

## **Influence of Political Connections on the Performance of Companies in Brazil**

**CLEITON RICARDO KURONUMA**  
FACULDADE FIPECAFI (FIPECAFI)

**RODRIGO TAKASHI OKIMURA**  
FACULDADE FIPECAFI (FIPECAFI)

**GEORGE ANDRE WILLRICH SALES**  
FACULDADE FIPECAFI (FIPECAFI)

**FABIANA LOPES DA SILVA**  
FACULDADE FIPECAFI (FIPECAFI)

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## 1 INTRODUCTION

Overall, the academic literature on the firm-environment relationship recognizes that organizations seek to strengthen ties with the environment in order to both preserve and attract value (Agrawal & Knoeber, 2001; Johnson & Mitton, 2003). Among the important links of organizations with the environment is politics. Although there is no consensus, the theoretical framework points to the importance of the political relationship between firms and government (Mahon, Murray Jr., & Edwin 1981).

In Brazil, according to Astorino (2015), the government has historically had a central role in the economy and held a close relationship with the Brazilian business elite. Faoro (2001) and Holanda (1995) suggest that the Brazilian state was founded on the system of patrimonialism, a form of political domination characterized by the absence of frontiers between the public and private domains.

Researchers have long sought to investigate the relationship between political connections by interest groups and the benefits derived from this association. Some of the main academic studies that deal with such a link are those that suggest a possible valuation of firms (Faccio, 2006; Claessens et al., 2007), an increase in market share (Faccio, 2010; Boas et al., 2014) and preferential access to credit (Joh & Chiu, 2004; Claessens et al., 2007).

More recently, research has been carried out addressing other dimensions of the influence of political connections on corporate performance, such as access to credit from development banks (Lazzarini et al., 2011; Sztutman, & Aldrighi, 2012; Astorino, 2015), equity participation in development banks (Lazzarini et al., 2011) and international expansion (Holburn & Zelner, 2010; Costa et al., 2013; Du & Luo, 2016). This research deals with the influence of the political connections in these three perspectives, still little explored in the literature.

This paper intends to contribute to the studies focusing on the influence of the political context on the performance of organizations. The companies' performance will be measured by the following dimensions: (i) access to credit from development banks; (ii) equity participation in development banks; and (iii) international expansion. The firms listed in Brasil, Bolsa, Balcão (B3) between 2007 and 2016 will be considered in this study. The period from 2007 to 2016 was chosen because it allows obtaining data of the analyzed companies in three electoral cycles - 2007 to 2010, 2011 to 2014 and 2015 to 2016. Each electoral cycle corresponds to the period following an election.

In this context, the present study aims to answer the following research question: **do political connections, measured through contributions to electoral campaigns, influence the performance of companies in Brazil?**

In terms of the potential practical implications, this research intends to contribute to the expansion of the study focused on the influence of political connections on the performance of companies in Brazil. With greater donor capacity, organizations generate greater attractiveness for political actors and, when these relationships are established, mutual interests can emerge (Camilo, 2011). In seeking to fill some of the gaps left by previous studies, this research may contribute, for example, to the discussion on alternatives to the corporate campaign financing model, to the elaboration of regulatory policies for BNDES financing, and tools for the supervision of the international expansion of firms in Brazil.

## **2 THEORETICAL BACKGROUND**

### **2.1 Political Connections in Brazil**

Political connections can be defined as activities that have the purpose of influencing the decision-making process of the government or its parties in favor of private interests (Lawton et al., 2013). The reasons that lead companies to seek government relations vary according to the objective of the political strategy defined by each company (Faccio, 2006). In general, such objectives are characterized by the pursuit of government favors or defense against threats to the continuity of organizations (Pfeffer & Salancik, 2003).

The nature of economics and politics in Latin America indicates that firms have the desire to participate in the political process (Boas et al., 2014). Latin American economies are predominantly dominated by large multinational corporations and household conglomerates controlled by large family groups (Schneider, 2013). In addition, less competitive and more oligopolistic interfirm relations predominate than those of the liberal market economies (Schneider, 2013).

Lazzarini (2011), through an important historical analysis of Brazil, verified that the close relationship between the Brazilian government and some companies in the country is present since before the independence movements occurred in the nineteenth century. This author attributes to Brazil the so-called bond capitalism, a system in which companies approach the government offering benefits in order to obtain some competitive advantage. Bond capitalism brings distortions into the market by allowing investment projects and decisions to be influenced by social contacts or political criteria, favoring private interests (Lazzarini, 2011).

In Brazil, in addition to the historical proximity between firms and the government, there is also a high concentration of shareholding control of companies (Carvalho-da Silva & Leal, 2005). According to research carried out by La Porta et al. (1998), the high concentration of property stems mainly from the lack of legal protection. For this reason, countries with worse legal protection - which adopt French Civil Law, such as Brazil - have a higher concentration of property, which is measured by the percentage of shares held by major shareholders. On the other hand, countries with better legal protection - which adopt the Common Law - tend to have a more pulverized property structure. In this way, greater protection of creditors' rights would encourage the development of the credit market and greater protection of shareholders' rights would encourage the development of the stock market.

In this scenario, controlling shareholders - owners - often assume the role of managers or act in collusion with them (Lopes & Walker, 2008, p.22). The existence of a well-defined controller or controlling group, therefore, makes it possible to centralize the control and management of organizations, favoring the political relationship.

