Elections, state-owned banks, and bank profitability in Brazil

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Abstract This article looks for evidence about the political use of Brazilian commercial state-owned banks in electoral years and possible impacts on the profitability of these banks. In addition, it aims to test the hypothesis that publicly traded state-owned banks suffer from less political interference and, consequently, are less affected in terms of lower profitability in election years. It is found, at first, that years of federal and municipal elections do not impact the profitability of state-owned banks. However, when state-owned banks are segmented into groups of publicly traded and non publicly traded banks, electoral cycles harm the profitability of banks that are non publicly traded, confirming the possibility of the political use of non publicly traded state-owned banks. The results show that the listing of state-owned banks on the stock exchange may reduce the use of state-owned banks for political purposes.

Keywords: State-owned banks; Elections; Publicly traded banks; Brazil.
JEL Code: G20, G21.

1. Introduction

The political use of state-owned banks (SBs) is an essential question about their participation in financial systems. It is even more relevant in countries where these banks have extensive participation in financial systems like Brazil. Dinç (2005) notes that elections, in particular, can tempt politicians to use SBs for electoral projects and shows that government-owned banks increase their lending in election years in comparison to private banks. Iannotta et al. (2013) show that SBs have higher operational risk in election years, consistent with the idea that these banks pursue political goals. Carvalho (2014) highlights that the political control of financial institutions provides the ability to politically influence the choices of projects implemented in the economy, which helps explain government participation in the financial market through the control of financial institutions. Shleifer and Vishny (1994) and La Porta et al. (1998) point that control over loans by the government can lead to political influence on decisions in the real economy.

Submitted on January 15, 2022. Revised on August 4, 2022. Accepted on August 21, 2022. Published online in December 2022. Editor in charge: Paulo Renato Soares Terra.
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The most common reasons to justify the existence of SBs are social, development, and political (Coelho et al., 2013). For the social and development motivations, Jackowicz et al. (2013) highlight that SBs are used to fix market failures and finance projects that private credit is not interested in, but that have positive social externalities. In the political view, SBs do not aim to increase social welfare, but are tools to obtain and maintain political support.[1] According to each motivation, SBs may have a different maximization function. For example, Sapienza (2004) observes that from the social and development perspectives, SBs maximize social welfare rather than profits. On the other hand, in the political view, SBs aim to maximize the objectives of the politicians who control the banks.

This article aims to find evidence about the political use of Brazilian commercial SBs in election years and possible impacts on the profitability of these banks, testing the political motivation of the existence of SBs. We follow Micco et al. (2007) who tested whether there are differences in the performance of SBs as a result of election years, seeking to assess the political use of these banks. The article also tests the hypothesis that publicly traded state-owned banks (PTSBs) suffer less political interference and are less affected by lower profitability in election years compared to non publicly traded state-owned banks (NPSBs). Therefore, it aims to fill a gap observed by Dinç (2005), quantifying the costs of the political use of the SBs in election years for emerging countries. We measure the impacts of the political use of Brazilian SBs on their profitability. To our knowledge, this is the first study that analyzes these effects for Brazilian commercial SBs.

The participation of commercial SBs is very relevant for the Brazilian economy and banking system. As of December 2019, Banco do Brasil and Caixa Econômica Federal (CEF), the two largest commercial SBs, account for about 37% of the credit stock and 29% of total assets in the Brazilian banking system. Thus, despite the country having undergone a privatization process in several sectors in the 1990s, the Brazilian banking sector still has relevant public institutions.

There is some evidence of the political use of SBs in Brazil, but not for commercial SBs. For example, Carvalho (2014) presents evidence of the political use of the National Bank for Economic and Social Development (BNDES) credit policy to shift employment to politically attractive regions

[1] The Brazilian president, Jair Messias Bolsonaro, requested the opening of a branch of Banco do Brasil in São Pedro dos Crentes, a municipality with 4,500 inhabitants, which was the only town in the state of Maranhão where he won the 2018 election. For more details, see https://www1.folha.uol.com.br/mercado/2019/04/em-desabafo-bolsonaro-diz-que-tem-de-ser-mais-do-que-perfeito.shtml.

and away from politically less-appealing areas, supporting the re-election of incumbent candidates. Likewise, Claessens et al. (2008) provide evidence that companies that contributed to politicians in the 1998 and 2002 election cycles substantially increased their bank financing, relative to a control group, after each election.

Segmenting our sample into NPSB, PTSB, and privately-owned banks (PB), some banking variables draw attention to the differences between electoral and non-election years. In non-electoral years, the average growth of the stock of credit operations is 3.3%, 3.2%, and 4.1% for NPSBs, PTSBs, and PBs, respectively. In electoral years, the average growth of the credit stock is 6.8% for NPSBs, 4.7% for PTSBs, and 4.1% for PBs. Credit risk, a variable that measures the quality of the loan portfolio, is 0.3% and 0.4% higher in election years for NPSBs and PTSBs. The financial margin is 0.3% lower in election years for NPSBs. Thus, these facts demonstrate a different behavior in the growth of the credit supply of SBs (NPSBs and PTSBs) in election years. In addition, the worse quality of the credit portfolio may justify lower profitability of these banks in election years due to its possible political use.

Dynamic panel models were estimated to search for evidence of the political use of SBs and their impacts on profitability. Because of endogeneity, unobserved heterogeneity, and persistence in bank profitability, we use System-GMM methods. Data are semiannual, taken from the Central Bank of Brazil (BCB) database, and the analysis period extends from the first half of 2000 to 2019. The sample consists of 182 SBs and PBs, totaling 3,505 observations. To isolate the effects of elections on bank profitability, we used some control variables such as banking variables and macroeconomic variables.

First, we find that years of federal and municipal elections do not impact commercial SBs profitability. However, when we segment SBs between PTSBs and NPSBs entities, electoral cycles harm the profitability of NPSBs. This result confirms the political motivation for the existence of NPSBs. The results show that listing SBs on the stock exchange may be relevant for reducing the use of Brazilian commercial SBs for political purposes. Moreover, the benefits go beyond the objectives relating to the capitalization of these banks and go hand-in-hand with the introduction of more external and internal controls, for example, through more participation by minority shareholders in corporate decisions.

The remainder of the article is divided into four sections. Section 2 presents a literature review emphasizing political influence on SBs and possible impacts on profitability. Section 3 shows the methodology and variables. Section 4 analyzes the estimated models. Finally, Section 5 presents the con-

clusions of the article.

2. Literature review

2.1 State-owned banks and elections

Coelho et al. (2013) observe that the literature that pays attention to the existence of SBs has three lines of thought to explain their existence. The first considers that SBs are necessary to finance projects that have positive social returns but negative private returns, so they are not attractive for private credit. The second line of thought highlights that political economy explains the existence of SBs through loans to political allies and cycles of politically motivated loans. The third reason is related to the need to correct market failures and to encourage economic development. Furthermore, another justification for the existence of SBs is associated with inducing competition in the banking system. Coelho et al. (2013) reject this hypothesis for Brazil, stressing that the presence of a private competitor reduces the profits of private banks. However, the existence of a public competitor has little effect on private banks.

