and acquisitions and bank incorporations, primarily by establishing a special line of financial assistance. Such measures would act in favour of the banking consolidation process by stimulating property changes. The programme authorised the launch of a private, non-profit entity to manage resources aimed at protecting savers. The goal was to minimise the risk of a bank run derived from a loss of confidence in the soundness of financial institutions. Subsequently, this initiative materialised in the constitution of the Credit Guarantee Fund (FGC). It also granted the Central Bank powers to civilly hold bank managers accountable and strengthen mechanisms that would allow it to act preventively in the sanitation of those weaker institutions. In addition, a series of tax incentives were established to stimulate the incorporation of weaker institutions by the healthiest (CUNHA; PRATES; CARVALHO, 2016).

Proes addressed regional SFIs equity imbalances**.** The programme allowed the controlling states to opt for privatisation, acquisition by the federal government for subsequent privatisation, extinction, or sanitation of their regional SFIs. In the case of sanitation, the state would maintain control of the institution by providing at least 50% of the necessary resources and guaranteeing its soundness in the long run (CUNHA; PRATES; CARVALHO, 2016). It also permitted states to transform their institutions into development agencies. Table 1 in the appendix lists the institutions that have been extinguished, privatised, or transformed into development agencies. It notes that, between the mid-1990s and the early 2000s, almost all regional SFIs underwent restructuring processes under Proes. These agents were virtually eliminated from the financial system. The few survivors and new development agencies began to live under a new regulatory environment.

Development agencies are institutions specialising in regional development but submitted to the Central Bank's control. They were created as non-financial institutions by the Provisional Measure Nº 1,514 of 1996 and were initially regulated by Resolution No. 2,347 of 1996. With the Fiscal Responsibility Law, in 2001, it was forbidden for any State-owned company to finance another federative unit. Such obstruction was not extended to financial institutions, which could make loans to public entities other than their controller. It happened that some states had funding for infrastructure projects and, paradoxically, those states that had joined Proes would lose essential financing options for their infrastructure projects.

In contrast, others, which kept their financial institutions intact, would continue to enjoy the benefit (FREITAS, 2010). This was a critical pressure factor for development agencies to be transformed into financial institutions. Therefore, the regulation was amended and consolidated through Provisional Measure Nº 2,192 of 2001 and Resolution No. 2,828 of 2001 (HORN; FEIL; TAVARES, 2015). Resolution 2,828 transformed development agencies into non-banking financial institutions. In authorising their creation, the Central Bank imposed two restrictions — forbidding direct loans to the controlling state and direct deposits from the public — which would limit their operations (PINTO; PAULA; SALLES, 2007).

The development agencies' main scope of action is financing investment in the states where they are based. Each state can only have one agency. They differ from banking institutions as they cannot raise funds from the public in the capital market, resort to rediscount, have a reserve account at the Central Bank or place interbank deposits as depositors, nor can be transformed into any other type of institution that is part of the national financial system. The development agencies operate through equity and transfers of budgetary resources, tax or parafiscal funds, and national and international development organisations, and are required to have and permanently maintain liquidity fund equivalents to at least 10% of the value of their equity, which must be fully applied to federal government bonds (HORN; FEIL, 2019).

Federal financial institutions have also undergone a restructuring process under the Proef. The programme intensified the transfer of problematic credits from the asset portfolio to the National Treasury and assigned credits to the Asset Management Company (Emgea), a non-financial company linked to the Ministry of Finance and created specifically to manage these rotten assets. The federal government capitalized Caixa, BNB and Banco da Amazônia. The Central Bank recommended a series of improvements in the institutions' governance, which were to be adopted to ensure their efficiency and effectiveness. Proef represented a continuity to the sanitation and capitalisation of Banco do Brasil in 1996 and the sanitation measures of the housing financial system and Caixa in the second half of the 1990s (HORN; FEIL, 2019; VIDOTTO, 2016).

Federal SFIs were preserved, but their missions turned on a mercantile logic, with institutions instilling regulation and control rules similar to those observed for private institutions. BNDES transformed into an important financial agent of the ongoing privatisation process, becoming the National Privatization Fund manager responsible for technical, administrative, and financial support of the National Privatization Plan. Economic and government policy modifications changed the bank's strategies, enabling it to act more aggressively in privatisations, export support, and the service sector. Its work began to focus on the firm instead of the industry (ALÉM, 1998).

The restructuring processes and the external opening of the financial system during the 1990s and early 2000s resulted in the system's denationalisation and equity concentration. However, once again, the reform did not represent a change in the pattern of financing productive investment, which remained the responsibility of public institutions. That is, the national financial system's structural changes were again not accompanied by the development of a private long-term credit system. In this context, the large federal banks were preserved. Still, their mission became similar to private financial institutions, with the adoption of a new management model in which risk aversion was emphasised.

4. SFIs revitalisation and recent contributions

The year 2003 represented a new milestone in the Brazilian credit market's structure and functioning, introducing new operational and regulatory guidelines. Luiz Inácio Lula da Silva's government had an important instrument in the credit policy capable of stimulating consumption to support a virtuous cycle in the economy. Although there were no major attempts to reformulate financial sector regulations, the federal government's economic policy to promote credit expansion to boost aggregate demand marked an increase in credit operations. The reduction in inflation, along with the fall in the interest rate, growth in domestic output, and regulatory improvements — payroll credit, bankruptcy law, and credit information system — allowed for credit expansion. The period recorded a concomitant increase of State-owned and private financial institutions' credit operations, although, at first, private banks were the dynamic vector. This dynamic was reversed after the international financial crisis, which began in 2007/2008, with SFIs assuming a leading role in expanding credit operations in a countercyclical policy movement that lasted until 2015 (SLIVNIK; FEIL, 2020).

Therefore, although the process of institutional recovery of the SFIs began as early as 2003, it was only during the aforementioned international financial crisis that their role as a development agent was renewed in the broader sense. Despite the increase in credit supply, Brazil still had a low relationship between credit operations and GDP (around 40% of GDP in 2008), compared to international levels, when the international financial crisis broke out in 2007/2008. As a result, there was room for government actions to maintain liquidity in the financial market. On the eve of the financial crisis, SFIs reduced relative participation in the national financial system. The Brazilian government acted mainly through SFIs, which avoided a reduction in liquidity preferences. In under a decade and a half, SFIs' credit operations had reduced from around 60% to between 35% and 40% of the total financial system. This process was reversed at the beginning of the crisis and lasted until 2015 when a new recession occurred (Figure 1).

Figure 1: Participation of the SFIs in the National Financial System

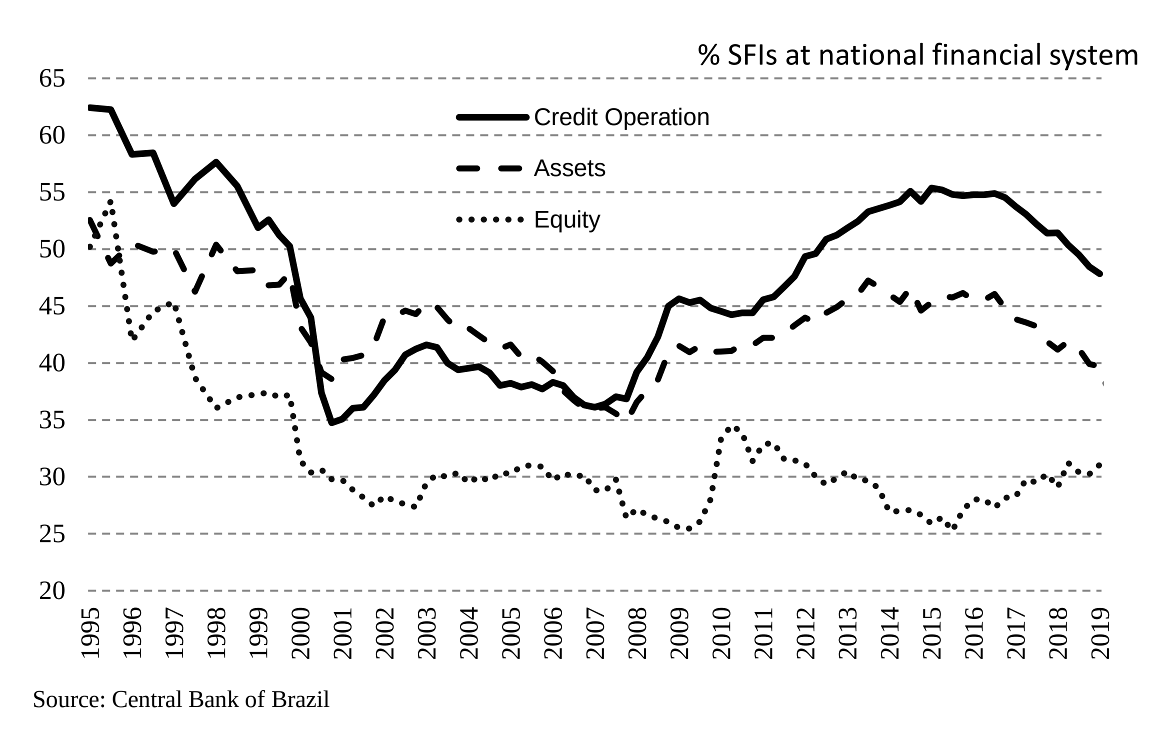
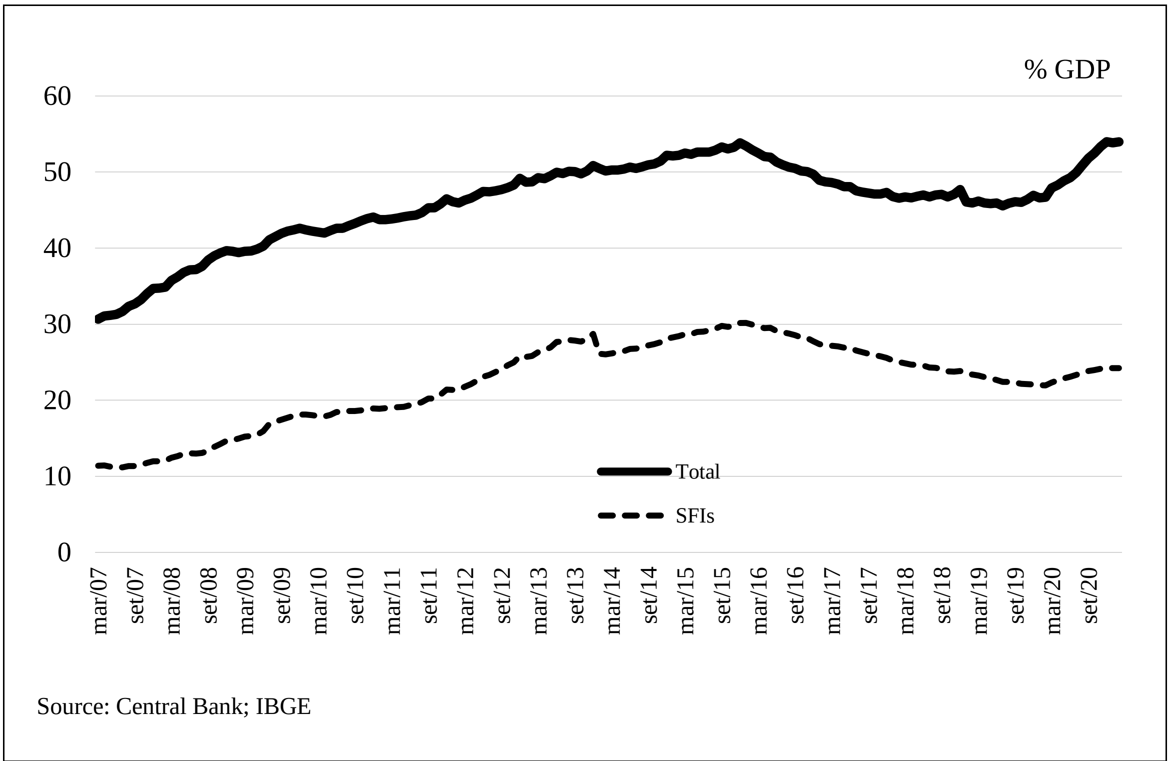


Figure 2: Credit Operation as a share of GDP – National Financial System and SFIs



The financial crisis's first impact was the contraction of private credit, with possible damaging economic growth effects. However, the reduced levels of leverage of the national financial system compared to the international system, the application of consolidated supervision procedures of the system, and the soundness of the institutions allowed for the adoption of measures to stimulate economic activity by injecting liquidity into the system. The Central Bank decreased the banks' reserve requirements and inserted approximately 3.3% of GDP into the money market at the end of 2008. Despite those actions, the private financial market augmented its liquidity preference, investing in the government bonds market instead of disbursing credit. Thus, it was up to SFIs to guarantee credit supply, resulting in their credit operations' relative rise. The countercyclical action of SFIs in the face of the higher liquidity preference of private credit was essential to avoid both the credit market's paralysis and even more negative impacts on the activity level (BARBOSA, 2010).

After the global financial crisis and the SFIs' actions, a more optimistic vision of State intervention in the financial market resurfaced. The credit market performance is essential for financing economic development. Under crisis circumstances, one of the main functions of the SFIs would be related to their countercyclical action, considered vital for maintaining productive activity. In other words, SFIs can act to counterbalance the harmful effects of the retraction of private credit. SFIs thus started expanding their relative and absolute presence in credit operations, assets, and equity during the crisis (Figures 1 and 2).

The increase in SFIs' participation in the post-crisis was possible due to the intentional action of the federal government given the pro-cyclical characteristic of the private financial sector, which, with the augmentation of risk, increased its liquidity preference and contracted the supply of credit, concentrating its assets on securities and government bonds. While the SFIs' access to lower-cost financing sources has allowed their market share to increase, this has occurred due to the federal government's intentional policy of strengthening SFIs through loans from the National Treasury. BNDES received a total of R$ 416.1 billion through treasury loans made by the issuance of government bonds. Caixa was capitalised through Hybrid Capital and Debt Instruments (IHCD): "perpetual loans" — contracts established without an amortisation period and with a monthly payment of interest and monetary adjustment by the inflation rates. The amount invested in Caixa as

IHCD between 2007 and 2010 was R$ 13 billion. Banco do Brasil received R$ 8.1 billion, 60% in the form of a perpetual loan (ARAÚJO, 2019; SLIVNIK; FEIL, 2020).

Whether acting directly or indirectly, SFIs are able to access the resources and tax and parafiscal funds of their controllers and have the role of acting as a public policy arm by operationalising or financing strategic programmes of their controlling entities. Recent examples are the Growth Acceleration Program (PAC in the Portuguese acronym), My Home My Life (MCMV), Family Allowance (Bolsa Família), the National Program for Strengthening Family Agriculture (Pronaf), the Safra Plan, the National Oriented Productive Microcredit Program (PNMPO), and the Investment Support Program (PSI) (HORN; FEIL, 2020).

4.1 Regional State-owned Financial Institutions

In this environment of strengthening federal SFIs, regional SFIs – development agencies, regional commercial banks, and state development banks — also recorded a period of expansion. Six new development agencies were created. The period between 2002 and 2016 recorded regulatory, institutional, administrative, operational, and funding availability improvements. Eight years after its adoption, Resolution No. 2,828 underwent significant modification through Resolution Nº 3,757 of 2009 and, subsequently, through Resolution Nº 3,834 of 2010 and 4,023 of 2011. The new regulation allowed (i) the extension of the limits of the activities of the development agencies; (ii) the execution of working capital operations for the maintenance of productive activity; (iii) a model of external fundraising from multilateral or international development banks, provided that it obtains a risk rating equal to or greater than the federal government risk; (iv) the implementation, on the condition of exceptionality, of programmes and projects developed in a state bordering on its area of operation; and (v) the handling of interbank deposits linked to microfinance operations (HORN; FEIL, 2019).

Currently, there are 16 development agencies in Brazil. The first to be created was in Santa Catarina. Approved by the Central Bank in September 1998, it originated from the transformation of the old development bank (Badesc). Since then, 15 other Agencies have been authorised, of which only Desenbahia and Badesc have preserved the full capital of their former commercial banks. The others were either established from partial structures (assets, employees, portfolios) of SFIs that went through Proes or were capitalised directly by the controlling state. Table 2 in the appendix presents a list of the development agencies operating in Brazil, ordered according to their approval date by the Central Bank. In addition to the 16 development agencies, there are the regional development institutions which include three development banks[7] and five commercial banks.[8]

At the end of 2020, the 24 regional SFIs had approximately US$ 39.2 billion in assets (equivalent to 1.80% of the financial system), credit operations totalling US$17.8 billion (2.3% of the financial system), and equity of US$4.9 billion (2.5% of the financial system). When classifying regional SFIs according to their assets, there is a higher concentration of small institutions in the less developed regions of the North and Northeast of Brazil. In contrast, the larger ones are concentrated in the more developed regions of the South and Southeast. These indicators demonstrate that, although the creation and maintenance of these institutions are considered necessary for the operationalisation of public policies and the financing of unique regional development projects, which seek to leverage local potential, they are still small in relation to the financial system as a whole.

SFIs are a heterogeneous set, an aspect that makes their analysis a particularly complex task. The data reflects the supremacy of federal SFIs in terms of assets, credit operations, and equity. Given the significant difference in size, the performance of SFIs depends on the direction taken by the group of the three major federal banks — Banco do Brasil, Caixa, and BNDES.

The operations of regional SFIs, nominally the development agencies and development banks, depend on transfers of resources from federal institutions, especially BNDES. Although an explanation for the factors of inequality among regional SFIs requires further investigation, it is possible to see that it results, first of all, from the inequality itself in the participation of the respective controlling states in the national economy. Additional institutional variables would be needed to capture the measure of the effort and financial capacity of state governments to strengthen their institutions. In this regard, we note the

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[7] The Development Bank of Espírito Santo (Bandes), the Development Bank of the State of Minas Gerais (BDMG), and the Regional Development Bank of the Extreme South (BRDE). BRDE is the only institution controlled by more than one state: Paraná, Santa Catarina and Rio Grande do Sul.

[8] State-owned bank of Rio Grande do Sul (Banrisul), Brasília (BRB), Espírito Santo (Banestes), Sergipe (Banese) and Pará (Banpará).

tendency of the states with lower participation in the Brazilian GDP to have smaller SFIs in terms of assets.

All regional SFIs have modest sizes yet have considerable potential to deepen their importance to their state economies. This is demonstrated by several regional SFIs that use various aid modalities for private activity and municipalities. However, the actions are not yet adequately measured regarding the relative importance of financing specific segments. It is worth mentioning that when observed in the aggregate, the inescapable conclusion is that regional SFIs have a small position; however, if their potential is considered, as evidenced in the variety of operational modalities found in each institution (qualitative aspect) and the probable larger relative size regarding the financing of specific sectors (quantitative aspect), it reaffirms the importance of considering the challenges posed to their growth.

Modalities of action and other aspects of regional SFIs

The operational modalities of regional SFIs vary widely according to their size and region. Regional commercial banks, despite being smaller, operate similarly to federal SFIs. This subsection will, for this reason, focus on development agencies and development banks. The main modalities are (i) long-term credit for investment projects, including working capital, especially for small and medium-sized enterprises (SMEs), rural producers and production cooperatives; (ii) credit for pure working capital; (iii) productive oriented microcredit and microfinance operations; (iv) long-term credit for innovation projects; and (v) management of tax funds, commonly used in operations with the municipal government sector to finance urban infrastructure projects. There are also credit operations with large companies and the contribution of resources in equity funds to a lesser extent. In addition to the financing modalities, it is worth noting that the performance of regional SFIs extends to the activities of mobilising economic agents in support of sectoral and regional development programs and business training actions, such as the dissemination of information on credit lines and tax incentives for investment (HORN; FEIL, 2019).

The organisational structure of development agencies and development banks' governance includes the functioning of technical committees, whose main objective is to ensure the suitability and efficiency in decision making and the coordination of internal activities. Among other aspects, the committees are responsible for defining criteria for granting credit, monitoring accounting practices, proposing annual activity planning, and analysing the institution's contributions to regional development. The growing concern for excellence in management, which results directly from the Central Bank's performance, ensures an element of prevention against the problems that led to the closure of their predecessors' activities in the 1990s. Risk management follows the central banks' standards and includes corporate risk management and capital management policies (HORN; FEIL, 2019).

Developing agencies and developing banks funding sources vary depending on their size. Nevertheless, they comprise three main types: (i) transfer resources from the BNDES System, Caixa Econômica Federal, Banco do Brasil, Finep and international financial development organisations and institutions; (ii) own resources; and (iii) resources from public funds and official programmes with state funds. Most development agencies and development banks operate primarily based on BNDES transfers. In the case of smaller development agencies, however, access has been denied in the face of BNDES's own necessities regarding the operational structure and capital required of the outgoing agents, including the technical capacity to evaluate and monitor credit operations, economic and financial performance, the degree of leverage defined by the Reference Equity and its dependence on the majority shareholder (states). A similar limitation occurs regarding the transfers of constitutional funds administered by federal financial institutions in the North, Northeast, and Midwest regions. Although they have had formal access to these resources since 2003, development agencies and development banks have effectively received a tiny portion of the total available.

