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

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Resumo

Este artigo busca evidências sobre o uso político dos bancos comerciais públicos brasileiros em anos eleitorais e possíveis impactos na rentabilidade destes bancos. Além disso, visa testar a hipótese de que os bancos públicos de capital aberto sofrem menos interferência política e, consequentemente, são menos afetados em termos de menor rentabilidade em anos eleitorais. Verifica-se, em um primeiro momento, que anos de eleições federais e municipais não impactam a rentabilidade dos bancos públicos. No entanto, quando os bancos estatais são segmentados em grupos de bancos de capital aberto e fechado, os ciclos eleitorais prejudicam a lucratividade dos bancos públicos de capital fechado, confirmando a possibilidade de uso político de bancos públicos de capital fechado. Os resultados mostram que a listagem de bancos públicos na bolsa de valores pode reduzir o uso de bancos públicos para fins políticos.

Palavras-chave: Bancos Públicos; Eleições; Listagem em bolsa; Brasil.

Código JEL: G20; G21.

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

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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; Brazil.

JEL Code: G20, G21, G32.

Indicação da Área ANPEC: Área 4 - Macroeconomia, Economia Monetária e Finanças.

1 Introduction

The political use of state-owned banks (SOBs) 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 SOBs for electoral projects and shows that government-owned banks increase their lending in election years in comparison to private banks. Iannotta, Nocera e Sironi (2013) show that SOBs 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 e 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.

The most common reasons to justify the existence of SOBs are social, development, and political (COELHO; MELLO; REZENDE, 2013). For the social and development motivations, Jackowicz, Kowalewski e Kozłowski (2013) highlight that SOBs 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, SOBs do not aim to increase social welfare, but are tools to obtain and maintain political support. According to each motivation, the public bank may have a different maximization function. For example, Sapienza (2004) observes that from the social and development perspectives, SOBs maximize social welfare rather than profits. On the other hand, in the political view, SOBs 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 SOBs in election years and possible impacts on the profitability of these banks, testing the political motivation of the existence of SOBs. We follow Micco, Panizza e Yanez (2007) who tested whether there are differences in the performance of SOBs as a result of election years, seeking to assess the political use of these banks. To our knowledge, this is the first study that analyzes these effects for Brazilian commercial SOBs. The participation of commercial SOBs 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 SOBs, 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.

The article also tests the hypothesis that publicly traded state-owned banks (PT-SOBs) suffer less political interference and are less affected by lower profitability in election years. Therefore, it aims to fill a gap observed by Dinç (2005), quantifying the costs of the political use of the SOBs in election years for emerging countries. We measure the impacts of the political use of Brazilian SOBs on their profitability. There is some evidence of the political use of SOBs in Brazil, but not for commercial SOBs. 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 and away from politically less-appealing areas, supporting the re-election of incumbent candidates. Likewise, Claessens, Feijen e Laeven (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.

Dynamic panel models were estimated to search for evidence of the political use of SOBs 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 state-owned and private commercial banks, 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 SOBs profitability. However, when we segment SOBs between publicly traded and non publicly traded entities, electoral cycles harm the profitability of non-publicly traded state-owned banks (NPSOBs). This result confirms the political motivation for the existence of NPSOBs. The results show that listing SOBs on the stock exchange may be relevant for reducing the use of Brazilian commercial SOBs 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 SOBs and possible impacts on profitability. Section 3 shows the methodology and variables. Section 4 analyzes the estimated models. Finally, Section 5 presents the conclusions of the article.

2 Literature review

2.1 State-owned Banks and Elections

Coelho, Mello e Rezende (2013) observe that the literature that pays attention to the existence of SOBs has three lines of thought to explain their existence. The first considers that SOBs 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 SOBs 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 SOBs is associated with inducing competition in the banking system. Coelho, Mello e Rezende (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, Silanes e Shleifer (2002) present evidence that public ownership of banks is associated with lower economic growth and that politicians capture these banks for their objectives and reduce these banks' efficiency as a consequence. Körner e Schnabel (2011) partially reject the development view of SOBs. The authors note that SOBs 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 SOBs for countries with such characteristics. They conclude that developed financial systems tend to mitigate principal-agent problems between politicians and bank managers, as SOBs 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 SOBs via better qualification of employees and better banking supervision and regulation. Hence, more competition may force SOBs 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 SOBs by politicians.