As for the economic development and market-failure explanations, La Porta et al. (2002) present evidence that SBs are associated with lower economic growth and that politicians capture these banks for their objectives and reduce these banks' efficiency as a consequence.

Körner and Schnabel (2011) partially reject the development view of SBs. The authors note that SBs are detrimental to economic development when the country has a less developed financial system and low institutional quality, providing some support for the political view of SBs for countries with such characteristics. They conclude that developed financial systems tend to mitigate principal-agent problems between politicians and bank managers, as SBs benefit from high financial standards. Examples are incentives to use new risk management techniques, knowledge, and expertise. These incentives could expand from private banks to SBs via better qualification of employees and better banking supervision and regulation. Hence, more competition may force SBs to provide better quality intermediation services. As for the degree of institutional development, good political institutions mitigate agency problems between society and politicians, reducing the abusive use of SBs by politicians.

In addition to SBs, there are other tools of political influence, including the use of non-financial state-owned companies or tax incentives. However, Carvalho (2014) observes that these tools generate a commitment problem because politicians cannot offer tax incentives for sufficient time and prefer

to offer long-term loans with favored interest rates, whose costs are not transparent. Dinç (2005) lists four reasons why SBs are attractive for political use: (i) asymmetric information between public and third-party banks about the quality of a specific loan makes it easier to hide the political motivation behind a loan; (ii) the actual costs of any politically motivated loan may be deferred until maturity; (iii) nonfinancial state-owned companies operate in defined sectors, limiting the ability of politicians to transfer resources, while banks operate across the economy, providing politicians with more opportunity to channel resources; and, (iv) the political elite can maintain or increase its power over financial resources more efficiently than creating barriers in other sectors.

La Porta et al. (2002) note that SBs provide extensive control of the financing of projects, while the private sector implements the projects. In addition, Shleifer and Vishny (1994) and La Porta et al. (1998) note that the political use of SBs provides politicians with a mechanism to gain private benefits through corporate decisions, which can lead to more political influence on decisions in the real economy. Carvalho (2014) corroborates this view of public credit preference as a form of political power by demonstrating that public loans in Brazil are still relevant even after the privatization of several nonfinancial state-owned companies.

As Körner and Schnabel (2011) noted, the use of SBs for political purposes may depend on the degree of development of the country's financial and institutional system. Carvalho (2009) highlights that the motivating idea for interventions in the credit market, especially in emerging countries, is the issue of market failures, that is, to finance projects that the private credit market does not want to fund. A large part of this public credit is directed to particular projects and priority sectors, generating political influence in the process.

Dinç (2005) segments the countries into developed and developing economies to estimate the impact of election years on SBs' loans. The results show that only in developing countries are there increases in SBs' loans in election years, while in developed countries, the effect was not significant. Therefore, SBs increase their loans in election years relative to their private peers, indicating the existence of political motivations behind the actions of SBs in emerging countries.

For Brazil, Carvalho (2014) demonstrates that politicians can influence election results through BNDES loans. In addition, the author shows that firms eligible for public credit loans via BNDES expand employment in politically attractive areas close to elections, an expansion that is directly associated with additional loans and favorable conditions from the development

bank. However, there are no impacts on employment at the national level, as firms redirect the portfolios of future projects to electorally attractive regions.

Claessens et al. (2008) show that Brazilian companies that provided donations to federal deputies in the 1998 and 2002 elections achieved higher shareholder returns than companies that did not donate. Firms that donate substantially increased their bank finance relative to a control group after each election, indicating that access to bank finance is a relevant channel through which connections operate. Estimated economic costs are at least 0.2% of GDP per year.

There is evidence of political use of SBs in several countries around the world. For example, Kumar (2020) presents evidence for India that politicians influence banks to increase lending to farmers at the cost of lower lending to manufacturing companies in states with upcoming elections. This reduction in credit makes manufacturers cut production and operate with less factor utilization. Khwaja and Mian (2005) find evidence that SBs in Pakistan tend to benefit firms with politically connected directors, lending more and allowing for higher default rates. Sapienza (2004) notes that election results affect Italian SBs' loans. Cole (2009) identifies an electoral cycle component of SBs in India. Persson and Tabellini (2002) highlight that politicians can inject resources into regions with "swing voters" to win elections.

Markgraf and Rosas (2019) use local German savings banks as a sample to assess the possibility that local politicians who occupy positions on the boards of these banks are more likely to be re-elected. Evidence confirms the hypothesis by indicating that politicians with seats on the boards of these banks are more likely to be re-elected. In addition, these politicians increase bank donations and prevent the closure of branches in their municipalities, providing clues as to why voters are re-electing them.

Bertrand et al. (2007) find evidence that politically well-connected CEOs in France trade favors with politicians by creating more jobs in regions considered politically competitive around elections periods. However, evidence is limited in the sense of politicians returning favors through policies that benefit business, reflecting personal exchanges between politicians and well-connected CEOs.

Decisions to privatize state-owned companies are also subject to political scrutiny. Dinç and Gupta (2011) investigate the political and financial factors that influence privatizing state-owned companies in India. The results demonstrate that the government delays privatizations in regions where the governing party faces greater competition from opposition parties. Furthermore, they show that no company has been privatized in the governor's home state, presenting evidence of political patronage, meaning that politi-

cians can influence the employment decisions of state-owned companies in favor of their supporters. Thus, the dispersed benefits and concentrated costs of privatization processes strongly influence the decisions of privatization.

From the evidence presented, it is clear that SBs are subject to political use, mainly through their loans, for electoral purposes. However, what is the evidence of impact on banks' profitability due to their political-electoral use?

2.2 Politics and banking profitability

A country's degree of development is crucial in how politicians can affect SBs' profitability. Micco et al. (2007) note that SBs are more profitable in economic expansions and less profitable in election years. Furthermore, they emphasize that elections are significant for SBs' profitability in developing countries, while not in developed countries. The authors conclude that SBs in developing countries are less profitable than private ones, and that this difference increases in election years.

With greater openness to competition and modern legislation, the modernization of financial systems can close the door to the political use of SBs, shielding their profitability. Chen and Liu (2013) investigate the political effects of elections on Taiwan's financial institutions between 1994 and 2009. They find no evidence of worse performance of SBs, demonstrating that these banks are no longer subject to political pressure, indicating the success of financial reforms in the country.

Jackowicz et al. (2013) examine the impact of political factors on the behavior and performance of Central European countries between 1995 and 2008. They note that SBs report lower interest income in parliamentary election years. Therefore, the reduction in the profitability of SBs is primarily due to lower interest rates charged on loans. They conclude that, although there are no differences in the growth of loans in electoral cycles, SBs' reduction of interest rates in electoral years is evidence of political use in Central European countries.