Research indicates two main ways of establishing political connections. The presence of a member with a history of involvement in politics is one of the ways a firm can connect politically (Faccio, 2006). Another important form is through contributions to political campaigns (Coate, 2004; Claessens et al., 2007). In this study, political donations will be considered as a proxy of political connections. According to Claessens et al. (2007), using political contributions as a point of reference has three advantages: (i) these are more objective when compared with other forms typically used in the academic literature to identify if a connection exists between politicians and firms; (ii) they allow the measurement of the intensity of the connections rather than just indicating their presence; and (iii) these allow us to investigate how contributions are distributed among different types of political candidates.

### **2.2 Political Connections and Performance of Companies**

Through political connections, firms seek to find imperfections in the market, becoming more competitive in turn. The effects of this relationship may favor performance outreach rather than traditional mercantile strategies (Barney, 1986). For Fejgelman (2016), there is no

consensus among the authors about the results of political connections for companies. Some studies show the political connections as having great potential to influence government activities, with positive effects on companies, either by access to information, influence or reduction of transaction costs and uncertainties (Hillman et al., 1999), with influence in the external political environment in favor of the companies (Baysinger et al., 1985). There are also studies that have contradictory results on the real benefits of such connections.

In this section, the most relevant results on the impact of political connections on corporate performance are presented, separated into dimensions that have not yet been extensively studied in the literature, such as access to development banks through financing or equity participation, and international expansion.

### **2.2.1 Political Connections and Development Banks**

In contrast to more developed countries, emerging economies face several institutional failures (Peng et al., 2009) and their financial markets are generally characterized by weak legal protection and fewer disclosure requirements (La Porta et al., 1999). This scenario discourages the performance of financial intermediaries (Khanna & Palepu, 2000), generating unfavorable conditions for economic growth. Therefore, many emerging countries, such as Brazil, opted for the creation of development banks with the purpose of promoting investment and fostering economic growth (Yeyati et al., 2004; Inoue, 2011).

For Inoue (2011), development bank support is expected to impact firm performance through two mechanisms: (i) capital offered to firms, improving performance; and (ii) corporate participation in companies, which can facilitate their access to the government, allowing the use of differentiated resources and skills, such as access to information that aids in the anticipation of changes in the institutional environment and the possibility of influencing and adapting policies and guidelines (Oliver & Holzinger, 2008). These two mechanisms will be further detailed in the following sections.

Lazzarini et al. (2011), forerunners of the study on the influence of electoral financing on BNDES (Development Bank of Brazil) disbursements, analyzed contributions to the state and federal campaigns in the 2002 and 2006 elections and their relationship with BNDES financing for donor organizations. The authors found evidence that the companies that most financed the campaigns of winning candidates were the ones that received the most BNDES contributions; on the other hand, companies that financed campaigns of defeated candidates had less access to bank credit.

Sztutman and Aldrighi (2012) investigated the relationship between financing for the 2006 election campaign and BNDES loans from 2003 to 2010. The authors found an increased financial volume of loans to companies, finding evidence that donations to candidates positively influence access to BNDES credit, although this influence is not necessarily direct.

Astorino (2015) analyzed the influence of the political connections established by some publicly traded companies in Brazil in the performance and access to BNDES credit. The results obtained did not reveal statistical significance between the study variables and BNDES performance indicators and access to credit.

#### **2.2.1.1 Political Connections and Access to Development Banks Credit**

In addition to the weak legal protection, the financial market of emerging countries, such as Brazil, is often characterized by high transaction costs (Yeyati et al., 2004). As a consequence, organizations fail to invest because of a lack of financial resources or high-risk premium charged by creditors (Inoue, 2011). In these countries, development banks emerge as an alternative to alleviate credit constraints and ensure the execution of long-term projects (Rodrik, 2004). Development banks usually offer subsidized credits to foster new economic sectors or encourage productivity improvement of certain industrial segments (Inoue, 2011).

Among the first researches that addressed the relationship between political connections and access to government bank financing are those of Dinç (2005) and Claessens et al. (2007). Dinç (2005) conducted the first multi-country research that addressed the existence of political incentives in public banks in emerging markets. This author assessed the political influence on government banks in 43 countries during the 1990s, finding evidence that they increase the volume of credit operations in election years compared to private banks. The results of his study provide evidence that political motivations can influence the actions taken by government banks (Dinç, 2005). Claessens et al. (2007) found that contributions to winning candidates generated greater access to bank financing compared to losing candidates, suggesting that there may be a direct relationship between contributions to electoral campaigns and political favoritism.

### **2.2.1.2 Political Connections and Access to Equity Participation in Development Banks**

The governmental connection with the companies through the property structure can be carried out either directly or indirectly (Brey et al., 2014). The direct form occurs when the government participates as a shareholder of the firms (Wu, 2010). The indirect form, the focus of this research, is carried out through intermediary institutions, such as development banks and state-owned funds (Lazzarini, 2011).

The shareholding of a development bank may provide the company with use for political purposes (Inoue, 2011). Such political motivations may prevent decision-making from maximizing firm performance, such as cutting off employees or raising prices (Shleifer & Vishny, 1994).

There is practically no academic research that addresses the influence of political connections on government corporate participation through development banks. Among the few existing ones, are the researches from Lazzarini et al. (2011) and Bueno (2016).

