Government ownership in Brazilian publicly traded companies: A descriptive analysis

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Abstract This study aimed to assess the relevance of government ownership in Brazilian publicly traded companies from 2010 to 2019, analyzing both direct and indirect shareholding. The findings confirm a significant influence, with the government holding some level of direct or indirect shareholding in 26% of the sample observations. This research contributes to the literature by offering a novel methodology to compute Brazilian government ownership, classifying it into direct and indirect forms. By elucidating the multifaceted forms of government influence, this study provides valuable data for investors and policymakers to assess governance risks and strengthen regulations in the Brazilian capital market.

Keywords: Ownership structure; Corporate governance; Privatization; Government.
JEL codes: G18, G38.

1. Introduction

State intervention in Brazil's economy is a topic of intense debate, often linked to government actions during crises. After all, State intervention in publicly traded firms is associated with control and monitoring inefficiencies. Political interference can thus distort company objectives in favor of political or electoral goals (Shleifer, 1998). Inefficiency concerns and recent corruption scandals involving public and private entities in Brazil reignite the debate on the State's role in productive activities.

While Brazilian companies are often recognized as family-led enterprises with significant family influence (Aldrighi and Mazzer Neto, 2005; Fainsh-

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midt et al., 2018; Estrin et al., 2019), the Brazilian government also exerts considerable influence on public companies (Musacchio and Lazzarini, 2015). This influence is even more pronounced when considering indirect government involvement (Abreu et al., 2019), which, as demonstrated by studies analyzing control structures via centrality measures, reveals the State's direct or tied ownership in numerous Brazilian public companies.

This study proposes a new methodology to compute the Brazilian government's actual ownership and influence in publicly traded companies. Given that Brazilian companies issue shares with distinct property rights (e.g., voting, non-voting), control can be achieved with less than 50% equity (Matos, 2017). Furthermore, the Brazilian government influences these firms through both direct and indirect ownership.

Based on prior studies (Aldrighi and Mazzer Neto, 2005; Brey et al., 2014), this methodology incorporates new features, clarifying government influence through share ownership in Brazilian publicly traded companies from 2010 to 2019.

We expect that, with this new method, as well as the exposure of the Brazilian government ownership during 2010-2019 in Brazilian publicly traded companies, this study contributes to the academic debate on corporate governance, the state's role in productive activities, and the broader implications of state ownership for firm behavior and market dynamics.

1.1 Literature review

By 1999, global privatization revenues had surpassed US$1 trillion (Megginson and Netter, 2001). In Brazil, between 1991 and 2001, the government transferred control of 119 firms to the private sector, raising over US$17 billion through share sales, concessions, and non-controlling stakes (Anuatti-Neto et al., 2003), placing the country among the global leaders in privatization.

Several empirical studies compare characteristics among state-owned and privately owned companies. The criticism about government ownership of publicly traded companies is related to poor monitoring of executive government and political indications of management positions (Zinnes et al., 2001). In fact, some studies pointed out that firms with government ownership can perform worse than private firms (e.g., DeWenter and Malatesta, 2001; Fan et al., 2007; La Porta et al., 2002; Ben-Nasr et al., 2012). If this premise were always true, there would be no place for government ownership of firms, and there would be no investors for companies for which the State holds part of their capital.

Yet, contrary to this assumption, governments continue to expand their

presence in capital markets. Between 2003 and 2013, they acquired more assets than they sold—US$1.52 trillion in stock purchases versus US$1.48 trillion in privatizations (Borisova et al., 2015). Indeed, several SOEs and government-controlled firms feature among the Fortune Global 500 (Musacchio et al., 2015).

Shleifer (1998) argues that state firms are inefficient not only due to weak managerial incentives but also because inefficiency results from deliberate government policies to transfer resources to supporters. Based on this, such firms may be riskier, leading shareholders to demand higher returns. This hypothesis is corroborated by Ben-Nasr et al. (2012), who use a multinational sample of 238 firms from 38 countries to demonstrate that the cost of equity is higher when the government is a shareholder.

Studies show that government control relinquishment and macroeconomic reforms improve newly privatized firms' performance (Boubakri et al., 2005), with state-owned firms generally being less profitable than private ones (DeWenter and Malatesta, 2001).