Dinç (2005) notes that election years are times when politicians may be more likely to use SBs. However, in addition to election years, other proxies may exist to assess the political use of these banks. For example, Shen and Lin (2012) investigate how political factors worsen the performance of SBs for 65 countries by considering political interference, given by the replacement of SB executives within 12 months after the general election. Banks with political interference, i.e. which have executives replaced, perform worse. Furthermore, the results demonstrate that the impacts of political interference and worse performance are more prevalent in developing countries than in developed ones.

Baum et al. (2010) assess the effects of parliamentary elections on the Turkish banking system using data from 1963 to 2007. The authors note that election years affect the behavior of state-owned, private, and foreign banks. Therefore there is no evidence that SBs behave differently from their private peers in election years.

2.3 Publicly traded banks and governance

Brazilian commercial banks must be incorporated as corporations. Hence, financial institutions are also subject to regulations regarding minority shareholders' protection and liability of the controlling shareholder for damages caused by acts of abuse of power, among others. As a consequence, for PTSBs, the legislation guarantees even higher protections to shareholders,

Therefore, going public, in addition to representing an important source of funds, brings with it control mechanisms over publicly traded corporations. Schiozer et al. (2010) highlight that among the positive impacts of banks going public is the participation of shareholders in the definition of business strategies, the monitoring of managers, and compliance with risk-management policies. In addition, going public opens the possibility for institutional shareholders to take part in the control of the bank, contributing even more to better accountability, reporting, and control systems. The scrutiny by shareholders can potentially complement the discipline imposed by depositors.

Wu et al. (2009) also note that listing helps improve governance-related issues through shareholder monitoring. Furthermore, Dietrich and Wanzenried (2011) conclude that one of the potential positive impacts of banks going public is the pressure from shareholders, analysts, and the financial market to be more profitable.

Barry et al. (2011) study the relationship between the corporate structure of banks and risk. They divide shareholders into five categories: managers, families (individuals), institutional investors, nonfinancial companies, and banks. In addition, they segment banks into ones that are publicly traded and those that are non publicly traded. The results indicate that the market forces imposed on publicly traded banks make the corporate structure irrelevant to explaining the banks' risk level. However, the corporate structure matters for the risk-taking of non-publicly-traded banks. Moreover, banks with a higher proportion of individual shareholders and other banks in the shareholder base have a lower level of risk.

On the other hand, it is worth noting the potential negative impacts on the profitability of publicly traded banks. Dietrich and Wanzenried (2011) emphasize that these banks must disclose more information and have more

bureaucracy, generating additional costs.

3. Methodology

3.1 Model and estimation

García-Herrero et al. (2009) highlight three problems when analyzing bank profitability: endogeneity, unobserved heterogeneity, and earnings persistence, which we deal with by estimating dynamic panel System-GMM models proposed by Arellano and Bover (1995) and Blundell and Bond (1998). Borio et al. (2017) and Alessandri and Nelson (2015) show that the System-GMM methodology is suitable for panel data with endogenous variables and helps to reduce the bias induced by omitted variables and the inconsistency caused by endogeneity.

This method uses the lagged values of the dependent variables as instruments, in levels and differences, and the lagged values of the other regressors that may suffer from endogeneity; i.e. the banking variables. Exogenous regressors, which are not correlated with individual effects, are not instrumentalized. The literature that analyzes bank profitability employs this method, such as studies by Athanasoglou et al. (2008) for Greek banks, Dietrich and Wanzenried (2011) for Swiss banks, Teixeira et al. (2019) for banks in OECD countries, Primo et al. (2013) and Vinhado and Divino (2013) for Brazilian banks, among others.

The lagged dependent and all independent variables that are considered endogenous are used as instruments. These variables are not correlated with the fixed effects, reducing or eliminating the problems related to endogeneity. This potential endogeneity reflects the fact that bank profitability can be affected by other banking variables. For example, more profitable banks can retain more profits and be more capitalized.

Arellano and Bover (1995) summarize how to treat unobserved heterogeneity in the fixed effects dynamic panel estimations: instead of transforming the regressors into first differences to eliminate the fixed effects, one should transform the differences into instruments to make them exogenous to fixed effects. For this, the orthogonalization method is used, calculating forward orthogonal deviations. Instead of calculating first differences, the average of the variable is subtracted from each observation. Thus, the number of data gaps does not matter, as it is computable for all observations except the last one for each individual, minimizing data loss and allowing for unbalanced panels.

As for earnings persistence, dynamic panel models capture the persistent nature of bank earnings by using lagged dependent variables as a regressor.

Berger et al. (2000) note a trend of persistence in bank earnings that reflects impediments to perfect competition, informational opacity, and sensitivity to macroeconomic and regional shocks. Thus, a dynamic specification of the base model is adopted, including the lagged dependent variable as a regressor. Athanasoglou et al. (2008) observe that not considering this aspect of earnings persistence when defining the econometric model will generate biased and inconsistent estimates.

At first, the models that seek to assess the impacts of federal and municipal election years on profitability measured by the return on assets (main variable) and return on equity (robustness) of SBs were estimated. The estimated model is given by:

$$y_{i,t} = \beta_0 + \beta_1 y_{i,t-1} + \sum_{j=1}^{J} \beta_j \mathrm{BV}_{i,t} + \sum_{k=1}^{K} \beta_k \mathrm{EV}_t + \beta_2 \mathrm{Elections} + \beta_3 (\mathrm{Elections} \times \mathrm{SB}) + f_i + \varepsilon_{i,t}, \quad (1)$$

where $y_{i,t}$ is the dependent variable return on assets ($\mathrm{ROA}_{i,t}$) or return on equity ($\mathrm{ROE}_{i,t}$); $y_{i,t-1}$ is the lagged dependent variable ($\mathrm{ROA}_{i,t-1}$ or $\mathrm{ROE}_{i,t-1}$); $\mathrm{BV}_{i,t}$ is the vector of internal bank variables; EV_t is the vector of external variables; Elections is a dummy variable that takes values 1 for years with federal and municipal elections and and zero for other years; Elections × SB is a multiplicative dummy variable that takes values 1 for years with federal and municipal elections and zero for other years, and 1 for SBs and 0 for other banks; f_i is the fixed effect of the bank i; $\varepsilon_{i,t}$ is the error term, and β_0, β_1, β_j, β_k, β_2, and β_3 are the coefficients to be estimated. Section 3.2 will present the variables used in more detail.

The second step aims to assess the impacts of years with federal and municipal elections, segmenting SBs into PTSBs and NPSBs. The estimated model is given by:

$$y_{i,t} = \beta_0 + \beta_1 y_{i,t-1} + \sum_{l=1}^{L} \beta_l \mathrm{BV}_{i,t} + \sum_{m=1}^{M} \beta_m \mathrm{EV}_t + \beta_2 \mathrm{Elections} + \beta_3 (\mathrm{Elections} \times \mathrm{SB} \times \mathrm{Non\ Publicly\ Traded}) + \beta_4 (\mathrm{Elections} \times \mathrm{SB} \times \mathrm{Publicly\ Traded}) + f_i + \varepsilon_{i,t}, \quad (2)$$

where Elections × SB × Non Publicly Traded is a multiplicative dummy variable that takes values equal to 1 for federal and municipal election years, 1 for SBs and 1 for non-publicly traded banks, and 0 for the other banks; Elections × SB × Public Traded is a multiplicative dummy variable that takes values equal to 1 for federal and municipal election years, 1 for SBs and 1 for Publicly Traded, and 0 for other banks.