In addition to SOBs, 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 SOBs 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, Silanes e Shleifer (2002) note that SOBs provide extensive control of the financing of projects, while the private sector implements the projects. In addition, Shleifer e Vishny (1994) and La Porta et al. (1998) note that the political use of SOBs 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 e Schnabel (2011) noted, the use of SOBs 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 SOBs' loans. The results show that only in developing countries are there increases in SOBs' loans in election years, while in developed countries, the effect was not significant. Therefore, SOBs increase their loans in election years relative to their private peers, indicating the existence of political motivations behind the actions of SOBs 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, Feijen e Laeven (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 SOBs 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 e Mian (2005) find evidence that SOBs 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 SOBs' loans. Cole (2009) identifies an electoral cycle component of SOBs in India. Persson e Tabellini (2002) highlight that politicians can inject resources into regions with "swing voters" to win elections.

Markgraf e 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.

Decisions to privatize state-owned companies are also subject to political scrutiny. Dinç e 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 politicians can in-

fluence 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.

2.2 Politics and Banking Profitability

A country's degree of development is crucial in how politicians can affect SOBs' profitability. Micco, Panizza e Yanez (2007) note that SOBs are more profitable in economic expansions and less profitable in election years. Furthermore, they emphasize that elections are significant for SOBs' profitability in developing countries, while not in developed countries. The authors conclude that SOBs 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 SOBs, shielding their profitability. Chen e 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 SOBs, demonstrating that these banks are no longer subject to political pressure, indicating the success of financial reforms in the country.

Jackowicz, Kowalewski e Kozłowski (2013) examine the impact of political factors on the behavior and performance of Central European countries between 1995 and 2008. They note that SOBs report lower interest income in parliamentary election years. Therefore, the reduction in the profitability of SOBs 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, SOBs' 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 SOBs. However, in addition to election years, other proxies may exist to assess the political use of these banks. For example, Shen e Lin (2012) investigate how political factors worsen the performance of SOBs for 65 countries by considering political interference, given by the replacement of SOB 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, Caglayan e Talavera (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 SOBs 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 PTSOBs, 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, Oliveira e Saito (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, Chen e Lin (2009) also note that listing helps improve governance-related issues through shareholder monitoring. Furthermore, Dietrich e 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, Lepetit e Tarazi (2011) study the relationship between the corporate structure of banks and risk. They divide shareholders into five categories: 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 e 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, Gavilá e Santabárbara (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 e Bover (1995) and Blundell e Bond (1998). Borio, Gambacorta e Hofmann (2017) and Alessandri e 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, Brissimis e Delis (2008) for Greek banks, Dietrich e Wanzenried (2011) for Swiss banks, Teixeira et al. (2019) for banks in OECD countries, Primo et al. (2013) and Vinhado e 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 e 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, Brissimis e Delis (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 SOBs were estimated. The estimated model is given by:

$$y_{i,t} = \beta_0 + \beta_1 y_{i,t-1} + \sum_{j=1}^{J} \beta_j \text{BV}_{i,t} + \sum_{k=1}^{K} \beta_k \text{EV}_t + \beta_3 (\text{Elections x SOB}) + f_i + \epsilon_{i,t}, \quad (1)$$

where $y_{i,t}$ is the dependent variable return on assets ($\text{ROA}_{i,t}$) or return on equity ($\text{ROE}_{i,t}$); $y_{i,t-1}$ is the lagged dependent variable ($\text{ROA}_{i,t-1}$ or $\text{ROE}_{i,t-1}$); $BV_{i,t}$ is the vector of internal bank variables; EV_t is the vector of external variables; Elections x SOB is a multiplicative dummy variable that takes values 1 for years with federal and municipal elections and and zero for other years, and 1 for SOBs and 0 for other banks; f_i is the fixed effect of the bank i; $\epsilon_{i,t}$ is the error term, and β_0, β_1, β_j, β_k, 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 SOBs into PTSOBs and NPSOBs. The estimated model is given by:

$$y_{i,t} = \beta_4 + \beta_5 y_{i,t-1} + \sum_{l=1}^{L} \beta_l \text{BV}_{i,t} + \sum_{m=1}^{M} \beta_m \text{EV}_t + \beta_6 (\text{Elections x SOB x Non Publicly Traded}) + \beta_7 (\text{Elections x SOB x Publicly Traded}) + \text{f}_i + \epsilon_{i,t}, \quad (2)$$

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

is a multiplicative dummy variable that takes values equal to 1 for federal and municipal election years, 1 for SOBs and 1 for Publicly Traded, and 0 for other banks.

