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Political Connections, Firm Value and Performance in Brazil

Mestrado em Administração

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Dissertação de mestrado apresentada ao Programa de Pós-Graduação em Administração, Instituto Coppead de Administração, Universidade Federal do Rio de Janeiro, como parte dos requisitos necessários à obtenção do título de Mestre em Administração.

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CARLOS EDUARDO FRANCO RUSSO

POLITICAL CONNECTIONS, FIRM VALUE AND PERFORMANCE IN BRAZIL

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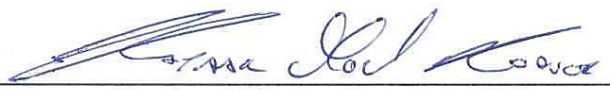

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RESUMO

RUSSO, Carlos Eduardo Franco. POLITICAL CONNECTIONS, FIRM VALUE AND PERFORMANCE IN BRAZIL – Rio de Janeiro, 2019. 55 fls. Dissertação (Mestrado em Administração) – Universidade Federal do Rio de Janeiro – UFRJ, Instituto Coppead de Administração, 2019.

A existência de uma relação próxima entre o Estado, em todas as suas esferas, e a iniciativa privada é evidente no Brasil. Esta relação se reflete na presença de políticos nos conselhos das principais empresas brasileiras. Este estudo teve como objetivo analisar o impacto de conselhos politicamente relacionados no valor e performance das empresas que compõem o índice IBrX-100. Para tal, foram identificados todos os membros titulares que figuraram nesses conselhos de administração desde 2010 e foi criado um índice que indica quais empresas possuem os conselhos de administração mais politicamente relacionados. Os critérios para identificar um conselheiro politicamente relacionado envolveram, entre outros, ter ocupado cargo eletivo ou ter recebido indicação direta de político ocupante de cargo eletivo. Como resultado da pesquisa, se verificou uma relação negativa, e estatisticamente significativa a 1%, para performance (ROA) e uma relação negativa, porém não estatisticamente significativa a 1%, para valor (Price-to-Book). Os resultados indicam que que conselhos com alto nível de influência política no Brasil contribuíram negativamente para o resultado das empresas analisadas, o que reforça a tese de que, no Brasil, os fatores negativos ligados à presença de políticos nas empresas superam os potenciais ganhos relacionados à influência desses agentes.

ABSTRACT

RUSSO, Carlos Eduardo Franco. POLITICAL CONNECTIONS, FIRM VALUE AND PERFORMANCE IN BRAZIL – Rio de Janeiro, 2019. 55 fls. Dissertação (Mestrado em Administração) – Universidade Federal do Rio de Janeiro – UFRJ, Instituto Coppead de Administração, 2019.

The existence of a close relationship between the Government, in all its levels, and the private sector is evident in Brazil. This relationship is reflected by the presence of political members on the boards of the main Brazilian companies. This study aimed to analyze the impact of the presence of politically related board members on the value and performance of the companies that make up the IBrX-100 index. To this end, all the members who have served on these boards since 2010 have been identified and an index has been created which indicates which companies have the most politically related boards of directors. Criteria for identifying a politically related board member involved, among others, having held a position as an elected official or received a direct nomination from an elected official. As a result of the research, it was found a negative and statistically significant relationship at 1% for performance (ROA) and a negative, but not statistically significant, relationship at 1% for value (Price-to-Book). The results indicate that boards with a high level of political influence in Brazil contributed negatively to the results of the companies analyzed, which reinforces the thesis that in Brazil the negative factors related to the presence of politicians in companies surpass the potential gains related to the influence of these agents.

SUMÁRIO

1. Introduction 11
2. Literature Review and Hypothesis 15
2.1. Background of Corporate Governance in Brazil 15
2.2. Different approaches to test political connection 16
2.3. Political influence and its impact on corporate governance, firm value and performance 18
2.4. Hypothesis 23
3. Data and Methodology 24
3.1. Data and Sample 24
3.2. Description of variables and model 25
3.3. Index Creation Process 28
3.4. State-Owned Enterprises and Politically Connected Firms 30
4. Results and Analysis 31
4.1. Summary of political ties in boards 31
4.2. Summary Statistics 33
4.3. Multivariate Analysis 42
4.4. Robustness Test 47
5. Conclusions 50
REFERENCES 53

LISTA DE TABELAS

Table 1 – Different methods to measure political connectedness

Table 2 – Summary of variables and selected measures

Table 3 – Political ties in boards per role performed in the public sector

Table 4 - Summary statistics for the full sample

Table 5 - Simple t-tests for summary statistics - PC firms vs non-PC firms (full sample)

Table 6 - Summary statistics for non-State-owned Enterprises (Non-SOE subsample)

Table 7 - Simple t-tests for summary statistics - PC firms vs non-PC firms (non-SOE sample)

Table 8 - Summary statistics for different portfolio sorts based on the LN (PC Index)

Table 8.1 - Simple t-tests for summary Statistics – Group A vs Group C (PC Firms)

Table 9 - Multivariate Analysis Simple Linear Regression

Table 10 - Multivariate Analysis Cross-Section Random Effects (Full Sample)

Table 11 - Multivariate Analysis Cross-Section Random Effects (Non-SOE subsample)

Table 12 - Robustness check Multivariate Analysis Cross-Section Random Effects (Full Sample)

Table 13 - Multivariate Analysis Cross-Section Random Effects using the natural logarithm of the number of Tier A board members in each company (Full Sample)

Appendix 1 - Summary Statistics of PC Index per Company

LISTA DE FIGURAS

Figura 1 - Index construction

1. Introduction

Political connection is a double-edged sword. On the one hand, there is risk of expropriation when politically connected individuals are acting on behalf of the government in state-controlled firms (Ang, Ding and Thong, 2013). On the other hand, political connection might lead to easier access to debt finance, lower taxation, awards of public contracts and relaxed regulatory requirements (Niessen, Alexandra; Ruenzi, 2009). Since the literature has produced mixed findings on the net effects of political connection to firms, as we will see in further details in the literature review part, the reality of each country should be investigated separately.

While political connections can bring benefits, arguments from the corporate governance literature suggest that the agency problem and governance issues may harm politically-connected firms due to firm value-reducing rent-seeking activities of politicians and their agents. In such case, those individuals might act to divert resources from firms to favor either individual or governmental interests.

For instance, Shleifer and Vishny (1994) describe some sources of political extraction of benefits. In order to gain political support, politicians may demand (1) excess employment, (2) production of goods wanted by politicians instead of by consumers, (3) location of facilities in politically desirable instead of economically attractive areas, (4) pricing below marginal costs intended at bringing benefits to politically important individuals or groups. Their rationale is that state-owned firms change from efficiency and profitability towards other government-imposed preferences. Inefficiency of state-owned firms is a result of political pressure from politicians who control them.

Qian, Pan and Yeung (2011) points out that expropriation by the controlling owners (mainly through self-dealing and tunneling) is more evident in politically connected companies. Chaney, Faccio and Parsley (2011) found that politically

connected firms worldwide report lower quality earnings. All these findings are consistent with the prior research (e.g. Guedhami and Pittman, 2006) on the relation between lower quality accounting information and expropriation activities.

Alternatively, the presence of politically connected individuals in organizations might positively impact value and performance. Faccio (2006) verifies some possible explanations for that, e.g., the preferential treatment given by the government itself or government owned enterprises, lighter taxation or relaxed regulatory oversight. It can also involve imposing tariffs on competitors or awarding valuable government contracts (Goldman *et al.*, 2006).

The benevolence with politically connected firms is intrinsically related to the quality of politicians and institutions in each region. According to Goldman et al. (2006), in countries with a weak legal system and a high level of corruption it has been shown that political connections are valuable to firms. To Ang, Ding and Thong (2013), when the value of political connection is found to be high, they are often in countries with higher levels of political corruption.

Political connectedness, in theory, could act as an inducer of good practices in corporate governance if such relations were conducted in the best interest of all shareholders and society. For instance, politically connected board members could have a positive effect in governance by providing an independent view, which could potentially result in better performance (Niessen, Alexandra and Ruenzi, 2009).