Table 1
Description of dependent variables

variable	measure
ROA (Return on Assets)	$\frac{\text{Net Profit}}{\text{Total Assets}}$
ROE (Return on Equity)	$\frac{\text{Net Profit}}{\text{Net Worth}}$

The coefficient of interest to assess the impacts of elections on the profitability of SBs in equation (1) is β_3. If β_3 is negative and statistically significant, election years negatively affect the profitability of SBs. The coefficients of interest in equation (2) are β_3 and β_4. If β_3 is negative and statistically different from zero, election years reduce the profitability of NPSBs. If β_4 is negative and statistically different from zero, election years reduce the profitability of PTSBs.

3.2 Data and variables

Data ranges from the first half of 2000 to the second half of 2019, totaling 40 observations. All banking variables were taken from the BCB databases, using the tool "IF.Data" at `https://www3.bcb.gov.br/ifdata/?lang=1`. We chose to use an unbalanced panel, avoiding losing degrees of freedom and information on financial institutions that entered and left the sample. The total sample comprises 182 SBs and PBs. The following exclusions applies to the data: (i) banks with negative equity in a given period; (ii) banks missing the profitability or some other banking variable in a given period; and (iii) banks outside the limit of three standard deviations above and below the mean of the dependent variables. In total, 87 out of 3,592 observations were removed, totaling 3,505 observations. All monetary values are expressed in constant values of December 2019, using the IPCA Consumer Price Index. Table 1 presents the dependent variables (y) used to estimate equations (1) and (2).

ROA is the primary profitability variable, and ROE is the alternative measure to ensure robustness. These variables are usual in the literature that assesses the impacts of internal and external factors on bank profitability, like Athanasoglou et al. (2008) for Greek banks, Dietrich and Wanzenried (2011) for Swiss banks, Teixeira et al. (2019) for OECD countries, Primo et al. (2013) and Vinhado and Divino (2013) for Brazilian banks. Table 2 presents the descriptive statistics of the dependent variables, ROA and ROE, with banks segmented into NPSBs, PTSB, and PBs.

The profitability measured by ROA of NPSBs is the lowest in the sam-

Table 2
Descriptive statistics: dependent variables

		mean (%)	median (%)	s.d. (%)
Non publicly traded SBs	ROA	0.48	0.52	0.85
	ROE	8.14	11.32	15.72
Publicly traded SBs	ROA	0.97	0.79	0.81
	ROE	8.97	8.50	6.34
Privately-owned banks (PBs)	ROA	0.62	0.67	2.05
	ROE	3.56	4.88	12.64

ple, corroborating the social, development, or political explanations for the existence of these banks, as the lower profitability may be due to the maximization of social welfare or to the achievement of goals of politicians. The PTSBs are the most profitable in the sample considering the ROA, evidence of profit-maximizing behavior. Even if there is a political use of these banks, they manage to deliver profitability. The standard deviation of the profitability of PBs is high for both measures, indicating high variability in profitability within this group of banks.

Table 3 presents the independent bank variables ($BV_{i,t}$) used to estimate equations (1) and (2). These variables are typical in the literature that assesses the internal and external factors that impact bank profitability. For example, Athanasoglou et al. (2008) note that bank profitability is a function of internal and external factors. Internal factors are bank-specific variables related to managerial capacity and distinctive factors of each bank. External factors impact profitability and reflect how the economic and legal environment can affect banking operations.

Table 4 presents the descriptive statistics of banking variables, segmenting the banks into non-publicly traded state-owned banks, publicly traded state-owned banks, and privately-owned banks.

The credit risk variable shows that the average quality of the bank credit portfolio is worse for NPSBs. Therefore, these banks have more problematic credit portfolios, with a higher probability of default. On the other hand, PBs have the best credit portfolio quality. The results corroborate Berger et al. (2005) and Iannotta et al. (2007): SBs have worse loan quality and higher default risk than PBs. Also noteworthy is the high level of liquidity of NPSBs, indicating that a relevant proportion of these banks holdings are in liquid assets, for example, in government bonds. However, this result does not corroborate the development view of SBs, as these banks should direct more funds to loans instead of securities. In addition, the capitalization of

Table 3
Description of independent bank variables

variable	measure
Capitalization	$\frac{\text{Net Worth}}{\text{Total Assets}}$
Liquidity Assets	$\frac{\text{(Availabilities + Interbank Liquidity Applications + Securities and Derivatives)}}{\text{Total Assets}}$
Asset Size	$\ln(\text{Total Assets})$
Deposits	$\frac{\text{Total Deposits}}{\text{Total Assets}}$
Credit Risk	$\frac{\text{Provision to Loan Losses}}{\text{Gross Credit Operations}}$
Operational Efficiency	$\frac{\text{(Services Income + Banking Fees)}}{\text{(Administrative Expenses)}}$
Publicly Traded (PT)	1: Publicly Traded, and 0: Non Publicly Traded
Privately-owned Bank (PB)	1: Privately-owned Bank, and 0: State-owned Bank

Table 4
Descriptive statistics of banks independent variables

		mean (%)	median (%)	s.d. (%)
Non publicly traded SBs	Capitalization	6.66	4.72	5.54
	Liquidity	51.16	52.63	17.31
	Asset Size	18.24	18.09	2.38
	Deposits	54.10	55.89	12.45
	Credit Risk	8.94	8.19	5.00
	Operational Efficiency	45.77	41.85	20.08
Publicly traded SBs	Capitalization	11.56	9.43	7.03
	Liquidity	49.08	48.91	16.62
	Asset Size	16.60	16.42	1.90
	Deposits	53.60	55.45	20.13
	Credit Risk	7.37	6.08	5.44
	Operational Efficiency	43.72	37.44	22.28
Privately-owned Banks (PBs)	Capitalization	20.54	14.89	17.81
	Liquidity	42.63	39.64	21.77
	Asset Size	15.09	14.96	2.14
	Deposits	32.65	30.70	22.15
	Credit Risk	5.80	3.58	8.66
	Operational Efficiency	31.44	19.09	39.28

Table 5
Description of external independent variables

variable	measure
IPCA	Monthly inflation rate accumulated semiannually
Selic (Real Ex-Post Interest Rate)	$\frac{1+\text{Selic Monthly Accumulated Semiannually}}{1+\text{IPCA Monthly Accumulated Semiannually}} - 1$
GDP (Real GDP Growth)	Real growth rate compared to the previous six months
Market Concentration (Herfindahl-Hirschman Index (HHI): Credit Operations)	$\sum_{i=1}^{n} \left(\frac{\text{Bank Credit Operations}_i}{\text{Total Credit Operations Banking System}_t} \right)^2$

Table 6
Descriptive statistics: external independent variables

	mean	median	s.d.
IPCA (%)	3.08	2.64	1.56
Selic (%)	3.13	2.84	2.00
GDP (%)	1.67	1.44	4.04
Market Concentration	0.13	0.14	0.03

NPSBs is almost a third of that of PBs, indicating less equity financing. On the other hand, the deposits variable shows that SBs finance much of their assets through deposits. NPSBs are also the largest in asset size, given the weight of CEF in this group.

