Full Length Article

Large shareholders' power and the quality of corporate governance: An analysis of Brazilian firms

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ARTICLE INFO

ABSTRACT

This paper analyzes the incentives of large shareholders to implement the corporate governance system that favors their interests within a framework of highly concentrated ownership and poor legal protection for investors. A metric for corporate governance based on the fulfillment of non-mandatory rules of good corporate governance is used. System GMM (Generalized Method of Moments) estimates for a balanced panel data of Brazilian firms reveal that the ownership concentration is detrimental to corporate governance quality and the quality of board composition. In accordance with the expropriation effect on principal-principal agency conflicts, by weakening the corporate governance system and board composition, large controlling shareholders may use private benefits of control. As proposed by the substitution effect, in a complementary way, controlling shareholders may renounce strong boards and directly perform management monitoring, mitigating agency conflicts with managers. Finally, the ability of large shareholders other than the main blockholder is not enough to contest his/her power to shape the corporate governance system. The work provides evidence of the prominence of the principal–principal agency problem in an emerging market, by analyzing the effect of ownership concentration over the quality of the corporate governance system, and also that other large non-controlling shareholders are not able to contest the power of the main blockholder.

1. Introduction

Recent research has stressed the national bundles perspective to corporate governance and the importance of understanding how corporate governance differs around the world which requires a rich view of national institutions (Filatotchev et al., 2013; Schiehll et al., 2014). The national institutional and legal environment has specific corporate governance nuances according to local rules which motivates research in specific countries (Chhaochharia and Laeven, 2009). In markets with strong shareholder protection, the institutional environment tends to promote better corporate governance systems with lower variability among firms (Durnev and Kim, 2005). Conversely, weak legal protection can lead to market pressures to improve the corporate governance system through the legal system or promoting the voluntary adoption of good governance practices (Claessens and Yurtoglu, 2013; Klapper and Love, 2004).

Despite the role of the institutional environment on corporate governance, an important heterogeneity of firm practices exists within national boundaries. Indeed, many firms integrate corporate governance practices beyond those determined by law or adopted

by other firms. Thus, the voluntary adoption of best governance practices in specific markets is a relevant line of study (Aguilera and Jackson, 2003).

Unlike Anglo-Saxon countries where corporate ownership is dispersed, the ownership structure in most other countries is much more concentrated with few shareholders owning a significant fraction of shares (Attig et al., 2009; Holderness, 2009; La Porta et al., 1999). Thus, unlike the primary agency problem of the manager–shareholder relationship in economies with dispersed ownership, the concentrated ownership and the relations between large and minority shareholders in economies with concentrated ownership create a principal–principal agency problem (Renders and Gaeremynck, 2012; Young et al., 2008).

In markets with highly concentrated ownership this agency problem is exacerbated by certain control-enhancing mechanisms such as dual-class shares, ownership pyramids, and coalitions of shareholders. These mechanisms result in a gap between the control and cash flow rights in the hands of the largest shareholders (Boubakri and Ghouma, 2010). The effects of these mechanisms on the power of the largest shareholders are twofold. First, they can extract private benefits at a lower cost, and, second, they can monitor managers without strong independent boards (Bozec and Bozec, 2007; Connelly et al., 2010).

Given the importance of the relation between dominant and minority shareholders, this work aims to assess whether the power of the largest shareholders affects the quality of the corporate governance system in the Brazilian market and the counterbalancing role played by other blockholders. We use an index for the corporate governance quality that takes into account a set of good corporate governance practices beyond those required by the legal system and that was previously used in Brazil (Brandão and Crisóstomo, 2015). We then test the relation between the ownership structure and both the index for the corporate governance quality and for the quality of board composition for a sample of 85 listed Brazilian firms for the period 2010–2013. The work also assesses the ability of other large shareholders to contest the excess power of the dominant shareholder, following previous literature (Ducassy and Guyot, 2017; Konijn et al., 2011; Sacristán-Navarro et al., 2011). The importance of investigating contest power of blockholders other than the first has been highlighted by the literature (Ducassy and Guyot, 2017). Thus, the work extends prior research in Brazil that uses corporate quality indices by using a specific index for the quality of the board composition, examining the effect of excess of control rights over cash flow rights on corporate governance quality, and by investigating the possible contest power of blockholders other than the dominant one.

Our results show that ownership concentration is detrimental to the adoption of good corporate governance practices. Specifically, highly concentrated voting ownership weakens the corporate governance system. Such findings are in accordance with the expropriation and substitution effects that are present in the principal–principal agency model. The negative impact of ownership concentration on the board composition points out the reality that large shareholders of Brazilian firm tend to monitor management directly, substituting the board function with no need of an independent board that might constrain the use of private benefits of control.

This paper provides two main contributions. First, we analyze the impact of ownership structure, specifically, ownership concentration on the use of corporate governance practices (both the board of directors and the index of good practices), and the counterbalancing role played by large blockholders other that the dominant one, in the context of an emerging market. Most previous research on the ownership structure has analyzed its incidence on a number of corporate issues such as firm value (Bennedsen and Nielsen, 2010; Liang et al., 2011; C. S. Mishra et al., 2001), corporate performance (Elyasiani and Jia, 2010), accounting statements quality (Prencipe et al., 2011), and the cost of debt (Anderson et al., 2003). However, few prior studies have addressed the way in which the ownership structure moderates mechanisms of corporate governance (Setia Atmaja, 2009; Sur et al., 2013), and, as far as we are concerned, no other work has examined the contest power of blockholders other than the first main shareholder. Second, the work uses an index for corporate governance quality previously proposed by Brandão and Crisóstomo (2015) for the Brazilian firm that comprises an ample set of good practices. This index is in line with the development of corporate governance indices that strive to measure the quality of corporate governance in a single metric (Aguilera et al., 2015; Aguilera and Desender, 2012; A. Chen et al., 2007). By taking advantage of a new set of information on the corporate governance of Brazilian firms that only recently has become available, this study adds to some prior research on corporate governance in Brazil and other emerging markets (Correia et al., 2011; Hoffmann, 2014; Klapper and Love, 2004; Ntim, 2013; Silveira et al., 2010).