Nevertheless, the literature indicates that this is rarely the case. When the relation between political connectedness, value and performance is found to be high it is usually attributed to unfair advantages conceded to firms. Alternatively, political connectedness might provoke an adverse effect in corporate governance. Rent-seeking[1] activities from politicians and their agents are causes

[1] Rent-seeking is the use of the resources of a company or an organization to gather economic gain from it without reciprocating any benefits through wealth creation. It is the case, for example, of directors that represent government in companies. Many times, the sole intent of the designated director is to

for value reduction (Neselevska, 2013). Likewise, the risk of perpetrating either illegal or anti-ethical behavior can potentially negatively affect the company in the long-term.

Overall, the literature has studied the impact of several governance-related variables on firm value and performance (e.g., Leal, Carvalhal and Iervolino, 2015, and Black, Carvalho and Sampaio, 2014). Many researches have also analyzed the specific impact of political connections (e.g., Goldman *et al.*, 2006, and Faccio, 2006). However, results should be taken with caution. Since the causes and consequences of politically connected firms are different worldwide, any results should be analyzed through the lens of each reality. Every new research on this subject contributes to understand the importance of this variable in each country.

Our objective with this research is to contribute to the literature by understanding whether political connectedness, represented and proxied by the presence of politically connected board members, is positively or negatively associated with performance and firm valuation. Differently from other studies conducted with Brazilian firms (e.g., Arvate, Barbosa and Fuzitani, 2013; Martins *et al.*, 2013) which focused on the abnormal returns of stocks following events such as donations to campaigns (Arvate, Barbosa and Fuzitani, 2013) and nominations of politically connected boards members (Martins *et al.*, 2013), we will analyze the political variable looking at its impact in accounting and market-related figures in a long-term perspective.

Brazil is an interesting case for this research since the country has been facing a series of large investigations aiming at crimes of corruption involving public officials and private corporations. The outcomes of these investigations led to several arrests of influential politicians and businessmen in recent years. In this context, Brazil was ranked 96 out of 180 countries in a 2017 research conducted

collude with the government to divert resources from the company. The “Lava-Jato” case in this sense is emblematic.

by non-governmental organization Transparency International. The country has been losing positions in recent years and scored only 37 out of 100 points in the last report, its worst grade ever.

To test the net effect of political connections in Brazil we examined the impact of politically connected directors on the value of local firms. Many Brazilian companies, being publicly or privately controlled, have employed politically connected individuals in their boards for different reasons, either because they are controlled by the government, government-controlled companies own some stake in the firm or simply because the individual was invited to be part of the board.

In order to identify the politically connected members, we examined firm's annual reports ("Formulário de Referência") released from 2010 to 2017. We manually input all the data including name and experience of board directors in more than 600 firm-years observations.

This paper is organized as follows. Section 2 presents the literature review and a table summarizing previous research concerning influence of political connections on firm value and performance. Based on this review we were able to formulate our hypothesis for the Brazilian market. Section 3 describes terminology and data used in the present research. In this section we also explain in detail the methodology applied in order to analyze the data. Section 4 analyzes the data to test the hypothesis presented in section 2. We preliminarily conducted a univariate analysis to test for statistically significant differences between different groups with different levels of political influence. After that we conducted a multivariate analysis on the variables of interest – Price-to-Book and ROA - controlling for other variables found in the literature. Finally, Section 5 presents our conclusions.

In the present research, firms with no political connections outperformed the group of politically connected firms. To proxy and assess the level of pollical

connectedness in each firm, we created an index called the PC index. The univariate analysis gave us a preliminary view that political connections could be an important factor in value and performance. Even the group of firms with a small number of politically connected board members had a worse performance than the group of non-politically connected firms. To confirm this relationship and to control for several accounting and governance related measures found in the literature we conducted a multivariate analysis using PB and ROA as dependent variables. The results using the mean value of this metric as a time invariant variable supported our hypothesis about the influence of the PC index in ROA – at 1% level – and in Price-to-Book – at 5% level.

2. Literature Review and Hypothesis

Corporate Governance can be interpreted as a set of mechanisms through which outside investors protect themselves against insiders, such as managers, directors and controlling shareholders, who might be diverting resources for their own benefits or assuming disproportional risk at the expense of minority shareholders and creditors (La Porta *et al.*, 2000).

2.1. Background of Corporate Governance in Brazil

The literature regarding the relationship between corporate governance practices in Brazil and its impacts on value and performance has emphasized major aspects of governance in listed firms. At least two comprehensive indexes in this subject were developed by different authors. The first, developed by Leal, Carvalhal and Iervolino (2015), is the Corporate Governance Index (CGI). The index is composed of 20 questions answered from public information disclosed by listed companies regarding i) disclosure of information, ii) board composition

and functioning, iii) ownership and control structure and iv) shareholder's rights. The questionnaire was applied in a sample of listed firms in the period from 2004 to 2013 and the results suggested improvements in corporate governance practices in the period analyzed. The same authors also observed a positive impact of better corporate governance practices in value and performance (Silva and Leal, 2005).

The latter index, formulated by Black, Carvalho and Sampaio (2014), is the Brazil Corporate Governance Index (BCGI). It is a survey-based index and the questionnaire was applied by the authors three different times (2004, 2006 and 2009) to assess the evolution of corporate governance practices in Brazil. The authors measured aspects such as i) board structure, ii) ownership, iii) board procedures, iv) related party transactions, v) shareholders rights and vi) disclosure of information. The conclusions were similar to those of Leal, Carvalhal and Iervolino (2015) and the regression results showed that a larger index score reflected in a significant increase in Tobin's Q.

The improvements in corporate governance practices came together with the creation of new listing standards such as Novo Mercado in the beginning of the 21st century (Black, Carvalho and Sampaio, 2014). The authors also suggest that better governance practices fostered the new wave of IPOs in Brazil in the last years of the 2000's.

2.2. Different approaches to test political connection

The literature presented with different forms of defining political connectedness in firms and different ways of analyzing its effects. With regard to the type of political connection investigated, authors such as Faccio (2006), Goldman *et al.* (2006) and Ang, Ding and Thong (2013) consider the presence of politically connected members in firm's boards of directors. Other researchers preferred to analyze the ownership structure (Ang and Ding, 2006) or donations

to campaigns (Cooper, Gulen and Ovtchinnikov, 2010; Arvate, Barbosa and Fuzitani, 2013) in order to measure this variable.

The methodology chosen by the author to measure the variable political connection is central to the hypothesis the researcher wants to prove. The presence of politically connected directors in companies, for example, can have short term and long-term effects. One might want to test the relationship between firm value and the studied variable for long-term effects or test the impacts of nominations of board members in stock prices to measure short-term effects (event studies).

Below we have a framework that tries to classify the literature according to the type of variable that represents political connectedness and the methodology applied.

Table 1 – Different methods to measure political connectedness

Method	PC independent variable	Country	Authors
Linear Regression on cross-section of cumulative (abnormal) stock returns following nomination of politically connected board members	Election of board members	Brazil	(Martins *et al.*, 2013)
Linear Regression on future returns	Political Index given by the number of supporting candidates	USA	(Cooper, Gulen and Ovtchinnikov, 2010)
Regression discontinuity design in Cumulative Abnormal stock returns	Donations to campaigns	Brazil	(Arvate, Barbosa and Fuzitani, 2013)
Regression discontinuity design in Cumulative Abnormal returns (CARs) following gubernatorial elections won by small margin	A firm is defined as politically connected if one of its directors and a governor elected by small margin graduate from same university program within a year	USA	(Do *et al.*, 2014)
Linear Regression between Firm Value and PC variable controlling for other governance-related and market/accounting-related variables	Government ownership	Singapore	(Ang and Ding, 2006)

Relationship between Firm Value and Government Ownership	Political Connection (PC) of board members	Singapore	(Ang, Ding and Thong, 2013)
Regression on cross-section of cumulative abnormal returns following	Donations to campaigns	Brazil	(Claessens, Feijen and Laeven, 2008)
Cross-sectional analysis of cumulative abnormal returns (CARs) following: i) Nomination of politically connected board members; ii) Republican win in presidential election	Politically connected board member (Republican and Democrat party)	USA	(Goldman *et al.*, 2006)
Panel regression on a Political Connection Index	Political Connection index given by the proportion of politically connected CEO/directors in firms	China	(Chen *et al.*, 2017)

2.3. Political influence and its impact on corporate governance, firm value and performance

Faccio (2006) was one of the first authors to conduct a cross-sectional study between different countries (over 20,000 listed companies from 47 companies). The criteria used for firms to be considered politically connected was that one of its large shareholders or top officers is a member of parliament, a minister or is closely related to top politician or party. The author found that connections are more common in countries with greater corruption levels and less common in countries where regulations pose limits on political conflicts of interest.