Table 5 presents the external independent variables (EV_t), and Table 6 shows the descriptive statistics of the variables used to estimate equations (1) and (2). We calculated the IPCA (Consumer Price Index) from IBGE (Brazilian Institute of Geography and Statistics) data, Selic and Herfindahl-Hirschman Index (HHI) from BCB data, and GDP with IPEA (Institute for Applied Economic Research) data.

As for the elections variable, Dinç (2005) notes that elections are a type of event that can motivate the political use of SBs to increase the chances of re-election, which does not exclude the fact that politicians can use the banks for political purposes at times other than elections. However, as elections determine the head of government, the intensity of the use of SBs will be correlated with electoral cycles.

We chose to use years of federal and municipal elections, as these are periods in which the political world focuses on the electoral process. In Brazil, it is common to hear the following statement: "the National Congress works only in odd years".[2] Odd years are years without federal and municipal elec-

[2] Article published in the Correio Braziliense newspaper in 2019, for example, highlights that the municipal electoral year (2020) will force Congress to run with deliberations. For more details:

Table 7
Federal and municipal election periods

event	period
Federal and Municipal Election	1H2000; 2H2000; 1H2002; 2H2002; 1H2004; 2H2004; 1H2006; 2H2006; 1H2008; 2H2008; 1H2010; 2H2010; 1H2012; 2H2012; 1H2014; 2H2014; 1H2016; 2H2016; 1H2018; 2H2018

tions. Thus, politicians who hold influence over SBs can go beyond years of federal elections. Federal and municipal elections years happen in 20 out of the 40 half-years periods in our sample. This information is a dummy used in the estimation of equations (1) and (2) in the variables Elections × Public × Non Publicly Traded and Elections × Public × Publicly Traded and aims to assess the impact of politics on the profitability of PTSBs and NPSBs. Table 7 presents the periods considered.

Finally, Table 8 presents the correlation matrix between the banking and external variables. As expected, the lagged variables ROA_{t-1} and ROE_{t-1} have a strong correlation with the variables ROA and ROE, evidencing the persistence of bank profitability. Capitalization is negatively correlated with ROE, since the ROE denominator is equity: the higher the capitalization, the lower the ROE. A result that calls attention is the correlation of -0.59 between size and capitalization, indicating that the larger the size of the bank, the less capitalized it is. The negative correlation between deposits and capitalization, and deposits and liquidity, indicates that the higher the level of deposits, the lower the level of capitalization, a logical result considering that the more the bank finances itself with deposits, the less he tends to use equity.

Other results deserve attention. The bank's credit risk has a negative relationship with its profitability (ROA and ROE): the lower the quality of the loan portfolio, the less profitable the bank. Furthermore, the larger the bank, the lower the credit risk, indicating that large banks have advantages in terms of evaluation and quality of the credit portfolio. Finally, operational efficiency is positively correlated with ROA and ROE, in addition to the larger the bank, the greater the operational efficiency, indicating that the larger the banks, the higher the level of service revenues in proportion to their administrative expenses. As for external variables, some results draw attention. The IPCA has little correlation with banking variables. The Selic interest rate is positively correlated with bank profitability (ROA and ROE). Furthermore,

https://www.correiobraziliense.com.br/app/noticia/politica/2020/01/19/interna_politica,821566/eleicoes-municipais-devem-provocar-corre-corre-de-votacoes-no-congress.shtml.

market concentration is negatively correlated with measures of profitability.

3.3 Sample of publicly- and non-publicly traded state-owned banks

There are seven NPSBs in the first half of 2000: Banrisul, CEF, Banco do Estado de Goiás, Banco do Estado do Amazonas, Banco do Estado do Maranhão, Banco do Estado da Paraíba and Nossa Caixa. From 2007 until the second half of 2019, only CEF was part of the sample of NPSBs. Until reaching this configuration, some corporate events took place. Table 9 presents the banks, years, and events between 2000 and 2019 among the NPSBs.

In the first half of 2000, there are 12 PTSBs: Banco do Brasil, Banco de Brasília, Banespa, Banestado, Banestes, Banco do Estado do Ceará, Banco da Amazônia, Banco do Estado do Pará, Banco do Estado do Piauí, Banco do Nordeste do Brasil, Banco do Estado do Sergipe, and Banco do Estado de Santa Catarina. In the second half of 2019 there are eight PTSBs: Banco do Brasil, Banco de Brasília, Banrisul, Banco da Amazônia, Banco do Estado do Pará, Banco do Nordeste do Brasil, Banco do Estado de Sergipe, and Banco do Estado do Espírito Santo. Table 10 presents the banks, years, and events between 2000 and 2019 in which PTSBs are part.

4. Econometric results and discussion

The primary variable of interest is the ROA, with the ROE being a profitability measure intended to demonstrate the robustness of the results. The statistical tests used to validate the estimates are Hansen's test, second-order autocorrelation test, and a Wald test. The null hypothesis of Hansen's test is the general validity of the instruments, and the non-rejection supports the choice. We look for values of Hansen's test greater than 0.10 (Hansen-Test $>$ 0.10). The second-order autocorrelation tests the null hypothesis (H_0) that the differentiated error terms are serially correlated in the first- and second-order. The non-rejection of the null hypothesis for second-order correlation implies that the original error term is not correlated and the moments are correctly specified. The test's value should be at least 0.05. The third test to check the validity of the models is the Wald test, whose null hypothesis (H_0) is that the coefficients are jointly equal to zero. Table 11 presents the estimates of the dynamic panel models. We show the estimations starting from the simplest model (1) to the most complete (7 and 8), with all variables included.

Looking at the results of the full specification (7 and 8), lagged banking variables (ROA_{t-1} and ROE_{t-1}) are statistically significant at the 1% level, justifying the use of the dynamic panel model. Furthermore, statistical tests support the correct specification of the models. For the two estimated models, Hansen's test was higher than 0.10. Therefore, the instruments are valid.