However, Chen et al. (2009) empirically verify that Chinese firms whose control is totally private cannot perform better than Chinese firms controlled by the State. They argue certain types of government ownership can be superior to private ownership, specially where the institutional environment and law enforcement is weak. This can be viewed as, in transition economies, the pervasive influence of government in business can help to improve firm performance. As a matter of fact, several studies discuss the distinct effect of government ownership on firms under different institutional environments (e.g., Estrin et al., 2019; Borisova et al., 2012; Boubakri et al., 2018).

In other words, although it may be tempting to associate state ownership in publicly traded companies with poor performance, this relationship is mediated by institutional factors, market characteristics, and a range of other contextual variables.

As an example, Lazzarini et al. (2015) verify the role of the State in the lending market through BNDES between 2002 and 2009. This evidence may indicate that in the Brazilian institutional environment, the presence of the State as a shareholder is related to a lower cost of debt due to political connections and ease of obtaining credit from state banks.

Much of the empirical research on government ownership focuses on private control and *majority* state ownership, as noted by Inoue et al. (2013). However, if the government holds only a minority stake, these issues may lessen: profit-maximizing majority owners tend to monitor management and adopt governance mechanisms that reduce agency conflicts. With no residual

state interference, politicians have little influence over investment or pricing decisions.

2. Methodology

To conduct this research, all the Brazilian publicly traded companies that were active during the sample period for at least for one year was selected to compose the sample. For example, companies that went out of business or closed capital in 2010, the first year of our sample, were not included in the analysis, as well as companies that went public in 2019, the last year of our sample.

For Government ownership, the main variable of interest - State ownership - is defined by those shares that belong to the National Treasury (Tesouro Nacional), public banks (e.g., Caixa Econômica Federal and Banco do Brasil), development banks (BNDES), Brazilian SOEs, pension funds of Brazilian SOEs (e.g., Fundação dos Economiários Federais - the pension fund for Caixa's employees (FUNCEF), Previ, PETROS, and the pension fund for Correios's employees (Postalis), and companies that are created to manage these holdings by the Brazilian government (e.g., BNDESPar or CaixaPar)).

In this study, we follow Brey et al. (2014)'s work and classify government ownership as direct or indirect, albeit with some modifications. When the government has shares through the National Treasury, state agencies (municipal, state, and federal levels), public banks, government managed funds, development banks, and public holdings (e.g., BNDESPar or CaixaPar), it would be classified as direct government ownership. When the pension funds of Brazilian SOEs or other Brazilian SOEs have shares from other companies, we consider this as indirect government ownership.

However, Brey et al. (2014) classify government ownership by levels of direct and indirect participation. When the government is a direct shareholder, it is first-level ownership; if this entity holds shares in another company, it is second-level, and so on. In this study, as the main objective is to relate the degree of government ownership with other variables, we propose the use of the *percentage* of government ownership, even when the government is not the direct shareholder. Nevertheless, it would not be necessary to distinguish the government's participation in levels once we compute the proportion of ownership.

The pension funds of Brazilian SOEs are a spotlight on indirect government ownership because they are responsible for several investments in capital markets. Although they are not directly controlled by the government, they are still highly influenced by it. Recently, some investments of Brazilian

SOEs pension funds have been under investigation by the Brazilian Federal Police (Greenfield Operation) because there are suspicions of misconduct, administrative dishonesty, and corruption, as seen in Casado et al. (2016).

It is important to highlight some aspects of ownership structure: several Brazilian firms have pyramidal structures of ownership and control. Even if the government does not directly participate (through the National Treasury, state agencies, or development banks), it can also appear as a shareholder of another company that owns shares of other companies. This situation can be illustrated via pyramidal structures, that is, when Firm A controls Firm B, which in turn owns Firm C. Indirectly, Firm A controls Firm C through this pyramidal structure. As a practical example, in 2018 Petrobras controlled Petrobras Distribuidora SA with 71.25% of the total shares. Once the Brazilian government controls Petrobras with 63.52% of the voting shares (sum of Brazilian government, BNDESPAR, Caixa, and BNDES's ownership), the Brazilian government indirectly controls Petrobras Distribuidora at the time.