Neselevska (2013) studied the impact of state ownership in corporate governance quality. The author used the same criteria used by Faccio (2006) to define a politically connected company and a third-party assessment of corporate governance quality of Ukrainian companies to find some relationship between them. The results showed a low level of corporate governance quality in state-controlled firms.

Yang, Lian and Liu (2012) investigated how political ties in privately held companies in China could help these companies to acquire more loans from banks and, as a consequence, stimulate growth of firm value.

Ang and Ding (2006) studied the impacts of corporate governance on firm value comparing a group of government-linked corporations (GLCs) with a control group of non-GLCs in Singapore. They compared financial and market performance of GLCs with non-GLCs, where each had a diverse governance structure with the main difference being the government ownership. The rationale behind this study was that GLCs in Singapore had better corporate governance practices by the time the sample was analyzed. To be considered a GLC, Temasek, the government-owned holding company should hold an effective ownership interest of around 20% or more in the listed company. Comparing the two groups using several market-based valuation measures and account-based measures of internal process efficiency the authors found statistically significant results among the two groups. The authors also investigated the relationship between firm valuation, government ownership and other governance factors, while controlling for cross-sectional differences. The authors calculated Tobin's Q as a proxy for firm value using the formula suggested by Chung and Pruitt (1994). The conclusion of the panel and pooled regression analysis was that there is a positive correlation between government ownership and firm value in Singapore.

Ang, Ding and Thong (2013) also studied the effects of political connections on company value and performance in the same country. The capital markets in Singapore are to some extent similar to the Brazilian markets due to the fact that equity is typically held by a small group of investors including the government, entrepreneurial families and multinational groups. Similar to Brazil, boards of many companies are composed by senior civil servants and former politicians, mainly in GLCs. Since Singapore is a country well known for having strong institutions and a low level of corruption, the main hypothesis of this article was

that, in the absence of political corruption, political connections within firms would have little to no effect on firm value. The authors analyzed a sample of 97 politically connected companies and 290 nonpolitically connected companies which were newly listed in the time frame between 1998 and 2006. The authors measured the relationship of political connections in boards and firm value via a panel regression controlling for other governance-related variables, e.g., duality, percentage of independent directors and a dummy variable attesting whether the company was government linked or not, and market-based and accounting-based variables such as underpricing, leverage and ROA. As a proxy of firm valuation, the authors used industry-adjusted Tobin's Q valuation for 1, 2 and 3 years after IPO and the median industry-adjusted Tobin's Q 3 years after IPO listing. The results of OLS regressions using Q as the dependent variable showed that political connection, represented as a percentage of political connected directors on the board, didn't have any statistically significant power in explaining firm value. As a consequence, the null hypothesis that stated that political connection in boards is not associated with firm value couldn't be rejected. The article also investigated that, in certain industries, politically connected directors might have an impact on firm valuation. Indeed, for those industries that carry grater regulatory risk, the variable political connections showed a positive and significant value.

Fan, Wong and Zhang (2007) provided different findings from those of Ang, Ding and Thong (2013). The authors found that from 790 newly partially privatized firms in China, those with politically connected CEOs underperform those without politically connected CEOs on three-year post IPO stock returns and have worse three-year post-IPO earnings growth, sales growth and other accounting measurements. Among the reasons provided by the authors, rent seeking, extraction and limited protection against expropriation are one of the reasons of government intervention. Government expropriation is a concern in several countries particularly those in sub-Saharan Africa and Central America

(Acemoglu and Johnson, 2005). Indeed, cash flow rights being diverted by politicians to pay political campaigns and personal expenses is a major concern in countries with high corruption perception. The main goal of the study was to analyze the effect of governmental influence on a firm's long term and how governance and board composition is related to this. The conclusion was that the accounting and stock return performance of the group of companies with politically connected CEOs were poorer than that of their counterparts. The property rights constraints faced by the firms, namely the non-transferability of state ownership and the right to name board directors affects firm performance, board professionalism and governance. According to the authors, by removing these constraints via future reforms, affected companies should expect an increase in productivity, performance and value.

Martins *et al.* (2013) studied the effects of the appointments of board members with political experience in Brazil on stock prices between 1999 and 2011. The authors used the event study method to analyze cumulative abnormal stock returns in the days before and after the nomination of politically connected members. The authors are in line with previous studies from other researchers, such as Goldman *et al.* (2006), that states that political connections of members tends to increase the price of the stock in the short term. The results of this study showed that the market reacts positively to the nomination of politically connected board members, although this is effect is not maintained after the second day of the event.

Moreover, and in contrast with other findings, Mrad and Hallara (2012) studied the impact of residual public ownership in French companies. They found that a higher level of government ownership in companies is related to better performance and firm value. They assert that public ownership can give two contradictory signals about the value of a firm. Whereas on one hand, there is gain for the investors in terms of its access to financial resources and institutional knowledge of the government; on the other hand, the risk of political interference

and rent-seeking activities might arise from the presence of such public ownership and control. Given the mixed effects of public ownership, we assume that this relationship may reflect a curvilinear relationship, such that the value of the firm first increases (due to the confidence of investors) then decreases as the level of state ownership increases (due to the risk of political interference). With reference to the results of previous work they assume the existence of nonlinear relationship (concave) between state ownership and performance of the privatized company.

Non-linearity in the relationship between firm value and political connections was also found by Chen *et al.* (2017). The authors analyzed a group of around 1000 Chinese companies in the period between 2004 and 2009. They created a political connection index for each company based on the quality of the connections. They were assessed based on the positions that politically connected directors had occupied before. By dividing politically connected firms into sub-samples of State-owned enterprises (SOE) and non-State-owned enterprises, the authors got to interesting conclusions. Both sub-samples were divided into quintiles and whereas in the SOE subsample firm value declined with the increase of the PC index, in the non-SOE subsample a moderate level of political connectedness presented better results (Quintile 2 and Quintile 3).

Do *et al.*(2014) studied the impact of networks of politicians and directors on firm value. Differently from other authors the methodology used was the regression discontinuity design to identify the value of political connections between directors and gubernatorial candidates elected in a closely contested race. The results pointed out to more valuable political connections when firms had supported winning candidates from more corrupt states.

Claessens, Feijen and Laeven (2008) applied a methodology similar to Do *et al. (*2014) to analyze the role of contributions to political campaigns and the effects in growth in bank leverage and cumulative abnormal returns of stocks from companies listed in the Brazilian stock exchange. The period analyzed was

between 1998 and 2002 and encompassed the tenure of President Fernando Henrique Cardoso. The authors found that contributions to congress campaigns were a significant variable to explain cumulative abnormal returns at the 1% level. They also showed that significance held true also for growth in bank leverage at the 1% level. Since most of the financing to these private groups were channeled via subsided loans, firms were benefiting from political connections with members of parliament. The authors also concluded that the overall cost from this rent seeking activity was around 0.2% of gross domestic product.

2.4. Hypothesis

The evidence from the literature and the discussions from the previous sections led us to formulate our research hypotheses:

“Political connectedness, proxied by the presence of directors with relevant public experience, is significantly associated with performance and value in Brazil.”

3. Data and Methodology

The purpose of this dissertation is to analyze the relationship between the degree of political connections within Brazilian firms and its valuation and performance. In order to attain that goal, we investigated board composition of companies belonging to the Índice Brasil 100 (IBrX-100) as of 2018.

3.1. Data and Sample

Our sample is composed of data from 2010 to 2017 for 93 Brazilian companies that figured in IBrX-100 in the first quarter of 2018. For the time being, we considered only companies included in the index as of 2018 due to time restrictions to develop this master thesis, but we acknowledge that this may introduce survival bias. We further excluded from the data financial institutions and companies with incomplete or unavailable information in the period from 2010 to 2017 and 85 firms remained.

The theoretical portfolio of the index is formed from the top 100 assets traded in B3 according to the Index of Negotiability (IN) and a set of liquidity restrictions given. It is rebalanced every 4 months in fixed periods: from January to the end of April, from May to the end of August and from September to the end of December(BM&F Bovespa, 2013).

We collected all accounting and market-related information for the time period assessed from the Bloomberg database and all the information related to the work experience of board members were extracted from a yearly mandatory disclosure requested by Comissão de Valores Mobiliários (CVM) called *Formulário de Referência* (FR), which provides information about board composition annualy.