Table 8
Correlation matrix

	ROA	ROE	ROA_{t-1}	ROE_{t-1}	Capitalization	Liquidity	Asset Size	Deposits	Credit Risk	Operational Efficiency	IPCA	Selic	GDP	Market Concentration
ROA	1													
ROE	0.72	1												
ROA_{t-1}	0.48	0.34	1											
ROE_{t-1}	0.39	0.45	0.73	1										
Capitalization	0.04	–0.07	0.03	–0.10	1									
Liquidity	0.01	0.02	0.01	0.03	0.17	1								
Asset Size	0.04	0.18	0.03	0.21	–0.59	0.00	1							
Deposits	0.03	0.39	0.04	0.05	–0.25	–0.28	–0.05	1						
Credit Risk	–0.11	–0.15	–0.06	–0.14	0.18	0.06	–0.11	0.06	1					
Operational Efficiency	0.09	0.18	0.04	0.15	–0.25	0.16	0.36	–0.12	–0.10	1				
IPCA	0.00	–0.01	0.05	0.01	0.00	0.01	–0.03	–0.02	0.05	–0.08	1			
Selic	0.11	0.10	0.09	0.08	0.02	0.07	–0.09	–0.03	0.04	–0.04	–0.31	1		
GDP	0.07	0.05	0.02	0.03	0.04	0.02	–0.02	0.03	0.02	0.01	–0.06	–0.05	1	
Market Concentration	–0.17	–0.13	–0.19	–0.15	–0.05	–0.07	0.11	0.03	0.04	0.08	–0.28	–0.55	–0.19	1

Table 9
Non publicly traded state-owned bank events

Banrisul	2007	Initial public offering
Banco do Estado de Goiás	2001	Privatization: sold to Itaú
Banco do Estado do Amazonas	2002	Privatization: sold to Bradesco
Banco do Estado do Maranhão	2004	Privatization: sold to Bradesco
Banco do Estado da Paraíba	2001	Privatization: sold to ABN AMRO
Nossa Caixa	2001	Initial public offering
	2008	Acquisition: sold to Banco do Brasil

Table 10
Publicly traded state-owned events

Banespa	2000	Privatization: sold to Santander
Banestado	2000	Privatization: sold to Itaú
Banco do Estado do Ceará (BEC)	2005	Acquisition: sold to Banco do Brasil
Banco do Estado do Piauí	2008	Acquisition: sold to Banco do Brasil
Banco do Estado de Santa Catarina	2008	Acquisition: sold to Banco do Brasil

Furthermore, the second-order autocorrelation test ($AR(2)$) does not reject the null hypothesis, validating the models' consistency. The Wald test rejects the null hypothesis, meaning that the coefficients are not jointly equal to zero. It is noted that in Models 2 and 4 (without any control variable), the variables SB and Elections × SB were positive and statistically significant. However, these results may be related to the way ROE is calculated (Net Profit/Net Worth), so, as SBs have a lower level of capitalization (Net Worth), the relationship to ROE is justified

The coefficients for the banking variables indicate that: (i) more capitalized banks are more profitable; (ii) larger banks are more profitable, indicating possible scale gains; (iii) the higher the proportion of deposits compared to total assets, the more profitable the bank is; (iv) the coefficient of the credit risk variable indicates that the greater the credit provisions for loan losses in proportion to the credit operations, the less profitable the banks are; and, (v) the higher the operational efficiency, the greater the banking profitability. As for the external variables: (i) the higher the Selic, the higher the bank profitability; (ii) the higher the GDP, the higher the profitability measured by ROA; and (iii) the higher the concentration, the lower the banking profitability. The coefficient related to the IPCA was not statistically significant.

Observing the results of the variable of interest (Elections × SB), it is noted that the profitability of SBs are not affected in federal and municipal election years. To test the hypothesis that PTSBs and NPSBs suffer from different degrees of political interference, and thus distinct impacts on profitability, Table 12 presents the results by segmenting the banks into NPSBs

Table 11
Results of panel model estimations of the impacts of federal and municipal elections on SBs' ROA and ROE

	ROA (1) (without FE)	ROE (2) (without FE)	ROA (3) (with FE)	ROE (4) (with FE)	ROA (5) (with FE)	ROE (6) (with FE)	ROA (7) (with FE)	ROE (8) (with FE)
Elections × SB	−0.001(−1.3)	−0.012(−1.3)	0.002(1.1)	0.056***(4.0)	−0.001(−1.1)	−0.009(−0.9)	−0.001(0.0)	−0.010(−1.0)
Elections	0.001(1.3)	0.005(1.4)	0.000(0.4)	−0.004(−0.6)	0.000(0.8)	0.000(0.1)	0.000(0.0)	0.000(0.0)
SB	0,002(1.1)	0.053***(5.2)						
ROA_{t-1}					0.406***(7.3)		0.363***(5.9)	
ROE_{t-1}						0.398***(5.1)		0.367***(4.2)
Capitalization					0.045***(4.6)	0.224***(3.2)	0.045***(4.5)	0.193***(2.8)
Liquidity					0.007(1.2)	0.063**(2.1)	0.005(1.0)	0.037(1.1)
Asset Size					0.003***(3.0)	0.022***(3.5)	0.004***(3.5)	0.024***(3.6)
Deposits					0.015**(2.1)	0.079*(1.9)	0.016**(2.4)	0.078(1.9)
Credit Risk					−0.063***(−4.7)	−0.393***(−3.9)	−0.063***(−4.6)	−0.374***(3.7)
Operational Efficiency					0.012***(3.5)	0.081***(4.5)	0.012***(3.6)	0.082***(4.2)
Publicly Traded					−0.005(−1.4)	−0.033(1.8)	−0.007*(−1.8)	−0.039*(−1.9)
PB					−0.002(−0.4)	−0.026(−1.1)	−0.002(−0.4)	−0.023(−1.0)
IPCA							0.029(1.1)	0.253(1.5)
Selic							0.066**(2.5)	0.520***(3.2)
GDP							0.017**(2.4)	0.092(1.4)
Market Concentration							−0.065***(−3.7)	−0.288**(−2.1)
Constant	0.006***(6.7)	0.036***(6.2)	0.005***(6.6)	0.037***(6.6)	−0.064***(−3.5)	−0.396***(−3.4)	−0.064***(−3.6)	−0.389***(−3.4)
Banks	182	182	182	182	182	182	182	182
Observations	3,505	3,505	3,505	3,505	3,505	3,505	3,505	3,505
Wald-Test (p)	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000
Instruments	117	117	116	116	136	136	140	140
Hansen-Test	0.265	0.242	0.203	0.289	0.244	0.244	0.306	0.308
AR(1) (p)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.001
AR(2) (p)	0.03	0.65	0.03	0.36	0.67	0.08	0.92	0.11

Note: ***, ** and * denote significance at 1%, 5% and 10% respectively. *t*-values are in parentheses.

and PTSBs. Again, we show the estimations starting from the simplest model to the most complete, with all variables included.

A dynamic model is justified based on the significance of the lagged dependent variables (ROA_{t-1} and ROE_{t-1}). The Hansen, AR(2), and Wald tests also give robustness to the estimates. The sign, magnitude, and significance of the estimated coefficients for banking and external variables converge to the values found and discussed above (Table 11). The same discussion around ROE presented in Table 11 applies to the results presented here.