Lazzarini et al. (2011) conducted the first study in Brazil on the influence of political connections on the Brazilian government's minority participation through BNDESPar. Analyzing electoral campaigns' contributions in the 2002 and 2006 elections and their relationship with BNDESPar's equity participation for organizations that made electoral contributions, the authors found evidence that the companies that financed the most winning candidate campaigns were the ones that most received BNDESPar shares.

Bueno (2016) carried out a survey to verify if companies that finance electoral campaigns receive, later on, greater participation of governmental institutions as shareholders, comparing the governmental shareholding of companies that made and did not make donations to electoral campaigns, before and after the elections of 2002, 2006 and 2010. The results for the years 2002 and 2006 did not present sufficient evidence to corroborate the hypothesis of government investment as a consequence of electoral financing. For the 2010 elections, the study presented evidence in favor of the hypothesis of increased government investment resulting from the participation of firms in the financing of electoral campaigns.

### **2.2.2 Political Connections and International Expansion**

In general, the development of international business in organizations starts with the import and export of products. As companies familiarize themselves with international activity, some choose to add activities that require more investment, such as the opening of subsidiaries abroad (Sapienza et al., 2006).

Political factors have great relevance in the context of international business (Holburn & Zelner, 2010). This is due to the variety and complexity of government regimes in which international corporations operate (Ring et al., 1990), which often have to negotiate and maintain the political dimension of the environment in which they operate (Fernandes, Bandeira-de-Mello, & Zanni, 2012).

Academic studies, in general, bring evidence that political motivations tend to influence much of the expansion of business groups (Schneider, 2008). For Schneider (2008), governments can promote the growth of business groups in either an intentional or an unintentional way. Examples of unintended forms are (i) weak enforcement of laws, leaving gaps for non-compliance (Schneider, 2008); and (ii) political instability, which increases uncertainty and encourages firms to diversify (Schneider, 2008). Alternatively, governments can intentionally encourage the expansion and diversification of business groups through: (i) promotional policies in favor of national groups such as access to capital, subsidies or licenses (Hoskisson et al., 2005); (ii) privatization of state-owned firms (Schneider, 2008); (iii) regulation of mergers and acquisitions through the use of antitrust laws (Schneider, 2008); (iv) creation of standards for joint ventures (Schneider, 2008); and (v) use of tariff protection mechanisms (Schneider, 2008).

Through these various mechanisms, governments can interfere in the expansion of firms, and, therefore, these can be used in the context of political connections (Schneider, 2008). The study of the influence of political connections in the international expansion of firms is recent and still little discussed in the literature. The following are some of the main works related to the theme.

Holburn and Zelner (2010) investigated whether firms in countries of origin characterized by weaker political institutions, as in most emerging countries, are less sensitive to the host country's political risk in its international expansion strategies. According to these authors, firms from countries with weaker political institutions are more adept at dealing with political mechanisms than firms from countries with stronger institutions. Such a feature reduces the effect of political risk on their decisions of entry abroad.

Costa et al. (2013) found strong evidence of political connections as a plausible explanation for the expansion and diversification of Brazilian business groups through the use of a fixed-effect panel regression model in a sample of 760 observations from 95 business groups, between 2001 and 2008, in Brazil.

Du and Luo (2016) conducted a study to analyze the impact of domestic political connections on the internationalization of emerging market companies, with a focus on Chinese companies. The results indicate that political connections and formal domestic institutions play an important role in determining the internationalization strategy of companies.

Finally, Pimentel (2017) examined how different types of political connections influenced the international expansion strategy of the largest French companies during the period from 2003 to 2012. The author has obtained indications that politically connected firms are more involved in international expansion strategies than non-connected ones.

### 2.3 Hypotheses

Through this research, it is expected to find evidence that supports previous studies and uncover new evidences of the relationship between political connections and: (i) access to credit from development banks:

**Hypothesis H<sub>1</sub>:** *Politically connected firms tend to have preferential access to development banks credit;*

(ii) equity participation in development banks:

**Hypothesis H<sub>2</sub>:** *Politically connected firms tend to have preferential access to development banks in terms of equity participation;*

and (iii) international expansion:

**Hypothesis H<sub>3</sub>:** *Politically connected firms tend to expand more internationally than unconnected ones.*

### 3 METHODOLOGY

#### 3.1 Population and Sample

In this research, the population is formed by the Brazilian firms that have shares listed in B3, between 2007 and 2016. Five research sources are considered: (i) Economática®; (ii) B3 portal; (iii) TSE portal; (iv) BNDES portal; and (v) FDC (Dom Cabral Foundation) portal.

#### 3.2 Data

##### 3.2.1 Economática® Database

A single database containing financial and sectoral data for the period spanning from 2007 to 2016 was set up of the 364 active and listed companies in B3 in December 2016.

Of this base, 12 government-owned firms and 78 public service concession sectors organizations were excluded, since the article 24 of Law No. 9,504 prohibits donation to electoral campaigns from firms of the direct and indirect public administration and concessionaires of public services. As a result, 274 firms were retained on the single database.

##### 3.2.2 B3 Database

For each of the 274 firms, the corporate governance level was collected in the B3 portal and this information was included in the single database.

##### 3.2.3 TSE Database

Based on the TSE database, a consolidation per donor was performed for each of the three elections addressed in this study (2006, 2010 and 2014), as presented in Table 1.