Our full sample covers data from 2010 to 2017, with a total of 631 firm-year observations. The time period from 2010 to 2017 was chosen because the oldest FR in the CVM database are from 2010. CVM requires firms to publish the biographies and curriculum vitae of executives in the FR.

3.2. Description of variables and model

We employed a multivariate analysis to test our hypothesis. We looked at the relationship between performance / firm value and political connectedness by conducting, respectively, linear regressions of ROA and Price-to-Book against our variable of interest and other crucial control mechanisms that might be associated with the dependent variable. Also, according to Silva and Leal (2005), those control variables are investigated in order to control for endogeneity in case the control variables are determinant of corporate governance practices.

In line with other studies (e.g., Ang, Ding and Thong, 2013; Chen *et al.*, 2017), we included several control variables in addition to the variable of interest (Political Connection Index): (1) firm characteristics, including leverage, firm size and ROA (in the case of Price-to-Book Regression); (2) corporate governance characteristics, including the percentage of independent directors, CEO/chairperson duality, board size, listing segment and government control. Table 2 provides detailed definitions of these variables.

Table 2 – Summary of variables and selected measures

Variable	Abbreviation	Measures	Bibliographic references
Return on Assets	ROA	EBITDA / Total Assets	(Silva and Leal, 2005) (Ang, Ding and Thong, 2013)
Price-to-Book	PB	Market Cap / Total Equity	
Political Connection Index	LN (PC Index)	See Section 3.3	Adapted from Chen *et al.(*2017)
Firm Size	SIZE	LN (Total Assets)	(Silva and Leal, 2005)
Independent Directors	INDEPENDENT	% of independent directors	(Chen *et al.*, 2017)
Duality	Duality	Dummy (1, 0): CEO and Chairperson are the same person	(Chen *et al.*, 2017)
Board Size	Board	Number of directors in the board	(Chen *et al.*, 2017)
Listing Segment	NM	Dummy (1, 0): 1 if Company belongs to "Novo Mercado" listing segment, 0 otherwise	
State Owned Enterprises (Dummy)	SOE	Dummy (1, 0): State Ownership interest > 30%	
Leverage	LEV	Short and Long Term Debt / Total Assets	(Silva and Leal, 2005)
Sector (Dummy)	Sector	macro sectorial classification of firms in the B3 website	(Silva and Leal, 2005)
Year (Dummy)	Year		(Silva and Leal, 2005)

Source: author compilation

In order to analyze the aforementioned relationship, we used Price-to-Book (PB) and return on assets (ROA) as dependent variables. Return on assets is defined as being EBITDA/Asset ratio. The Price-to-Book ratio is calculated as the market value of a company divided by the book value of the firm's assets.

The control variables used in this model have the bibliographic references revealed in the table above and are common in other similar studies. The control variables concerning firms' accounting and market related characteristics are Leverage, Size and ROA (used as a control variable when Price-to-Book is the dependent variable).

The control variables concerning firms' corporate governance characteristics are Percentage of Independent Directors, Duality, Board Size, Listing Segment and State Ownership (SOE).

We also included industry and year dummy variables to control for specific characteristics of different sectors of the economy and macroeconomic changes during the period studied. We assumed that each sector is in a different stage of maturity and might have different incentives from government or have same peculiarities that influence firm valuation and performance. The sectors considered are those indicated in macro sectorial classification of firms in the B3 website totaling ten different sectors (Industrial Goods, Cyclical Consumption, Non-Cyclic Consumption, Financial and others, Basic Materials, Oil Gas & Biofuels, Healthcare, Information Technology, Telecommunications and Public Utilities).

In addition to the inclusion of several control variables, robustness checks were performed using alternative definitions of political connection. These include (i) using political connection as a dummy variable, taking on the value of one when at least one director is politically connected (Yang, Lian and Liu, 2012) and (ii) using political connection index as an invariant variable calculated as the average value of the index in the period assessed.

We estimate the regression models as follows:

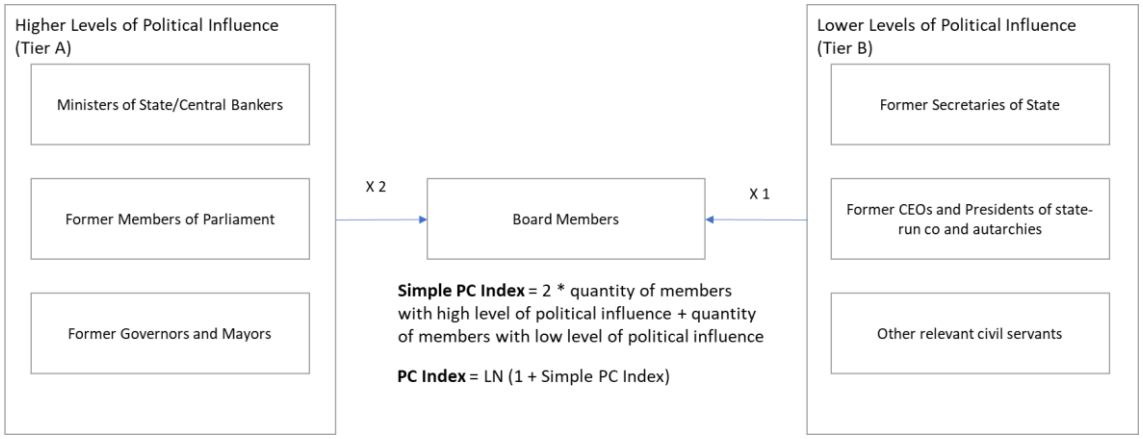
$$PB_{it} = \alpha + \beta_1 * PC\ Index_{it} + \sum_{=2}^{n} \beta_n * CONTROL_{it}$$

$$ROA_{it} = \alpha + \beta_1 * PC\ Index_{it} + \sum_{=2}^{n} \beta_n * CONTROL_{it}$$

3.3. Index Creation Process

The information about the background of politically connected board members were obtained checking their resumé in “Formulário de Referência” and they were classified in different functions performed in the public sector. We then divided this politically connected board members into two different groups according to their assumed power and influence in the public sector.

Figure 1 – Index construction



The index was adapted from Chen *et al.* (2017) and is calculated by summing the number of politically connected members in the boards attributing different weights for the different levels of influence exerted by them. As seen in figure 1, former or current civil servants with higher levels of political influence (Tier A) were given weight 2 in the calculation of PC Index for a given firm-year observation. Ministers of state, central bankers, elected officials, such as former members of parliament and governors/mayors were included in this group.

Former or current civil servants with lower levels of political influence (Tier B) were given weight 1 in the calculation of the PC Index for a given firm-year observation. Former secretaries of state (central, state and municipal levels), former CEOs and Presidents of state-run companies or autarchies and other relevant civil servants in the judiciary, legislative and executive powers were included in this group.

Because the distribution of the Simple PC index is highly skewed to the left, PC Index was transformed using natural logarithm, as follows: LN (Simple PC Index) = Natural Logarithm (1 + Simple PC Index).

3.4. State-Owned Enterprises and Politically Connected Firms

State-Owned enterprises (SOEs) are government-controlled companies, which stands for companies in which the state is the largest shareholder with at least 30% of voting power; otherwise, the firm is classified as a non-SOE. Politically connected firms (PC Firms) are companies in which there were at least one politically connected board member in the board of directors during the period between 2010 and 2017; otherwise, the firm is classified as a non-PC Firm.

The SOE and non-S.O.E. subsamples have 79 and 552 firm-year observations, respectively. Regarding the status of political connectedness, there are 454 observations of politically connected firms (PC firms) and 177 observations of non-politically connected firms (non-PC firms).

4. Results and Analysis

4.1. Summary of political ties in boards

We first examined firm annual reports released from 2010 to 2017, focusing on the biographies of board members to retrieve information on (1) the names of those who are politically connected; (2) their position(s) in the public sector; (3) the relevance of each political position; (4) their tenure in the firm's board of directors. If an annual report indicates no political experience for a director, we then conduct an internet research to validate that. All information was manually recorded in the database. Since some directors performed more than one role during their careers as civil servants, the summation of the categories taken separately are not equal to the total number of politically connected board members (270) observed.