The coefficient of interest to assess the impacts of elections on the profitability of SOBs in Equation (1) is β_3. If β_3 is negative and statistically significant, election years negatively affect the profitability of SOBs. The coefficients of interest in Equation (2) are β_6 and β_7. If β_6 is negative and statistically different from zero, election years reduce the profitability of NPSOBs. If β_7 is negative and statistically different from zero, election years reduce the profitability of PTSOBs.

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 public and private commercial banks. The following exclusions are 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 National Consumer Price Index (IPCA).

Table 1 presents the dependent variables (y) and the descriptive statistics 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, Brissimis e Delis (2008) for Greek banks, Dietrich e Wanzenried (2011) for Swiss banks, Teixeira et al. (2019) for OECD countries, Primo et al. (2013) and Vinhado e Divino (2013) for Brazilian banks. Table 1 presents the descriptive statistics of the dependent variables, ROA and ROE, with banks segmented into non-publicly traded, publicly traded, and private.

Table 1 – Descriptive statistics: dependent variables (2000-2019).

		Mean	**Median**	**Standard Deviation**
		(%)	**(%)**	**(%)**
Non publicly traded SOBs	ROA	0.48	0.52	0.85
	ROE	8.14	11.32	15.72
Publicly traded SOBs	ROA	0.97	0.79	0.81
	ROE	8.97	8.50	6.34
Private banks	ROA	0.62	0.67	2.05
	ROE	3.56	4.88	12.64

Source: calculated with data from Central Bank of Brazil. ROA is the return on assets and is defined as the ratio of net profit to total assets; ROE is the return on equity and is defined as the ratio of net profit to total net worth.

The profitability measured by ROA of NPSOBs is the lowest in the sample,

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 PTSOBs 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 private banks is high for both measures, indicating high variability in profitability within this group of banks.

Table 2 presents the independent bank variables ($BV_{i,t}$) and the descriptive statistics used to estimate Equations (1) and (2), segmenting the banks into non-publicly traded and publicly traded publics and private banks.. These variables are typical in the literature that assesses the internal and external factors that impact bank profitability. For example, Athanasoglou, Brissimis e Delis (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 2 – Descriptive statistics of banks independent variables (2000-2019).

		Mean	**Median**	**Standard Deviation**
		(%)	**(%)**	**(%)**
Non publicly traded SOBs	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 SOBs	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
Private banks	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

Source: calculated with data from Central Bank of Brazil. Capitalization is the ratio of total net worth (equity) to total assets; Liquidity is the ratio of total liquid assets to total assets; Deposits is the ratio of total deposits to total assets; Credit Risk is the ratio of total provision to loan losses to total gross credit operations; Operational Efficiency is the ratio of total services and banking fees income to total administrative expenses.

The credit risk variable shows that the average quality of the bank credit portfolio is worse for NPSOBs. Therefore, these banks have more problematic credit portfolios, with a higher probability of default. On the other hand, private banks have the best credit portfolio quality. The results corroborate Berger et al. (2005) and Iannotta, Nocera e Sironi (2007): SOBs have worse loan quality and higher default risk than private banks.

Also noteworthy is the high level of liquidity of NPSOBs, indicating that a relevant proportion of these bankings holdings are in liquid assets, for example, in government bonds. However, this result does not corroborate the development view of SOBs, as these banks should direct more funds to loans instead of securities. In addition, the capitalization of NPSOBs is almost a third of that of private banks, indicating less equity financing. On the other hand, the deposits variable shows that banks finance much of their assets through deposits. NPSOBs are also the largest in asset size, given the weight of CEF in this group.

Table 3 presents the external independent variables (EV_t), and 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.

Table 3 – Descriptive statistics: external independent variables (2000-2019).

	Mean	**Median**	**Standard Deviation**
IPCA (%)	3.08	2.64	1.56
Selic	3.13	2.84	2.00
GDP (%)	1.67	1.44	4.04
HHI Credit Operations	0.13	0.14	0.03

Source: calculated with data from Central Bank of Brazil,Ipea and IBGE. IPCA is the monthly consumer inflation rate accumulated semiannually; Selic is the real ex-post interest rate accumulated semiannually; GDP is the real growth rate compared to the previous six months; HHI is the Herfindahl-Hirschman Index of concentration for credit operations.