From the complete specification of the model (7 and 8), including all banking and external variables, election years contribute negatively to the profitability of NPSBs (Elections × NPSB) as measured through ROA and ROE, at 1% and 5% significance levels, respectively. Thus, the results validate the hypothesis that election years reduce the profitability of NPSBs, possibly related to political interference. These impacts are relevant. After controlling for internal and external factors, years with federal and municipal elections reduce profitability measured by ROA by 1.6% and by ROE by 8.2% for NPSBs. However, this negative and significant impact of election years does not mean that NPSBs have negative profitability in these periods.

Thus, one of the possible explanations for the results is that the SBs' listing on the stock exchange makes them have better controls beyond government control bodies. In addition, the market discipline imposed on PTSBs and the governance and regulatory structure required for publicly traded banks impose more restrictions on them in election years. On the other hand, it seems that this does not happen in NPSBs, given the negative contribution of election years to profitability.

The results corroborate the argument of Wu et al. (2009), who highlight that in addition to a form of capitalization, listing on a stock exchange helps to improve governance-related issues through monitoring by shareholders and regulators. They also corroborate the findings of Schiozer et al. (2010). The latter observed that the positive impacts of the listing of the banks are related to the participation of shareholders in the definition of business strategies, monitoring of managers, and compliance with risk management policies. Moreover, going public opens the possibility for institutional shareholders to be part of the corporate structure, contributing even more to better accountability, reporting, and control systems. In addition, shareholders can complement the discipline potentially imposed by depositors.

The case of Banco de Brasília (BRB), from July 2020, draws attention to the protection of minority shareholders in publicly traded banks. BRB's controlling shareholder is the Government of the Federal District (GDF) with 75.44% of the common shares and the Instituto de Previdência dos Servidores

Table 12
Estimations of the impacts of federal and municipal elections on ROA and ROE of NPSBs and PTSBs

	ROA (1) (without FE)	ROE (2) (without FE)	ROA (3) (with FE)	ROE (4) (with FE)	ROA (5) (with FE)	ROE (6) (with FE)	ROA (7) (with FE)	ROE (8) (with FE)
Elections × NPSB	−0.002(−0.6)	−0.021(−0.6)	−0.002(0.9)	0.065(1.3)	0.021(0.3)	0.201(0.7)	−0.015***(−2.7)	−0.081**(−2.1)
Elections × PTSB	−0.001(−1.1)	−0.008(−1.2)	0.003*(1.8)	0.054***(5.6)	−0.008(−0.3)	−0.057(−1.0)	0.002(0.8)	0.009(0.6)
Elections	0.001(1.29)	0.005(1.3)	0.000(0.3)	−0.004(−0.7)	0.000(−0.0)	0.001(0.1)	0.000(−0.1)	0.000(0.0)
NPSB	−0.001(−0.2)	0.048***(3.2)						
PTSB	0.002(1.5)	0.055***(4.8)						
$ROA_t - 1$					0.397***(7.5)		0.363***(6.0)	
$ROE_t - 1$						0.391***(5.2)		0.372***(4.3)
Capitalization					0.046***(4.2)	0.204***(2.9)	0.045***(4.6)	0.191***(2.8)
Liquidity					0.005(0.8)	0.055(1.7)	0.006(1.1)	0.039(1.2)
Asset Size					0.003***(2.6)	0.019***(2.7)	0.004***(3.5)	0.024***(3.7)
Deposits					0.012**(1.9)	0.068*(1.8)	0.017***(2.7)	0.079**(2.0)
Credit Risk					−0.063***(−4.6)	−0.409***(4.0)	−0.062***(−4.6)	−0.375***(−3.7)
Operational Efficiency					0.012***(3.1)	0.079***(4.5)	0.012***(3.6)	0.082***(4.1)
Publicly Traded					−0.002(−0.3)	−0.014(−0.5)	−0.008**(−2.2)	−0.045**(−2.2)
PB					0.000(0.1)	−0.021(−1.1)	−0.003(−0.6)	−0.026(−1.2)
IPCA							0.031(1.2)	0.266*(1.72)
Selic							0.067***(2.7)	0.513***(3.3)
GDP							0.018**(2.5)	0.099(1.5)
Market Concentration							−0.066***(−3.7)	−0.286**(−2.1)
Constant	0.006***(6.8)	0.036***(6.1)	0.005***(6.6)	0.037***(6.6)	−0.062***(−3.2)	−0.339***(−2.8)	−0.066***(−3.7)	−0.387***(−3.5)
Banks and Obs	182 and 3,505	182 and 3,505	182 and 3,505	182 and 3,505	182 and 3,505	182 and 3,505	182 and 3,505	182 and 3,505
Wald-Test (p)	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Instruments	119	119	117	117	136	136	141	141
Hansen-Test	0.266	0.212	0.190	0.294	0.224	0.399	0.414	0.338
AR(1) e AR(2) (p)	0.00 and 0.03	0.00 and 0.65	0.00 and 0.02	0.00 and 0.36	0.00 and 0.91	0.00 and 0.90	0.00 and 0.93	0.00 and 0.12

Note: ***, ** and * denote significance at 1%, 5% and 10% respectively. *t*-values are in parentheses.

do Distrito Federal (IPREV/DF) with 21.41%.[3] The Securities and Exchange Commission (CVM) fined IPREV/DF R$ 300,000 for having voted separately for a member of the bank's board of directors. As the IPREV/DF belongs to the GDF itself, the Institute's separate vote represents the same point of view as the controller and should not be seen as a separate vote of minority shareholders, that is, in the understanding of the CVM, the IPREV/DF forged a situation to act as a minority shareholder of the bank.[4]

Furthermore, the results presented have substantial implications. Profitability and profit retention are sources of capitalization. A well-capitalized banking sector is less susceptible to crises, as noted by Demirgüç-Kunt and Huizinga (1999). BCB (2019a) highlights that in 2018, SBs maintained a profit retention policy, preserving what the regulator calls a strategy to strengthen their balance sheets after a period of strong credit growth and losses resulting from the deterioration of portfolios. This deterioration led to a capital restriction for these entities, unlike private banks that remained with higher levels of profit distribution without capital restrictions. However, they increased the retention of profits, preparing for a cycle of credit recovery.

If the SB reduces its capitalization capacity due to lower profitability, it will have to capitalize in another way. In the case of non-adequacy with regulatory capital levels, these banks will have to reduce credit supply. Thus, by negatively contributing to the profitability of NPSBs, election years may indirectly harm a source of capitalization, translating into a lower credit supply in non-electoral years. Therefore, the political use and the consequent negative impact on the profitability of NPSBs can reduce a primary form of capitalization of these banks, making it necessary for the controlling entity (the Federal Government, in the case of the CEF) to capitalize the banks.[5]

The use of the bank for electoral purposes could affect its profitabil-

[3]For more details on BRB's shareholding composition, see: http://ri.brb.com.br/governanca-corporativa/composicao-acionaria/

[4]The vote of the rapporteur of the process at CVM, Marcelo Barbosa, brings important reflections. It is highlighted (p.4): "In terms of these precedents, what was intended to be achieved with the extension of such impediment is the guarantee that only "true minorities participate in the election separately" and that shareholders who behave as auxiliary line or long manus of the controller are prevented from participating in the separate election process".