Table 3: Political ties in boards per role performed in the public sector

Types of Political Connection in Boards	**No. of Directors**	**No. of firms**
Politically connected board members	270 (16%)	59 (64%)
Public Officials with superior level of Political Influence (Tier A)		
Former Ministers of State / Central Bankers	45	30 (32%)
Former Members of Parliament	30	15 (16%)
Former Governors and Mayors	12	8 (9%)
Public Officials with minor level of political influence (Tier B)		
Former CEOs and Presidents of state-run companies and autarchies	102	41 (44%)
Former heads of central, state and municipal level departments	163	43 (46%)
Other relevant civil servants in the judiciary, legislative and executive branches	15	13 (14%)

Notes:

1. This table reports the number of directors and firms with political ties. We included here the financial firms omitted in the univariate and multivariate analysis, totaling 93 firms.
2. Elective positions in Brazil include executive roles such as President (national), Governors (state) and Mayors (municipality) and legislative roles from central (national), regional (state) and local (municipality) levels

Table 3 presents summary statistics of the types of political connectedness found in our analysis. In this summary we kept the financial institutions and firms with unavailable financial information in the period since we are not analyzing any financial indicator. Thus, sample size in Table 3 equals 93 firms and 1680 distinct board directors.

Table 3 demonstrates that over 16% of all sitting board members (excluding substitutes) from 2010 to 2017 in companies composing the sample (93 firms including financial firms and those firms with unavailable financial information in the period) had had previous experience in relevant positions in the public sector and are considered politically connected. Around 65% of the analyzed companies had at least one director in the period from 2010 to 2017 with some degree of political connection. As mentioned above, we also divided the roles occupied by these board members in two major groups (superior – Tier A - and minor – Tier B - influence) and subcategories were used to classify the type of role performed in the public sector.

Considering only the roles classified as being of superior influence – Tier A -, almost one third (32%) of the companies employed former ministers of state/central bankers in their boards, 16% of the firms had former members of parliament and 9% of them had former governors or mayors occupying sits in the board.

From those roles classified as being of minor influence – Tier B-, 44% of the companies had former CEOs/Presidents of state-run companies/autarchies. 46% of the studied boards had some current or former heads of departments in national, state or municipal level. Other roles considered as being politically connected were found in the judiciary, legislative and executive powers and were present in 14% of companies' boards.

4.2. Summary Statistics

From our sample of 93 firms we excluded financial institutions and companies with either incomplete or unavailable data. The remaining 85 firms were used for the univariate and multivariate analysis totaling 631 firm-year observations. Table 4 presents statistics of the major variables used in the regression.

In the full sample (Table 4), the studied variable LN (PC Index) ranged from 0 to 2.49, with an average (median) of 0.69 (0.69). Considering the percentage of politically connected board members in each firm-year observation, the data ranged from 0.00 to 0.78, with an average (median) of 0.12 (0.09). The average number of politically connected board members per firm-year observation is 1.10 with the average number of tier A (superior influence) members and Tier B (minor influence) members being 0.35 and 0.75, respectively.

The average (median) Price-to-Book in the sample is 3.29 (1.82). With respect to accounting and market related control variables, the average (median) ROA, leverage and ln (market value) are 5.95 (4.79), 32.32 (31.68) and 9.27 (9.28), respectively.

Regarding corporate governance related measures, the average (median) board size is 8.65 (9.00) with an average of 29.3% being independent directors. CEO/chairperson duality was found in 8.1% of the observations of our sample. Also, 69.3% of the companies analyzed were in the Novo Mercado.

Table 4 - Summary Statistics for the full sample

Variable	Mean	Std	Min	Median	Max
LN (PC Index)	0.69	0.70	0.00	0.69	2.49
Politically connected B.M. (Tier A)	0.35	0.65	0.00	0.00	4.00
Politically connected B.M. (Tier B)	0.75	1.19	0.00	0.00	7.00
% of politically connected board members	0.12	0.15	0.00	0.09	0.78
Price-to-Book	3.29	4.54	-12.82	1.82	51.79
ROA	5.95	8.62	-43.86	4.79	76.45
Leverage	32.32	15.56	0.00	31.68	89.74
LN (Market Value)	9.27	1.32	5.20	9.28	13.71
% of independent directors	0.29	0.21	0.00	0.27	1.00
CEO/Chairperson duality	0.08	0.27	0.00	0.00	1.00
Board Size	8.65	2.26	3.00	9.00	16.00
Novo Mercado	0.69	0.46	0.00	1.00	1.00

Notes:

1. According to our criteria, Tier A positions in the public sector are those occupied by elected candidates and Ministers of State/Central Bankers. Tier B positions are other relevant positions in the public sector including former CEOs of public entities, former head of departments and members of the judicial power.
2. All statistics have 631 firm-year observations

In table 5, we classified the firms in the sample in two groups based on the existence or not of any politically connected member in the board during the period from 2010 to 2017. For PC firms we have 454 firm-years observations and for non-PC firms we have 177 firm-year observations. PC firms have on average a lower Price-to-Book and ROA than non-PC firms and the mean differences tested using simple t-tests are significant. There was no significance for the percentage of independent directors and the existence of duality between the CEO and Chairman. Boards sizes are higher in PC Firms (average of 9.10) than in non-PC-Firms (average of 7.50). Also, interesting to observe that larger and more leveraged firms are more politically connected.

Table 5 - Simple t-tests for summary statistics - PC firms vs non-PC firms (full sample)

Variable	PC firms (N=454)	Non-PC Firms (N=177)	Difference
	Mean	Mean	Mean
PC Index	0.96	0.00	0.96***
Price-to-Book	2.58	4.98	-2.40***
ROA	4.68	9.32	-4.64***
Leverage	33.77	28.41	5.37***
LN (Market Value)	9.59	8.44	1.15***
% of independent directors	0.29	0.30	-0.01
CEO/Chairperson duality	0.09	0.06	0.03
Board Size	9.10	7.50	1.60***

Notes:

* = significance at 10% level (two-tailed test)
** = significance at 5% level (two-tailed test)
*** = significance at 1% level (two-tailed test)

For the purpose of this analysis, we also looked at a subsample with only observations of non-state-owned enterprises (non-SOEs). Table 6 presents the results. The ln (PC Index) ranged from 0 to 1.95, with an average (median) of 0.52 (0.69). Considering the percentage of politically connected board members in each firm-year observation, the data ranged from 0 to 50%, with an average (median) of 8.2% (8.3%). The average number of politically connected board members per firm-year observation is 0.72 with the average number of Tier A (superior influence) members and Tier B (minor influence) members being 0.26 and 0.46, respectively.

The average (median) Price-to-Book in the sample is 3.59 (2.05). With respect to accounting and market related control variables, the average (median) ROA, leverage and ln (market value) are 6.26 (4.83), 32.65 (32.10) and 9.12 (9.15), respectively.

Regarding corporate governance related measures, the average (median) board size is 8.40 (8.00) with an average of 30.9% being independent directors. CEO/chairperson duality was found in 9.2% of the observations of our sample. Also, 74.8% of the companies analyzed were in the Novo Mercado.

Table 6 - Summary statistics for non-State-owned Enterprises (non-SOE) subsample

Variable	Mean	Std	Min	Median	Max
LN (PC Index)	0.52	0.56	0.00	0.69	1.95
Politically connected B.M. (Tier A)	0.26	0.49	0.00	0.00	2.00
Politically connected B.M. (Tier B)	0.46	0.71	0.00	0.00	4.00
% of politically connected board members	0.08	0.10	0.00	0.08	0.50
Price-to-Book	3.59	4.74	-12.82	2.05	51.79
ROA	6.26	9.02	-43.86	4.83	76.45
Leverage	32.65	17.14	0.00	32.10	89.74
LN (Market Value)	9.12	1.25	5.20	9.15	12.75
% of independent directors	0.31	0.21	0.00	0.29	1.00
CEO/Chairperson duality	0.09	0.29	0.00	0.00	1.00
Board Size	8.40	2.18	3.00	8.00	16.00
Novo Mercado	0.75	0.43	0.00	1.00	1.00

Notes:

1. According to our criteria, Tier A positions in the public sector are those occupied by elected candidates and Ministers of State/Central Bankers. Tier B positions are other relevant positions in the public sector including former CEOs of public entities, former executive secretaries and members of the judicial power.
2. All statistics have 552 firm-year observations

In Table 7, we classified the non-SOE firms in two groups based on the existence or not of any politically connected member in the board during the period from 2010 to 2017. For PC firms we have 375 firm-years observations and for non-PC firms we have 177 firm-year observations. PC firms have on average a lower Price-to-Book and ROA than non-PC Firms and the mean differences

tested using simple t-tests are significant. There was no significance for the other variables.