**Table 1** – Donations for elections campaigns of 2006, 2010 and 2014

Election	#Donors				Amount donated (billions of reais)			
	Legal Entity	Individual	Party	Total	Legal Entity	Individual	Party	Total
2006	19,434	124,605	565	144,604	0.876	0.443	0.563	1.882
2010	21,553	206,254	1,101	228,908	2.387	0.749	1.625	4.761
2014	16,331	151,234	2,547	170,112	3.018	0.938	3.135	7.091

Source: Prepared by the authors from TSE data.

However, donations made to parties can be redistributed to other parties or candidates, generating a multiplier effect on the TSE's electoral donation base (Lopes, 2016). In order to avoid this multiplier effect, donations originating from party directories are not considered in this paper. Considering that the purpose of this study is to analyze the influence of electoral donations on the performance of firms, donations from individuals will also not be considered.

Of the total contributions made by organizations, only the ones made by the 274 firms of the single database will be considered - 26.4% of the total donated by firms (Table 2).

**Table 2** – Representativeness of the sample on the total of donations by legal entities

Election	Amount donated (billions of reais)		% Single Database of Total
	Legal Entity Total	Single Database	
2006	0.876	0.191	21.8%
2010	2.387	0.511	21.4%
2014	3.018	0.958	31.7%
Total	6.281	1.660	26.4%

Source: Prepared by the authors from TSE data.

##### 3.2.4 BNDES Database

BNDES financing amounts were consolidated per electoral cycle (2007-2010, 2011-2015, 2015-2016) and aggregated to the single base for each of the 274 companies in the sample (Table 3).

**Table 3** – Annual average of BNDES financing per electoral cycle

Period	Average annual credit (billions of reais)		
	Automatic Indirect	Direct and Non-Automatic Indirect	Total
2007-2010	1.008	7.452	8.459
2011-2014	1.100	11.488	12.588
2015-2016	0.558	2.170	2.728
Total	0.954	8.010	8.964

**Source:** Prepared by the authors from BNDES data.

From the BNDESPar archives, investments made in each company were separated by type and by electoral cycle (2007-2010, 2011-2015, 2015-2016). Among the 274 organizations considered in this survey, 58 received direct equity participation or BNDESPar corporate debt securities, from 2007 to 2016 (Table 4).

**Table 4** – Number of firms that received investments from BNDESPar

Period	#Firms that received BNDESPar investments		
	Direct Investment	Corporate Debt Security	Total
2007-2010	44	9	46
2011-2014	38	10	40
2015-2016	38	8	39
Total	56	13	58

**Source:** Prepared by the authors from BNDES data.

**Note:** The number of companies that received investments from BNDESPar is not equal to the sum of the number of firms that received direct investments and corporate debt securities given that some obtained the two types of modalities.

Finally, a binary variable was created, assuming the value 1 for the firms that take BNDESPar investments and 0 otherwise. This variable was added to the single database.

### 3.2.5 FDC Database

The FDC's UNCTAD transnationality index, from 2007 to 2016, was consolidated by electoral cycle (2007-2010, 2011-2015, 2015-2016) and added to the single database (Table 5).

**Table 5** – Average UNCTAD transnationality index of the companies analyzed

Period	Average UNCTAD transnationality index
2007-2010	7.98%
2011-2014	13.97%
2015-2016	18.11%
Total	13.35%

**Source:** Prepared by the authors from FDC data.

As can be seen in Table 5, among the 274 firms that are part of this survey, the average internationalization index increased from 7.98% (2007-2010) to 18.11% (2015-2016), indicating an international expansion of the firms analyzed during the three electoral cycles.

## 3.3 Characterization of the Variables

### 3.3.1 Dependent Variables

Three dependent variables were defined for the hypotheses test: (i) BNDES credit; (ii) BNDESPar's equity participation; and (iii) degree of internationalization.

**Chart 1 - Description of dependent variables**

<b>Variable</b>	<b>Description</b>	<b>Authors</b>
BNDES credit	The total amount of direct and indirect credit obtained from the BNDES from 2007 to 2016.	Lazzarini et al. (2011); Sztutman and Aldrighi (2012); Astorino (2015).
BNDESPar equity participation	Binary variable - value 1 for firms that received BNDESPar investments from 2007 to 2016.	Lazzarini et al. (2011); Bueno (2016).
Degree of internationalization	UNCTAD transnationality index from 2007 to 2016.	Holburn and Zelner (2010); Costa, Bandeira-de-Mello and Marcon (2013); Du and Luo (2016).

**Source:** Prepared by the authors.

**Note:** The list of authors refers to those who used the same dependent variables proposed.

### 3.3.2 Independent Variables

For the hypotheses test, an independent variable was defined: donations to the electoral campaigns as a proxy of the variable political connections.

**Chart 2 - Description of the independent variable**

<b>Variable</b>	<b>Description</b>	<b>Authors</b>
Donations to electoral campaigns	Contributions to political campaigns of the 2006, 2010 and 2014 elections	Claessens et al. (2007); Lazzarini et al. (2011); Costa et al. (2013); Bueno (2016).

**Source:** Prepared by the authors.

**Note:** The list of authors refers to those who used the same independent variables proposed.

### 3.3.3 Control Variables

The following control variables were considered: (i) firm size; (ii) sector; and (iii) level of corporate governance. They were included in the model in order to verify if firm size, specific sectorial characteristics and different levels of corporate governance influence the relationship between the dependent variable and the independent ones.