As for elections years dummy, Dinç (2005) notes that elections are a type of event that can motivate the political use of SOBs 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 SOBs 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”. Odd years are years without federal and municipal elections. Thus, politicians who hold influence over SOBs can go beyond years of federal elections. Federal and municipal elections years happen in 20 of the 40 half-years periods. This information is a dummy used in the estimation of equations (1) and (2) in the variables Elections x Public x Non Publicly Traded and Elections x Public x Publicly Traded and aims to assess the impact of politics on the profitability of PTSOBs and NPSOBs.

4 Econometric results and discussion

Results are segmented between PTSOBs and NPSOBs. Table 4 presents the estimates of the dynamic panel models. 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, and a Wald test.

Table 4 – Results of panel model estimations of the impacts of federal and municipal elections on SOBs' ROA and ROE. Estimation period: 2000 to 2019.

	ROA	**ROE**
Banking Variables (BV)		
ROA_{t-1}	0.362***	
	(5.99)	
ROE_{t-1}		0.367***
		(4.29)
Capitalization	0.045***	0.192***
	(4.57)	(2.80)
Liquidity	0.005	0.038
	(1.05)	(1.20)
Asset Size	0.004***	0.024***
	(3.59)	(3.69)
Deposits	0.016**	0.079*
	(2.44)	(1.91)
Credit Risk	-0.064***	-0.375***
	(-4.67)	(-3.76)
Operational Efficiency	0.012***	0.082***
	(3.66)	(4.23)
Publicly Traded	-0.007*	-0.039*
	(-1.85)	(-1.90)
Private Bank	-0.002	-0.022
	(-0.46)	(-1.01)
Federal and Municipal Elections x SOB	-0.001*	-0.009
	(-1.71)	(-1.14)
External Variables (EV)		
IPCA	0.028	0.257
	(1.08)	(1.56)
Selic	0.066**	0.524***
	(2.54)	(3.35)
GDP	0.017**	0.094
	(2.39)	(1.50)
HHI	-0.065***	-0.285**
	(-3.70)	(-2.10)
Constant	-0.065***	-0.391***
	(-3.71)	(-3.48)
Banks and number of observations	182 and 3,505	182 and 3,505
Wald-Test (p)	165.23 (0.00)	148.99 (0.00)
Number of instruments	141	141
Hansen-Test	0.310	0.308
AR(1) (p)	0.000	0.001
AR(2) (p)	0.927	0.110

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

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. Furthermore, the second-order autocorrelation test ($AR(2)$) does not reject the null hypothesis, validating the models' consistency. Finally, the Wald test rejects the null hypothesis, meaning that the coefficients are not jointly equal to zero.

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 significant.

Observing the results of the variable of interest (Federal and Municipal Elections x SOB), it is noted, at first, that the profitability of SOBs measured by ROA is negatively affected in federal and municipal election years, with a significance level of 10%. Thus, based on this specification, election years reduce the profitability for ROA by around 0.1% per half-year[1]. However, the evidence of the negative impacts of electoral cycles on SOBs profitability is weak due to the low statistical significance in ROA and non-significance in ROE estimations. To test the hypothesis that PTSOBs and NPSOBs suffer from different degrees of political interference, and thus distinct impacts on profitability, Table 5 presents the results by segmenting the banks into NPSOBs and PTSOBs.

[1] The variations hereinafter presented will be all by six-month periods.

Table 5 – Results of panel model estimations of the impacts of federal and municipal elections on ROA and ROE of NPSOBs and PTSOBs. Estimation period: 2000 to 2019.