4.2 Recent setbacks

The growth trajectory of SFIs has reversed since 2015, as shown by the sharp fall in this group of institutions' participation in the system's total credit operations (Figures 1 and 2). The change in government orientation regarding the performance of SFIs led to the decision to anticipate the return of contributions made by the National Treasury to federal banks. BNDES had an original commitment to pay by 2060, but from 2016 to 2019, the bank returned R$ 409 billion to the National Treasury, leaving an amount payable of R$ 225 billion. Debt renegotiation has allowed the institution to gradually reach this value by 2040; however, the expectation is that BNDES will complete the total payment in the next five years (HORN; FEIL, 2020).

In the same period, Caixa returned R$ 10.3 billion to the National Treasury, considerably reducing its lending ability. The debit balance of Hybrid Capital and Debt Instruments of the official financial institutions (Caixa and Banco do Brasil), together with the National Treasury, totalled R$ 37.1 billion at the end of 2019. The policy of early return of loans from federal SFIs has affected these agents' ability to provide liquidity to the market, the most severe case being BNDES, which has its liabilities less diversified. The reduction of resources available in federal SFIs and the adoption of stricter rules (albeit informally) directly affect the stake in institutions whose sources of resources are highly dependent on BNDES. This includes development agencies and development banks, which now find their funding for new operations reduced (HORN; FEIL, 2020).

Another issue arising from the changes in recent years involves collecting the long-term loans offered by BNDES. The bank used the Long-Term Interest Rate (TJLP), a fixed rate that is historically lower than the regular interest rate loans, as its main cost reference for its financing. In January 2018, the TJLP was replaced by the Long-Term Rate (TLP). While the National Monetary Council set the first based on the inflation target and a risk premium, the TLP is defined by the inflation index (IPCA), plus the five-year NTN-B real interest rate (quarterly average). The new rate is released by the Central Bank monthly. With this change, the fee charged by BNDES starts to be equivalent to the fees paid by the National Treasury in the taking of loans to the market. This change will make the basic interest rate charged by BNDES higher than the TJLP and the Selic rate itself — the economy's basic interest rate — and, therefore, be above the borrowing costs of commercial banks. Additionally, given that the rate will be fixed in the market and no longer by the National Monetary Council, it will fluctuate procyclically, hindering the countercyclical performance of BNDES (TORRES FILHO, 2018).

There has also been an attempt to change the use of an important source of SFI funding. Judicial deposits, a liability item of Banco do Brasil (representing the second-largest deposit account of the institution, behind only deposits in national currency) and Caixa, may also be deposited into private financial institutions. Judicial deposits are an essential source of compensation as they lengthen the term of the liability, reducing market risk and allowing a better match with possible long-term credit operations (HORN; FEIL, 2020).

These initiatives tend to weaken the performance of SFIs. They are also being accompanied by privatising measures. BNDESPar, BNDES's capital market arm, is selling a considerable part of its portfolio, and Caixa is restructuring its insurance sector for further privatisation. Likewise, the Central Bank has been operating to increase the economy's credit supply while reducing public sector participation in favour of the private sector and the capital market. In general, since the beginning of 2019, the Central Bank has pursued regulatory changes in the financial system to expand the competitive environment and market efficiency. Among the proposals are the attempt to expand liquidity through increased credibility of private securities and the creation of a secondary market for such securities, which would be almost as liquid as government bonds. This also promotes an agenda to stimulate the inclusion of new financial agents, such as fintech. Still, regarding credit, the intention is for larger companies, which would not require subsidised interest, to capture resources in the private market, while small and medium-sized companies, which would need more attention, are to be served by the public sector. Ultimately, the goal is to reduce the number of targeted resources.

Other one-off measures to stimulate the capital market include (i) the indexation of real estate credit to the IPCA, which would facilitate securitisation; (ii) the portability of real estate debt, allowing the debtor to refinance the debt; (iii) the expansion of the offer of productive oriented microcredit, increasing the credit limit without the face-to-face visit; (iv) the expansion of the secondary market of private securities, increasing the liquidity of the economy; (v) stimulating competition through the open banking system; and (vi) the flexibilisation of compulsory rules on term deposits, which would free up more resources for the economy (HORN; FEIL, 2020).

5. Promoting long-term sustainable development through regional SFIs

(BATEMAN, 2019) defines the Local Developmental State (LDS) as the subnational state that seeks to promote local economic development through explicit incentives to certain sectors. The LDS can act at the state, municipal, or multiple municipalities level, depending on the projects' opportunities and needs to promote development. It seeks development planning through technical guidance in formulating economic policy, choosing the region's driving activities that generate greater internalisation of income. Thus, the LDS perspective highlights strategies constructed from the "bottom-up" to induce structural change through innovation that has the increased technological sophistication of local production processes.

(BATEMAN, 2019) argues the LDS model's success would be that proactive subnational governments would be in a better position than the central government to provide a variety of institutional support structures and other incentives for the establishment and sustainable growth of the region. They would also play a major role in connecting companies to clusters, networks, and subcontracting chains, resulting in significant "collective" economies of scale and scope.

The private financial system is inherently pro-cyclical, a credit concentrator in regional and sectoral terms, profit-oriented and focused on the short term. It has a higher liquidity preference in regions with a lesser degree of economic development.[9] Therefore, the financial system tends to further concentrate production, generating a vicious cycle in the regional development process. Regional institutions, in turn, tend to reduce these characteristics, encouraging the supply of local credit and increasing the capillarity of the financial system (DOW, 1987b). Regional SFIs integrated into the context of LDS may promote regional catching up. The choice of new productive arrangements to be prioritised in a development strategy is not a trivial issue, being one of the most important for formulating a region's planning. Structural changes that predict increased productivity are considered important drivers for economic growth. The first dimension of this issue refers to the desired characteristics of these arrangements. It is important to avoid attempts

[9] See Dutra, (2020) e Dutra and Bastos (2016).

to circumscribe regional planning to the horizontal sum of all previously existing activities, meeting only the demands of local actors, and to be sure the arrangements result in more than just a reinforcement of a productive structure that requires overcoming. The second dimension is more appropriately associated with the State's role in betting on the new arrangements, which implies deciding and acting under greater uncertainty conditions.

Regarding the first dimension, (PAIVA, 2013) argues that disposable income in a region depends on its productive activity to occupy export markets in other areas of the same country or other countries. Export-oriented activities are designated as "propulsive activities" by the author.

In formulating and implementing its regional development strategy, the LDS is not autarkic but depends on cooperation with the central government. The success of such coordination, from a regional perspective, is contingent on the guidelines of the national development strategy, that is, how much it gives shelter to the substance of the local strategy, thus allowing access to federal resources. It is also dependent on the conduct of macroeconomic policy, that is, if the setting of basic prices, such as exchange and interest rates, favours or disfavours growth. Credit policies coordinated at the national and regional level with macroeconomic, fiscal, and monetary policies operating through SFIs should be part of the state toolkit to promote structural change. In this sense, a net of financial institutions, nucleated by BNDES and following regional and national development planning, is necessary to achieve structural change and reduce economic, social, and regional heterogeneity.

In short, the strengthening of the LDS depends on a national environment favourable to long-term development and the funding conditions that provide and direct credit towards the desirable projects and sectors. While regional development must consider local specificities and potentialities, the success of the process will only occur through the coordination of each region's strategies, especially ones that prevent some cannibalising others. Thus, acting symbiotically and aligned with a national development project would ensure complementarity in the regional development process.

To perform their functions effectively, development agencies and development banks must have conditions of context and technical and management capacity to regularly offer financial products with appropriate deadlines and costs under sustainable risk conditions. Ideally, they should combine development agents, financial autonomy, and low liquidity and interest risks (HERMANN, 2011). The strengthening of these institutions faces some obstacles that need to be overcome to make their operational and institutional growth viable. The main obstacles include access to appropriate funding in terms of volume and conditions, the reduced capital base of several institutions, the tax burden that reduces the pace of wealth growth, and the increasing cost of compliance associated with sometimes excessive and merely bureaucratic controls of regulatory bodies.

An effective National Development System should bring together institutions capable of supporting development policies at all levels, particularly at regional and local levels. Pursuing this objective requires overcoming the challenges posed to each institution's functioning and the search for greater coordination between federal institutions specialised in financing investment and innovation, but without capillarity.

More than 20 years after creating the first development agency, it is possible to affirm that most of these institutions have already distanced themselves from the initial stage of their formation. For ten years, approximately between 2005 and 2015, the development agencies and development banks experienced a significant expansion in the volumes financed, implementing new operational modalities, and were focused on promoting economic activity. In the context of the resumption of national development, this trajectory's continuity will depend on overcoming barriers that hinder the sustained operational growth of regional SFIs.

5.1 Sources of resources and capitalisation

Access to funding in volume and conditions compatible with economic development demands is a problem for most SFIs in Brazil. However, the degree of importance and other aspects vary according to the institution's type and size. In the case of development agencies and development banks, this issue involves two others: (i) access to existing sources of resources for long-term financing — constitutional, budgetary, and parafiscal funds and transfers from institutions operating on the second tier of the system; and (ii) the expansion of the capital base, especially in smaller institutions.

Regarding the first issue, it is about allowing development agencies and development banks, especially those already with the conditions to do so, to access a larger volume of resources from traditional sources administered by federal SFIs. The second question is more complex. The capital base of development agencies and development banks can be expanded through the contribution of resources from the controlling shareholders or through better financial results retained in equity increase. Although cases of funds from the controlling shareholders have been observed, usually originating from financing lines from BNDES and Banco do Brasil to the states, this path suffers the injunctions of the states' reduced fiscal capacity, which worsened during the post-2015 economic recession. Concerning the improvement in financial results, this solution is limited by the low remuneration margins of long-term loans.

A feasible alternative anchored in development institutions' international experience involves tax credits to capitalise the regional SFIs. Paradoxically, although they have very particular characteristics derived from their status as development agents, with little diversification in the product portfolio, regional SFIs are subject to the same tax regime as private financial institutions. They are, however, different by nature: while the first group consists of government entities focused on promoting economic development and has its profit as a source of wealth growth that will allow catching-up, the second carries out financial intermediation with the primary objective of profit as income from private controllers. Extending to development agencies and development ban, the private system's tax burden results in limiting its capacity for equity growth and for the exercise of its function.

In several countries, there are successful examples of SFIs that receive tax incentives to perform their duties better. The most symbolic is KfWBankengruppe in Germany, which enjoys tax exemption (HORN; FEIL, 2019).

5.2 Governance and management

Despite improving corporate governance in development agencies and development banks, there is still room for improvement in management mechanisms. It is not enough that development agencies and development banks innovate in their operational processes through financial programmes and products. It is also necessary to innovate in internal processes, promoting the essential advances in leadership, work, and information that increase their operational efficiency. This improvement should be a dynamic and continuous process anchored in technical committees and not just an adaptive behaviour to the Central Bank rules.

The governance of development agencies and development banks should ensure convergence of multiple interests, emphasising the efficient application of their resources in terms of risk-return and fulfilling their mandates as promotional agents. To this end, it is crucial to reinforce the commitment of the governments of the controlling states to the governance of those institutions, and to ensure management based on quality criteria and effective economic and financial results. These results, it should be stressed, are not limited to the institutions' solvency indicators but include the importance of their operations for the promotion of investment and innovation and the implementation of public policies (FREITAS, 2010).

5.3 Technical Training

The constant improvement of their staff is necessary for strengthening development agencies and development banks' technical excellence. On the one hand, the transformations of the financial market and the world economy require adaptations of these institutions to redirect the business's direction, meet market demands and innovate in the supply of products. Structural change requires differentiated controls and specialised teams. On the other hand, the most efficient development agencies and development banks will be those whose technical staff can not only structure financing solutions but also incorporate other relevant knowledge to investment decisions, such as alternative tax incentives, environmental licensing rules, and opportunities for the location of industrial enterprises, among others. In a broad sense, they should act as a group of development agents.

Despite the organisational commitment and the effort required to improve governance strategies and practices, development agencies and development banks need to evolve with respect to their technical training, especially in smaller institutions. The resources for staff training and development are insufficient, and there is a lack of technical support for implementing a modern management structure. There are cases where it is even necessary to select people to form a permanent technical framework and identify with the institution's mandate (HORN; FEIL; TAVARES, 2015).

5.4 A stronger institutional arrangement and BNDES

The construction of an effective National Development Financial System should be seen as a period of institutional strengthening of the State, whose objective is the recovery of the capacity to plan and execute development policies. This process necessarily requires a more effective combination between federal SFIs that usually act as second-tier institutions and regional SFIs. Many regional agents fund BNDES, Finep, Banco do Nordeste and Caixa. However, these relationships are usually established under the same rules applied to private banks. An effective National Development Financial System that supports a national and regional development policy needs to create a more robust institutional arrangement in combining regional and federal SFIs, one that expands the capillarity of the long-term financing system, based on the technical expertise of regional SFIs. The most promising starting point to develop this from the present stage would be to place regional SFIs in an initiative that would make BNDES the leading institution of this process.

SFIs can play an essential role in coordinating public policies, reducing problems associated with information, and fostering a state of trust that expands the economy's liquidity preference. This expansion is directed to allow structural changes that reinforce the virtuous cycles of sustainable economic growth. The potential of SFIs is maximised when it is coordinated with the State at its various levels (federal and regional), placing the SFIs at the center of the development policies' planning and execution.

6. Conclusion

In this article, we discuss the role and, above all, the challenges faced by Brazil’s regional SFIs. It is an ongoing issue given the demands placed on financing investment in the process of economic development. In Brazil, productive financing is characterised by the strong participation of SFIs. Furthermore, the evidence shows that several countries have used SFIs to support industrialisation and that such institutions still maintain an important stake in the total banking assets.

In the 1990s, the National Financial System in Brazil underwent a restructuring that modified the environment in which SFIs operate. A different context emerged in the 2000s when credit policy was again part of the State's toolkit. The financial crisis of 2007-2008 led to an expansion of SFI participation despite the reaffirmation of the pro-cyclical behaviour of private intermediaries.

The return of the importance of SFIs and the birth of a new set of regional institutions have placed the strengthening of a National Development Financial System on the agenda of the development policy. It is also vital to address the restrictions placed on the more effective action of regional SFIs based on the objectives of development and capillarisation of long-term financing means. Thus, an agenda for overcoming these obstacles and, more importantly, for strengthening an institutional arrangement called NFS was the main subject of this article. With respect to this agenda, we highlight the issues of funding, the capital base, the governance of institutions, and technical staff training that takes a more comprehensive role as development agents. As always, such questions will only find an adequate answer in the plan of intentionality. In a statement, they depend on a policy that determines coordinated action between federal institutions, especially BNDES and regional SFIs, under the aegis of an effective regional development policy.

7. Appendix

Table 1: Financial institutions controlled by federation units

State	Financial Institution	Creation	Closure	Razon of transformation
Acre	Banco do Estado do Acre S.A.(Banacre)	1964	1999	Extinct
Alagoas	Banco do Estado do Alagoas S.A.(Produban)	1963	2002	Extinct
Amazonas	Banco do Estado do Amazonas S.A.(BEA)	1958	2002	Privatized
Amapá	Banco do Estado do Amapá S.A.(Banap)	1992	1999	Extinct
Bahia	Banco do Estado da Bahia S.A.(Baneb)	1937	1999	Privatized
	Banco de Desenvolvimento do Estado da Bahia S.A.(Desenbanco)	1966	2000	Turned into Development Agency
Cear-a	Banco do Estado do Ceará S.A.(BEC)	1964	2005	Privatezed
	Banco de Desenvolvimento do Ceará S.A.(BANDECE)	1970	1988	Extinct
Distrito Federal	Banco de Brasília(BRB)	1966	Open	Remain unchanged
Espírito Santo	Banco Banestes S.A. (Banestes)	1935	Open	Rescued
	Banco do Espírito Santo(nd)	1911	1931	Extinct
	Banco de Desenvolvimento do Espírito Santo S.A.(Bandes)	1969	Open	Remain unchanged
Goias	Banco do Estado de Goiás S.A.(BEG)	1955	2001	Privatized
	Banco de Desenvolvimento de Goiás S.A.(BDGoiás)	1977	1994	Extinct
Maranhão	Banco do Estado do Maranhão S.A.(BEM)	1939	2004	Privatized
	Banco de Desenvolvimento do Estado do Maranhão(BDM)	1970	1988	Extinct
Mato Grosso	Banco do Estado do Mato Grosso S.A.(Bemat)	1963	1997	Extinct
Minas Gerais	Banco do Estado de Minas Gerais S.A.(Bemge)	1967	1998	Privatized
	Banco de Crédito Real de Minas Gerais S.A. (Credireal)	1889	1997	Privatized
	Caixa Econômica do Estado de Minas Gerais(MinasCaixa)	1896	1998	Extinct
	Banco de Desenvolvimento de Minas Gerais S.A.(BDMG)	1962	Open	Rescued
Pará	Banco do Estado do Pará S.A.(Banpará)	1961	Open	Rescued
Paraíba	Banco do Estado da Paraíba S.A.(Paraíban)	1930	2001	Privatized
Pernambuco	Banco do Estado de Pernambuco S.A. (Bandepe)	1939	1998	Privatized
Piauí	Banco do Estado do Piauí S.A.(BEP)	1958	2008	Privatized
Paraná	Banco do Estado do Paraná S.A.(Banestado)	1928	2000	Privatized

	Bando de Desenvolvimento do Paraná(BADEP)	1968	1994	Extinct
Rio de Janeiro	Banco do Estado do Rio de Janeiro S.A.(Banerj)	1945	1997	Privatized
	Banco de Desenvolvimento do Estado do Rio de Janeiro S.A.(BD-Rio)	1975	1989	NA
Rondonia	Banco do Estado de Rondônia S.A.(Beron)	1983	1998	Extinct
	Rondônia Crédito Imobiliário S.A.(Rondonpoup)	nd	1998	Extinct
Rio Grande do Norte	Banco do Rio Grande Norte S.A. (Badern)	1906	2000	Extinct
	Banco de Desenvolvimento do Rio Grande do Norte S.A.(BDRN)	1970	2000	Extinct
Roraima	Banco do Estado de Roraima S.A.(Baner)	1991	1998	Extinct
Rio Grande do Sul	Banco do Estado do Rio Grande do Sul S.A.(Banrisul)	1928	Open	Rescued
	Caixa Econômica Estadual do Rio Grande do Sul S.A.(CEE)	1960	1998	Turned into Development Agency
	Bando de Desenvolvimento do Estado do Rio Grande do Sul S.A.(Badesul)	1974	1992	Incorporação
Santa Catarina	Banco do Estado de Santa Catarina S.A.(Besc)	1962	2008	Privatized
	Caixa Econômica do Estado de Santa Catarina(CEESC)	1969	NA	NA
	Banco de Desenvolvimento do Estado de Santa Catarina S.A.(Badesc)	1977	1998	Turned into Development Agency
Sergipe	Banco do Estado de Sergipe S.A.(Banese)	1963	Open	Rescued
São Paulo	Banco do Estado de São Paulo S.A.(Banespa)	1909	2000	Privatized
	Banco de Desenvolvimento do Estado de São Paulo S.A.(Badesp)	1970	1990	Extinto
	Nossa Caixa Nosso Banco S.A.(Nossa Caixa)	1916	2009	Privatized
South Region	Banco Regional de Desenvolvimento do Extremo Sul S.A.(BRDE)	1962	Open	Remain unchanged

Source: Horn, Feil and Tavares (2015)
NA-Not Available

***Table 2: Funding Agencies*[10]**

Development Agency	Acronysn	Date of approval
DA of the State of Santa Catarina	Badesc	15/09/1998
DA of the Sstate of Rio Grande do Sul	Badesul	07/12/1998
DA of the State of Roraima	Develops RR	24/03/1999
DA of the State of Amapá	Afap	10/05/1999
DA of the State of Amazonas	Afeam	02/09/1999
DA of the State of Paraná	Fomento Paraná	08/11/1999
DA of the Sstate of Rio Grande do Norte	AGN	05/04/2000
AF of the State of Goiás	Goiás Fomento	18/04/2000
AF of the State of Bahia	Desena	17/08/2001
Pa of the State of Tocantins	Tocantins Foment	22/11/2002
PA of the State of Rio de Janeiro	Agerio	26/09/2003
PA of the State of Mato Grosso	Develops MT	21/05/2004
AF Paulista	Develops SP	12/02/2009
AF of the State of Alagoas	Develops	25/03/2009
PA of the State of Piauí	Piauí Fomento	09/04/2010
AF of the State of Pernambuco	Agefepe	06/12/2010

Source: BCB. Elaboration of the authors.

[10] The AF of Santa Catarina maintained the acronym of the former Development Bank.