Analyzing the pyramidal structure is also essential to verify not only the control rights but also the cash flow rights when the government does not directly appear in the firm's ownership structure, as seen in Petrobras Distribuidora's example given above. In this case, even though the Brazilian government does not own Petrobras Distribuidora's shares directly, it has 32.79% of the cash flow rights through Petrobras.

It is worth noting that the method of computing the percentage of shares owned indirectly by the Brazilian government can vary when the issue is about control or cash flow rights. Following the methodology proposed by Aldrighi and Mazzer Neto (2005), we can obtain the cash flow rights by multiplying the total shares owned by one company to the percentage of the total shares owned by the government, especially in this specific case. The result would be the percentage of cash flow rights indirectly owned by the Brazilian government, as explained before.

Aldrighi and Mazzer Neto (2005) state that it is imperative to examine if the ultimate shareholder is the controller of the publicly traded company. If the shareholder who controls the company is an SOE, this means that the Brazilian government also controls it. Nevertheless, when the shareholder that has ties to the government is not the controller of the public company to be analyzed, the percentage of control rights is defined as well as that of the cash flow rights, that is, by multiplying the ordinary shares owned by one company to the percentage of that owned by the government.

Thus, illustrating this situation with Petrobras Distribuidora's example described above, it could be considered that in 2018, the Brazilian government

indirectly had 71.25% of its control rights. This occurs because Petrobras is controlled by the Brazilian government at the time. Once Petrobras controlled Petrobras Distribuidora, the Brazilian government also controlled it through Petrobras.

It should be noted that, in the aforementioned Petrobras Distribuidora, the Brazilian government held indirect shares according to this methodology, that is, through a Brazilian SOE (in this case, Petrobras).

However, it is possible that the Brazilian government has both direct and indirect ownership in some Brazilian public companies. Vale SA is a good example. In 2018, BNDESPAR had shares of Vale, such as Litel Participações. Once Previ and Petros had shares of Litel at the time, the Brazilian government had an indirect ownership through these pension funds, and a direct ownership via BNDESPAR's shares.

In this research, we assume that a controller is the company (or person) that has 50% or more of the voting shares. We do not consider the shareholders' agreement because, in this case, the decision-making power would be diluted among different types of shareholders, thereby moving us away from the objective of analyzing the government's influence on publicly traded companies.

To define a minimum ownership threshold for potential government influence in public firms, we refer to Lei nº 6.404 (1976), which regulates Brazilian corporations. Under this law, shareholders with at least 10% of total or voting shares can request special shareholders' meetings or adopt cumulative voting for board elections. Owners of 10% of capital stock may also elect or remove board members. Thus, we consider government ownership relevant when it reaches at least 10%—via voting or non-voting shares, directly or indirectly.

3. Results

We collected the ownership data of all Brazilian publicly traded companies through the Comdinheiro platform, as well as the information available in the balance sheets and Securities and Exchange Commission of Brazil (CVM)'s mandatory reports, especially in the Reference Form. Although the Comdinheiro platform provides data about the names and percentages of the shareholders, it is crucial to verify if the Brazilian government can benefit itself through pyramidal structures, as seen in the examples given in the previous section. For this reason, we analyzed all the companies' ownership data manually. We collect the data of 422 Brazilian publicly traded companies from 2010 to 2019, totaling 3367 firm-year observations.

To verify the government ownership in each firm-year observation, this study uses a unique set of variables to capture and understand this distinctiveness of government ownership in Brazilian publicly traded companies. First, we classify all the companies that have a dual-class share, considering its importance, to define the government participation in control and cash flow rights. It is worth mentioning that 207 of 422 firms (49% of all public companies' sample) have had dual class shares for at least one year in the sample period. This fact shows the relevance of studying the control and cash flow rights in the Brazilian stock market.

The Brazilian government had until 2019 golden shares for three companies: Vale, Embraer, and IRB Brazil — the Brazilian Reinsurance Institute. Once these golden shares represented a small fraction of government ownership we did not consider their influence in the present study.