Table 7 - Simple t-tests for summary Statistics - PC firms vs non-PC firms (non-SOE sample)

Variable	PC firms (N=375)	Non-PC Firms (N=177)	Difference
	Mean	Mean	Mean
PC Index	0.77	0.00	0.77***
Price-to-Book	2.90	4.98	-2.08***
ROA	4.85	9.32	-4.46***
Leverage	34.56	28.41	6.16
LN (Market Value)	9.45	8.44	1.01
% of independent directors	0.31	0.30	0.01
CEO/Chairperson duality	0.11	0.06	0.05
Board Size	8.83	7.50	1.33

Notes:

* = significance at 10% level (two-tailed test)

** = significance at 5% level (two-tailed test)

*** = significance at 1% level (two-tailed test)

It is important to analyze the non-SOE subsample separately from the full sample because in theory non-state-owned enterprises have different motivations when they seek political connections. However, the results of the univariate analysis between PC firms and non-PC firms in both samples give us a hint that the presence of politically connected board members might be detrimental to firm value and performance regardless of the intentions pursued by companies when they employ politically connected board members.

In Table 8 we ranked all firms in the full sample according to their level of political connectedness measured by the average score of our LN (PC Index) in the period from 2010 to 2017. We then divided them in 4 groups, being groups A,

B and C politically connected firms with different degrees of intensity and group D for firms which scored 0 in the index (non-politically connected). The politically connected sample was subdivided in 3 subgroups. Group A firms (21 enterprises) have a superior level of political influence within their board compositions in the period between 2010 to 2017, Group B firms (20 enterprises) have a medium level of political influence for the same period and Group C firms (18 enterprises) registered a lower level of political connectedness in the same period according to our criteria. Group D firms (26 firms) are those classified as non-politically connected in previous analysis.

The Appendix 1 shows the companies that belong to each group together with the average PC Index of each company. After having divided the companies in 4 different portfolios we then observed the variables in these subgroups. Group A firms, which includes all state-owned enterprises and other highly connected firms presented the worst performance in terms of ROA and Price-to-Book. In terms of ROA it is interesting to observe that the greater the level of political connectedness of the group the lower the result of this metric. It is especially higher in group D.

Table 8 - Summary statistics for different portfolio sorts based on the LN (PC Index)

		Group A firms (High Level of PC) (N=159)	Group B Firms (Medium Level of PC) (N=159)	Group C Firms (Low Level of PC) (N=136)	Group D Firms (No PC) (N=177)
PC Index	Mean	1.52	0.91	0.35	0.00
	Min	0.00	0.00	0.00	0.00
	Max	2.49	1.79	1.79	0.00
	Stdev	0.52	0.39	0.44	0.00
	Median	1.39	1.10	0.00	0.00
Price-to-Book	Mean	1.30	3.51	2.95	4.98
	Min	0.00	-12.82	0.36	0.52
	Max	5.07	33.06	26.37	51.79
	Stdev	0.83	4.99	3.24	5.88
	Median	1.11	1.75	1.81	3.27
ROA	Mean	4.01	4.72	5.42	9.32
	Min	-13.50	-43.86	-3.28	-13.34
	Max	16.74	54.29	44.03	76.45
	Stdev	5.00	10.28	5.74	10.35
	Median	3.82	3.77	5.09	7.24
Leverage	Mean	29.86	37.41	34.34	28.41
	Min	3.49	1.63	0.00	0.09
	Max	54.77	89.79	65.92	76.75
	Stdev	12.87	18.85	14.13	17.85
	Median	29.22	37.18	36.20	28.99
LN (Market Value)	Mean	10.04	9.34	9.34	8.44
	Min	7.69	6.69	6.69	5.20
	Max	13.71	11.53	11.41	10.65
	Stdev	1.37	1.24	1.01	1.07
	Median	9.76	9.44	9.51	8.47
% of independent directors	Mean	0.26	0.33	0.27	0.30
	Min	0.00	0.00	0.00	0.00
	Max	0.75	0.89	1.00	0.88
	Stdev	0.21	0.23	0.22	0.19
	Median	0.20	0.31	0.25	0.30

CEO/Chairperson duality	Mean	0.08	0.14	0.04	0.06
	Min	0.00	0.00	0.00	0.00
	Max	1.00	1.00	1.00	1.00
	Stdev	0.27	0.35	0.19	0.24
	Median	0.00	0.00	0.00	0.00
Board Size	Mean	9.43	8.87	8.96	7.50
	Min	3.00	5.00	5.00	3.00
	Max	16.00	16.00	13.00	12.00
	Stdev	2.58	2.17	1.81	1.86
	Median	9.00	9.00	9.00	7.00

Notes:

1. We ranked all firms in the full sample according to their level of political connectedness measured by the average score of our LN (PC Index) in the period from 2010 to 2017. We then divided them in 4 groups, being groups A, B and C politically connected firms with different degrees of intensity and group D for firms which scored 0 in the index (non-politically connected).

Since we had already tested the difference between Non-PC Firms and PC Firms in tables 5 and 7, we decided to go further and break down the PC group in 3 different sub-groups to see how different degrees of Political connection can impact the variables of interest.

Additional t-tests were conducted in table 8.1 for Price-to-Book and ROA in order to find significant difference between groups A and C. From these tests we acknowledged that different degrees of political connection significantly influenced the results within the PC group. A higher degree of political influence is associated with lower PB and ROA. We are still not controlling for other variables at this point, but the preliminary results indicate that our initial hypothesis deserves greater attention.

ROA analysis is rather interesting due to the clear upward nature of this performance indicator when associated with our PC index.

Table 8.1 - Simple t-tests for summary Statistics – Group A vs Group C (PC Firms)

Variable	Group A Firms (N=159)	Group C Firms (N=136)	Difference
	Mean	Mean	Mean
PC Index	1.52	0.35	1.17***
Price-to-Book	1.30	2.95	-1.65***
ROA	4.01	5.42	-1.41**
Leverage	29.86	34.34	-4.48
LN (Market Value)	10.04	9.34	0.70
% of independent directors	0.26	0.27	-0.01
CEO/Chairperson duality	0.08	0.04	0.04
Board Size	9.43	8.96	0.47

4.3. Multivariate Analysis

We used two different methodologies to proxy the influence of political connections. In the first methodology, the independent variable is the PC Index, calculated as described in section 3.3. The second methodology assumes the PC variable as a dummy variable that takes the value of 1 if the firm had at least one politically connected director in the period from 2010 to 2017 or zero otherwise. For robustness checks (section 4.4) we also conducted (i) a regression using the PC variable as a percentage of politically connected board members and (ii) a regression using the PC variable as 1 if there was at least 1 director in the Tier A group and 0 otherwise.

In Table 9, we conducted a simple linear regression on ROA and PB using the full sample and the non-SOE subsample and our results suggest that PC Index has a statistically significant - at the 1% level – negative effect on performance (ROA) considering the inclusion of all control variables. We also observe a negative and insignificant effect of PC Index on Price-to-Book considering the inclusion of all control variables. Our findings for PB are weaker but the negative sign is maintained.

In Tables 10 and 11 we conducted the linear regression using the random effects model. The Hausman (1978) test statistic indicates that the random effects model is more efficient than fixed effects. We again conducted two regressions, one using the full sample (Table 10) and the other disregarding state-owned enterprises (Table 11).

In Tables 10 and 11 we tested 3 different models. In the first model the PC index was calculated using the methodology from section 3.3. The results – negative effects on ROA and PB - are consistent with those found in the simple linear regression although the results are not statistically significant.