Table 3: Regional State-owned Financial Institutions, according to size variables, 2019

R$ Billion	Assets		Equity		Credit Operation		Basel Index	
Financial Institution	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**	**2019**	**2018**
Bancos Federais	**3,586**	**3,567**	**262**	**219**	**1,575**	**1,525**		
BNDES	740	807	105	80	297	261	37	
BB	1,473	1,418	99	92	582	567	19	29
Caixa	1,293	1,265	50	41	684	684	19	19
BNB	59	59	5	4	10	10	14	20
Banco da Amazônia	20	19	2	2	3	4	13	15
Regional Coomercial Banks	**135.5**	**132.2**	**12.9**	**11.8**	**49.3**	**55.1**		**13.3**
Banese	5.5	5.2	0.4	0.4	2.1	2.5	13.3	
Banestes	23.6	27.8	1.6	1.5	3.7	3.8	14.1	14.6
Banpara	8.8	7.1	1.4	1.2	4.2	5.3	20.6	16.7
Banrisul	81.0	77.0	7.8	7.3	30.8	33.0	15.1	24.0
BRB	16.7	15.0	1.7	1.4	8.5	10.4	16.3	15.9
Davelopment Banks	**24.1**	**25.4**	**4.9**	**4.9**	**19.7**	**18.8**	**-**	**16.7**
Bandes	1.1	1.5	0.2	0.5	1.0	0.8	16.9	34.3
BDMG	6.1	6.6	1.8	1.7	5.2	4.5	20.5	16.9
BRDE	16.9	17.3	2.9	2.7	13.5	13.5	18.2	17.6
Development Agencis	**10**	**11**	**6**	**5**	**6**	**6**		
Afap	0.01	0.01	0.01	0.01	0.01	0.01	37.08	NI
Afeam	0.27	0.49	0.09	0.09	0.02	0.02	33.65	32.16
Tocantins Fomento	0.02	0.02	0.02	0.02	0.01	0.01	70.05	72.41
Age	0.05	0.06	0.05	0.05	0.04	0.03	66.83	61.44
Agerio	0.57	0.56	0.47	0.47	0.17	0.25	100.87	71.43
AGN	0.07	0.07	0.04	0.04	0.02	0.02	55.47	55.51
Badesc	0.97	0.98	0.60	0.55	0.67	0.72	37.67	37.07
Badesul	2.67	2.99	0.73	0.71	2.25	2.00	21.70	19.54
Desenbahia	1.21	1.22	0.58	0.57	0.71	0.69	33.88	33.60
Desenvolve	NI	0.06	NI	0.04	0.02	NI	70.70	65.40
Desenvolve RR	0.01	0.01	0.01	0.01	0.00	0.00	122.41	43.58
Desenvolve SP	1.80	1.82	1.12	1.06	1.28	1.27	46.83	31.16
Fomento Paraná	2.12	2.01	1.79	1.65	1.15	1.15	41.31	41.24
Goiás Fomento	0.24	0.24	0.19	0.19	0.11	0.10	55.02	47.62
Desenvolve MT	0.04	0.04	0.01	0.01	0.02	0.02	19.04	18.72
Piauí Fomento	0.01	0.01	0.01	0.01	0.00	0.01	61.60	72.64

Source: Central Bank

Article 2 - Regional credit distribution in Brazil: the role of State-owned financial institutions[11]

[11] A version of this article was published at Area Development and Policy in 2021.

1. Introduction

State-owned financial institutions (SFIs) still hold a significant share of total world banking assets, notwithstanding the continuous advance of financial liberalisation, deregulation, and privatization since the 1980s, reducing their presence in most economies. However, with the outbreak of the financial crisis of 2007-2008, the role of SFIs as instruments employed to minimize the damaging effects of private credit crunches has been widening. New State-owned financial institutions have emerged, and other institutions have reviewed and enlarged their development role (LUNA-MARTINEZ; VICENTE, 2012)[12].

Brazil, SFIs have always played an important role in the domestic financial system. During the rapid industrialization period that lasted from World War II to the end of the 1970s, SFIs were proactive in supplying financial resources for structural economic change. This role was partially weakened following the 1980s debt crisis when economic performance slowed down and the 1990s financial reform that redefined the size of SFIs (AMADO, 1997, 2010; HORN; FEIL, 2019). Even so, Brazil still has a rather sophisticated State-owned financial architecture, composed of four development banks, nine commercial banks with a development portfolio and earmarked credit operations, and 16 development agencies.[13] These banks and agencies comprise national and regional State-owned institutions.

This paper aims to evaluate the contribution of SFIs to the decentralization of credit to Brazilian regions over the last two decades. In order to accomplish this aim, Section 2 provides a brief theoretical review of the relevance of State-owned financial institutions for economic development. More specifically, it is argued that SFIs are needed to promote economic development, that is to say, structural change to enhance growth rates and sustain aggregate demand in the short term. Moreover, SFIs are important tools to promote local development, assuming that an uneven supply of credit among regions with

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[12] Examples are the China Development Bank (CDB), the Asian Infrastructure Investment Bank (AIIB), and the BRICS's New Development Bank (NDB). Development finance institutions have been created all around the world regardless of the country's economic or financial development stage (Luna-Marinez et al., 2018; Carvalho et al., 2018).

[13] Develpment agencies are non-banking financial institutions that operate similarly to development banks excepted that they cannot receive deposits from the public or issue bonds.

different degrees of development can set up a vicious growth cycle. Section 3 outlines the evolution of Brazilian SFIs starting with their consolidation after World War II through the financial reform of the 1990s that brought about a reduction in their share and, finally, to their revival in the 2000s. Three distinct phases are identified: (i) the period of rapid industrialization from the end of World War II to the late 1970s; (ii) the period of economic opening and increasing financial integration starting in the 1980s; and (iii) the period 2007-15, which was marked by a quick recovery in the importance of the leading SFIs. Section 4 presents an analysis of the regional distribution of credit and the role of national and regional Brazilian SFIs in reducing inequality in the 2000s and 2010s. The final section concludes by arguing that notwithstanding continuing regional disparities, the Brazilian indicator of regional credit concentration improved between 2004 and 2015, mainly because of the North and Northeast regions' performance. This improvement was related to the recovery of State-owned financial institutions after 2008. In particular, it is suggested that regional Brazilian SFIs, although they decreased in size after the neoliberal reforms of the 1990s, still play a role in regional development as a consequence of their chief mandate of supplying credit. The strengthening of regional SFIs is a public policy choice. When such a choice is integrated with developmental policies, as suggested by this empirical analysis of the regional distribution of credit in Brazil in 2004-2015, it can help reduce regional disparities by providing credit for projects that may boost local potentialities.

2. Why are State-owned financial institutions needed? A heterodox overview

Following the assumption of non-neutrality of money, financial institutions, particularly banks, exert a fundamental role in modern economies' growth dynamics as they provide investment credit.[14] However, as private financial institutions are profit-oriented, they might not operate in the best interests of long-term growth. They can create gaps in the finance of specific economic segments, especially those perceived as too risky and with expected returns that lie too far into the future (DEMIRGÜÇ-KUNT; FEYEN; LEVINE, 2012; GUTIERREZ *et al.*, 2011; MAZZUCATO; MACFARLANE, 2019). In other words, even if the social return of financing a productive sector or a region has a positive long-term impact on growth, the investment may not occur in the face of deficient private returns that private financial institutions naturally prioritize (STIGLITZ, 1994).

The developmental and structuralist literature suggests that commitment to structural change is a necessary condition for enhancing the growth performance of developing economies (PREBISCH, 1971; STIGLITZ *et al.*, 2006). In this perspective, SFIs play a distinct role not fulfilled by private financial institutions in promoting economic development. Theoretical arguments concerning this particular role draw on liquidity preference theory, according to which SFIs provide more liquidity to those regions or industries whose financing private financial institutions deprecate (WRAY, 2009); the entrepreneurial State proposition, which suggests that SFIs should fund investment projects linked to 'guided missions' (MAZZUCATO; MACFARLANE, 2019; MAZZUCATO; PENNA, 2015); and the argument that SFIs are needed to curb the financial fragility of modern economies, strengthening 'the Big Bank' according to Minsky's (1992) terminology (FEIL; FEIJÓ, 2019).

[14] In post-Keynesian theory, banks play a crucial role as they "hold the key" to economic activity. Assuming that money is not neutral, the liquidity preference of financial institutions determines their supply of funds to finance economic growth and investment in capital accumulation. Keynes (1997) discusses in depth the role of banks and the liquidity problem, showing that banks are not just saving-lending institutions, but have a more active role in the productive system. With the introduction of the principle of effective demand in *The General Theory of Employment, Interest and Money* (1936, 1997), Keynes reversed the dominant view of the role of savings as a source of funds for investments. This inversion had important implications for understandings of how banks and firms interact and consequently of the role of the banking system in the national and regional development. In a word, the supply of credit was assumed to be an essential driver of economic growth once it provides support to aggregate demand.

In this Brazilian case analysis, SFIs are identified as essential State planning and development strategy tools. To function adequately and fulfill their purpose, SFIs should operate as public policy arms, promoting sustainable growth through funding and financing activities related to state State development projects, enabling changes in the productive structure, and reducing structural heterogeneities. As such, SFIs' role should be understood as going well beyond the issue of market failures; in effect, their chief role should be to stir the market and to promote the catching-up process – regionally and nationally. In this sense, the authors subscribe to the argument of (MAZZUCATO; MACFARLANE, 2019), according to which credit should be orientated so as to boost innovation and build new market opportunities. Therefore, there is room for public financing of developmental projects that promote structural change, increase aggregate productivity in developing economies, and expand the technological frontier in developed economies.[15]

SFIs also play an essential role in reducing regional inequalities through credit supply to less developed regions. (DOW, 1982) has shown that an unequal local development pattern is likely to arise because financial institutions' liquidity preference results in the supply of insufficient credit to less developed regions. Financial institutions set their liquidity preference based on the information gathered in headquarters, at the national level, normally located in the most developed areas. Not uncommonly, they choose to maintain a high level of reserves and restrict credit to less developed regions.

Thus, unequal regional development can also be associated with an uneven volume of credit offered by financial institutions, reflecting the liquidity preference where they operate. Considering the cumulative circular causation process in the sense of (MYRDAL, 1968), financial institutions profit from dynamic economies of scale as well as reinforce regional inequalities whenever they transfer money from the most deprived

[15] An alternative line of reasoning claims that SFI operations should be limited. Torres e Zeidan, (2016) point out that the justification for the existence of SFIs is to correct market failures and that their role should decrease as the financial market is developed, lest generating government failures occur. These faiures are assumed to be much worse than market failures. Furthermore, these authors argue that strong State-owned financial institutions may prevent the improvement of the private market, causing irreparable distortions in the financial sector. Their position is that SFIs should be confined to the first step in the initial period of the investment process. Lazzarini et al., (2015) add that, although SFIs have the mission to operate at the industry level, they end up operating at the firm level and endorsing political interests – the rent-seeking hypothesis.

regions to the richest ones. Financial institutions' negative role is referred to as a 'leakage of deposits', that is, expenditures in less-favoured regions end up 'leaking' to more developed regions for the simple reason that the former are net importers of goods and services from regions that provide productive resources.[16]

In sum, economic development and long-term growth depend on building complex financial systems since the channeling of financial resources to productive investments is a *sine qua non* condition for developmental success. Assuming that financial institutions, like any firm, seek profits, their expectations of higher returns determine their liquidity preference and credit provision. Direct government actions through SFIs increase credit availability, specifically for those sectors and regions that, despite multiplier effects and their capacity to promote the structural change required for economic development, are subject to credit shortages when credit provision is determined exclusively by private considerations of risk and return. In this sense, the fundamental importance of the SFIs should be interpreted as fulfilling a unique role in promoting structural change in developing economies as well as sustaining long-term growth in both developing and developed economies. In addition, SFIs are essential to the system's allocative efficiency, improving credit conditions as a whole (FREITAS, 2010; HERMANN, 2010) and providing needed liquidity throughout the economic cycle.

[16] If they transferred money in the opposite direction, financial institutions could play a decisive role by extending the effects of the economic expansion of the most developed areas to less developed ones.

3. Evolution of State-owned financial institutions in Brazil

The modern evolution of State-owned financial institutions in Brazil involved three distinct periods leading to the system's present architecture. The first period relates to the consolidation and expansion of the State-owned financial system in parallel with the rapid industrialization that lasted from World War II to the late 1970s. In this period, SFIs performed in full their role as promoters of structural change to enhance long-term economic growth. The second period covers the 1980s and the 1990s when a new regulatory space worldwide acted to weaken the Brazilian State-owned financial system. Finally, SFIs regained importance between the 2007-2008 financial crisis and 2014 (HORN; FEIL, 2019). During this third period, SFI operations helped sustain aggregate demand in the aftermath of the international financial crisis, yet without fully recovering their structural change commitment.

3.1 Consolidation and expansion in a period of rapid industrialisation: from the 1950s to the 1970s

The Brazilian economy has always had a strong presence of State-owned financial institutions. The first Brazilian SFI, Bank of Brazil (*Banco do Brasil*), dates back to the beginning of the nineteenth century (1808)[17]. In 1861, *Caixa Econômica Federal do Rio de Janeiro e do Monte de Socorro*, later transformed into *Caixa Econômica Federal*, was established in order to attend to the needs of the low-income population. However, despite the importance acquired by these two major State-owned banks, issues related to the funding of economic development only came to the top of the governmental agenda in the early 1940s. A structural change strategy originated from the Estado Novo's economic policy (1930-1945) and the advance of the industrialization process. This larger context led to the creation of the National Bank for Economic Development (BNDE) in 1952, later transformed into the National Bank for Economic and Social Development (BNDES). Furthermore, two federal banks with regional dimensions were set up in the 1950s addressing the problem of Brazilian regional economic inequalities: the Northeast

[17] *Banco do Brasil* was created when the Portuguese royal family moved to Brazil, fleeing the Napoleonic wars in Europe. Court needs demanded the existence of a financial institution.

Bank of Brazil (*Banco do Nordeste do Brasil* – BNB) and the Amazon Bank (HORN; FEIL, 2019).[18]

Post World War II, economic development further deepened Brazilian regional disparities, concentrating industrialization and growth in the Southeast and South regions. In response, many Brazilian states created planning organizations as well as sub-national State-owned financial institutions – regional development banks and commercial banks with development portfolios and earmarked credit operations. In particular, regional SFIs aimed to foster local economic development and act as financial agents of the states. From the late 1950s onwards, regional SFIs quickly grew up in terms of the number of branches, scale of operations and financial system share (COSTA NETO, 2004). As a whole, 45 regional State-owned financial institutions came into life in this period of Brazilian industrial development. More than two-thirds of these institutions emerged after the formation of BNDE. In the following decade, they operated in a complementary way to the BNDE as prime-tier institutions funded by federal bank resources.

Major attempts to reform the Brazilian financial system in the 1960s did not see a significant change in long-term credit supply, which continued to rely heavily on SFIs and foreign financing (FEIL; FEIJÓ, 2019; VIDOTTO, 2002). BNDE maintained a very important role as the leading development finance institution, filling the gap left by private banks and capital markets through both direct operations and joint operations with local SFIs. The development bank was the main source of funding for regional SFIs. In its first years, BNDE provided funds for infrastructure projects in rail, energy, and steel. Only in 1964 did it begin to finance private sector investment, leading to the creation of Finame, a subsidiary aimed at supporting manufacturing industries. One year later, BNDE started functioning as a second-tier institution to increase capillarity and better allocate resources throughout the national territory. This step saw the emergence of a network of

[18] BNB's original purposes were the allocation of funds to deal with the recurrent drought in the Northeast region and the development of productive activities aligned with the national economy. Additionally, it operated in a mixed way, performing the functions of both commercial and development banks. From 1989 onwards, BNB became responsible for managing the Constitutional Financing Fund of the Northeast (FNE). Banco da Amazônia was initially set up in partnership with the United States' government primarily to fund the exploitation of Amazon rubber. The bank assumed its current delineation as a SFI only from 1966, when it started to play the role of financial agent of the public policy for the development of the Amazon region. From the 1990s onwards, this institution came to operate with the resources of the Constitutional Fund for Financing the North (FNO), which had been created in 1989 (HORN; FEIL, 2019).

regional development banks providing long-term credit, which was of particular importance in the second half of the 1970s when BNDE gave priority to the finance of the production of capital goods and basic inputs under the auspices of the II National Development Plan (PND) (FEIL; FEIJÓ, 2019).

Despite attempts to reform the system so as to get private institutions and the capital market to provide long-term credit, State-owned banks remained the leading long-term credit institutions (HERMANN, 2002; LEMBRUGER, 1978). Not only did the cycle of the creation of regional financial institutions continue (18 new banks were set up after the financial reforms in the 1960s), but also the performance of this group was strengthened due to a considerable increase in BNDE disbursements to them. SFIs were consolidated over the 1960s and 1970s (HERMANN, 2002; STUDART; HERMANN, 2001) so that the chief mechanisms for financing investment projects during this phase of Brazilian economic development involved a combination of public bank credit, self-financing and external capital (credit and foreign direct investment).

3.2 The shrinkage of SFIs: from the 1980s to the international financial crisis in 2008

In the 1980s, the external debt crisis interrupted the cycle of high growth of the Brazilian economy, bringing about a severe fiscal crisis and high levels of inflation. The new external and domestic environment strongly affected development finance institutions, most of them reverting to lending money to finance increasing budget deficits. This conversion of SFIs' operations hurt their balance sheets and contributed to their liabilities' gradual increase. At the same time, neoliberal orientation worldwide weakened the economic role of the public sector. The need for macroeconomic adjustment established a robust connection between the increase in public deficits and SFIs' financial fragility and provided fresh arguments for a new regulatory space.

The opportunity to promote a larger rearrangement in the financial system came in 1994, when the success of the *Plano Real*, a stabilization policy aimed at curbing high inflation, gave rise to a severe financial system liquidity problem. A large share of Brazilian bank revenues arose from the inflationary procedures, with financial institutions arbitrating their operations in order to maximize the return, taking advantage of high inflation levels. Both private and public financial institutions faced difficulties in adjusting to the new economic environment of lower inflation. As a result, a number of banks were bankrupted, generating financial and social costs.

In order to avoid a systemic banking crisis and to ensure the liquidity and solvency of financial institutions, the federal government implemented a major financial reform in the 1990s. Several measures were taken, starting with the Programme to Stimulate Restructuring and Strengthening of the National Financial System (Proer). The Proer accelerated bank mergers and takeovers, increasing the degree of concentration in an already highly concentrated financial system (VIDOTTO, 2002). Another important initiative was the Programme to Encourage the Reduction of the Public Sector in Banking Activity (Proes), which aimed at redressing imbalances of regional State-owned financial institutions as well as preventing these institutions from providing their shareholders with credit. The fundamental aim was to reduce the share of State-owned financial institutions (SALVIANO JR, 2004). The Proes offered state governments a pool of policy alternatives for these financial institutions, ranging from privatization to a transfer of property to the federal government for subsequent privatization, closure or reorganisation, and transformation into special non-bank financial institutions. Consequently, a great number of regional State-owned financial institutions were privatized or closed, while others resurfaced as a new type of non-bank financial institution – the development agency (*Agência de Fomento* – AF) (CUNHA; PRATES; CARVALHO, 2016). Development agencies are non-bank regional development finance institutions set up to promote regional economic development by funding investment projects and financing working capital.

The 1990s bank reform also addressed federal banks with the Program for Strengthening Federal Financial Institutions (Proef). Under Proef, federal banks were able to exchange low-yielding assets for liquid assets at market rates. In addition, the federal government took preventive measures to avoid asset imbalances by increasing the equity of the *Caixa Econômica Federal*, *Banco do Nordeste do Brasil*, and *Banco da Amazônia*. In its turn, the Central Bank pushed for improvements in the corporate governance of these institutions as a way to ensure efficiency and effectiveness (CUNHA; PRATES; CARVALHO, 2016).

Although the restructuring of the financial system was seen as necessary to control high inflation, it put aside improved provision of long-term credit for structural change and regional development. The main consequences were a higher degree of bank concentration and the virtual elimination of sub-national State-owned banks. Several mergers saw private banks take over regional commercial banks, redirecting their activities to regions with comparative advantages. Federal banks (*Banco do Brasil* and *Caixa Econômica Federal*) were preserved, but they came to operate primarily as commercial banks under a managerial model that emphasized risk aversion. As for BNDES, it became the chief agent of the privatization of public non-financial corporations carried out in the second half of the 1990s.

In the early 2000s, the architecture of the regional SFIs included development agencies, three development banks, BRDE, BDMG, and BANDES, and five commercial banks, BANESE, BANESTES, BANPARA, BANRISUL and BRB. Besides these regional entities, five federal SFIs (banks) remained. Table 1 lists the State-owned financial institutions that have operated for the last twenty years.

Table 1: Brazilian State-owned financial institutions, 2020[*]

Federal banks	Regional coverage
BNDES – Development	National
Bank of Brasil – Commercial	National
Caixa Econômica Federal – Commercial	National
Northeast Bank – Commercial	Northeast (NE)
Amazon Bank – Commercial	North (N)
Regional development banks	Regional coverage
BRDE	South (S)
BDMG	Minas Gerais (SE)
BANDES	Espírito Santo (SE)
Regional commercial banks	Regional coverage
BANRISUL	Rio Grande do Sul (S)
BANESTES	Espírito Santo (SE)
BRB	Distrito Federal (CW)
BANESE	Sergipe (NE)
BANPARA	Pará (N)

Development agencies – AF
AF Alagoas (NE)
AF Amapá (N)
AF Amazonas (N)
AF Bahia (NE)
AF Goiás (CW)
AF Mato Grosso (CW)
AF Paraná (S)
AF Pernambuco (NE)
AF Piauí (NE)
AF Rio de Janeiro (SE)
AF Rio Grande do Sul (S)
AF Rio Grande do Norte (NE)
AF Roraima (N)
AF Santa Catarina (S)
AF São Paulo (SE)
AF Tocantins (CW)

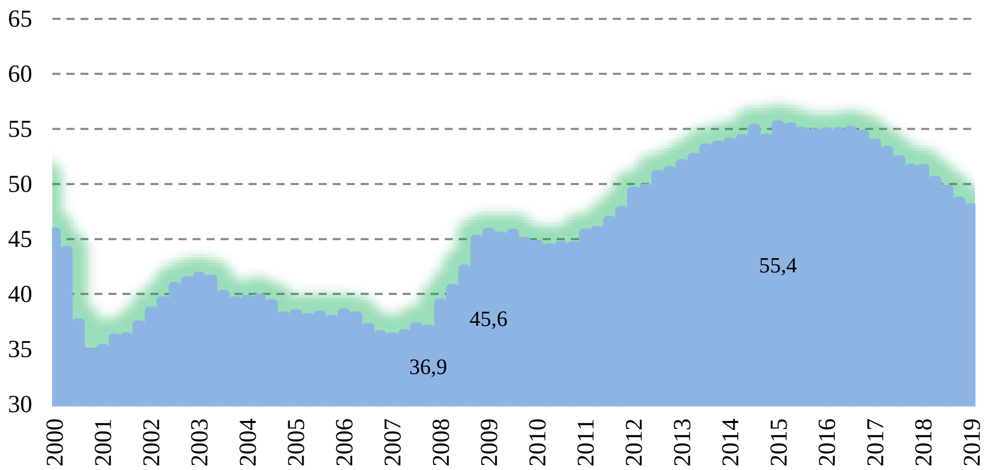
* States are indicated in the names of the Development agencies and in the information on regional coverage of regional banks. The great administrative regions of the country are noted in brackets: N – North; NE – Northeast; CW – Centre West; SE – Southeast; and S – South.
Source: Central Bank of Brazil.