**Chart 3 - Description of control variables**

<b>Variable</b>	<b>Description</b>	<b>Authors</b>
Firm size	Total assets as a proxy for the firm size.	Claessens et al. (2007); Faccio (2010); Lazzarini et al. (2011); Fejgelman (2016).
Sector	The sector of firms, according to B3.	Khwaja and Mian (2005); Lu (2008); Inoue (2011).
Level of Corporate Governance	Level of corporate governance provided by B3.	Carrera (2013); Cunha and Piccoli (2017).

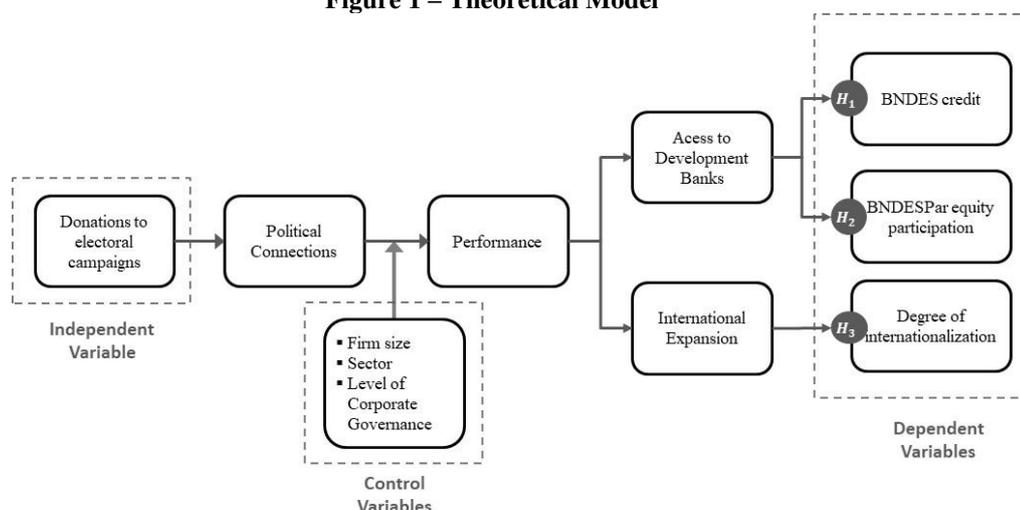
**Source:** Prepared by the authors.

**Note:** The list of authors refers to those who used the same control variables proposed.

## 3.4 Theoretical Model

The theoretical model proposed in this paper is illustrated in Figure 1. This theoretical construction presents the firm-government relationship through the expected relationships among the variables used in this work, donations to the electoral campaigns, BNDES financing, BNDESPar shareholding and degree of internationalization of firms, considering the variables of control, firm size, sector, and level of corporate governance of the analyzed organizations.

**Figure 1 – Theoretical Model**



Source: Prepared by the authors.

## 4 Result Analysis

### 4.1 Analysis of the Variables

#### 4.1.1 Analysis of the Donations to Electoral Campaigns Variable

Table 6 presents the evolution of the contributions made by the five largest donors, considering the total amount offered in the three electoral campaigns. With the exception of Gerdau, which decreased the amount donated between 2010 and 2014, JBS, Bradesco, Vale, and Ambev increased the amounts donated to the 2006-2014 election campaigns. In terms of participation in total contributions, JBS stands out from other organizations by expanding its presence in the sample from 6.6% (2006) to 40.4% (2014).

**Table 6 – The five largest donors in the sample for the 2006, 2010 and 2014 election campaigns**

Donors		Electoral Cycle			
		2006	2010	2014	Total
JBS	(billions of reais) / %	0.012 / 6.6%	0.074 / 14.6%	0.386 / 40.4%	0.474 / 28.6%
Bradesco	(billions of reais) / %	0.022 / 11.3%	0.094 / 18.4%	0.101 / 10.5%	0.216 / 13.0%
Vale	(billions of reais) / %	0.030 / 15.5%	0.059 / 11.5%	0.079 / 8.3%	0.168 / 10.1%
Ambev	(billions of reais) / %	0.010 / 5.2%	0.015 / 2.9%	0.057 / 6.0%	0.082 / 4.9%
Gerdau	(billions of reais) / %	0.018 / 9.6%	0.034 / 6.6%	0.028 / 2.9%	0.080 / 4.8%
Other firms	(billions of reais) / %	0.099 / 51.8%	0.235 / 45.9%	0.306 / 32.0%	0.640 / 38.6%
Total	(billions of reais) / %	0.191 / 100.0%	0.511 / 100.0%	0.958 / 100.0%	1.660 / 100.0%

Source: Prepared by the authors.

#### 4.1.2 Analysis of the BNDES Credit Variable

Table 7 presents the five firms that received most of the BNDES funding in the three electoral cycles. With regard to access to BNDES credit, all organizations were affected by the drop in BNDES investments in the 2015-2016 electoral cycle. Among the five firms analyzed, Vale was the most affected by the crisis, reducing the average annual financing from BNDES from R\$ 3.565 billion (2011-2014) to R\$ 19 million (2015-2016).