Table 9 - Multivariate Analysis Simple Linear Regression

Variable	ROA		Price-to-Book	
	Full Sample	Non-SOE subsample	Full Sample	Non-SOE subsample
Constant	29.69***	33.43***	-0.12	-0.79
	(7.66)	(7.99)	(-0.06)	(-0.38)
PC Index	-1.97***	-2.47***	-0.38	-0.31
	(-3.34)	(-3.89)	(1.32)	(-0.97)
ROA	-	-	0.22***	0.24***
			(11.58)	(11.26)
Leverage	-0.20***	-0.22***	0.07***	0.08***
	(-10.61)	(-11.10)	(7.17)	(7.43)
Size	-2.36***	-2.71***	-0.06	-0.07
	(-7.85)	(-7.88)	(-0.37)	(-0.39)
Novo Mercado	1.10*	1.56**	0.17	0.17
	(1.66)	(2.10)	(0.55)	(0.46)
% of independent directors	-2.46*	-2.91*	-1.58**	-1.87**
	(-1.66)	(1.80)	(-2.29)	(-2.39)
CEO/Chairperson duality	1.05	1.49	-1.00**	-1.05**
	(1.01)	(1.40)	(2.10)	(-2.08)
Board Size	0.49***	0.57***	0.11*	0.16**
	(3.61)	(3.70)	(1.69)	(2.11)
SOE Dummy	-0.13	-	-0.12	-
	(-0.10)		(-0.20)	
Industry Dummy	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES
Adj. R^2	0.33	0.37	0.31	0.31
N	603	603	501	501

Notes: Linear regression models with ROA and Price-to-Book as dependent variables for the full sample and non-SOE sub-sample. The table reports the coefficients and t-statistic (in parentheses). * = significance at 10% level (two-tailed test)
** = significance at 5% level (two-tailed test)
*** = significance at 1% level (two-tailed test)

Table 10 - Multivariate Analysis Cross-Section Random Effects (Full Sample)

Variable	ROA			Price-to-Book		
	(1)	(2)	(3)	(1)	(2)	(3)
Constant	29.58*** (4.81)	31.68*** (5.02)	30.08*** (4.79)	6.57** (2.30)	6.82** (2.37)	6.36** (2.17)
PC Index (time variant)	-0.89 (-1.52)	-	-	-0.09 (-0.25)	-	-
PC Dummy	-	-4.73*** (-3.16)		-	-0.47 (-0.77)	
PC Index (mean value)			-- 21.68*** (-3.06)	-		-5.29* (-1.81)
ROA	-	-	-	0.15*** (7.55)	0.15*** (7.39)	0.15*** (7.24)
Leverage	-0.19*** (-8.34)	-0.20*** (-8.34)	-0.20*** (-8.28)	0.05*** (3.87)	0.05*** (-3.83)	0.05*** (3.62)
Size	-2.25*** (-4.99)	-2.07*** (-4.47)	-2.14*** (-4.35)	-0.54** (-2.50)	-0.53** (-2.45)	-0.47** (-2.03)
Novo Mercado	0.93 (0.72)		1.25 (0.93)	0.09 (0.16)	0.03 (0.05)	0.15 (0.27)
% of independent directors	0.36 (0.23)	0.67 (0.43)	0.75 (-0.47)	-1.69** (2.12)	-1.60** (-2.01)	-1.41* (-1.72)
CEO/Chairperson duality	-0.50 (0.54)	-0.50 (-0.54)	-0.38 (-0.41)	-0.35 (-0.74)	-0.35 (-0.73)	-0.35 (-0.71)
Board Size	0.32 (2.00)	0.31** (2.02)	0.27* (1.76)	0.00 (0.02)	0.01 (0.13)	0.00 (0.01)
SOE Dummy	-1.24 (-0.54)	-1.48 (-0.66)	4.39 (1.28)	-0.06 (-0.06)	-0.03 (-0.04)	1.58 (1.13)
Industry Dummy	YES	YES	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES	YES	YES
Adj. R^2	0.21	0.22	0.22	0.17	0.17	0.17
N	603	603	603	571	571	571

Notes: Random-effect regression models with ROA and Price-to-Book as dependent variables for the full sample. The table reports the coefficients and t-statistic (in parentheses).
* = significance at 10% level (two-tailed test)
** = significance at 5% level (two-tailed test)
*** = significance at 1% level (two-tailed test)

Table 11- Multivariate Analysis Cross-Section Random Effects (Non-SOE subsample)

Variable	ROA			Price-to-Book		
	(1)	(2)	(3)	(1)	(2)	(3)
Constant	32.36*** (4.89)	34.32*** (5.08)	33.72*** (5.10)	5.83* (1.91)	6.03** (1.97)	5.62*
PC Index (time variant)	-1.43** (-2.11)	-	-	-0.09 (-0.25)	-	-
PC Dummy	-	--4.45*** (-2.88)		-	-0.48 (-0.77)	
- PC Index (mean value)			--4.37*** (-3.00)	-		-7.70** (-2.37)
ROA	-	-	-	0.16 (7.38)	0.16 (7.28)	0.16*** (7.03)
Leverage	-0.21*** (-8.47)	-0.21*** (-8.35)	-0.22*** (-8.57)	0.05 (3.95)	0.05*** (3.93)	0.05*** (3.71)
Size	-2.56*** (-5.10)	-2.39*** (-4.64)	-2.32*** (-4.53)	-0.05 (-2.13)	-0.50** (2.06)	-0.42* (-1.76)
Novo Mercado	1.33 (0.92)	0.66 (0.44)	1.19 (0.82)	0.10 (0.17)	0.03 (0.04)	0.21 (0.36)
% of independent directors	-0.46 (-0.27)	-0.24 (-0.14)	-0.06 (-0.04)	-1.69 (-1.93)	-1.63* (-1.85)	-1.42 (-1.63)
CEO/Chairperson duality	-0.27 (0.28)	-0.30 (-0.31)	-0.23 (-0.23)	-0.45 (-0.87)	-0.45 (-0.87)	-0.39 (-0.76)
Board Size	0.45*** (2.61)	0.39** (2.35)	0.39** (2.37)	0.04 (0.69)	0.04 (0.47)	0.04 (0.41)
SOE Dummy	NO	NO	NO	NO	NO	NO
Industry Dummy	YES	YES	YES	YES	YES	YES
Year Dummy	YES	YES	YES	YES	YES	YES
Adj. R^2	0.23	0.23	0.23	0.17	0.17	0.17
N	524	524	524	524	501	501

Notes: Random-effect regression models with ROA and Price-to-Book as dependent variables for the non-SOE sub-sample. The table reports the coefficients and t-statistic (in parentheses).

* = significance at 10% level (two-tailed test)
** = significance at 5% level (two-tailed test)
*** = significance at 1% level (two-tailed test)

The second model used the PC index as a dummy variable calculated as one if the company had at least 1 politically connected director or zero otherwise. This model was seen in previous researches from Faccio (2006), Neselevska (2013) and Ang, Ding and Thong (2013). The results show that the coefficient has a negative and significant effect on ROA– at 1% level – if we consider both the full sample and the non-SOE subsample. There is also a negative and insignificant effect of this PC dummy variable on Price-to-Book using both samples.

The third model used the PC index as a time invariant variable calculated as the mean value of the yearly PC Index for every firm. Since the effects of the presence of politically connected board members may result in a lagged effect in the company's performance and firm value, it is valuable to treat PC index as a time invariant variable so as to define the extemporaneous profile of the firm's board concerning political influence.

In our regression using the full sample our results for the third model indicate that companies with a greater average degree of political influence have a significant lower performance at the 1% level. Also, we found that Price-to-Book is significantly – at the 10% level – and negatively affected by the variable. Our regression using only the non-SOE subsample (Table 11) found similar results. The PC index affects ROA negatively and significantly – at the 1% level in non-SOE firms. Also, the PC index affects Price-to-Book negatively and significantly – at the 5% level in non-SOE Firms. This last finding is interesting because it is inconsistent with Chen *et al.* (2017) findings that non-SOE firms in China benefited from the presence – up to a certain extent – of politically connected board members in terms of firm value (Price-to-Book).

This is an indication that perhaps, in the Brazilian context, the activities perpetrated by political forces are more value reducing than it was previously imagined. Although the presence of political forces can help companies to be granted with valuable government contracts and to have a more proactive

behavior in regulatory discussions, there is no clear evidence of this being reverted into greater performance and value – actually the opposite is verified.

4.4. Robustness Test

In order to validate our findings, we conducted two robustness tests using different methodologies from those used in the previous section. In the first case we considered as a proxy of political connections the percentage of politically connected members. Using the mean value of this variable in the analyzed period for every firm we obtained similar results and found a negative and significant coefficient – at the 1% level - affecting ROA. The coefficient is also negative and statistically significant – at the 10% level – when the dependent variable is Price-to-Book.