We should notice that although the government had considerable ownership in some public companies, reaching 100% of the total shares in some cases, the mean was very low. Table 1 presents the descriptive statistics for the full sample and only for public companies that the Brazilian government has had some influence through ownership shares, direct or indirectly, in the sample period. Applying this filter, we have 881 firm-year observation, and unique 131 firms the Brazilian government have shares.

We can infer from Table 1 that the Brazilian government ownership in publicly traded companies is usually through voting shares, and it captures the benefits of control. However, only 24 companies were government-controlled and matched the Brazilian definition of SOEs: listed companies for which the government owned more than half of the voting right shares.

In Table 2, we present the numbers of firm-year observations by sector. For this classification, we used the sector information provided by the Economatica database, using its own classification. In this table, we exhibit the firm-year observations with government ownership and their proportion related to the full sample. The electric power sector is a good example of strategic business that the government still maintains ownership, according to Musacchio et al. (2016): the Brazilian government is a shareholder in 75% of all the firm-year observation related to this sector. This is also evident in firms wherein the Brazilian government has control: eight out twenty-four SOEs are related to the electric power sector. Government ownership in the finance and insurance sector also deserves some consideration: 37.5% of Brazilian SOEs in the sample belong to it, and the proportion of the government ownership for all this sector is approximately 33%. However, the government has almost no shares in certain sectors such trade and construction.

Table 1
Descriptive statistics: Government ownership variables

	Total Sample							Firms with Government Ownership						
Variable	Min	P25	Median	Mean	P75	SD	Max	Min	P25	Median	Mean	P75	SD	Max
DGO_ON	0,00	0,00	0,00	6,60	0,00	21,07	100	0,00	0,00	0,00	25,24	50,30	35,04	100
DGO_PN	0,00	0,00	0,00	2,51	0,00	12,55	100	0,00	0,00	0,00	9,57	0,00	23,12	100
DGO_CF	0,00	0,00	0,00	5,89	0,00	18,33	100	0,00	0,00	8,40	22,51	36,00	30,19	100
IGO_ON	0,00	0,00	0,00	4,07	0,00	13,47	100	0,00	0,00	7,77	15,54	22,24	22,71	100
IGO_PN	0,00	0,00	0,00	2,09	0,00	9,85	100	0,00	0,00	0,00	7,97	0,00	18,00	100
IGO_CF	0,00	0,00	0,00	4,45	0,00	13,79	100	0,00	0,00	10,43	17,02	22,35	22,64	100
TGO_ON	0,00	0,00	0,00	10,67	0,00	24,73	100	0,00	15,03	29,08	40,78	66,25	33,32	100
TGO_PN	0,00	0,00	0,00	4,60	0,00	15,99	100	0,00	0,00	0,00	17,54	22,90	27,40	100
TGO_CF	0,00	0,00	0,00	10,34	8,30	22,82	100	1,84	17,46	29,60	39,53	55,04	28,93	100

Note: "Total sample" refers to 3,367 firm-year observations (422 unique firms); "Firms with government ownership" refers to 881 firm-year observations (131 unique firms). DGO_ON refers to direct government ownership through voting rights; IGO_ON refers to indirect government ownership through voting rights; TGO_CF refers to total government ownership (both direct and indirect) through voting rights; DGO_PN refers to direct government ownership through non-voting shares; IGO_PN refers to indirect government ownership through non-voting shares; TGO_PN refers to total government ownership (both direct and indirect) through non-voting shares; DGO_CF refers to direct government ownership through cash-flows rights; IGO_CF refers to indirect government ownership through cash-flows rights; and TGO_CF refers to total government ownership (both direct and indirect) through cash-flows rights.

Table 2
Proportion of government ownership by sector

	Only companies with government ownership	Full Sample	
Sector	Companies*	Companies*	Proportion
Agriculture & Fisheries	3	43	7%
Basic & Fab Metal	50	208	24%
Chemical	34	98	35%
Construction	1	255	0%
Electric Electron	2	62	3%
Electric Power	317	425	75%
Finance and Insurance	104	317	33%
Food & Beverage	42	153	27%
Industrial Machine	9	53	17%
Mining	13	43	30%
Nonmetallic Minerals	0	33	0
Oil & Gas	14	81	17%
Other	110	721	15%
Pulp & Paper	20	49	41%
Software & Data	31	57	54%
Telecommunication	27	68	40%
Textile	11	198	5%
Trade	0	170	0
Transport Services	39	181	22%
Vehicle & Parts	54	152	36%
Total	881	3	26%

Note: *Company-year observations.