**Table 7 – The five firms in the sample that received the largest BNDES financing in the period**

Average funding with BNDES		Electoral Cycle			
		2007-2010	2011-2014	2015-2016	Total
Vale	(billions of reais) / %	1.506 / 17.8%	3.565 / 28.3%	0.019 / 0.7%	2.032 / 22.7%
Braskem	(billions of reais) / %	0.528 / 6.2%	0.814 / 6.5%	0.290 / 10.6%	0.595 / 6.6%

Cosan	(billions of reais) / %	0.474 / 5.6%	0.904 / 7.2%	0.214 / 7.9%	0.594 / 6.6%
Klabim	(billions of reais) / %	0.169 / 2.0%	1.221 / 9.7%	0.171 / 6.3%	0.594 / 6.6%
Suzano Papel	(billions of reais) / %	0.682 / 8.1%	0.370 / 2.9%	0.132 / 4.8%	0.447 / 5.0%
Other firms	(billions of reais) / %	5.100 / 60.3%	5.713 / 45.4%	1.902 / 69.7%	4.706 / 52.5%
Total	(billions of reais) / %	8.459 / 100.0%	12.588 / 100.0%	2.728 / 100.0%	8.964 / 100.0%

Source: Prepared by the authors.

#### 4.1.3 Analysis of the BNDESPar Equity Participation Variable

As with BNDES investments, there is a reduction in the number of firms invested by BNDESPar, also influenced by the unfavorable political-economic scenario of the 2015 to 2016 period (Puga & Gabrielli, 2018).

**Table 8** – BNDESPar shareholdings in the sample firms in the three electoral cycles

Sample	Electoral Cycle			Total
	2007-2010	2011-2014	2015-2016	
#firms with BNDESPar equity participation	46	40	39	58

Source: Prepared by the authors.

#### 4.1.4 Analysis of the Degree of Internationalization Variable

Table 9 presents the five firms with the highest degree of internationalization during the three electoral cycles analyzed. Among them, two are from Consumer (JBS and Marfrig) and one is from Industry (Metalfrio) – all had an intense internationalization process between the first and the third electoral cycle. On the other hand, Vale reduced its international exposure during the same period.

**Table 9** – The five firms with the highest degree of internationalization in the period

Firms	Electoral Cycle			Average
	2007-2010	2011-2014	2015-2016	
Gerdau	51.7%	51.7%	56.9%	53.4%
JBS	15.4%	55.6%	53.2%	41.4%
Marfrig	27.5%	43.7%	52.8%	41.3%
Metalfrio	19.3%	44.5%	45.7%	36.5%
Vale	34.8%	28.6%	29.2%	30.9%
Other firms	0.5%	0.9%	1.3%	0.9%

Source: Prepared by the authors.

## 4.2 First Panel: BNDES Credit

### 4.2.1 Selection Method and Analysis

For the selection of the most appropriate method for this research, three tests were performed: (i) Chow test, used for selection between the fixed effects models and the OLS, and since the null hypothesis was rejected, the fixed effects model is the most suitable; (ii) Breusch-Pagan test, used to select between random effects models and OLS, and since the null hypothesis was rejected, the random effects model is the most adequate; and (iii) Hausman test, used to select between fixed and random effects models, and since the null hypothesis was rejected, the fixed effects model is the most suitable.

Thus, the fixed-effects model is the most appropriate for the study of the BNDES credit variable. The next step is to verify the assumptions of the regression, in order to guarantee the robustness of the estimators.

### 4.2.2 Method Validation Tests

The VIF test returns values close to 1. Gujarati and Porter (2011) point values above 10 as critical. In this sense, it is possible to verify that there is no problem of multicollinearity in the variables of the research model for the first panel.

Residues from the regression model were submitted to the Jarque-Bera normality test. There are indications that the residues are not normally distributed, in which case Gujarati and Porter (2011) suggest the use of robust estimation methods.

For the residues' autocorrelation test, the Breusch-Godfrey model was applied to panel data, indicating a possible serial correlation in the regression of the model by fixed effects. For Hoechle (2007), the Driscoll-Kraay estimator can be used to correct the serial correlation in the regression.

Regarding heteroskedasticity, the White test was chosen, which indicated the possible presence of heteroscedasticity in the model. For the adjustment of heteroscedasticity, the robust Driscoll-Kraay models can be used (Hoechle, 2007).

### 4.2.3 Robust Methods

Given the scenario of violation of assumptions, such as homoscedasticity and the absence of autocorrelation of residuals, corrective measures may be necessary, such as the adoption of models with robust standard error (Gujarati & Porter, 2011). Among the models tested in this work is that of Driscoll-Kraay. The results of this test are shown in Table 10.

**Table 10** - Estimation of the first panel by fixed effects method with robust standard error (*Driscoll-Kraay*)

	<b>Coefficient</b>	<b>SD</b>	<b>t</b>	<b>P&gt;  t  </b>	<b>IC-95%</b>	
LnTAM	-0.1656	0.0421	-3.93	0.000 ***	-0.2485	-0.0828
LnDOA	0.1596	0.0271	5.88	0.000 ***	0.1062	0.2130
Const	5.3996	0.3161	17.08	0.000 ***	4.7771	6.0221
Prob > F					0.0000	

**Source:** Prepared by the authors.

**Note:** SD: Standard Deviation; t: student t statistics; P>| t |: p-value; and IC-95%: confidence interval 95%. Variables: LnTAM is the ln(x) of firm size and LnDOA is the ln(x) of campaign donations. 822 observations. 274 groups. Significance level: \* at 10%, \*\* at 5% and \*\*\* at 1%.