Although the new State-owned financial architecture was smaller in size, it still had the potential to support economic activity. 2003 was a new milestone in the structure and operation of the Brazilian financial system, with the introduction of new operational and regulatory guidelines. President Luiz Inacio Lula da Silva, who took office in 2003 used credit leverage as an instrument to stimulate consumption and reinforce a virtuous economic circle. Although the first period, from 2003 until 2007/2008, the period saw a concomitant expansion of public and private credit operations, the latter's share pushed the boom. From the start of the international financial crisis until 2015, the share of SFIs operations was the main reason for total credit operations increases (see Figure 1).

3.3 The momentary revival of State-owned financial institutions: from 2008 to 2014

The role of State-owned financial institutions was renewed after the international financial crisis of 2007-2008. The Brazilian government acted quickly by expanding liquidity and pushing State-owned financial institutions to supply credit to avoid credit crunching. On the side of private banks, a higher degree of risk aversion and an increase in liquidity preference caused them to direct the funds to repurchase operations with the monetary authority itself. This reaction of the private financial system forced SFIs to bear most of the credit supply in the face of a risk of credit drought. The countercyclical action of SFIs was decisive to avoid a sudden stop in the domestic credit market and its negative impact on the level of activity. Moreover, SFIs came to increase operations of existing public policy programs and to implement new ones, all of them designed to boost aggregated demand, such as *Minha casa, minha vida* ("My House, My Life"), the National Family Farming Program, the Crop Plan, and the National Microcredit Program, just to name a few (SLIVNIK; FEIL, 2020). As a consequence, SFIs expanded their share from less than 40% to more than 55% of total credit operations by 2015 (Figure 1), when this trend reversed. Despite the goal of reducing SFIs' operations which was a priority in the financial reform of the 1990s, the context of the 2007-2008 international crisis proved the importance of public institutions in both reactivating credit to support countercyclical actions and funding investment programs that helped to sustain the economic activity.

Figure 1: State-owned financial institutions' share of total credit, Dec 2000-Jun 2020 %)



Source: Central Bank of Brazil.

In the wake of growing funds for federal institutions following the 2007-2008 crisis, regional SFIs also increased their funds, for they operate mainly as prime-tier institutions for federal banks. Therefore, regional SFIs were able to undertake credit operations, enlarging their presence as regional credit agents. Development agencies were particularly strengthened, and six new agencies were created in this period. Even so, they still accounted for a small share of SFI activities. By the end of 2015, regional SFIs had US$ 36.4 billion in assets (3.7% of all SFI assets), credit operations amounting to US$ 19.7 billion (4.1% of all SFI credit operations), and equity of US$ 5.0 billion (12.5% of total SFI equity). Besides, regional SFIs are extremely heterogeneous in size, number of operations, funding and other attributes. As their size is generally associated with the size and characteristics of the regional economies where they operate, there is a more magnificent array of small institutions in the less developed areas of the North and Northeast of Brazil. In contrast, the large ones are concentrated in the more developed regions of the Southeast and South.

4. The evolution of the regional supply of credit in Brazil in the 2000s and 2010s

Regional economies within the large territory of Brazil display very different characteristics and potentialities. As mentioned, the private financial system is inherently procyclical, a credit concentrator in regional and sectoral terms, and focused on the short term. Therefore, among other consequences, the private financial system has a lower preference for liquidity in regions that exhibit a higher degree of economic development. In the more developed areas, information about financial transactions is more accessible, as these regions house the headquarters or decision-making center of large financial conglomerates. The financial system's characteristics tend to concentrate product further, generating a vicious circle in the development process. Brazilian economic development has been marked by accentuated regional inequality and credit concentration in the Southeast and South regions. As Table 2 shows, in 2016, these regions accounted for 70.2% of the Brazilian GDP and 72.4% of total credit (72.4%).

Table 2: Regional share of total credit and GDP in the major Brazilian regions, 2004/2016 (%)

	North		Northeast		Centre West		Southeast		South	
	Credit	GDP	Credit	GDP	Credit	GDP	Credit	GDP	Credit	GDP
2004	3.3	4.9	10.2	12.7	10.0	9.1	56.8	55.8	19.6	17.4
2008	3.6	5.1	11.1	13.1	9.4	9.2	56.8	56.0	19.1	16.6
2012	4.0	5.4	13.2	13.6	9.3	9.2	55.2	55.9	18.3	15.9
2016	3.8	5.4	13.1	14.3	10.8	10.1	54.2	53.2	18.2	17.0

Source: Central Bank of Brazil and IBGE – Brazilian Bureau of Statistics.

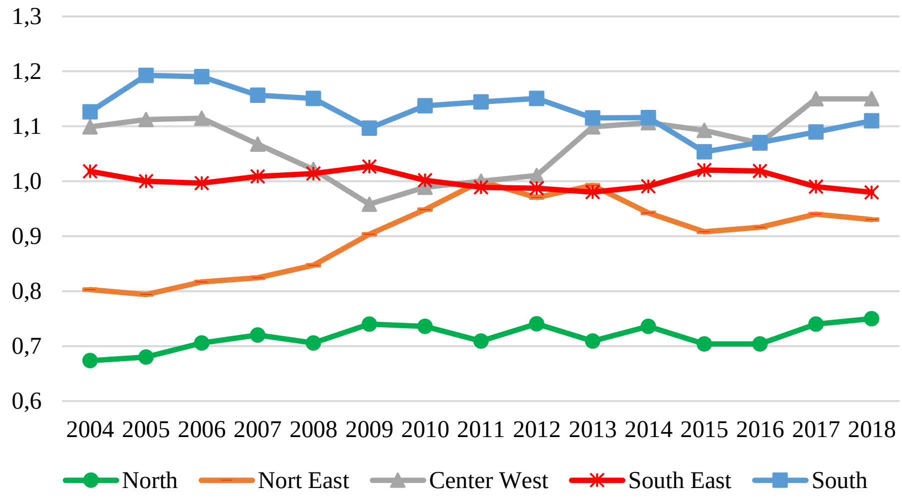
Unequal credit distribution as revealed in Table 2 is partly due to the uneven regional distribution of income. More developed regions receive a greater amount of credit precisely because they are wealthier and more developed. (JAYME JR; CROCCO, 2010) argue that private institutions preferentially channel credit into regions with a higher degree of economic development, usually associated with less uncertainty and a weaker liquidity preference, reinforcing cumulative regional inequality dynamics, concentrating credit, financial institutions, and more sophisticated financials services in urban agglomerations in the wealthiest areas. State-owned financial institutions, especially those more deeply integrated with local economies and mandates to promote sustainable regional development are expected to break this vicious circle. Regional SFIs and national development banks fulfil these conditions. Apart from BNDES, they are regionally orientated and have local roots so that they seem abler to identify moral hazards and viable projects. As arms of either regional government or federal regional development policy, these institutions may consciously impede the leakage of deposits, where it occurs, and promote regional economic development, helping to diminish the geographical concentration of credit.

In order to analyse the regional distribution of credit in Brazil between 2007 and 2014, a Regional Credit Index (RCI) is calculated by comparing a region's share of total national credit with its share of national GDP (CROCCO et al., 2011; CROCCO; FIGUEIREDO, 2009). When the RCI equals one, the regions' share of total credit is equal to its GDP share and credit is not concentrated disproportionately on that region. If the RCI is not equal to one, credit serves to disproportionately stimulate (RCI is greater than one) or discourage (RCI is less than one) GDP growth. In the first case, a region seemingly attracts, relative to its output, funds from other areas. In the second case, there is a possible net transfer of credit (leakage) to other regions, leaving local opportunities to grow unexploited due to an insufficient supply of finance (DUTRA; FEIJÓ; BASTOS, 2017).

A combination of slow growth and credit scarcity may contribute to negative circular and cumulative causation. For a region to escape from this trap and boost its economic activity, credit channels must work efficiently, giving rise to increases in a region's RCI alongside increases in the region's share of GDP.

Figure 2 plots the evolution of the RCI for each of the five Brazilian macro-regions from 2004 to 2018. Special attention is paid to what happened between 2008 and 2014 vis-à-vis the previous period. As mentioned, Brazilian SFIs' credit supply increased more quickly following the 2007-2008 international crisis as a direct result of a public policy designed to curb the economic effects of the crisis. An issue is whether SFIs' credit expansion helped to either decrease or reinforce regional credit concentration. The data suggests that there was a process of credit deconcentration evidenced by an increase in the RCI of lower-income regions, notably the Northeast and North regions.

Figure 2: Regional Credit Index, Brazil, 2004-2018*



*The figures include all institutions operating in the national financial system.
Source: Central Bank of Brazil and IBGE – Brazilian Bureau of Statistics.

In the period before the 2007-2008 international crisis, the country's poorest macro-regions, North and Northeast, recorded the smallest RCIs, both well below 1.0, while the richer South and Centre West regions recorded RCIs that were greater than one. As for the richest Brazilian region, the Southeast, its RCI was close to one, indicating an approximately equal share of credit and GDP. From 2007 to 2014, this configuration changed in the direction of a less concentrated distribution.

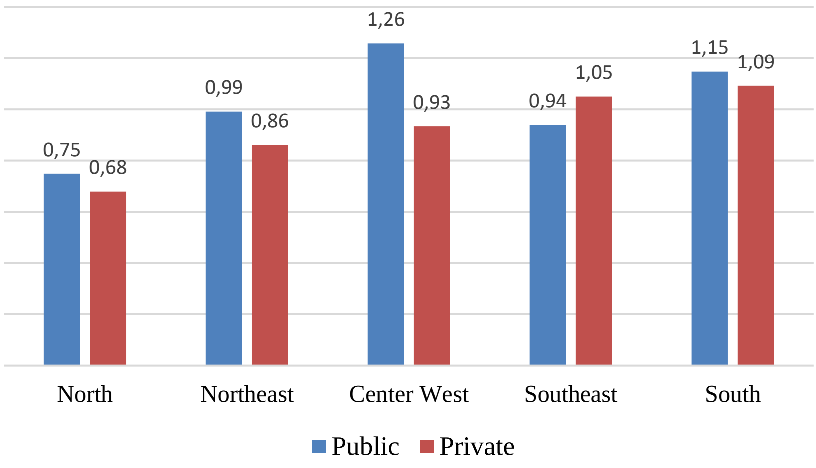
Three out of the five Brazilian macro-regions, Northeast, North, and South, deserve particular attention in that process. In the Northeast region, the RCI increased sharply from 0.82 in 2007 to a peak of 0.98 in 2013, before falling to 0.93 in 2018 as economic conditions worsened as a result of a recession that started in the second semester of 2014. The increase in the Northeastern RCI was accompanied by a change of 0.9 percentage points in its share of Brazilian GDP. The background for this virtuous association between credit and regional GDP in the Northeast may be found in a central government policy to improve the living conditions of the most impoverished sections of the population and positively affect the region's productive structure. Annual increases in minimum wages and income transfer policies such as *Bolsa Familia* were instances of this redistributive public policy (BIELSCHOWSKY, 2014; CARNEIRO; BALTAR; SARTI, 2018; SAAD-FILHO; MORAIS, 2018).

The North region also saw an increase in both the RCI and its GDP share, although not as intense as for the Northeast region. As a matter of fact, this process antedated the 2007-2008 crisis. The North region was noted for having the smallest RCI due to both a lack of economic momentum compared to other regions and geographical barriers in distributing credit into an inhospitable area. Nevertheless, the RCI increased steadily over the whole period.

The counterpart of this improvement in credit distribution to the northern areas of Brazil was a decrease of the South region's RCI from 1.16 in 2007 to 1.12 in 2014. At the same time, its share of Brazilian GPD declined slightly from 16.6% to 16.4%. Even so, the South region recorded the larger RCI for most of the period, indicating that it consistently concentrates credit. Possible reasons are a strong tradition of credit cooperatives and the presence of the largest regional SFIs in this region. Furthermore, it is a well-developed area compared to Brazilian standards. The countryside and the main cities are connected, facilitating physical and economic integration, which includes credit operations.

This process of regional deconcentration of credit coincided with an increase in the share of credit originated in SFIs as Figure 1 reveals, suggesting that public banks and development agencies helped to deliver a lower concentration of credit and increases in the GDP share of the lower-income regions over the 2007-2014 period. Figure 3 reinforces this relationship by comparing RCIs for both the State-owned and private financial institutions in 2014.

Figure 3: Regional Credit Index - public and private financial institutions, Brazil, 2014

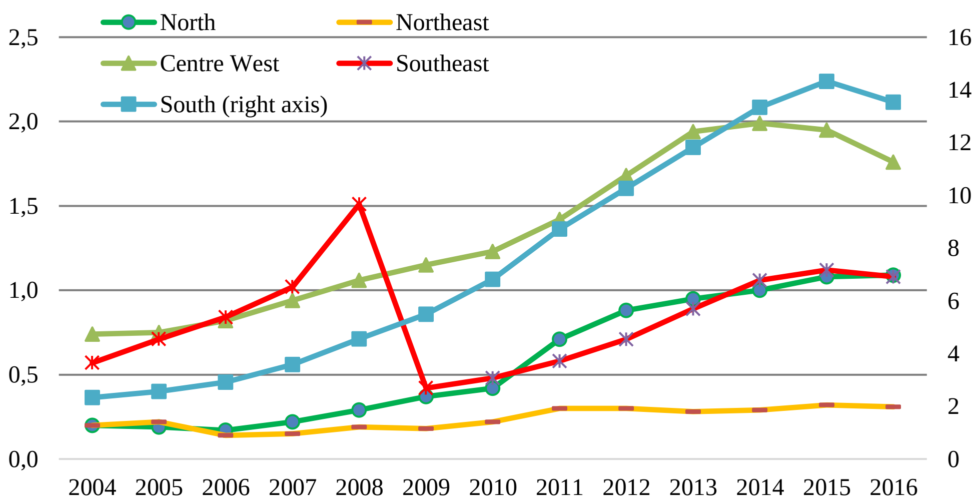


Source: Central Bank of Brazil and IBGE – Brazilian Bureau of Statistics.

The RCI reveals two basic patterns in the regional institutional origins of credit. Indices are greater for SFIs *vis-à-vis* private institutions in the relatively poorer regions, whereas the opposite is applied in the country's richest region (Southeast). This conclusion is consistent with the hypothesis that private institutions concentrate credit in wealthier areas, usually those where their headquarters are located.

The Southern exception in the comparison between SFIs and private financial institutions is associated with the structure of regional SFIs, which may be understood in historical as well as in economic terms. As mentioned, the share of regional SFIs in total SFI credit varies among states in conformity with the unequal distribution of economic activity. This relationship holds in the Brazilian case, where the most important regional banks and development agencies are located in the Southern and Southeastern states. Still more important is the fact that the largest regional development bank (*Banco de Desenvolvimento Regional do Extremo Sul* – BRDE), as well as the largest regional commercial bank (*Banco do Estado do Rio Grande do Sul* – Banrisul), operates in the South region, for both of them evaded privatization in the 1990s due to the decisions of regional governments in the state of Rio Grande do Sul. As a consequence, the Southern states enjoy a much stronger presence of regional SFIs than other Brazilian regions, as Figure 4 shows.

Figure 4: Regional SFIs' credit as a share of regional GDP, Brazil, 2004-2016 (%).



Source: Central Bank of Brazil and IBGE – Brazilian Bureau of Statistics

Figure 4 points to the greater importance of regional SFIs in the South region. Even before the increase in their activity following the 2007-2008 international crisis, credit supplied by their five institutions accounted for 2.84% (2004-2007 average) of regional GDP, whereas this figure did not exceed 1.0% in the rest of the country. The strong increase in SFIs' credit supply from 2008 onwards, as Figure 1 shows, may also be observed in the case of regional institutions, above all the Southern ones, whose total credit reached 13.34% of regional GDP in 2014. A robust enlargement of regional SFI operations also occurred in the North and Centre West regions.

The cases of the Southeast and Northeast regions deserve further attention. The sharp drop in regional SFI credit in the Southeast in 2009 was a result of the takeover of a large commercial bank owned by the state of São Paulo (*Nossa Caixa*) by the Bank of Brazil. Thus, *Nossa Caixa* was turned into a federal SFI. Despite this change, the relation between regional SFI credit and Southeast GDP more than doubled between 2009 and 2014.

The Northeast was the region where regional SFIs exhibited a steady minor presence throughout the period from 2004 and 2016. This outcome was associated with the structure of their regional SFIs, all but one of which were very small development agencies. Besides, not all state governments own a financial institution. Thus, the considerable improvement in the Northeastern RCI and its remarkable contribution to deconcentrating credit from 2008 onwards should be explained mostly, if not entirely, as an outcome of federal SFI operations.

5. Conclusion

This paper assumes that SFIs play a crucial economic development role, including narrowing regional inequalities in the distribution of credit. After briefly describing the evolution of Brazilian SFIs from the end of World War II onwards and identifying their continuing importance in the country's financial architecture despite reforms aimed at reducing their presence, attention was focused on their role in deconcentrating credit among regions between 2008 and 2014. As a consequence of the procyclical reaction typical of private banks as well as the government decision to encourage public banks to provide liquidity in the context of the 2007-2008 international crisis, the SFI share of credit in Brazil rose significantly. This increase even continued after the immediate consequences of the crisis had been left behind.

This higher growth of the supply of SFI credit was accompanied by a deconcentration of the regional distribution of credit that mostly benefited the Northeast region. Thus, public financial institutions not only helped to sustain liquidity and aggregate demand following the 2007-2008 crisis, but their credit programmes also resulted in a deconcentration of credit among regions.

A particular feature of SFI performance relates to regional institutions: regional SFIs also strongly expanded their operations, notwithstanding their considerably smaller size vis-à-vis federal institutions. Their contribution to deconcentrating credit, though, is more disputable. For instance, the tiny presence of regional SFIs in the Northeastern states suggests that the deconcentration of credit in this region was mainly explained by the operations of federal SFIs. As a whole, the effect of regional SFIs on the regional distribution of credit reflected their earlier spatial concentration in the Southeast and South of the country.

However, the boom in credit supply by the five regional SFIs operating in the Southern states over 2008-2014 draws attention to the role regional SFIs may perform in the light of their stakeholders' response to public policy decisions. At the time of and after the 2007-2008 crisis, the large increase in a short period of SFIs' credit-GDP ratio is indicative of their potential to implement powerful countercyclical operations and affect regional development paths. Therefore, the empowerment of the SFIs such that they can finance the larger projects that affect development paths is an important challenge for governments in the Northeast, North and Centre West.

Notwithstanding SFIs' highly positive role in the Brazilian reaction to the 2007-2008 international crisis and perhaps because of their success and increase in their share of national financial markets, public institutions face significant challenges after the revival of neoliberal economic policies in 2016. The new context that emerged in that year is much less favourable for development finance institutions. One of the first and most shocking measures adopted by the new government was a reduction in the size of BNDES as a consequence of a specific fiscal response to recession. This step process affected the entire long-term credit system, with a stronger impact on regional SFIs. Despite the resumed importance of SFIs and the improved operational capacity and financial health of regional SFIs in recent years, the public financial system faces a phase of fewer resources, more limited scope, and the risk of a new wave of privatisations in the third decade of the 21st century.

Article 3 - Development banks as an economic policy arm – promoting sustainable structural change[19]

[19] A version of this article was published at International Journal of Political Economy in 2021.

1. Introduction

The private financial sector fails to meet the credit loans' demand for certain economic segments, geographic areas, and specific services modalities. It is accepted in the economic literature that because of market imperfections, particularly the asymmetric distribution of information, State-owned financial institutions (SFIs) are essential in improving resource allocation efficiency and, therefore, leverage modern monetary development economies.

SFIs also play an essential countercyclical role. In times of financial systems' turmoil, SFIs provide the necessary liquidity to the economy, ensuring that credit loan supply meets the demand. Thus, SFIs' performance in the macroeconomic sphere and their capacity to mitigate systemic risk justifies their existence. The recent international financial crisis that began in the 2007/2008 biennium highlighted how essential SFIs are in acute liquidity crises. Indeed, the crisis brought a new understanding of SFIs' importance for public policies.