	ROA	**ROE**
Banking Variables (BV)		
ROA_{t-1}	0.362***	
	(6.01)	
ROE_{t-1}		0.372***
		(4.34)
Capitalization	0.046***	0.191***
	(4.62)	(2.83)
Liquidity	0.006	0.040
	(1.16)	(1.25)
Asset Size	0.004***	0.024***
	(3.52)	(3.75)
Deposits	0.017***	0.080**
	(2.64)	(2.01)
Credit Risk	-0.063***	-0.376***
	(-4.59)	(-3.75)
Operational Efficiency	0.012***	0.082***
	(3.60)	(4.14)
Publicly Traded	-0.008**	-0.045**
	(-2.18)	(-2.23)
Private Bank	-0.003	-0.025
	(-0.66)	(-1.17)
Federal and Municipal Elections x NPSOB	-0.015***	- 0.080**
	(-2.73)	(-2.05)
Federal and Municipal Elections x PTSOB	0.002	0.009
	(0.81)	(0.72)
External Variables (EV)		
IPCA	0.032	0.270*
	(1.20)	(1.70)
Selic	0.067***	0.516***
	(2.64)	(3.41)
GDP	0.018**	0.101
	(2.57)	(1.61)
HHI	-0.066***	-0.283***
	(-3.72)	(-2.11)
Constant	-0.066***	-0.388***
	(-3.76)	(-3.60)
Banks and number of observations	182 and 3,505	182 and 3,505
Wald-Test (p)	176.71 (0.00)	153.22 (0.00)
Number of instruments	142	142
Hansen-Test	0.420	0.339
AR(1) (p)	0.000	0.001
AR(2) (p)	0.929	0.120

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

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. From this specification, election years contribute negatively to the profitability of NPSOBs

(Federal and Municipal Elections x SOB x Non Publicly Traded) 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 NPSOBs, 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 NPSOBs. However, this negative and significant impact of election years does not mean that NPSOBs have negative profitability in these periods.

Thus, one of the possible explanations for the results is that the SOBs' listing on the stock exchange makes them have better controls beyond government control bodies. In addition, the market discipline imposed on PTSOBs 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 NPSOBs, given the negative contribution of election years to profitability.

The results corroborate the argument of Wu, Chen e Lin (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, Oliveira e Saito (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 do Distrito Federal (IPREV/DF) with 21.41%. 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

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 e Huizinga (1999). BCB (2019a) highlights that in 2018, SOBs 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 SOB 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 NPSOBs, 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 NPSOBs 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.

The use of the bank for electoral purposes could affect its profitability, 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. 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 NPSOB in the sample. Therefore, through the estimation results, it can be seen that this was the NPSOB used politically during the election years. The political use of CEF was the origin of the impeachment process of former president Dilma Rousseff, by which the agencies of external control realized that the federal government delayed the transfer of funds to the CEF in 2013 and 2014, bank that makes payment for various social programs of the federal government, which is prohibited by legislation to prevent SOBs from financing their controlling entity.

5 Concluding remarks

This article aims to answer some questions made 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 SOBs and the profitability of PTSOBs and NPSOBs. The answer to the question is positive, confirming the political view of SOBs, conditioned on whether the SOB is publicly traded on the stock exchange or not. Specifically, controlling for banks' internal and external variables, election years negatively affect NPSOBs' profitability.

There is evidence that the mechanisms imposed on publicly traded companies, including PTSOBs, 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 e Schnabel (2011) conclude that developed financial systems mitigate principal-agent problems between politicians and society. In this environment, SOBs tend to benefit from high financial standards and are less susceptible to abuse by politicians. Our results also support Musacchio e Lazzarini (2015), and Torres e Zeidan (2016). The authors argue that good governance can overcome some of the classic problems of state ownership. Therefore, standards imposed on publicly traded companies through legal mechanisms may reduce the political use of SOBs. Going public can, therefore, reduce the agency conflict between politicians and society. Thus, market forces seem to lessen the political use of PTSOBs.

The social and development views that also justify the existence of public banks

are not analyzed but support the debate on better governance in SOBs 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 SOBs 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 PTSOB) 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.

Other mechanisms for shielding the political use of public financial and non-financial companies should be regularly created and strengthened, such as Law 13.303 of 2016, 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 determines that the BCB has to approve designations of bank directors, which is an improvement in the governance mechanisms of the banks. As evidenced by Chen e Liu (2013), legal reforms can reduce political pressures on SOBs. Körner e 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 SOBs in their favor.

As Barry, Lepetit e Tarazi (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 PTSOBs. 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 SOB will have fulfilled its role in reducing its political use. An NPSOB has more incentives to be aligned with its controlling shareholder. Despite the greater separation, agency cost problems continue. Managers of PTSOBs 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.

Finally, the relative importance of the CEF (the biggest NPSOB) 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.

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