According to Table 10, at the 1% level of significance, the results obtained with the Driscoll-Kraay method for the independent variable logarithm of electoral donations (LnDOA) confirm the expected effect of the H<sub>1</sub> hypothesis, suggesting a direct and positive relationship between political connections, estimated through proxy electoral donations (LnDOA) and the BNDES credit volume received by the firms.

These results corroborate the studies of Lazzarini et al. (2011), who found evidence of the influence of electoral financing on the BNDES disbursements, and Sztutman and Aldrighi (2012), who found evidence that donations to candidates positively influence access to BNDES credit. On the other hand, the presented effects diverge from those obtained by Astorino (2015), who found no statistical significance between the variables. One of the reasons that may explain this divergence is the fact that the researcher used as a proxy for political connections the presence of members in the board of directors who have held management positions in BNDES.

Regarding the size control variable (LnTAM), although it is significant at 1% (p-value null), this was presented as negative, suggesting that the larger the firm size, the lower the value of the financing obtained in the BNDES. The dummy variables were omitted since the fixed effects model does not consider the variables invariant in time (Gujarati & Porter, 2011).

## 4.3 Second Panel: BNDESPar Equity Participation

### 4.3.1 Selection Method and Analysis

For the selection of the most appropriate approach for this study, three tests were performed: (i) Chow test; (ii) Breusch-Pagan test; and (iii) Hausman test. The fixed-effects model is the most appropriate for the study of BNDESPar equity participation variable.

### 4.3.2 Method Validation Tests

Since the VIF test returns values close to 1, there is no evidence that the sample shows multicollinearity. Thus, there is no need to replace the regressors.

The regression residuals of the model were submitted to the Jarque-Bera normality test. Evidence was obtained that the regression residues are not normally distributed. For this scenario, Gujarati and Porter (2011) suggest the use of robust estimation methods.

For autocorrelation, the Breusch-Godfrey test was applied, which indicated a possible serial correlation in the regression of the model by fixed effects.

For heteroskedasticity, the White test was chosen, which indicated the possible presence of heteroscedasticity in the model proposed in the second panel.

### 4.3.3 Robust Methods

As a consequence of the violation of assumptions of the model, Gujarati and Porter (2011) suggest corrective measures such as the adoption of models with robust standard error. In this research, the Driscoll-Kraay models were used (Table 11).

**Table 11** - Estimation of the second panel by fixed effects method with robust standard error (*Driscoll-Kraay*)

	Coefficient	SD	t	P> t	IC-95%	
LnTAM	-0.0047	0.0009	-4.90	0.000 ***	-0.0066	-0.0028
LnDOA	0.0044	0.0011	4.16	0.000 ***	0.0023	0.0065
Const	0.3510	0.0029	120.91	0.000 ***	0.3453	0.3568
Prob > F						0.0000

**Source:** Prepared by the authors.

**Note:** SD: Standard Deviation; t: student t statistics; P>|t|: p-value; and IC-95%: confidence interval 95%. Variables: LnTAM is the ln(x) of firm size and LnDOA is the ln(x) of campaign donations. 822 observations. 274 groups. Significance level: \* at 10%, \*\* at 5% and \*\*\* at 1%.

The Driscoll-Kraay estimator confirms the expected effect of the H<sub>2</sub> hypothesis, suggesting that a direct and positive relationship was found between the political connections, estimated through proxy electoral donations (LnDOA), and the BNDESPar equity participation.

This result corroborates the study by Lazzarini et al. (2011), which analyzed the contributions to the state and federal campaigns in the 2002 and 2006 elections and its relation to BNDESPar's equity participation, finding evidence that the companies that most financed campaigns of winning candidates were the ones that received the most BNDESPar investments.

On the other hand, the results of this study diverge from Bueno (2016), who did not find enough evidence to support the hypothesis of government investment as a consequence of electoral financing. Two reasons may explain this divergence: (i) the author used, as a dependent variable, the participation of the government as shareholder of the companies listed on the São Paulo Stock Exchange, a broader concept than that of BNDESPar; and (ii) the differences method was used, an alternative model to that proposed in this paper.

Regarding the size control variable (LnTAM), although it was significant at 1% (p-value null), it was negative, suggesting that there is evidence of an inverse relationship with BNDES financing received.

## 4.4 Third Panel: Degree of Internationalization

### 4.4.1 Selection Method and Analysis

For the selection of the most appropriate approach for this study, three tests were performed: (i) Chow test; (ii) Breusch-Pagan test; and (iii) Hausman test. The fixed effects model is the most convenient for the study of the variable degree of internationalization.

#### 4.4.2 Method Validation Tests

The VIF test returns values close to 1. Within this scenario, it is possible to verify that there is no problem of multicollinearity in the variables for the third panel.

Residues from the regression model were submitted to the Jarque-Bera test. As the p-value is null, there are indications that the residues are not normally distributed, in which case Gujarati and Porter (2011) advise the use of robust estimation methods.

For autocorrelation, the Breusch-Godfrey model was applied. It indicates a possible serial correlation in the regression of the model by fixed effects. Hoechle (2007) suggests the use of the Driscoll-Kraay estimator for possible correction of the serial correlation in the regressions.