Despite this recognition, (MARSHALL; ROCHON, 2019) argue there is a void in the literature on economic policy that is the absence of a discussion on credit as a macroeconomic toolkit. Credit policy would explain how the performance of State-owned financial institutions, particularly development banks (DBs), is included in the economic policy toolkit. According to the authors, from a critical perspective of financial institutions too big to fail, SFIs should be used, along with monetary and fiscal policies, to control aggregate demand in the short term.

Concerning the behavior of the United States financial market, they note that the advancement of banking concentration has made it very difficult to regulate private financial institutions. Therefore, SFIs assume the role of public policy arm, giving functionality to the financial system through targeted credit policies. This strategy would be more efficient than public spending and would enhance fiscal policies. The argument for directing a credit policy through SFIs broadens the understanding of their role beyond their countercyclical function. Thus, SFIs would be part of a permanent toolkit for managing aggregate demand. (MARSHALL; ROCHON, 2019)

Going further, we propose in this article that among SFIs, the performance of DBs as a public policy arm is essential to promote the structural change of peripheral[20] economies boosting the catching-up process. That is, SFIs, especially development banks, can be used to finance and fund long-term investments, in addition to acting countercyclically, ensuring that productive investment is not held hostage to private financial sector liquidity preference.

However, the intentionality of promoting economic development requires the alignment of investment and macroeconomic policies for this purpose. State planning, its institutions, and the strategies adopted – fiscal, monetary, foreign exchange, and industrial, altogether with credit policy – must ensure the catching up process's longevity and sustainability. SFIs are public policy arms, but their effectiveness will only be guaranteed if conventional macroeconomic policies are concatenated to promote growth.

DBs' credit policies should also contribute to peripheral economies' economic development, which implies providing necessary funding to enable structural change in countries with a high degree of productive heterogeneity. Hence, in this article, there is an importance attached to development banks in particular. This article aims to analyze how DBs have performed as a "policy arm" to sustain aggregate demand and leverage Brazil's economic growth post World War II. It assumes that the existence of an efficient financial system is a *sine-qua-non* condition to support the development process, to secure the level of investment and to ensure that economic structural changes occur.

Taking as an example the Brazilian Development Bank - the National Bank for Economic and Social Development (BNDES) - this article demonstrates how the bank's actions contributed to the country's economic development in different macroeconomic contexts and under changing domestic policy spaces for pro-development programs. Our hypothesis is that the BNDES's performance was more successful for the country's development process when it was coordinated with other economic policies. In this sense, its "macroeconomic efficiency" that is, its functionality to promote the structural change

[20] In the context of this article, peripheral economies are those where the systems of accumulation are driven by exogenous alterations in global capitalism instead of domestic directives. (SAAD-FILHO; MORAIS, 2018).

necessary for catching up, should consider its articulation with other economic policy instruments - monetary, fiscal, exchange rate and industrial policies.

This article is divided into three sections in addition to this introduction. Section 2 reviews the role of credit for economic growth. Section 3 addresses the development policy space in Brazil and the experience of the BNDES. Section 4 offers the final considerations of the article.

2. The role of credit in economic growth

Financial services are essential to inject liquidity into the economy, sustain market transactions and fund investment and economic growth. The development process is possible due to a mature financial system capable of funding production. Keynes argued that banks are responsible for the economic transition from the lowest to the highest productivity level. Thus, financial institutions, not savings, determine the investment level. However, the instability inherent in the financial system can limit investors' ability to promote sustainable growth (KREGEL, 2017; MINSKY, 1992; STUDART; ALVES JR, 2019; UNCTAD, 2016).

The evolution of the capitalist system allowed the pioneer economies in the industrialization process to build an institutional framework to finance productive growth. In central countries, the expansion of capitalism and its need for finance and funding came along with the financial system's evolution. When economic dynamics increased in the 19th and 20th centuries and international competition intensified, the importance of a financial system that met impoverished countries' needs became apparent. The lack of an efficient financial system limited peripheral countries' development capacity (CUNHA; PERUFFO; SILVA, 2020).

Thus, the degree of consolidation of financial systems in peripheral countries, specifically the supply of long-term credit, has run into a series of macroeconomic, legal, and structural obstacles, rendering their institutional configuration diverse both between countries and intertemporally. This configuration also depends on the degree of economic development, the evolution of the financial systems, the legal configuration, and the macroeconomic policy tradition (ARAUJO; CINTRA, 2011).

Despite the centrality of discussing the importance of funding, this issue began to be addressed more actively only after the reconstruction of national economies at the end of World War II. In many countries with an industrialization program, SFIs, especially DBs, were created during this period. Such institutions acted as a public policy arm and aided the industrialization process.

From a Keynesian perspective, markets alone are not able to guarantee full employment. Thus, State intervention is imperative to coordinate expectations to ensure full employment. The lack of resources does not cause scarcity. On the contrary, there is poverty in abundance. Excess demand for liquidity generates unemployment and accentuates inequality, and causes shortages. Financial institutions' behavior — credit providers deciding in an environment of non-probabilistic uncertainty — creates the economic system's instability. Thus, the State's action is justified to provide liquidity to the system, either through SFIs or through direct spending (KREGEL, 2017).

According to (SECCARECCIA, 1995), by recognizing the importance of financial power, Keynes considers that in an uncertain world, the financial market, with a high preference for liquidity, will prioritize the short-term to the detriment of the long-term, curbing the development of instruments capable of providing funding for productive investment. The result is the economy operating in an equilibrium of underemployment. In this context, it is necessary for the State to calculate the marginal efficiency of capital in the long run and its social gains, to assume more significant responsibilities in investing directly. According to the author, Keynes' idea of socializing investment through State participation, as expressed in the last chapter of *General Theory*, could reach two-thirds or three-quarters of total investment: "The partial socialization of investment by means of an enhanced rate of public capital formation is expected to improve long term, private economic performance sector, leading to higher levels of output and employment growth" (SECCARECCIA, 1995, p. 51).[21]

Although Keynes failed to specify a mechanism that fulfilled the role of coordinating the socialization of investment, his theoretical proposal makes it possible to assume his support for the existence of SFIs, particularly development banks, which are responsible for long-term funding. Keynes's reference to the need for mature monetary economies to have a public investment institution for the "socialization of investment" should be the starting point for understanding the role attributed to DBs.

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[21] Keynes criticizes the liberalism of *laissez-faire* as not based on real facts, but rather on incomplete hypotheses, introduced in the models to simplify them. The real issues of market formation, such as the lack of economies of scale, very high initial costs and uncertain returns, and the absence of sufficient information for long lasting projects - are incorporated into the a posteriori model and treated as problems, or diseases, in the author's words (KEYNES, 1997). Therefore, for society to strike a balance at full employment, State intervention is essential.

2.1 Purpose of development banks

This article focuses on development banks' performance, institutions responsible for funding long-term investment, and relevant instruments for economic structural change. The justifications set out for the existence of State-owned financial institutions, in general, coincide with the grounds for the presence of DBs in particular. However, DBs' reasons for operation are more significant than the motives attributed to SFIs. Thus, when this article mentions SFIs, it also englobes reasons for the existence of DBs. As the functions are addressed in this article, its functionality will be narrowed to incorporate only DBs.

The centrality of credit for funding the development process justifies State intervention in financial intermediation. However, the scope of response is still a cause for dispute between the various currents of economic thinking. (DEOS; MENDONÇA, 2010) present a survey on the literature regarding the role of SFIs. They classify the multiple views into two main categories – conventional and unconventional.

In the pro-market, **conventional category**, the existence of SFIs is justified according to markets' imperfections or failures, such as asymmetry of information, imperfect competition and incompleteness of the capital market. From this perspective, SFIs act where the private sector does not operate (FEIJÓ; HORN; FEIL, 2020). SFIs would be a "second-best" solution in the sense that they would complement private banks' actions, which, due to market failures, do not work the most efficiently.[22] The hypothesis of market failures presupposes that the market itself, acting perfectly and supported by a flexible interest rate system, would determine an optimal level of resources, and public interference would cause distortions in the financial system. In this case, the SFIs would not be rationalized because it has a role to play, and there is a flaw the market cannot solve. In this sense, many of its functions will not be justified - like financing innovation, regional disparities, and structural change, among others.

[22] The arguments justifying public intervention in the credit market from a conventional perspective, which works under the central hypothesis that the State should not intervene in the economy, cover: 1. the need to ensure the soundness and security of the financial system in the face of negative externalities if the market is in crisis; 2. the existence of high-cost asymmetric information, especially in the financial market; 3. Financing of socially important projects; and 4. the need to promote financial development. (STIGLITZ, 1994)

The **unconventional theory** defends SFIs beyond market failures. They are essential because long-term decisions are driven by non-probabilistic uncertainty. Therefore, their performance is not limited to complementing private institutions as it should also mitigate their pro-cyclical action and guide private choices, creating new areas for investment. In this sense, their position is perennial, not transitory.

The most celebrated role of SFIs since the outbreak of the 2007/2008 financial crisis has been the countercyclical function. During the crisis, SFIs in several countries provided liquidity to financial markets, minimizing the downturn. The financial sector operates pro-cyclically, so private banks' behavior tends to aggravate crises by reducing the system's liquidity exactly when it is most necessary[23] (MINSKY, 2008). Financial institutions' preference for liquidity is directly related to agents' expectations throughout the economic cycle. The expansion of credit in periods of growth and its contraction in times of crisis are inherent characteristics of banking activity, especially of the private sector that follows a profitability logic. Therefore, SFIs would have the function of minimizing the effects of this financial cycle, ensuring the supply of liquidity in the economy even in times of economic crisis.

Additionally, we highlight the role of SFIs as a public policy arm with a mission to promote development through structural transformation, following government guidelines. To this end, they must offer a range of products differentiated from the private sector, concerning cost, term, and operationality. Hence, they are institutions that direct credit and follow a public policy orientation, being executors of government policies (ANDRADE; DEOS, 2009). The interpretation of structural transformation addresses alternative ideas complementary to the theory of market failures and are not aggregated around a single theoretical framework. SFIs assume different formats and functions, depending on the countries' development level and an institutional, structural, legal, macroeconomic, and political framework (FEIL; FEIJÓ, 2019). Such interpretations justify the actions of SFIs in addition to market failures. SFIs must be proactive, endowed with a mission, and act as a vector of structural change in the economy.[24] In the structural

[23] Theory known as Minsky's "financial fragility hypothesis."
[24] For more information see see Mazzucato and Penna (2015); Wray (2009); Mazzucato and MacFarlane (2019).

transformation interpretation, SFIs not only correct market failure but also create demand by encouraging new technologies. Thus, it is not market failure but the development of the capitalist system itself that gives SFIs an organic function in the catchin-up process. Notwithstanding this, to do so, SFIs must have a strategic vision of structural transformation and be provided with a mission.

Nonetheless, to fulfill their function satisfactorily, to act effectively as a public policy arm, SFIs must be coordinated with macroeconomic policies. In uncoordinated action, the SFIs would serve only as punctual agents, unable to facilitate structural changes, demanding financial resources for an extended period. In this perspective, the performance of SFIs goes beyond acting on market failures or improving the allocation of credit. They should be thought of as members of the Big Government. In Minsky's interpretation, this public structure would develop stabilizing institutions, which would have a primary function to sustain the generation of profits to validate debt contracts, maintaining aggregate demand.[25] (ANDRADE; DEOS, 2009) suggest that Minsky's vision would indicate that SFIs, DBs in particular, could be called Big Government Banks.

For the State to engage in economic transformation, it must be aligned with the private market. At some point, the analysis of State institutions and capacity must be joined with an analysis of market structures (RUESCHEMEYER; EVANS, 1985). Therefore, SFIs should play an essential role in coordinating public policies, reducing problems associated with information, and fostering a state of trust that expands the economy's supply of liquidity. In turn, this expansion is oriented to encourage companies and allow structural transformations that reinforce the virtuous cycles of sustainable economic growth. The realization of the potential of SFIs requires its articulation with the State at its various levels (federal and regional). It is necessary to create guidelines for this articulation, inserting the SFIs in the center of the development policy in planning and execution. The president of DB could even receive a minister's status at the federal level. Such a structure could modify agents' perception regarding the State's economic activity, thus influencing

[25]"With Big Government, a move toward a deep depression is accompanied by a large government deficit that sustains or increases business profits. With profits sustained, output and employment are sustained or increased" (MINSKY, 2008, p. 330)

the conventions that guide private decisions in the economic sphere. This idea was exposed in the recent research of (FERNÁNDEZ-ARIAS; HAUSMANN; PANIZZA, 2019) in an Inter-American Development Bank (IDB) report, arguing that SFIs act in the intersection between the market and the State, representing the State and interacting directly with the market, it could operate as an intermediary, an interlocutor.

In this sense, development banks would have an even more strategic role because they could contrapose higher liquidity preference, ensuring long-term funding maintenance. When acting in coordination with developmental policies, DBs can ensure that the flow of financing and funding to investment is not interrupted, minimizing financial fragility (FEIJÓ; HORN; FEIL, 2020).

In mature market economies, these institutions' most relevant feature is that of a countercyclical actor, sustaining aggregate demand. In peripheral economies, where the policy space is more restricted, given its unequal and asymmetric[26] insertion into the international financial system, the most relevant action is funding to develop the productive structure. Even if there is a private financial system capable of offering credit for long-term funding in peripheral economies, the existence of DBs would still be justified to ensure that the development process is not at the mercy of private agents' liquidity preferences. Of course, both functions – the countercyclical actor and the allocation of credit – should be present in central and peripheral economies, but with different emphasis according to the degree of economic policy autonomy in each case. DBs are not "second best" alternatives but essential instruments that promote structural change more efficiently than private financial institutions.

The performance of SFIs as an economic policy arm should be understood in peripheral economies as expanding the public policy space. When the maneuvering room for macroeconomic policy to promote the structural changes needed to improve trade balances and service debt commitments is reduced, there is room for DBs to perform a developmental strategy in providing long-term resources for funding growth.

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[26] For a discussion on currency asymmetry and its impact on economic development, see Paula, Fritz, and Prates (2017). See also and Feijo and Lamônica (2019).

The macroeconomic context of peripheral economies is greater financial fragility, given the pro-cyclical profile of international capital flows. According toKregel (2008), fiscal policy is pro-cyclical once it narrows the fiscal space in reaction to deficits and debts that may spook the market, thereby generating a budgetary crisis. One way to control the fiscal deficit is to reduce the domestic interest rate that is a burden for rolling over public debt. However, a financially integrated peripheral economy may not be able to do so because the interest rate differential is a crucial tool for attracting foreign capital. Moreover, if the economy is in an inflation target regime, the interest rate is the only instrument for controlling inflation. The interest rate differential, in turn, appreciates the exchange rate, which contributes to controlling inflation. As long as the speculative flow of capital continues, the pressure to sustain the domestic currency's overvaluation will continue. This movement should last until the deterioration of the current account precipitates a balance of payment crisis. Therefore, keeping interest rates at a high level for an extended period deteriorates the balance of payment accounts and the profile of public debt, condemning the economy to a low and volatile growth rate as policy space becomes limited.

In this sense, (OCAMPO; STIGLITZ, 2009, p. 153), when pointing out policy alternatives to promote structural transformation that would enable the catching-up process, conclude in favor of DBs by stating: "A major instrument that has not been limited by international agreements is development banking." In the same logic, (KREGEL, 2017, p. 128) states that an efficient option to reduce economies' financial fragility would be creating DBs, which would act countercyclically, ensuring a financial security net.

3. Financing of development and policy space in Brazil: the experience of the BNDES

Under the financial fragility hypothesis, Minsky argues that the financial market is inherently unstable, and insecurity should be confronted with an active interventionist and efficient government capable of acting promptly to prevent and minimize crises. Economies are dynamic and need institutions and regulations that follow their stages of development, hence the importance of not using a general theory for public policies, but rather understanding the specificities, historical periods, and stages of development of each country (PAPADIMITRIOU; WRAY, 1998). In this case, development banks' success should be evaluated according to their efficiency in promoting structural changes.

Although in Brazil SFIs have long had a strong presence in the financial system, issues specifically related to the financing and funding of the development process reached the top of the agenda in the 1940s as a result of the State economic policy of the developmental period (1930-1945) and the advancement of industrialization. The National Bank for Economic Development (BNDE), later transformed into the National Bank for Economic and Social Development (BNDES), began its operations in 1952 to support productive transformation. BNDE was launched with internal and external financial resources to support infrastructure and industrialization programs (HORN; FEIL; TAVARES, 2015).

In this section, we analyze the BNDES's operations as the main development bank in Brazil. We divide the study into three periods to illustrate the variability in its ability to generate wealth for the country by transforming the productive structure. The first period begins with the bank's creation through the end of the 1970s, after the second oil shock. The second period incorporates the 1980s and 1990s when economic liberalization is consolidated. The third period began in 2003 when discussions about industrial policy returned to the public agenda.

Figures 1 and 2 show the average rates of real growth of the BNDES disbursements in annual terms and the selected periods. In the consolidation period of the BNDES (1954-80), increasing disbursements positively impacted GDP growth and gross capital formation, presenting the highest rates compared to other periods (Figure 2). The period of 1980 until 2002 had the lowest average growth rate of the BNDES disbursements and

GDP and gross capital formation. The most recent period (2003-2015) shows a recovery in the pace of disbursement growth and GDP and gross capital formation.

Figure1: Annual and average rates of real growth of BNDES disbursements: 1954-2018

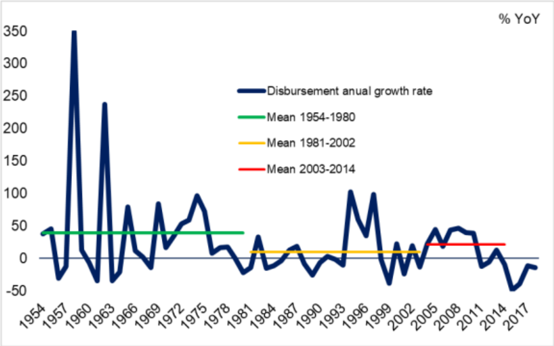
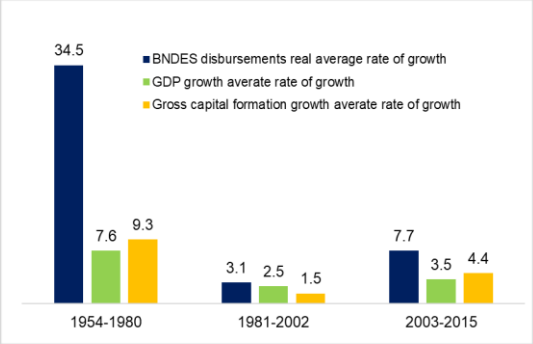


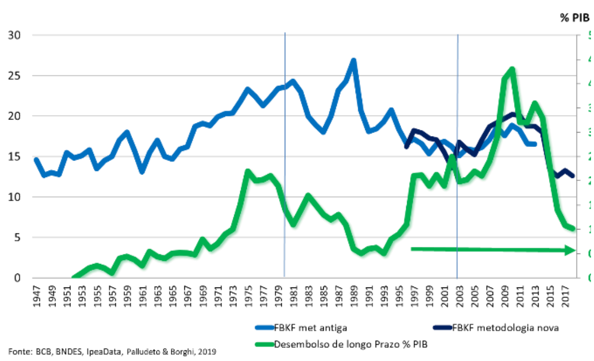
Figure 2: Average real growth rates of 'BNDES's disbursements; GDP and Gross Fixed Capital Formation



Source: (BNDES, 1992, 2017) and (PALLUDETO; BORGHI, 2020)

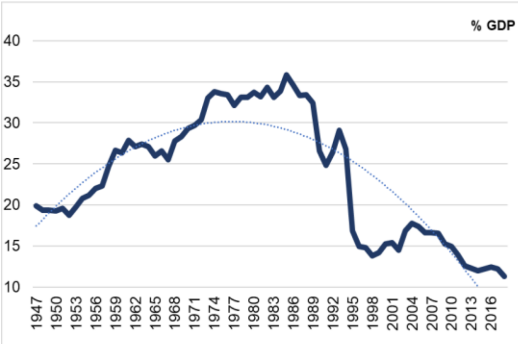
Graph 3 shows the BNDES disbursements' evolution as a percentage of GDP and the investment rate, demonstrating a higher positive correlation in the first and third periods. Figure 4 shows how the manufacturing industry begins to lose participation from the 1990s onwards with trade liberation and the redefinition of the BNDES's role in the economy. The process of deindustrialization is accentuated in the decade of the 2010s.

Figure 3: BNDES disbursement and Gross Fixed Capital Formation in relation to GDP: 1947-2018



Source: Central Bank, BNDES, Brazilian bureau of statistics

Figure 4: Participation of the Transformation Industry in GDP: 1947-2018



Source: IpeaData, Brazilian bureau of statistics

3.1 1952–1980: The creation of BNDE and the consolidation of the industrialization process with highly coordinated industrial, commercial, and macroeconomic policy

The Brazilian industrialization process was financed by long-term credit through SFIs and foreign capital (credit and foreign direct investment). BNDE, as the primary financial development institution, maintained a highly relevant role, filling the gap left by private banks and the capital market. There was a set of SFI at the national and regional level in the period, working in financing the development, composing a financial network aimed to promote growth (COSTA NETO, 2004; HORN; FEIL, 2019).