Table 3 shows the descriptive statistics of total assets of the companies in two groups: firms with and without government ownership. In all the sample years, the average asset of companies where the government is a shareholder, directly or indirectly, is higher, and the difference is statistically significant.

The Return on Assets (ROA) for the firm's sample are presented in Table 4. Although the return seems to be higher in firms whereby the government has shares, the t-test cannot reject the null hypothesis that the mean values are the same.

4. Conclusion

In this study, we presented all the methodology to classify government ownership in Brazilian publicly traded companies.

These data corroborate the relevance of the Brazilian government in the Brazilian capital market: as shown in Table 2, 26% of all the firm-year obser-

Table 3
Descriptive statistics - assets

	Firms without Government Ownership				Firms with Government Ownership			
Year	Mean	St dev	Max	Min	Mean	St dev	Max	Min
2010	13.89	2.14	20.44	3.43	15.14	2.21	20.51	8.50
2011	14.15	2.09	20.56	4.91	15.16	2.15	20.70	9.44
2012	14.21	2.00	20.73	6.24	15.15	2.19	20.86	9.03
2013	14.24	2.10	20.83	4.66	15.12	2.09	20.99	9.97
2014	14.37	2.14	20.91	5.26	15.10	2.22	21.09	9.73
2015	14.47	2.10	21.03	6.36	15.03	2.29	21.06	9.90
2016	14.39	2.13	21.08	6.38	14.98	2.39	21.06	9.87
2017	14.43	2.14	21.13	7.79	15.18	2.33	21.04	9.82
2018	14.43	2.20	21.22	6.04	15.36	2.30	21.07	9.77
2019	14.71	2.11	21.28	9.20	15.46	2.37	21.11	9.75

Note: The assets are represented by the natural logarithm of total assets in thousands (local currency - *R*$). The t-test rejects the null hypothesis the two means are equal with 99% confidence ($t = 10.1$; df $= 15.389$; p-value $= 3.46e^{-08}$).

Table 4
Descriptive statistics - return on assets

	Firms without Government Ownership				Firms with Government Ownership			
Year	Mean	St dev	Max	Min	Mean	St dev	Max	Min
2010	–1,23	19,57	1,99	–314,76	0,03	0,15	0,49	–0,87
2011	–0,03	0,52	1,12	–6,83	0,04	0,10	0,36	–0,39
2012	–0,06	0,62	0,52	–6,61	–0,02	0,28	0,24	–1,73
2013	–2,82	42,81	0,80	–670,09	0,01	0,20	0,28	–1,80
2014	–0,41	6,58	11,89	–100,18	0,00	0,16	0,33	–0,92
2015	–0,06	0,46	0,29	–5,92	–0,03	0,29	0,55	–2,27
2016	–0,08	0,73	2,22	–8,26	0,08	0,50	4,50	–0,66
2017	–0,11	0,92	0,78	–11,19	0,03	0,10	0,30	–0,52
2018	–0,03	1,28	14,54	–11,74	0,03	0,10	0,38	–0,33
2019	–0,05	0,87	0,59	–13,55	0,04	0,12	0,45	–0,44

Note: The t-test does not reject the null hypothesis the two means are equal ($t = 1.785$; df $= 9.0214$; p-value $= 0.1078$).

vations had some government influence through shares, directly or indirectly. Even with the privatization wave in the last decades, the Brazilian government still figures as an important player in the Brazilian capital market.

Using this unique database, we identified sectors with strong government shareholding, notably electric power and finance. Firms with government ownership tend to be larger, while the state appears to avoid smaller, less profitable companies — challenging the political view that SOEs underperform, given the lack of significant ROA differences in our sample.

We hope this study can contribute with the financial studies through the relationship of publicly traded companies with a relevant market player in Brazil: the government. Through the study of control and ownership structures, it can lead a path for future research, as well as the government's influence in corporate governance's mechanisms and firm performance.

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