Table 12- Multivariate Analysis Cross-Section Random Effects using the percentage of politically connected members (Full Sample)

Variable	ROA	Price-to-Book
	(1)	(1)
Constant	30.08***	6.36**
	(4.79)	(2.17)
% of politically connected	-21.68***	-5.29*
	(-3.06)	(-1.81)
ROA	-	0.15***
		(7.24)
Leverage	-0.20***	0.05***
	(-8.28)	(3.62)
Size	-2.14***	-0.47**
	(-4.35)	(-2.03)
Novo Mercado	1.25	0.15
	(0.93)	(0.27)
% of independent directors	0.75	-1.41*
	(-0.47)	(-1.72)
CEO/Chairperson duality	-0.38	-0.35
	(-0.41)	(-0.71)
Board Size	0.27*	0.00
	(1.76)	(0.01)
SOE Dummy	4.39	1.58
	(1.28)	(1.13)
Industry Dummy	YES	YES
Year Dummy	YES	YES
Adj. R^2	0.22	0.17
N	603	571

Notes: Random-effect regression models with ROA and Price-to-Book as dependent variables for the full sample using the percentage of politically connected members. The table reports the coefficients and t-statistic (in parentheses).

* = significance at 10% level (two-tailed test)
** = significance at 5% level (two-tailed test)
*** = significance at 1% level (two-tailed test)

In the second robustness test conducted we only considered the number of Tier-A politicians in the companies' boards. In this test we also found negative values for both ROA and Price-to-Book, although results were less significant.

The reason for that might be that by only using tier A politicians we limit the real influence verified by the less influential members.

Table 13- Multivariate Analysis Cross-Section Random Effects using the natural logarithm of the number of Tier A board members in each company (Full Sample)

Variable	ROA	Price-to-Book
	(1)	(1)
Constant	30.31***	6.67**
	(4.90)	(2.40)
LN (1 + Number of Tier A board members)	-3.31*	-1.20
	(-1.77)	(-1.48)
ROA	-	0.15***
		(7.46)
Leverage	-0.19***	0.05***
	(-8.25)	(3.79)
Size	-2.14***	-0.49**
	(-4.60)	(-2.27)
% of independent directors	0.51	-1.61**
	(0.74)	(-2.08)
CEO/Chairperson duality	-0.51	-0.32
	(-0.56)	(-0.68)
Board Size	0.26*	0.00
	(1.69)	(0.03)
SOE Dummy	-0.28	0.66
	(-0.11)	(0.62)
Industry Dummy	YES	YES
Year Dummy	YES	YES
Adj. R^2	0.24	0.21
N	603	571

Notes: Random-effect regression models with ROA and Price-to-Book as dependent variables for the full sample using the natural logarithm, of the number of Tier A board members in each company. The table reports the coefficients and t-statistic (in parentheses).

* = significance at 10% level (two-tailed test)
** = significance at 5% level (two-tailed test)
*** = significance at 1% level (two-tailed test)

5. Conclusions

Previous findings about the effects of political connections on firm value and financial performance are varied and depends on the context of the country studied. The present research contributes to the literature by analyzing the degrees of political connection for the IBrX 100 index companies in Brazil and its observable relationship with financial performance and value. The adaptation of the political connection index used in the paper from Chen *et al.* (2017) to the Brazilian context of politically connected firms sheds new light to this field of study. So far, most studies on this field treated political connection variables as dummy variables indicating whether companies had politically connected directors or not.

Differently from the results obtained by Chen *et al.* (2017) in China, which verified that results were conditional on whether a firm is classified as non-SOE or SOE, the results found in the Brazilian context suggest that both types of firms are penalized by having too much political influence. Also, contrarily to the findings of Chen *et al.* (2017), we didn't observe a significant relationship – at the 1% level - between Price-to-Book and the Political Connection Index. On the other hand, we found negative and significant relationship – at the 1% level – for the PC variable when analyzed against a financial performance indicator, such as ROA.

Indeed, firms with no political connections outperformed the group of politically connected firms as seen in our univariate analysis. The univariate analysis gave us a hint that this relationship deserved a greater attention. Even the group of firms with a small number of politically connected board members had a worse performance than the group of non-politically connected firms. To confirm this relationship and to control for several accounting and governance related measures found in the literature we employed a multivariate analysis using PB and ROA as dependent variables. The results using the mean value of

this metric as a time invariant variable supported our hypothesis about the influence of the PC index in ROA – at 1% level – and in Price-to-Book – at 5% level.

The results are not conclusive due to the existence of some potential limitations and biases, including survival bias and the fact that the results may be biased in favor of larger firms. Also, a current issue of potential concern is the extent to which endogeneity limits the validity of empirical testing. These include omitted variables, simultaneity, equilibrium conditions and issues regarding choice variables. Our sample of 85 firms, after excluding financial enterprises and firms with missing information, should be increased to avoid bias in favor of larger firms. Also, the window of data observed, from 2010 to 2017 might limit definitive conclusions.

Our analysis, however, indicates that in the Brazilian context, the presence of political forces in state-owned and non-state-owned firms might be leading to potential value-reducing activities perpetrated by these forces. This might include, but not being limited to, a demand coming from political agents for excess employment for the political group, production of goods wanted by politicians instead of by consumers and the development of projects intended at bringing benefits to politically important individuals or groups. Although we cannot ignore that the presence of politically connected individuals might be granting preferential treatment by awarding valuable government contracts, lighter taxation or relaxed regulatory oversight, our investigation points out that the negative effects outweigh, in the Brazilian context, the positive effects in these cases.

Although our results are satisfactory, further research is welcomed and could help to overcome some of the potential bias disclosed in this research. Another consideration is the analysis of other roles in the CV screening such as executive directors and fiscal board members. Since our analysis is restricted to board

members, we might have missed some important data that could have improved our analysis.

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Appendix - Summary Statistics of PC Index per Company

Non-S.O.E.	S.O.E.	PC INDEX (FIRM AVERAGE)
Group A Firms		
	LIGT3	0.535
	CPLE6	0.529
	SBSP3	0.521
	CESP6	0.511
	SAPR11	0.458
	TAEE11	0.352
	CSMG3	0.350
	PETR3	0.350
	ELET3	0.350
	CMIG4	0.341
MDIA3		0.293
MRVE3		0.273
VALE3		0.253
	ELPL3	0.217
RAIL3		0.216
BRFS3		0.215
SMTO3		0.214
ALSC3		0.204
B3SA3		0.200
JBSS3		0.184
ENBR3		0.183
Group B Firms		
KROT3		0.171
GGBR4		0.169
TIMP3		0.167
MRFG3		0.159
CSNA3		0.154
GFSA3		0.150
KLBN11		0.150
EQTL3		0.145
VLID3		0.143
ALUP11		0.137
ENGI11		0.127
TOTS3		0.119
GOLL4		0.118
PCAR4		0.116
ODPV3		0.113
NATU3		0.106
USIM5		0.104
VIVT4		0.103
CIEL3		0.098
BEEF3		0.088

Group C Firms	
TIET11	0.087
TRPL4	0.087
VVAR11	0.083
CSAN3	0.079
EMBR3	0.078
ABEV3	0.074
UGPA3	0.071
POMO4	0.068
MYPK3	0.059
BRKM5	0.045
SUZB3	0.042
CCRO3	0.036
IGTA3	0.033
FIBR3	0.027
RAPT4	0.025
CVCB3	0.023
CYRE3	0.017
ESTC3	0.016
Group D Firms	
CRFB3	0.000
ARZZ3	0.000
BRML3	0.000
BTOW3	0.000
CPFE3	0.000
DTEX3	0.000
ECOR3	0.000
EGIE3	0.000
EZTC3	0.000
FLRY3	0.000
HGTX3	0.000
HYPE3	0.000
LAME4	0.000
LINX3	0.000
LREN3	0.000
MGLU3	0.000
MOVI3	0.000
MPLU3	0.000
MULT3	0.000
QUAL3	0.000
RADL3	0.000
RENT3	0.000
SEER3	0.000
SMLS3	0.000
WEGE3	0.000
WIZS3	0.000

Notes: We ranked all firms in the full sample according to their level of political connectedness measured by the average score of our LN (PC Index) in the period from 2010 to 2017. We then divided them in 4 groups, being groups A, B and C politically connected firms with different degrees of intensity and group D for firms which scored 0 in the index (non-politically connected).