During the period, BNDE acted mainly in supporting public projects, ensuring investment in rail, energy, and steel. In 1964, twelve years after its foundation, BNDE focused on private sector investment funding through different programs. That year, FINAME (Special Agency for Industrial Financing) was created to promote national industrial. In 1965, the bank began operating as a second-tier institution, transferring resources to other financial agents. The objective was to increase its capillarity[27], allowing the distribution of financing throughout the national territory. From 1974 on, with the Second National Development Plan (II PND), BNDE began to act more in line with the government's political orientation, essentially financing capital goods and primary inputs. The Bank operated as a long-term credit provider for the projects and as an intelligence agency, conducting sectoral and economic studies and aiding entrepreneurs with projects for the ongoing industrializing plan.[28]

The State intentionality defined the period in analyses[29] by promoting industrialization. From 1952 to 1980, the BNDES acted through two channels: 1. growing disbursement,

[27] The BNDES has only one branch in Rio de Janeiro.

[28] The strong presence of SFIs in the national financial system has not always been unanimously accepted in the academic and political debate. During the history of the Brazilian financial system, many attempts to increase the supply of credit destined for investment by private institutions and to stimulate the capital market occurred. The first strong attempt to reorder the financial system occurred during 1964/1966 when the federal government undertook a broad bank reform that aimed to reduce public sector participation in the economy and boost the capital market (HERMANN, 2002). To this end, the plan included a broad incentive to develop the capital market and incentives to the private financial sector to settle in Brazil. Despite the effort, the reforms did not mean considerable changes in the domestic financing process, which followed the responsibility of public banks, self-financing and external financing.

[29] According to Fonseca (2014:59) "[...] developmentalism means the economic policy formulated and/or executed deliberately by governments (national or subnational), through the growth of production and productivity, under the leadership of the industrial sector, transforming society with a view to achieving

which, according to the estimates to (PALLUDETO; BORGHI, 2020), reached 2.0% of GDP until the end of the 1980s, and 2. through long-term planning and insertion in the state-designed economic policy (BNDES, 1992; TORRES FILHO; COSTA, 2012).

Furthermore, from the end of the 1950s until the 1970s, industrial and economic policies were coordinated, and their priorities were conditioned to National Development Plans implemented. The macroeconomic policy was coordinated with industrial and commercial policies' instruments and objectives, resulting in dynamic efficiencies in the Brazilian economy. Between 1950 and 1979, labor productivity grew on average 4.4% per year,[30] while Brazil's real GDP grew by 7.3% per year on average in the same period. Also, labor productivity growth was accompanied by a sharp increase (3.3% per year, on average) in employment.

3.2 1981–2002 - From debt crisis to economic liberation and price stabilization: redefinition of the BNDES' role

The foreign debt crisis in the 1980s disrupted the period of high growth of the Brazilian economy and placed the country in a severe fiscal and budgetary imbalance along with high inflation rates. The new external and domestic environment had repercussions on the State-owned financial institutions, which became financiers for the states' growing fiscal deficits. The practice harmed SFIs' balance sheets and contributed to the institutions' liabilities positions' gradual deterioration. The need to promote macroeconomic adjustment in the Brazilian economy established a strong connection between the growing public deficit and the construction of SFIs' fragility, providing arguments for a new regulatory space.

The outbreak of the foreign debt crisis led to the collapse of international private capital flows to Latin America in 1982, meaning the discontinuation of industrial, commercial, and macroeconomic policies. In the early 1990s, a trade liberalization program was adopted as part of the Brady Plan negotiations to restructure Brazil's foreign debt.

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desirable ends, highlighting the overcoming of its economic and social problems, within the institutional frameworks of the capitalist system.

[30] For productivity rates in Brazil, see Nassif et al. (2020) Table 1, p. 8.

After a long period of industrialization driven by import substitution, Brazil adopted a liberalization program from 1990 on, along with reforms to reduce the State's size via privatizations, financial deregulation, and liberation of the capital account. During the neoliberal phase, the BNDES moved away from developmental investment projects and began to finance companies in crisis (TORRES FILHO; COSTA, 2012). Under the neoliberal orientation, the bank became the National Privatization Program manager in the 1990s, providing technical, administrative, and financial support (BNDES, 1992).

The monetary stabilization program of the 1990s formed a new regulatory area in which policy guidelines pointed to the reduction of State participation in the banking sector, impacting SFIs in general (NASSIF; FEIJÓ, 2013). The monetary stabilization achieved with the Real Plan in 1994 brought a profitability problem to the national financial system, which had the "inflationary tax" as an essential source of its revenues. Financial institutions faced difficulties in promoting the necessary adjustments to survive in this new environment. Several banks failed, generating enormous economic and social costs. To minimize financial instability, the federal government implemented three reform programs (MAIA, 2003):

1. Program to Stimulate the Restructuring and Strengthening of the National Financial System (Proer) to ensure the national financial system's liquidity and solvency through the merger and acquisition of private financial institutions.
2. Program to Encourage the Reduction of the State Public Sector in Banking Activity (Proes) – aimed at the equation of capital imbalances of regional SFIs. It resulted in the substantial reduction of these institutions in the total national financial system through privatizations and mergers.
3. Federal Financial Institutions Strengthening Program (Proef) – directed at restructuring federal SFIs, emphasizing the transfer of troubled assets to the Asset Management Company (Emgea), a nonfinancial company linked to the Ministry of Finance and specifically created to manage these assets.

Moreover, the Central Bank recommended a series of improvements in the institutions' governance to ensure these institutions' efficiency and effectiveness. In the new regulatory environment, many regional-level SFIs shut down. Federal SFIs were preserved but began to act in a market-oriented manner, abandoning their roles as development agents.

The period was marked by the prioritization of economic stability achieved with the Real Plan. The specter of previous stabilization plans (with only temporary price stability) was still latent. The Real Plan's support via a currency peg and high interest rates, combined with commercial opening, allowed the massive entry of imported products, contributing to the external imbalance and initiating a long deindustrialization process in Brazil.

The macroeconomic policies adopted in a global context of a low growth period in the 1990s weakened the national economy in the international financial system's space. The dependency relationship left the country vulnerable to international crises. The impacts arising from the appreciated national currency, with low growth and high unemployment, were the costs paid to ensure stability. The maintenance of this policy made inevitable a crisis in the balance of payments. The deterioration of the fiscal situation and international crises questioned the State’s ability to roll over public debt.

Amid a currency crisis involving a substantial devaluation of the national currency and external imbalance, from 1999 onward, a reorientation of the economic regime occurred. It entailed significant institutional changes regarding exchange rate and monetary policies and more considerable commitment on the government's part to fiscal adjustment. The abandonment of the exchange rate peg indicated the restructuring of macroeconomic policy, which began to be guided by the "macroeconomic tripod" consisting of floating exchange rates (with capital mobility), primary surplus targets, and the adoption of an inflation-targeting regime (BRESSER-PEREIRA, 2015).

3.3 2003-2015: The consolidation of the macroeconomic tripod and the resumption of industrial policies with low policy coordination

A new milestone in credit policy was established in Brazil after 2003 with Luiz Inácio Lula da Silva's government. Credit leverage was a strategic instrument to stimulate aggregate demand through social inclusion and domestic consumption, and, consequently, investment.[31] From 2003 until 2008, there was a concomitant expansion of

[31] In terms of economic planning, the government launched the "Economic Policy and Structural Reforms" program, which identified the need to resume sustainable growth for which economic stability and structural reforms were essencial. At the same time, it saw as imperative the adoption of an economic development project that had social inclusion as its central axis. The program saw the need to increase Brazil's investment level, pointing out as problems the reduced volume of credit, high-interest rates spreads, and the low per capita income of the population. The plan also pleaded for an austere fiscal policy in order

State-owned financial institutions' credit operations and private financial institutions. The differentiation between the two groups changed from the 2007/2008 international financial crisis onward, when SFIs were used as countercyclical agents, providing liquidity to the system (SLIVNIK; FEIL, 2020).

The period also marked industrial policy's return as one of the primary mechanisms for promoting activities considered strategic to accelerate structural changes in greater technological sophistication sectors. However, these programs showed poor coordination among industrial, commercial, and macroeconomic policies.

From 2006 on, during Lula's second turn in office and Dilma Rousseff's first term (2011-2014), the government increased income transfers, raised the real minimum wage, and promoted the low-income population's financial inclusion. Economic policy, especially between 2007 and 2010, incorporated more potent instruments of social inclusion. The State also began to play a more active role in medium- and long-term economic planning, acting as a growth inducer. Among the government's industrial policies, those with greater participation in the BNDES were the Growth Acceleration Program (PAC for its abbreviations in Portuguese)[32] and Productive Development Policy (PDP for its abbreviations in Portuguese)[33]. In particular, federal SFIs in general and the BNDES, in particular, were used as the leading financial agents of the investment policy. The BNDES supported various sectors, emphasizing infrastructure, productive and technological

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for the State to increase its investment capacity, once it restored confidence and reduced public debt. That is, even though development was the government's goal, the macroeconomic policies adopted remained liberal, and the priority was inflation control through high-interest rates and fiscal austerity. (BIANCARELLI; ROSSI, 2013)

[32] The PAC was launched in January 2007 and continued in 2010 (PAC 2). It constitutes a set of institutional measures that mark the resumption of the role of the State as a planner by prioritizing sectors for investment and diagnosing possible bottlenecks for sustained growth and reducing barriers. The premise of the program went beyond the expansion of productivity and infrastructure, contemplating the increase in access of public services to the population, thus allowing improvements in living conditions. With the PAC, Brazil began the process of recovering the state's ability to induce the development of several sectors essential for the modernization of the economy.

[33] The Productive Development Policy (PDP), developed in 2008, continued the Industrial, Technological and Foreign Trade Policy (PITCE for its abbreviations in Portuguese) of 2004. The PDP was an industrial development policy that aimed at increasing the productivity of the industrial sector, investing in innovation and differentiation in Brazil in the medium and long term. The PDP intended to ensure a long-term cycle of sustainable development of the Brazilian economy, its income and employment. The policy had four macro targets: to expand fixed investment, to stimulate innovation, to expand the country's international insertion, and to increase the number of micro and small exporting companies.

development, exports, and capital markets, taking into account socio-environmental considerations (BNDES, 2017).

Despite the efforts to implement industrial policies and programs to stimulate private investment from 2003 onward, the weak coordination of industrial and commercial policies with macroeconomic policies in Brazil resulted in a low impact on the productive structure. As was described in section three, the policy space for implementing developmental policies is constrained by economic liberation. In Brazil, macroeconomic policies were carried out in a very orthodox manner. According to (NASSIF; BRESSER-PEREIRA; FEIJÓ, 2017), the combination of high real interest rates, a low real exchange rate and free capital mobility put the Brazilian economy in a vicious cycle of low growth. Moreover, the most damaging consequence was deindustrialization and a reprimarization of exports. After 2015, macroeconomic policy turned more orthodox, and a deep recession followed in 2015 and 2016 (PAULA, 2017).

Thus, despite the resurgence of industrial policies in the mid-2000s with increased disbursements of the BNDES, the process of structural transformation did not advance in the direction of promoting technological sophistication. The most significant growth of the economy was during the commodity boom of 2004-2008, which accentuated the Dutch disease and deepened regressive specialization in the export agenda. In this sense, the BNDES's performance was not enough to induce a structural change in a scenario of high real interest rates and strong real exchange rate appreciation. As a result, the long-term policy space was not expanded despite the BNDES's actions.

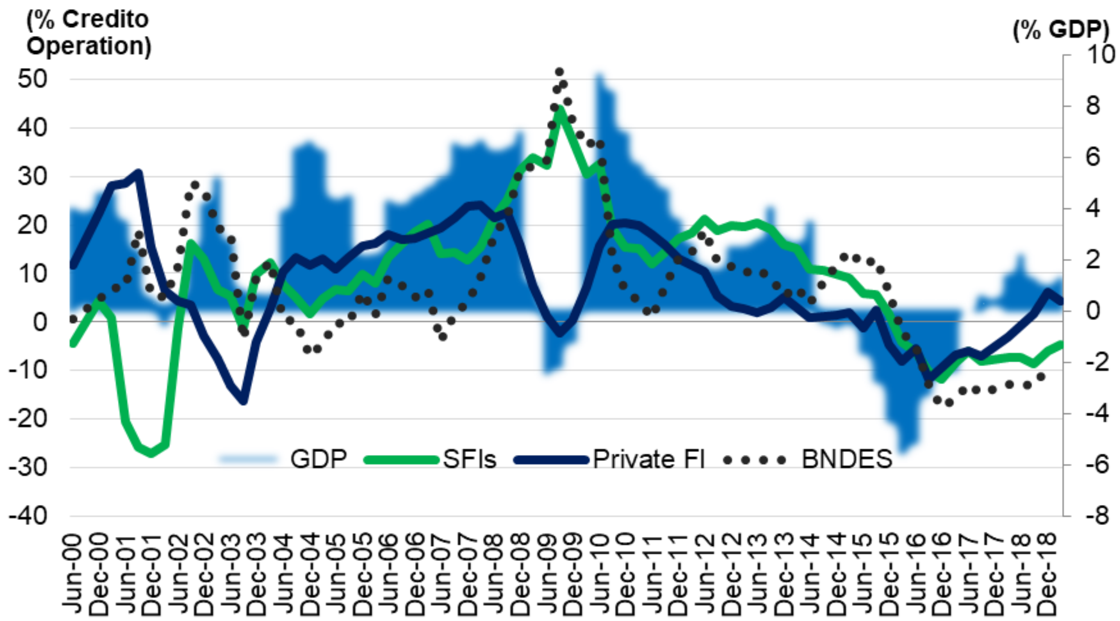
With the financial crisis of 2008, however, SFIs were used as an instrument of countercyclical policy, reinstating the necessary conditions for the reactivation of public credit. In this context of countercyclical action, the dynamism of SFIs was essential for maintaining the credit level, contributing to the activity's recovery (OLIVEIRA, 2015; SLIVNIK; FEIL, 2020).

3.4 The performance of SFIs and the BNDES before and after the international financial crisis

The advent of the global financial crisis in 2008, which resulted in a sharp contraction of credit in the domestic market, placed SFIs in general, and the BNDES in particular, in a position to act countercyclically. Figure 5 shows the annual real growth rate of private banks' credit operations, the real growth rate of credit operations of SFIs, and the BNDES (left axis) with the annual GDP growth rate (right axis). The chart identifies the period in which there is an abrupt drop in the growth rate of private bank credit in September 2008. To minimize the effects of falling liquidity in the economy, the federal government used SFIs as liquidity providers for the credit market.

The BNDES acted actively at this time, providing large amounts of credit to ensure the maintenance of investment and working capital, guaranteeing companies' continued operation during a macroeconomic context of increased uncertainty. By the end of 2011, the credit supply was normalized, and public credit's growth rate started to slow.

Figure 5 - The Rate of real growth of credit of SFIs, the BNDES and private banks and GDP growth: 2000-2018



Source: Central Bank and Brazilian bureau of statistics. Data inflated for 2018 by the Consumer’s price index (IPCA).

The federal government's adoption of countercyclical policies in 2009 - 2010 included maintaining public investments, tax incentives, and reducing the basic interest rate (Selic rate). The Central Bank also liberalized compulsory collections, injecting 3.3% of GDP of liquidity into the banking system. However, uncertainties about the international financial crisis increased the preference for private banks' liquidity, which applied the resources released in compulsory transactions committed to the Monetary Authority itself. Given the increase in liquidity preference in private institutions, the government used SFI to maintain the economy's credit supply (BARBOSA; SOUZA, 2010). The BNDES and other SFIs directed efforts to finance private investment, the agricultural sector, and housing.

The Investment Support Program (PSI, for its abbreviations in Portuguese) mostly explains the BNDES's more recent trajectory (PSI 2009–2015), which can be divided into three phases: the first phase of investment support of a countercyclical character (2009–2010); a period of discontinuation in 2011; and a resumption in 2012 that lasted until 2015. According to (NEGRI; ARAÚJO; BACELETTE, 2018), PSI was responsible for adequately sustaining investment during the international crisis's most acute phase (2009–2010). In the resumption phase (2014), PSI had US$178 billion at its peak. Almost half of it (44%) was destined to produce and purchase trucks, buses, trailers, and the like. Another 28% financed the acquisition of other capital goods. Only 5% was allocated to innovation projects. The PSI's sectoral distribution shows that the program did not contribute to the existing productive structure's progress.

4. Conclusion

The theoretical discussion about the role of development banks points out the many functions they can perform. This article proposes that the primary purpose of DBs should be to expand the policy space to promote structural transformation towards a more sustainable, complex, and technologically sophisticated productive structure. As peripheral economies are dependent on capital and external technology, the performance of SFIs should promote structural transformation so that these economies narrow their distance from advanced economies in terms of GDP per capita.

DBs should act as an arm of public policies inserted in a broad investment promotion context that functions as a developmental State's instruments. They are vehicles of credit policies that guide the State's intentionality in promoting sustainable development and directing long-term funding. Consequently, they should be part of the macroeconomic policy toolkit, as essential as monetary and fiscal policies, which can finance peripheral countries' catching up. SFIs in general, and DBs in particular, are necessary for several reasons, as set out in this article. The most acclaimed of its functions in recent years – the countercyclical function, widely used since the 2008 financial crisis – is undoubtedly a reason for their existence.

In addition to this role, DBs can act as financiers of the development process. Private banks do not promote this activity due to their pro-cyclical, short-term-profit orientation. Additionally, DBs operating in the context of a development-promoting State minimize the breadth of financial and economic cycles, ensuring a continuous flow of financing. This function increases economic stability and the confidence of agents in the growth process. To properly promote structural transformation, DB's credit policy should be coordinated with other macroeconomic policy instruments.

Taking as an example the trajectory of the BNDES, we saw in this article that in the import substitution phase, its performance was well coordinated with industrial, commercial, and foreign exchange policies. This period marks the Brazilian economy's highest growth rate with the promotion of the industrialization process. The shock of external debt in the early 1980s reduced the policy space with the lack of international liquidity, which implied economic openness, the decline in the State's size, and the reorientation of the BNDES functions in the 1990s.

The resumption of attempts to promote industrial and developmental policies between 2003 and 2014 occurred in a macroeconomic scenario with poor coordination between SFI credit policies and macroeconomic policies. In this context, productive structure and exports regressed, and productivity stagnated. The performance of SFIs became more relevant after the international financial crisis when they acted countercyclically.

Finally, from the recent Brazilian case, we conclude that adopting developmental policies is only possible through powerful SFIs aligned with the State's planning program, acting, and other public institutions. Liberalizing policies in the macroeconomic sphere proved incompatible with the promotion of structural changes in the economy. They are antagonistic policies in the sense of the message sent to economic agents. However, in the context of neoliberalism, where fiscal constraints and monetary policy are subordinate to inflation control and foreign capital attraction, credit policy is the only macroeconomic tool left for the State to maneuver towards economic structural change. Fiscal and monetary policies are restricted, given the macroeconomic policies adopted worldwide.

SFIs should be recognized as an essential toolkit for promoting catching-up. This process has to have a strong alliance with the State's goals. Therefore, we neither recommend having only an SFI nor only a Big Government, in Minsky's sense. We believe that a Big Government Bank must be able to interact with other economic areas. We argue SFI should be a bridge between the productive and government sectors, thereby aligning economic strategy and production plans. Therefore, the SFI should be a smart and dynamic organism, in direct line with the State administration. As part of the economic toolkit, the development bank's president should have a minister of State's status in order to be part of economic decisions. In conclusion, we advocate in favor of a "Big Smart Government Bank".

Article 4 - The green transition and the need for a sustainable development convention

1. Introduction

The Covid-19 crisis has reintroduced the minimal State discussion as a path to nurture sustainable development. The quadruple crisis – environmental, health, economic, and political – has only made the problems of the current global system more evident, especially concerning the deepening of social and economic inequalities and the rapid process of environmental destruction and drastic climate change. The pandemic's economic crisis, coupled with the environmental and health disaster, exposed the current financialized system's inherent instability (CHOMSKY; POLLIN, 2020). Covid-19 has necessitated the creation of new public policy instruments since the current ones replicate the same economic system that caused the complications in the first place – underdevelopment, deforestation, environmental impacts, poverty, and inequality, to name but the most evident ones. (STIGLITZ, 2019)

The 2008-09 global financial crisis, the economic stagnation that followed in the frameworks of neoliberal reforms, and the present Covid-19 crisis point equally to the likelihood of, if not the necessity for, effective development strategies led by the State and its institutions. In this context, this article argues that the green transition — the passage from a high-intensity carbon dioxide economy to a low-intensity one — requires long-term investment in new sectors and innovation, of which the private financial sector is not naturally compelled to invest in. The necessary State institutions must be integrated into the State's plan for a new sustainable development convention that focuses on promoting structural change, and reducing social and regional inequalities.

We will naturally discuss the scope of macroeconomic policies – fiscal, monetary, and external — yet understanding the political economy will play an essential role in the green transition. To this end, it is necessary to rethink the State's role and the economic policies and toolkits available. The importance of monetary policy and the central banks' power, aimed at inflationary control and financial stability as a central goal, do not adequately assess the environmental and social risks involved in making changes to the current economic format —structural, regional, sectoral, and social inequalities — as well as to the environment itself and the sustainability of the production model. In this regard, the solution involves the creation of instruments that support the green, economic, and social transformations. (CROCCO; FEIL, 2020)

This article assumes that as long as there is no coordination of macroeconomic policies, resulting from shifts in political relationships of power, between the State and its institutions focused on economic development – in other words, a sustainable development convention – we will continue to soar from crisis to crisis. That being the case, we propose that the State act as a long-term planner, promote sustainable development, stimulate innovative enterprises, and enable structural change and the green transition. Such a convention is only possible in an environment of global cooperation and shift in the financialized neoliberal order. Nevertheless, the deconstruction of the neoliberal narrative requires critical analysis, theoretical elaboration, and policy propositions that society will accept as real alternatives to the circumstances caused by the crisis. Accordingly, one of our premises is when there is a rupture of the current conventions due to severe crisis, the State should operate through its institutions to rebuild confidence, guiding the agent's decision-making process in an uncertain environment.