[5]The discussion around the possible capitalization needs of *CEF* was already the subject of analysis in 2016 and 2017. In an interview with *The Wall Street Journal* (WSJ) on October 18, 2016, the president of the Bank, Gilberto Occhi, admitted the need for adjustments by the bank, such as the initial public offering of the bank's insurance arm, Caixa Seguridade; privatization of Lotex and cuts in dividends, to avoid the need for contributions from the National Treasury. The executive pointed out that while the other banks were accumulating reserves to adapt to regulatory capital, the CEF was going in the opposite direction in a deliberate economic policy by the Dilma Rousseff government of strong growth in the credit portfolio.

ity, bearing in mind the costs associated with this policy. One cost is the likely need for a capital contribution by the controlling shareholder if non-compliance with required capital levels occurs. Another cost could be restrictions on loans.[6] It is a trade-off between the expansion of the credit portfolio and retention of profits/capitalization. Credit expansion may come with higher profit retention to support losses and impacts on capitalization, a relevant cushion for CEF, which has a worse credit portfolio quality.

Finally, it is noteworthy that for most of the period, the CEF was the only NPSB in the sample. Therefore, through the estimation results, it can be seen that this was the NPSB used politically during the election years. The political use of CEF was the origin of the impeachment process of former president Dilma Rousseff. External control agencies realized that the federal government delayed the transfer of funds for payments for various federal government social programs to the CEF in 2013 and 2014, which is forbidden by legislation, to prevent SBs from financing their controlling entity.

5. Concluding remarks

This article aims to answer questions raised by Dinç (2005) for the Brazilian context: given that politicians control the government, are the actions of state-owned banks motivated by political issues? Do these banks behave differently during election periods? In particular, the question is whether election years contribute negatively to the profitability of SBs and the profitability of PTSBs and NPSBs. The answer to the question is positive, confirming the political view of SBs, conditioned on whether the SB is publicly traded on the stock exchange or not. Specifically, controlling for banks' internal and external variables, election years negatively affect NPSBs' profitability.

There is evidence that the mechanisms imposed on publicly traded companies, including PTSBs, make them reach higher levels of governance and have less political interference, as there is no change in the profitability of these institutions in election years. Körner and Schnabel (2011) conclude that developed financial systems mitigate principal-agent problems between politicians and society. In this environment, SBs tend to benefit from high

[6] In an article published in the Valor Econômico newspaper, on March 28, 2018, entitled "Caixa solves capital, but limits credit", some important points stand out. One of them is that in 2019 the capital equilibrium was restored, due to the strong improvement in profitability (up 106.9% compared to 2016), avoiding the need of raising capital, but with limitations to credit growth. With limited growth in the credit supply, the bank sought new sources of revenue, such as service revenues. According to the then-president of CEF, Gilberto Occhi, the focus of credit turned to lower risk lines with higher returns, due to the need to create a capital cushion. The then-president praised the need for Central Bank approval for directors of SBs, improving governance-related issues.

financial standards and are less susceptible to abuse by politicians. Our results also support Musacchio and Lazzarini (2015), and Torres and Zeidan (2016). The authors argue that good governance can overcome some of the classic problems of state ownership. Therefore, we show that the standards imposed on publicly traded companies through legal mechanisms may reduce the political use of SBs. Going public can, therefore, reduce the agency conflict between politicians and society. Thus, market forces seem to lessen the political use of PTSBs.

The social and development views that also justify the existence of public banks are not analyzed but support the debate on better governance in SBs and the possible consequences of the political use of these banks. For example, Nordhaus (1975) noted that government policies determine the whole economy, and even in perfect democracies, politicians will make biased decisions against future generations. Thus, one of the ways to shield SBs from the temptation of political use is to make them publicly traded, which can also be a way of raising capital.

Listing on a stock exchange is not a panacea or a cure-all. For example, in January 2021, the Brazilian president raised the possibility of ousting the president of Banco do Brasil (a PTSB) because he was not aware of a restructuring of the branches and employees. The possibility of political interference caused the bank to lose approximately US$ 1.2 billion of its market value in one day. The stock market is sensitive to political interference, which can lead to value destruction. On the other hand, in another case involving Banco do Brasil, in July 2022, the Brazilian National Treasury asked the bank to change the frequency of payment and the proportion of profits distributed in the form of dividends, in order to increase the government's revenues. However, the bank denied the change in frequency. The same did not happen with the CEF (a NPSB), which should expand the distribution of dividends.

Other mechanisms for shielding the political use of public financial and nonfinancial companies should be regularly created and strengthened, such as Law 13.303 of 2016,[7] the Law of State-owned Companies. This law establishes several mechanisms such as minimum requirements for the appointment of directors, functioning of boards, risk management, transparency, and governance of public and partially state-owned companies. A resolution of 2012[8] determines that the BCB has to approve designations of bank directors, which is an improvement in the governance mechanisms of the banks.

[7]For more details, see http://www.planalto.gov.br/ccivil_03/_ato2015-2018/2016/lei/l13303.htm.

[8]For more details, see https://www.bcb.gov.br/pre/normativos/res/2012/pdf/res_4122_v2_P.pdf

As evidenced by Chen and Liu (2013), legal reforms can reduce political pressures on SBs. Körner and Schnabel (2011) note that the public may control the actions of politicians if political institutions are solid. In this way, their power exercise is restricted to their political mandate, limiting the use of SBs in their favor.

As Barry et al. (2011) note, ownership tends to be spread among many shareholders in publicly traded banks. Therefore, the separation between shareholders and managers is more effective for publicly traded banks than non-publicly traded banks. In this sense, more separation seems to be advantageous for PTSBs. If the politicians' incentives are for the banks' political use, and if the opening of capital makes them lose influence in managers' decisions (greater separation between shareholders and managers), the listing of an SB will have fulfilled its role in reducing its political use. An NPSB has more incentives to be aligned with its controlling shareholder. Despite the greater separation, agency cost problems continue. Managers of PTSBs may want to maximize their benefits as a career-related issue. However, the listing will have the effect of reducing the bank's political utilization.

It is important to note that the relative importance of the CEF (the biggest NPSB) in the supply of credit to the Brazilian economy has systemic implications. The possibility of political use, supplying loans with a political-electoral bias, can affect the ability of these banks to withstand shocks. Moreover, the political use of these institutions harms their profitability and capability to retain profits, a primary source of capitalization for financial institutions. Political party power projects can, in this way, influence the stability of the financial system.

Our results have some limitations. One of them refers to the results found by Carvalho (2014). The author evaluated the political use of the BNDES to favor incumbent politicians, segmenting his sample between states in Brazil with allies of the federal government (controller and sole owner of BNDES) and how fierce the elections were. He found the political use of BNDES not only for states with federal government allies contesting the elections but also depending on the fierceness of the dispute. The political use of the BNDES was greater in more fierce elections. We did not explore questions about election fierceness and the possibility of fierceness further affecting the profitability and political use of NPSBs. Future research may evaluate these questions.

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