For heteroskedasticity, the White test was chosen, which indicated the possible presence of heteroscedasticity in the model proposed in the second panel.

#### 4.4.3 Robust Methods

Results of the robust Driscoll-Kraay models (Table 12), used as a result of a violation of regression assumptions, such as heteroskedasticity and lack of autocorrelation of residues, are presented below.

**Table 12** - Estimation of the third panel by fixed effects method with robust standard error (*Driscoll-Kraay*)

	Coefficient	SD	t	P> t	IC-95%	
LnTAM	0.0008	0.0001	8.91	0.000 ***	0.0007	0.0010
DOA	0.0006	0.0003	2.31	0.022 **	0.0001	0.0011
Const	0.0051	0.0033	1.52	0.129	-0.0015	0.0116
Prob > F						0.0000

**Source:** Prepared by the authors.

**Note:** SD: Standard Deviation; t: student t statistics; P>|t|: p-value; and IC-95%: confidence interval 95%. Variables: LnTAM is the ln(x) of firm size and DOA is the campaign donations. 822 observations. 274 groups. Significance level: \* at 10%, \*\* at 5% and \*\*\* at 1%.

The Driscoll-Kraay estimator, at the 5% level of significance, confirms the expected effect of the H<sub>3</sub> hypothesis, suggesting that a positive relationship was found between the political connections, estimated through proxy donations (DOA), and the degree of internationalization of companies.

These results corroborate the studies by Holburn and Zelner (2010), which found that the greater the political capacity of the organization, the lower its aversion to investments in countries with higher political risks, Costa et al. (2013), who found strong evidence of political connections as a plausible explanation for the expansion and diversification of Brazilian business groups, Du and Luo (2016), whose research indicated that political connections play an important role in determining the internationalization strategy of emerging market companies, and Pimentel (2017), who noted that politically connected firms are more involved in international expansion strategies than non-connected ones.

The control variable size (LnTAM) presented as positive and significant at 1% (p-value null), suggesting that the larger the firm size, the greater its degree of internationalization.

## 5 CONCLUSION

This paper aims to evaluate the influence of political connections on the performance of companies in Brazil. Three research hypotheses were developed based on the premise that political connections can bring benefits to firms: (i) H<sub>1</sub>, which addresses the preferential access of firms to development banks credit; (ii) H<sub>2</sub>, which seeks to understand the relationship between firm-government connections and preferential access to development banks equity participation; and (iii) H<sub>3</sub>, which seeks to know if politically connected firms tend to expand internationally more than unconnected ones.

To understand the dynamics between the elections and the analyzed variables the Driscoll-Kraay model with robust standard error was adopted, as some regression assumptions were violated - normality, heteroscedasticity, and autocorrelation of residues -, as recommended by Wooldridge (2010) and Hoechle (2007).

Evidence obtained using Driscoll-Kraay data regression tests brought important insights to the research hypotheses: (i) the variable indicating political connection in firms was positive and significant at level 1% to explain the access to BNDES credit, suggesting that there are clues that confirm the H<sub>1</sub> hypothesis, that politically connected firms tend to have preferential access to BNDES credit; (ii) the variable that manifests the presence of a political connection was positive and significant at level 1% to explain the BNDESPar equity participation in organizations, bringing evidences that confirms the H<sub>2</sub> hypothesis, that politically connected firms tend to have preferential access to BNDESPar equity participation; and (iii) the variable that suggests the existence of political connections in companies was positive and significant at level 5% to explain the degree of internationalization of the firms, indicating that there are clues that confirm the hypothesis H<sub>3</sub>, that politically connected firms tend to expand internationally more than the non-politically ones.

The control variable size (LnTAM) was negative and significant at 1% (p-value null) to explain the access to BNDES credit and the BNDESPar equity participation in firms, suggesting that there is evidence that the larger the size of the firm, the lower the amount of BNDES financing obtained by the companies, as well as the BNDESPar equity participation in corporations. On the other hand, this variable proved to be positive and significant at level 1% (p-value null) to explain the degree of internationalization of organizations, suggesting that the larger the firm size, the more internationalized it will be.

The contribution of this research to the set of works developed for the study of the firm-government relationship in the literature includes, besides the empirical results about the potential benefits to firms, through variables still little explored in the literature, the aim of filling a few gaps left by the available studies on the subject, in terms of sample coverage, timeframe and econometric models used. By filling in some of these gaps, this paper expands the academic literature on the effects of political connections, contributing to both the debate on the electoral campaign funding model in Brazil, which was in force until 2015, and which authorized contributions to political campaigns by individuals and legal entities, as well as the new rules for electoral contributions, adopted as of the municipal elections of 2016, and which prohibited donations by legal entities. With regard to the previous electoral campaign financing model, the results of this research may, for example, be used for the preparation of regulatory policies for financing and investments made by BNDES itself, as well as tools for monitoring and control of the political influence in the decisions of the international expansion of the firms. Regarding the new model of electoral contribution, this work can be used, for example, as a basis for evaluating the benefits of the new proposal.

In general, the evidence found in this article supports the recent change in Brazil's electoral financing system, since the new model has the potential to reduce political influence in companies since these are prohibited from donating to the campaigns elections. This effect brings in the possibility for the development of new academic studies that could confirm or refute this hypothesis. Other suggestions for future studies include the analysis of the probable alternative forms for the financing of electoral campaigns.

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