To address these points, the remainder of this article is divided into three sections, plus the conclusion. Section two discusses the importance of a sustainable development convention guided by the State and its institutions. This section looks in detail at the requirements of the green transition, including the necessity for a profound and swift restructuring of production and consumption, which demands extreme changes in society. Therefore, the State, its institutions, economic policies, civil society, NGOs (non-governmental organizations), the private sector, and the financial sector all must act coordinately towards the same goal, readjusting their behaviors and expectations. Section three states the risks of the green transition for the financial sector. The green transition requires new, greener sectors with less greenhouse gas emissions, meaning that most of the existing leading economic industries will become extinct or will have to be readapted. Hence, the green transition presents an inherent risk to the financial system's stability, given the growth amount of stranded assets. In view of the extreme metamorphosis, the fourth section highlights a few proposals for financing the green transition, focusing on development banks' functionality, central banks' roles, and a sustainable development convention.

2. Sustainable development convention

The Covid-19 crisis can be seen as an opportunity to shift public policy focus from what (REINERT, 2008) calls a palliative economy, that is, one which targets the relief of economic misery, to the development economy, which aims to change the productive architecture. Structural change in the green transition — the passage from a high-intensity carbon dioxide economy to a low-intensity one — implies that the State should combine long-term planning with the need for sustainable structural change.

Long-term planning requires synergy and coordination among the policymakers in charge of short-term economic policies and State policies, especially with regards to reducing carbon emissions since it involves a shift in the productive structure and the consumption pattern. The Paris Agreement (signed by nearly 200 countries in December 2015 at United Nations Climate Change Conference — Cop 21) aims to limit the increase in global temperature below 2ºC above pre-industrial levels by 2050 by zeroing CO_2 global net emissions. This is a bold plan that implies the need for a swift change in society.[34] The green transition is a synergistic phenomenon and requires a diversified industrial sector. According to (CHENET; HILKE; DUAN, 2017), the green transition demands financing, tax benefits for selected activities, cheap credit, and subsidies. The commitments set forth by Cop 21 combine a conversion to environment-friendly production processes and behaviors and creations of new technologies and infrastructure to replace the current ones (CHENET, 2019). A massive capital reallocation is necessary to limit global warming. The capital flow must shift from high-carbon assets to low-carbon ones if the critical green transition in the economy is to be attained.

In this context, it is up to the State to initiate growth resumption by generating positive expectations in order to change the productive structure for future recovery, and even more by [re]launching the historical process of the developmental State. The main focus needs to be on sustainable development and the green transition with social inclusion, thereby promoting a **sustainable development convention**. The concept is based on the notion of "convention to growth," first coined by Antonio Barros de (CASTRO, 1993) to

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[34] For a reference, see https://unfccc.int/process-and-meetings/the-paris-agreement/the-paris-agreement.

describe the period of the Brazilian industrialization process. The argument suggests that the government's commitment to growth and industrialization in Brazil generated a state of expectations among economic agents that stimulated productive investment. Consequently, development tends to be a self-fulfilling prophecy. Fabio (ERBER, 2012) widened the concept by creating the "development convention," arguing that a collective perception of pro-development provides policymakers, economic agents, and society a sense of certainty in a non-ergodic world.

A sustainable development convention is a change in a State's mission and actions through the coordination of its policies, institutions, and tools towards a green and just transition. It also signals to the private market and society that the policies will ensure sustainable development despite the green transition's risks. The institutions' (both formal and informal) transformation provides the basis for society to reduce uncertainty. According to (NORTH, 1990), institutions shape the way societies evolve, defining the agents' limits and actions. Institutions provide society with a means to cope with the problems of uncertainty and coordination. A convention is a social representation, a form of knowledge, socially produced and shared, that establishes a collective reality. (ERBER, 2011, 2012). The green transition is an uncertain process, which reduces the scope for coordination. A sustainable development convention provides a set of rules focused on the green transition, considering its financial, institutional, economic, social, environmental, and technological aspects.

2.1 The role of the State in the green transition

Under the assumption that economic decisions are made in a non-ergodic world, expectations on future returns are the principal guide to long-term commitment decisions. If, as in (KEYNES, 1997), we assume that the economy does not show a systematic tendency towards full employment as there is no direct relationship between expenditure, income, and current production, then there is no market coordination capable of linking future decisions to present investment determinations. The agents' behavior, seeking to maximize their profits, can generate crises steming from the fall or lack of effective demand. The fall in investments reduces income levels and decreases marginal capital efficiency, starting a vicious circle that will only be reversed through an external incentive. Thus, in Keynes's view, a State's economic policy should ensure an environment favorable to investments.[35] The state of confidence regarding the potential yields and the liquidity preference determines the flow of new investments. It is an environment of long-term expectations that drive agents to invest.

Therefore, changes in the perception of future gains alter expectations that will be reflected in investment decisions. (KEYNES, 1997, p. Chapter 12) argued that decisions based on long-term expectations rely on the agents' level of confidence in the economy's future outcome. In this sense, conventions built upon economic practices supported by governmental institutions and policies are the central pillar to back long-term economic decisions. Green transition projects are highly uncertain and not necessarily the most profitable ones (in the short term), even though they are the ones with the highest returns from a social perspective. Consequently, the private sector will most likely not risk new investments aimed at the green transition. This concern raises the argument that an intelligence center which coordinates the socialization of investment is necessary to manage expectations that drive investment decisions towards a long-term policy to sustain growth. Keynes did not design specific public policies that would achieve the goal of socializing investment. However, according to (SECCARECCIA, 1995), Keynes supported creating a National Investment Board (NIB), which would aim at encouraging full employment equilibrium by promoting long-term investment financing. During a green transition, the NIB would be the intelligence center that would pool investment funds, both public and private, and ensure financing at competitive costs to attract private investors. (SECCARECCIA, 1995, p. 49).

The social purpose of the well-oriented investment by an intelligence center is to counterbalance the forces surrounding private investment decisions guided by uncertain expectations of money returns. New conventions should, thus, be built to allow for the State's coordination of private investment decisions.

We argue in this paper that when there is a rupture in the old conventions due to a severe economic crisis or paradigm shift, State intervention through public institutions can profit

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[35] See Sicsú (2020) for an interpretation about Keynes's view on State planning.

from this unique moment by using it as an opportunity to rebuild trust in expectations to guide private agents' decision-making in an environment of exacerbated uncertainty. (KEYNES, 1997)

The claim for the State's superior coordination capacity for economic decisions can be explained by considering how private agents, in a non-ergodic environment, form their expectations about the uncertain future. According to (KNIGHT, 1921), risks are linked to a measurable probability, while uncertainty is connected to a non-ergodic situation. Uncertainty results in a scenario where it is not possible to make reliable estimates about the future.[36] That is the case of the green transition. It will require a complete reorganization of the economic and social structure. Therefore, profit-oriented private agents lack the means, complete knowledge, and the social requirement to undertake such a process without State coordination. Current premises, essential for the formulation of expectations and conventions, might no longer hold if, for example, climate change becomes a clear threat to business. Therefore, the logic of decision-making based on old conventions will no longer be feasible. It is a rupture in the processes, and as such, state intervention will be required not only to redirect investment but also to reinforce a new convention, one that, in this case, is pro-sustainable development, based on the green transition – a sustainable development convention.

In an essay on the State's role in economic theory, (CARVALHO, F. C. DE, 1999) explained that the active and continued State intervention in the economy had become an essential aspect of modern capitalism, notably after World War II. We can add that this intermediation remains vital despite financial globalization, privatizations, and the dismantling of economic planning institutions and of social security systems. To bring Keynes's theory to an environmental approach, there would be a permanent conflict between sustainable development and the pursuit of profit maximization since there is high uncertainty in the green transition.

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[36] See on this issue Dow (2020). The author argues that when decisions are made under uncertain expectations, prices that guide decisions are “conventional prices” and not “true prices,” as assumed in the conventional literature that addresses the concept of probabilistic risk.

In line with the argument that State intervention in the climate transition is essential, (KROGSTRUP; OMAN, 2019) argue that the productive and behavioral changes required to limit global warming will have profound implications for economic policy instruments since limiting global warming depends upon a rapid revolution of global economic structure that will not occur through the market alone. So, in addition to the argument that only State intervention can guide a climate transition in production and consumption behavior, there is a sense of urgency. This is the reason why (BOLTON et al., 2020) argue that the obstacles to mitigating climate change pose unprecedented challenges for society, the State, and the financial system in the sense that a green transition means moving towards a new production system based on lower CO_2 emissions.

In sum, due to the green transition's scope and nature, it can only be coordinated by the State and its institutions, which have the wherewithal to socialize investment in the way that Keynes foresaw in the last chapter of the *General Theory*. That is not to say the private sector and civil society are not prominent players; they must act alongside the State to successfully transition. What Keynes proposed was the rentier's euthanasia. In our view, this can be interpreted as the replacement of the functionless entrepreneur, the rentier, with the entrepreneur willing to run risks based on expectations anchored by a solid sustainable development convention of growth. Sound public institutions capable of facing such challenges are fundamental for the green transition's success. Therefore, public sector coordination with the private market's structures is necessary, making the intersection between public and private even more essential. (EVANS; RUESCHEMEYER; SKOCPOL, 1985)

3. Climate change and green transition's financial risks: uncertainty involved in the risks of climate change

3.1 The role of the financial sector in the green transition

Drastic economic and financial reforms will be fundamental to catalyze a transition to zero carbon emissions. The green transition requires new, greener sectors with less greenhouse gas emissions, meaning that many existing leading economic industries will become extinct or will have to be adapted. The transformation must be thoroughly planned through a collective project of change and coordination. In other words, the metamorphosis must be profound and structural since it requires a complete rearrangement of the mode of production and consumption towards environmental sustainability. ((CHRISTOPHERS, 2019); (ZUCCO; POWER, 2012); (GROS et al., 2016); (CHENET; RYAN-COLLINS; VAN LERVEN, 2019); (CARNEY, 2018); (ICAP, 2020); (CALDECOTT et al., 2016); and (CHENET; RYAN-COLLINS; VAN LERVEN, 2019))

In addition to long-term planning, the sustainable development convention requires a new financing structure. Different economic activities have different maturation times to adapt to the goals established at Cop 21. Therefore, meeting the challenges posed by climate change will lead to the simultaneous closure of the economy's traditional sectors in order to create new ones. The financial system will play a central role in the green transition, given its ability to drive investments to generate structural changes focused on innovation and environmental efficiency. However, the private financial system is profit-seeking. Thus, how can the actual financial architecture be conciliated with its role and the targets of the green transition?

Indeed, (CARNEY, 2015) maintains that the green transition presents an inherent risk to the financial system's stability. (CAMPIGLIO et al., 2018) observe that provided the imminent changes required for the green transition, stranded assets risk[37] is becoming a

[37] Stranded assets are defined as assets that have suffered from unanticipated or premature write-downs, devaluations, or conversion to liabilities. (Campiglio et al., 2018:5)

more frequent, regular, and widespread feature of the economic system, increasingly affecting financial stability. According to research developed by the Inter-American Development Bank, IDB, recent events have shown that these assets are becoming increasingly related to the environmental phenomenon, and this trend is set to rise in the next few years (CALDECOTT et al., 2016).

(CARNEY, 2018) argues that success in transitioning to a cleaner economy within the established time frame can generate a paradox where success is a failure. That is, a swift move towards a low-carbon economy could materially undermine financial stability. A general revision of the outlook, as climate-related risks are reassessed, could destabilize markets, triggering a loss cycle, and lead to a persistent tightening of financial conditions – called the Minsky climate moment by the author.

That is to say that despite the green transition's essentiality — recognized as settled on the international treaties —, the inherently unstable, procyclical, and short-term nature of private financing cannot conduct the transition process by itself. The financial system, unfortunately, does not always operate in society's best interest since it is profit-oriented and inherently unstable, attributes that limit investors' ability to promote sustainable development (KREGEL, 2017; MINSKY, 1992). According to their institutional structure, financial services can create gaps in the financing of specific segments, especially those demanding long-term credit, and put up barriers for the green transition. (STIGLITZ, 1994) states that even if the social return has an appreciable impact, the project may not be funded in the face of deficient private returns, to which financial institutions naturally lend top priority.

Private financial institutions function pro-cyclically, expanding credit operations in a boom-bust pattern[38] (MINSKY, 2008). The liquidity preference of financial institutions is directly related to agents' expectations throughout the economic cycle. The expansion of credit in accelerated growth periods and its contraction in slow-growth times

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[38]Minsky (2008) separates the financing structures into three stages: Hedge, when the income flows from agents cover as much interest as the principal of financial loans; Speculative, when short-term income flows cover interest only; and Ponzi, when short-term revenues are insufficient to cover interest, so that debt increases. Throughout the expansionary economic cycle, financial positions evolve from hedge to speculative and Ponzi positions.

exacerbate the business cycle. That is why, in Minsky's view, the cycle is endogenous to the way decisions are made in a non-ergodic world.

3.2 The financial risks of climate change

Climate change will affect economic dynamics and inflict risks to the financial system. This is because the transition will impact most economic sectors, especially those highly intensive in CO_2, which, in turn, will influence risk management. As the transition's uncertainty tends to spread into the financial sector, such risks cannot be treated conventionally. In building the narrative of a sustainable development convention, financial regulators should actively guide market actors in a clear direction to a managed green transition. This will ensure a scenario that minimizes the damages to the financial system and to the economy in general. It is up to central banks and policymakers to downplay the impacts, acting as regulators for the green transition (CHENET; RYAN-COLLINS; VAN LERVEN, 2019).

A few central banks around the world (the European Central Bank, the Federal Reserve, De Nederlandsche Bank, to name a few)[39] started to regulate the financial market towards a greener approach, incorporating into the prudential supervision some guidelines for financial institutions' measurement of the transition risks. However, (RYAN-COLLINS, 2019) argues that, despite the evidence of climate change, financial institutions have yet to incorporate the transition risk into their models, suggesting that role of central banks should become more proactive.

Climate impacts are long-term, while the financial institution's logic is limited by the short term and is profit-oriented. This is what Mark Corney coined as the "tragedy of the time horizon." There is a misassociation in the maturity of a green investment project and the period when the government (not the State[40]) or private investors demand their profits or externalities from the project (GENERATION FOUNDATION, 2017). The financial

[39] A group of central banks and financial regulators formed, in 2017, the Network for Geening the Financial System (NGFS) to share best practices and responses to meet the requirements to achieve the goals of the Cop 21.
[40] The understanding that there are risks involved in the green transition that will eventually damage some businesses and consumers makes it a difficult political choice, resulting in government not acting at the speed and scale required. (CAMPIGLIO et al., 2018)

market has a short-term logic that does not capture investments with long-term horizons. Hence, building a sustainable development convention that supports green transition investments requires guidance that the private financial market or capital market cannot handle. As long as prices do not reflect the effects of global warming, there will be no incentives for financial institutions to incorporate the transition risk into their analyses or shift their assets towards a greener portfolio. "Knowing that the tangible risk will manifest at some point is not enough to trigger a reaction from financial markets, as long as the occurrence does not coincide with their own time horizon" (CHENET, 2019). The typical turnover of investment portfolios is about one to two years; most of the portfolio manager's incentives are annual and financial analysis is limited to five years. Due to the natural inertia of the climate response, global temperatures will continue to rise for an extended period, even if greenhouse gas emissions cease completely. The major impacts of climate change will come long after, usually within a period higher than the time horizons of public managers and financial managers. ((CHENET, 2019)

However, there is a more significant threat of climate change to the financial system. The financial system generally addresses the climate issue from the perspective of the social and environmental risks the projects bring to society and the environment. This approach meets most monetary authorities' regulatory requirements, which are in fact linked to the financial institutions' reputational risk. The problem with this kind of analysis is that it is limited to the project's risk to the environment without considering any impact the environment can cause on the project.

This approach rarely forms part of traditional risk analysis models: credit, liquidity, market, and operational. In other words, the climate analysis carried out in financial institutions considers the environmental impact of the projects being investigated. It does not reflect the climate impacts on the economy as a whole, which can significantly transform the economic sectors. They do not contemplate the possibility of climate-related hazards that can destroy productive structures – out-of-season cyclones, earthquakes, tsunamis, and similar events. The dangers posed by global warming have the potential to cause considerable financial losses. (BOLTON *et al.*, 2020) Not analyzing the impact of the environment on the project, as (CHENET; RYAN-COLLINS; VAN LERVEN, 2019) put it, is the very denial of climate change itself. Financial institutions' risk models consider the environment as a given and constant element, being only marginally affected by the effects of the project financed at that time alone.

Climate risks are just beginning to materialize, and their consequences are unknown, as they are only projected (CAMPIGLIO *et al.*, 2018; CARNEY, 2015; GROS *et al.*, 2016; TCFD, 2017). That being the case, environmental risks need to be integrated into financial and market supervision models. (BOLTON et al., 2020) argue that when considering the microeconomic aspect of the green transition, financial institutions need a new risk analysis model that incorporates the environmental threats. This will depend on the resilience of the financial system itself to new changes.

(CARNEY, 2018) points out three main channels of risk through which climate risks affect the stability of the financial system:

i**. Physical risks** — emerge from weather condition changes and their direct impacts on assets (e.g., global warming, heatwaves, droughts, rising sea levels, extreme weather events), causing property damage and significant trade effects in goods and services.

ii. **Liability risks** — derived from those who have suffered losses resulting from climate change and are seeking compensation from those they hold responsible for such changes.

iii. **Transition risks** — materialize from the socio-economic reaction to the rapid adjustment to the low-carbon economy resulting from policies to mitigate or adapt to the effects of climate change (e.g., carbon taxes, new regulations or rules producing certain goods, technological development and deployment, changing consumer preferences, litigation, and so on).

The physical risks are related to the notion of "green swans." This notion, coined by (BOLTON et al., 2020)), is in reference to the black swan concept by Nassim Nicholas (TALEB, 2007), since it was observed that the environmental crisis and its consequent physical risks could lead to green swan-like events. Black swans are unexpected and rare events, the impacts of which are broad or extreme and can be characterized after the fact occurred. The existence of black swans requires alternative risk epistemologies based on the recognition of uncertainty. They can take various forms from terrorist attacks and disruptive technological changes to financial crises, such as the one in 2008. Although unexpected, statistical techniques can at least partially provide some form of protection against black swans. (CROCCO; FEIL, 2020)

Green swans resemble typical black swans but are related to the environment and climate change; their chances of occurrence are not reflected in past data; and the possibility of extreme values is expected. Green swan events are an example of Keynes-Knight uncertainty expectations. In such a sense, green swans cannot be adequately prespecified; they have to be estimated. Green swans refer to more severe phenomena than the global financial crisis of 2007/2008 for example, as they may pose an existential threat to humanity itself. Their effects can result in chain reactions whose consequences can generate fundamentally unpredictable environmental, geopolitical, social, and economic dynamics.

The deep uncertainties involved in green swan events and the necessary structural change of our global socio-economic and financial system are such that no single model or scenario can provide a complete view of the potential macroeconomic, sectoral, and social impacts caused by climate change. However, it can be affirmed that green swans have unknown consequences since they have multiple interrelated events, placing the need for coordination between many aspects: health, economic (micro, macro, fiscal, monetary), environmental, and their political scale as well, which is necessarily global.

The transition risks also deserve to be highlighted. Given the current global warming stage, the actions necessary to keep the increase in the earth's temperature below 2ºC need productive and consumption shifts that generate winners and losers. The former are those industrial sectors that can provide low-carbon technological innovations, and the latter, the CO_2-intensive industries/sectors. It implies significant impacts on both the risk and profitability of financial assets. In other words, the speed of the change required to achieve zero carbon emissions may be too short for the amortization of investments already made in CO_2-intensive activities, with severe consequences for the financial architecture.

According to (MCGLADE; EKINS, 2015), to achieve the goal of 2ºC, the total CO_2 emissions between 2011 and 2050 should reach no more than 1,100 gigatonnes (Gt). The total greenhouse gas emissions in current fossil fuel reserves are estimated to be three times higher than this amount. The authors suggest that "a third of oil reserves, half of the gas reserves, and over 80 percent of current coal reserves should remain unused from 2010 to 2050 to meet the target of 2ºC."

Table 1 presents the share of oil, gas, and coal that should remain unburned according to different regions. The different scenarios consider using and not using Carbon Capture Storage (CCS). CCS is the process of capturing carbon dioxide waste, transporting it to a storage container, and placing it where it will not enter the atmosphere. Considering the use of CCS, 33% of the global oil reserves, 49% of the gas, and 82% of the coal must remain unburned. It shows how drastically regions will have to adapt to accomplish the requirement set by Cop 21. The IDB (Inter-American Development Bank) estimates that 60% to 80% of publicly listed fossil fuel reserves must be "unburned." the equivalent to US$ 28 trillion in revenues. (CALDECOTT *et al.*, 2016)

Table 1 - Regional distribution of unburnable reserves before 2050 for the 2ºC scenarios with and without Carbon Capture Storage (CCS)[41]

	2ºC with CCS						**2ºC without CCS**					
	Oil		Gas		Coal		Oil		Gas		Coal	
	Billions of Barrels	%	Trillions of m^3	%	Gt	%	Billions of Barrels	%	Trillions of m^3	%	Gt	%
Africa	23	21	4.4	33	28	85	28	26	4.4	34	30	90
Canada	39	74	0.3	24	5.0	75	40	75	0.3	24	5.4	82
China and India	9	25	2.9	63	180	66	9	25	2.5	53	207	77
Former Soviet Union Countries	27	18	31	50	203	94	28	19	36	59	209	97
Central and South America	58	39	4.8	53	8	51	63	42	5.0	56	11	73
Europe	5	20	0.6	11	65	78	5.3	21	0.3	6	74	89
Middle East	263	38	46	61	3.4	99	264	38	47	61	3.4	99
OECD Pacific	2.1	37	2.2	56	83	93	2.7	46	2.0	51	85	95
Other Asian Countries	2	9	2.2	24	10	34	2.8	12	2.1	22	17	60
USA	2.8	6	0.3	4	235	92	4.6	9	0.5	6	245	95
Global	431	33	95	49	819	82	449	35	100	52	887	88
Source: McGlade, C. and Ekins, P. (2015)												

[41] Resources are taken to be the remaining, ultimately recoverable resources - the quantity of oil, gas or coal remaining that is recoverable over all time with both current and future technology, irrespective of current economic conditions. Reserves are a subset of resources that are defined to be recoverable under current economic conditions and have a specific probability of being produced. (McGlade & Ekins, 2015:188)

Fossil fuel companies are primarily accountable for global greenhouse gas emissions. These institutions' investment practices will shape the green transition's rate and nature as well as the speed and nature of the global financial system's parallel transition.

In sum, both physical and transition risks can affect the financial system in several ways. Risk materializes in companies' and sectors' physical assets levels through their operations, market, or value chain, acting on income and expenses. Thus, having started at the company level, the risk can materialize at the financial market level through credit risk, liquidity, operations, and possibly be systemic. Those financial institutions highly exposed to firms linked to old polluting industries/activities – oil, deforestation, minerals — are those that may go bankrupt and are subject to large asset losses in the near future. (CHENET; RYAN-COLLINS; VAN LERVEN, 2019)

4. How to finance the green transition

The green transition process relies upon a change in the funding structure to redirect investments to cleaner projects and ensure the shift does not affect the financial system's stability due to the system's current leverage in sectors intensive in carbon dioxide emissions. A successful green transition, thus, requires integrated state action to create markets through investment projects and structure for sustainable products, ranging from clean energy to sustainable agriculture. Implementing this movement requires novel state actions that are unlike the current ones, which are based on the available economic toolkits or on policies stemming from balanced budget assumptions. In order to build a sustainable development convention, the State should initially set up public investments to reduce risks and leverage climate investments to attract private investors. A State's ability to plan requires a political bargaining chip, economic tools, and strong institutions. Development banks, in particular, play a central role in the process since they are essential in shaping the market, directing the investment process, and offering credit to those sectors and projects accountable for the transition.

The private financial system structure strengthens the current market model, exacerbating the risks of the green transition. Fast and ambitious measures may be the most desirable from the point of view of climate mitigation, but not necessarily from the point of view of financial stability in a short-term horizon, as the destruction of sectors could dramatically affect financial liabilities. In this case, both physical and transitional risks are characterized by deep uncertainty and nonlinearity.

Development banks are essential to ensure funding for productive change. That is why they must act intentionally, seeking to fulfill their mission, a mission integrated into a developmental State that promotes the economy's structural change. (MAZZUCATO; MACFARLANE, 2019) A development bank's intentionality, its mission, is a concept of public policy, insofar as such banks integrate and acquire a strategy of action, industrial policy, innovation policy, and financing policy. Moreover, as it is proposed here, development banks will act more efficiently if aligned with a sustainable development convention.

The credit mechanism is fundamental for achieving an investment's objective and, consequently, a determinant of growth and development (SECCARECCIA, 2011). However, the idiosyncrasies of private financial systems – procyclical action, concentrating on regional and sectoral perspectives, and focusing on the pursuit of profit in the short term – limit the primary function of credit for financing activities with high uncertainty with regards to the expected returns over a long period (STIGLITZ, 1994). State intervention in financial intermediation may compensate for this limitation. But for such intervention to have greater scope in the development process, development banks must act as a public policy arm, being a means for the government to achieve its mission (FEIL; FEIJÓ, 2019).

Development banks have accumulated experience in providing long-term reimbursement resources for high uncertainty activities such as infrastructure or innovation projects and other (presumed) high-risk activities.[42] Their repeated performance in financing growth, capital formation, and infrastructure formation has allowed them to gather tacit or systematic knowledge about the structure and actors of the economy, thus constituting intelligence centers that can be adequately mobilized in the planning and execution of public policies. This experience is one of the main qualities of development banks that permits them to act as a public policy arm, helping to operationalize projects and redesign the productive structure where they operate, so long as they are effectively integrated into a coordinated development strategy (FEIL; FEIJO; HORN, 2021).

Thus, the role of development banks within the State structure is not limited to financing specific projects. Development banks in a green transition program can play an essential role in coordinating public policies; in reducing problems associated with information, that is, mitigating uncertainty in a Keynes-Knight view; and in fostering a state of trust that expands the supply of liquidity. This expansion of liquidity is oriented not only to encourage companies and production chains but also to allow structural changes that

[42] For instance, KfW, in Germany, was one of the first financial institutions to finance renewable energy; the CDB invested heavily in infrastructure and innovation in China in the aftermath of the 2007-2008 global financial crisis; and BNDES, in Brazil, issues green bonds.

reinforce the green transition and promote new productive arrangements that enhance development and reduce sectoral, social, and regional inequalities.

4.1 Development banks: a proposal of a Green Industrial Policy and Innovation for Productive Conversion

Development banks' operations require coordination with other State entities to carry out a national development strategy. It is necessary to summarisethis articulation, inserting development banks are put at the center of the planning and execution of development policy. In a recent paper, (FERNÁNDEZ-ARIAS; HAUSMANN; PANIZZA, 2019) argue that development banks may exercise their knowledge as a type of new intelligence agency.[43]

By acting as the new intelligence agency, development banks can fund the green transition and exploit the complementarities between the market and the State since they are in a unique position to moderate both agents.[44] The banks should also develop well-established communication channels with the government to incorporate their intelligence role. At the maximum, we suggest that the institutions' presidents receive a State minister's status at the federal level and secretary within the scope of federative units, or at least be the president of the economic development committee. What is important here is that the development policy issues be in the direct presence, without delegation, of the head of the government in such a way that makes the subject matter of this policy occupy the center stage of the State. Such a structure could modify agents' perception regarding the State's economic activities, thus influencing the conventions that guide private decisions in the economic sphere. (FEIJÓ; HORN; FEIL, 2020)

The change in private agents' perception in the face of a new institution for development deserves constant attention from governments because it cannot be assumed that this reaction is necessarily positive. In fact, the years of dissemination of neoliberal doctrine have reinforced these agents' propensity to resist a new convention. Where the State plays

[43] Similar to the National Investment Board proposed by Keynes, which is an institution created to coordinate the socialization of investment.
[44] The role of an intermediate institution is also defended by Reinert (2008).

a vital role in the national development strategy, its institutions do not merely act as transmission channels of the central government's policies; hey actively contribute to the formulation of the strategy itself.

(SKOCPOL, 1985) argues that the intersection of actions between the State and the market is precisely where the development process becomes successful. Development banks act as representatives of the State in the market, symbolizing the State to the private sector. Therefore, they are the ideal institutions to link those actors. Their repeated performance in financing economic growth and infrastructure, among others, has allowed them to gather tacit or systematic knowledge about the structure and actors of the economy. This qualifies them as intelligence centers that can be adequately mobilized in the planning and execution of public policies, insofar as they are effectively integrated into a development strategy.

To addressthe process of asset losses due to the intensive CO_2 emissions of many leveraged sectors, we propose a "Green Industrial Policy and Innovation for Productive Conversion." This is an industrial policy that provides instruments to promote the green transition process through incentive measures and requirements that allow the sectors intensive in CO_2 emission to carry out a change of action.[45] It is necessary to recall here the issue of stranded assets. Since the risks related to these assets are not yet priced in a company's value, a rapid and successful climate transition may generate a loss in substantive value for these companies with a significant impact not only on the entire production chain but also on all the financial architecture that sustains it.

Another central issue is the mismarriage between assets and liabilities by financial institutions. Development banks cannot have a fundraising logic with the same temporal rationality as the financial market. The financial model of financial institutions is not neutral. In this sense, the implications of what kind of funding the development banks will have — public resources or the capital market — are essential. When resorting to

[45] The Green Industrial Policy and Innovation for Productive Conversion must also ensure workers' subsistence guaranteed by a welfare State. Workers from brown industries may be reintegrated into a new expanding labor market. However, this intermediary process must safeguard their well-being so that this group no longer represents a barrier to the transition (CHOMSKY; POLLIN, 2020).

issuing securities in the capital market, banks will need to comply with a series of governance, management, operations, and financial rules that adapt to the private market's needs and logic. Thus, the institutions will follow the capital market rules and, therefore, be oriented to short-term, profit maximization. The actual financing logic of development banks will apply when funding projects that a State mission is guiding. However, when choosing to finance themselves with capital market securities, there is a contradiction with development banks' activities, especially development banks that have investments with a longer maturity horizon. This funding strategy does not fit in with development banks in a developmental State committed to the green transition.

(HUMPHREY, 2016) argues that multilateral development banks such as the World Bank, the Inter-American Development Bank, and the Andean Development Corporation all had initial mandates that were directed to promote development and industrialization in member countries. However, since those institutions are controlled by more than one country, they rapidly began to raise funds in the private capital market. In doing so, the multilateral development banks' practices shifted away from the developmental mission to obey the capital market rules. This clearly demonstrates how those three institutions were pushed by financial pressures to operational practices unaligned with their developmental mandate. The need to raise funds in the private capital market now shapes their operations and financial policies.

Additionally, when issuing securities in the capital market, any institution needs to acquire a risk rating from rating agencies, indicating the market's degree of risk. Thus, development banks need to adjust their performance and financial structure to these agencies' methodology. Dealing with climate change investments and reducing economic and social structural heterogeneities requires a foundation that the capital market cannot handle.

In this context, not only can financing the transition process be solely carried out by development banks, but the sources of funds must be guaranteed without interference from private logic, which, as mentioned, tends to deepen the contradictions of the financialized capitalist system. However, there is no doubt that, when taking into account the structural incapacities of the private financial system to face the challenges posed by the present day, it is precisely up to the development banks to lead this process, directing credit and consequently the sector and the productive orientation itself. Not only that, coordinated action by the State and its institutions is vital. With public policies that exceed the government's temporal horizon, the developmental State is essential in this new reality that is being imposed.

4.2 The role of the Central Bank: a proposal of a Green Quantitative Transition

The reformulation of the role of central banks will also play an essential part in a sustainable development convention. Ultimately, central banks may have to act as climate rescuers of last resort, as Bolton et al. (2020) indicated in "The Green Swan." The authors argue that events caused by "green swans" which affect the financial system's health may require central banks to buy assets.

This article claims that central banks can play an even greater central role in the process by developing a policy such as a "**Green Quantitative Transition.**" To ensure that this transition does not affect the financial system, central banks should align their monetary and regulatory policies with the environmental ones (CAMPIGLIO *et al.*, 2018). Central banks then could play a key role by aiding the financial system through the purchase of depreciated assets resulting from the rapid climate transition, with the condition that this rescue package is directed to the financing of environmental sustainability projects or green industries. (CROCCO; FEIL, 2020)

The Green Quantitative Transition would be a policy inspired by Quantitative Easing, which was initially implemented by the Bank of Japan at the beginning of the century, and disseminated by the Federal Reserve, the U.S. Central Bank, and later the European Central Bank, to deal with the financial crisis that began in 2007/2008 and the subsequent euro crisis in the following years. Quantitative easing is the injection of liquidity into the economy by purchasing assets from financial institutions. Green quantitative easing would be implemented with the same principles but directed to the climate transition process. Central banks would also issue securities to capitalize on development banks to ensure that the institutions could finance the projects necessary for the transition without hitting obstacles stemming from the private credit market, as previously discussed.

At the same time, it would be up to the central banks to create a company – along the lines of the Brazilian Emgea Asset Management Company, for instance[46] – to manage the exchange of financial assets linked to old technology, –or brown, for green technology assets. This process would allow central banks to rescue financial institutions in trouble during the transition and, simultaneously, impose conditionalities for their operations in a movement to [re]regulate the financial market. In other words, central banks would have the potential to rescue financial institutions from the stranded assets problems; direct their operations towards green projects, by imposing conditionalities to the asset swaps; have instruments to coordinate the financial market; and even nationalize the private financial institutions, if and when necessary.

Finally, through the Green Quantitative Transition, the federal government could finance the Green Industrial Policy and Innovation for Productive Conversion through an expansionary fiscal policy, conditioned by technology and innovation changes. Nonetheless, the intentionality (according to Mazzucato's definition) to promote a successful green transition that involves reductions in inequalities requires the alignment of macroeconomic policies for this purpose. State planning, its institutions, and the strategies employed – fiscal, monetary, foreign exchange, and industrial, all together with credit policy – must ensure the green transition’s sustainability. The financial system's stability and efficiency and the productive sector's productivity and maintenance focused on new technology could be guaranteed in this way. (FEIL; FEIJÓ, 2021)

4.3 Putting together development banks and central banks in a sustainable development convention: a proposal

In our proposal, the Green Quantitative Transition is a vital instrument for funding development banks. By taking on the mission to finance the green transition, development banks will face the double challenge of capitalization and availability of resources. Special government bonds could capitalize the development banks (Development Bonds).

[46]Emgea is a non-financial company linked to the Brazilian Ministry of Finance created in the late 1990s by the National Treasury under the Federal Financial Institutions Strengthening Program (Proef) to transfer government bonds to federal banks in exchange for their problematic (or rotten) assets (HORN; FEIL, 2019)

Central banks can issue and direct them to the long-term financing of projects through development banks (FEIJÓ; HORN; FEIL, 2020). Development bonds issuances would be conditioned to finance the "Green Industrial Policy and Innovation for Productive Conversion."

Such an instrument would not affect public debt. The central banks would issue bonds to fund the development banks, ensuring the necessary support to finance the process without burdening their fiscal policy. Funding instruments need to evolve accordingly to societies' needs. Development banks can only perform their missions within a developmental State context. The funding structure must be inserted in to the State's mission, focusing on productive innovation and green technology. Its main concern should be full employment and reducing of social inequalities achieved through structural change of the economy.

The absence of State policy and coordination inhibits the effective mobilization of climate change financing and the green transition. We argue that the proposed policies need to be imposed to be effective. The State should ensure the environmental integrity and fairness impacts of climate policies. Technological change is inherently dynamic and often disruptive to markets. Climate finance policies must anticipate the green transitions' changes and be able to respond to them. "Climate finance policies should be nested in a comprehensive set of regulatory, fiscal, industrial, market-based, and other climate change policies that disincentivize investment in polluting technologies and incentivize investment in low or zero-carbon technologies." (BHANDARY; GALLAGHER; ZHANG, 2021, p. 13)

5. Conclusion

The crisis caused by social isolation measures necessary to contain the pandemic's advance highlighted the inefficiencies of financialized neoliberalism, starting with the urgent need for change in the economic paradigms. The environmental, health, economic, political, and social crisis moves society towards its rapid destruction. In view of this, development banks are essential public policy instruments that, together with central banks, can ensure the financing of the green transition and of the innovation necessary to develop and promote sustainable economic and social structural change. Such institutions should be organized within a sustainable development convention.

However, institutional changes in the financial architecture are the result of political will. That is why, even though we are caught in the trap of discussing the scope of macroeconomic policies (fiscal, monetary, exchange rate, etc.), we understand that the political economy will be essential in building a sustainable development convention and in the successful implementation of the Industrial Policy and Innovation for Productive Conversion, which will aid in achieving the Cop 21 goals. In other words, we understand that the current conventional macroeconomic policies are designed to reproduce the current economic structure. We are, therefore, not well equipped to deal with the problems already existing from climate change and are not addressing the need for structural change or sustainability. To this end, we propose a reorganization of the economic agents and toolkits available to promote a sustainable development convention, which, in turn, promotes the green transition.

Consequently, if the macroeconomic policies and the State and its institutions remain focused on economic development and not sustainability, we will continue to go from crisis to crisis. This will exacerbate the social, economic, and environmental fissures inherent in the process of financialized neoliberalism. We propose that the State, committed to the green transition, work as a long-term planner to promote sustainable development and foster financial stability during the transition process. Restructuring the current production model is necessary to curb global warming, and as we have seen in this article, it needs to be rapid and drastic.

In short, it is up to the State to plan and lead this process. To do so, its main institutions should operate towards the same goal. This includes a development bank working as a development agency and a central bank working as a lender of last resort for the green transition. Finally, constructing a sustainable development convention to promote the green transition is essential due to the process's uncertainties. Only the State can act as a long-term planner to guide private investment decisions to build and consolidate a sustainable development convention.

Thesis Final Remarks

This thesis comprises four articles addressing different State-owned financial institutions as part of State took kit to promote sustainable development. The articles are "Regional State-owned financial institutions and the challenges of the National Development System"; "Regional credit distribution in Brazil: the role of State-owned financial institutions"; "Development banks as an economic policy arm – promoting sustainable structural change"; and "The green transition and the need for a sustainable development convention".

It discussed the role and challenges faced by SFIs, emphasizing development banks. It is an ever-renewed issue given the demands placed on long-term funding for investment. This thesis proposes development banks are a part of the State's instrument of credit policy and inserted in a context of developmental State are essential to promote the catching-up. It brings a structural approach of SFIs' role emphasizing they should be inserted in State's long term planning, working as "Big Smart Government Bank" that interacts with other economic areas, operating as a bridge between the productive and government sectors, aligning economic strategy and production plans. In a global warming context and the need for a green transition, development banks should operate in a sustainable development convention, alongside with State, its institutions, civil society, NGOs, the private sector, coordinating their actions toward the COP 21 goals, rearranging behaviors and expectations.

The first article, "Regional State-owned financial institutions and the challenges of the National Development System" approached the Brazilian SFI's history and its main role in the countries industrialization process. Brazil is characterized by the strong participation of SFIs since the XIX century. Despite many modifications, the country reached the global financial crisis of 2007-2008 with a strong architecture of SFIs. Those institutions were part of an essential contra cyclical policy that injected liquidity into the economy. It was argued that in order to take a more comprehensive role as development agents, SFIs must be strengthening by increasing funding, capital base, governance, and technical staff's formation.

The second article, "Regional credit distribution in Brazil: the role of State-owned financial institutions", argues that SFIs play a crucial economic development role, including narrowing regional inequalities in credit distribution. After briefly describing the evolution of Brazilian SFIs, attention was focused on their role in deconcentrating credit among regions between 2008 and 2014. As a consequence of the procyclical reaction typical of private banks and the government's decision to encourage SFIs to increase liquidity, the SFI share of credit in Brazil rose significantly. This increase even continued after the immediate consequences of the crisis had been left behind.

The third article, "Development banks as an economic policy arm – promoting sustainable structural change", addressed the discussion about the role of development banks and the many functions they can perform. It proposed that the primary purpose of DBs should be to expand the policy space to promote structural transformation towards a more sustainable, complex, and technologically sophisticated productive structure. In peripheral economies, the performance of SFIs should promote structural transformation so that these economies narrow their distance from advanced economies in terms of GDP per capita.

DBs should act as an arm of public policies inserted in a broad investment promotion context that functions as a developmental State's instruments. They are vehicles of credit policies that guide the State's intentionality in promoting sustainable development and directing long-term funding. Consequently, they should be part of the macroeconomic policy toolkit, as essential as monetary and fiscal policies, which can finance peripheral countries' catching up. Finally, from the recent Brazilian case, we conclude that adopting developmental policies is only possible through powerful SFIs aligned with the State's planning program. Liberalizing policies in the macroeconomic sphere proved incompatible with the promotion of structural changes in the economy. They are antagonistic policies in the sense of the message sent to economic agents. In the context of neoliberalism, where fiscal constraints and monetary policy are subordinate to inflation control and foreign capital attraction, credit policy is the only macroeconomic tool left for the State to maneuver towards economic structural change.

The final article, "The green transition and the need for a sustainable development convention," brings the discussion of the financial sector, State, and its institutions to the green transition, suggesting a need to recapture the developmental State, building a sustainable development convention. Constructing a sustainable development convention to promote the green transition is essential due to the process's uncertainties. Only the State can act as a long-term planner to guide private decisions to build and consolidate the sustainable development convention.

The final main remarks are that SFIs should be justified with a structural approach beyond market failures. They are essential because long-term decisions are driven by non-probabilistic uncertainty. Their performance is not limited to complementing private institutions or acting countercyclically. In this sense, their position is perennial, not transitory. SFIs are public policy arms with a mission to promote development through structural transformation, following government guidelines. To this end, they must operate as Big Smart Government Bank, inserted in a sustainable convention to development growth.

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