The remainder of the paper is organized as follows. Section 2 provides arguments on the conflicts between controlling and minority shareholders associated with excess control rights under the principal–principal agency model framework. Following the rationale that large controlling shareholders try to maximize their private benefits of control, we propose the hypothesis that high ownership concentration is detrimental to the quality of corporate governance. In the same vein, we also hypothesize that controlling blockholders negatively affect the quality of the board composition. Section 3 presents the method, and Section 4 provides an analysis of the results. Finally, Section 5 offers a general assessment of our findings.

2. Theoretical background and hypotheses

The principal–principal agency approach stresses the conflicts of interests between large controlling and minority shareholders (Baixauli-Soler and Sanchez-Marin, 2015; Renders and Gaeremynck, 2012; Young et al., 2008). As suggested by the expropriation hypothesis, the dominant shareholder has the incentives and the power to extract private benefits in detriment of minority shareholders (Bae et al., 2012; Y. Y. Chen and Young, 2010; Dharwadkar et al., 2000; Jiang and Peng, 2011; Young et al., 2008). To point, Nagar et al. (2011) find that firms have a substantially larger return on assets when the main shareholder surrenders some control to minority shareholders via ownership rights.

Under the view of the principal–principal agency problem, a dominant controlling shareholder has an incentive to shape the corporate governance system to extract private benefits (Kang and Shivdasani, 1995; Yafeh and Yosha, 2003; Young et al., 2008). The

literature reports varying ways of expropriation by controlling shareholders. Dominant shareholders can make suboptimal investment decisions through nonprofitable mergers and acquisitions to look for their own interests (Johnson et al., 2000) or engage in related party transactions that may not be advantageous to the firm (Gordon et al., 2004; Jian and Wong, 2010). The dominant shareholder, if also holding a management position, can push through the adoption of anti-takeover rules and become entrenched reducing accountability for his/her managerial performance (Holderness, 2003; Stulz, 1988). This problem is especially severe in countries with weaker legal protection of shareholders and high firm ownership concentration (Yao et al., 2010).

The literature provides support to the theoretical framework of the principal–principal agency conflict based on the expropriation hypothesis. Dominant shareholders have incentives to maintain weak internal control systems to enable private benefits of control (Bozec and Bozec, 2007; Johnson et al., 2000; R. La Porta et al., 2000). The power of the dominant shareholder is positively related to his/her ability to extract these private benefits of control.

Complementary to the expropriation hypothesis, the substitution hypothesis predicts a relation between the power of the largest shareholders and the implementation of the mechanisms of corporate governance. The substitution hypothesis refers to the possibility that controlling shareholders take over some monitoring activity, rather than implementing costly control mechanisms, given the subordination of CEO to the controlling shareholders who may easily remove him/her (Alchian and Demsetz, 1972; Rediker and Seth, 1995; Roe, 2006). In companies in which the main shareholder is more influential, managerial oversight by the incumbent shareholders is more effective, and the other mechanisms of control become less necessary.

Jensen (1993) argues that the board of directors is at the apex of internal control systems so it makes sense to pay special attention to a possible substitution effect between the ownership structure and the quality of the board of directors. One of the main duties of the board is managerial supervision (Adams et al., 2010; Kim et al., 2014), which raises the question about to what extent highly motivated shareholders can substitute the board of directors and perform effective managerial supervision. Shareholders assess the cost–benefit trade-off of the corporate governance system in effectively monitoring management. From this point of view, empowered large shareholders can lead to a lower quality board of directors (Bozec and Bozec, 2007; Desai et al., 2005; Desender et al., 2013; Rediker and Seth, 1995).

In this respect, powerful controlling shareholders act as a substitute of the formal corporate governance system, decreasing the relevance of the control exercised by the board of directors. In this way, high voting ownership concentration becomes an important internal control mechanism that substitutes the board function (Bhathala and Rao, 1995; Bozec and Bozec, 2007; Fiol and Aldrich, 1995; Min, 2018; Prevost et al., 2002; Rediker and Seth, 1995).

Taken together, our arguments stress the role of the board of directors for managerial oversight and to avoid managers extracting private benefits. Strong boards are especially important in low concentrated ownership firms to protect all shareholders. On the contrary, in highly concentrated ownership firms, controlling blockholders have more ability and interest to monitor the CEO. Thus, controlling blockholders may weaken the corporate governance structure as a whole to enable private benefits of control for them (expropriation effect) and, in a complementary vein, they will also weaken the board structure given that they may directly monitor the managers (substitution effect).

Given that voting ownership concentration is one of the main means to acquire power within the firm and taking into account the weak protection of shareholders in Brazil and the leading role of controlling shareholders, we propose our first hypothesis, which relates the corporate governance system to the ownership concentration, in two parts:

Hypothesis 1a. Voting ownership concentration is negatively related to the quality of the corporate governance system of the Brazilian firms.

Hypothesis 1b. Voting ownership concentration is negatively related to the quality of the board composition of the Brazilian firms.

The power of the largest shareholder can be amplified by the use of the control enhancing mechanisms such as dual class shares, pyramid ownership structures, cross-shareholdings, supermajority provisions, and shareholder agreements (Levy, 2009). These mechanisms usually result in deviations from the one-share–one-vote rule and in the separation between voting rights and cash flow rights. Such separation empowers large controlling shareholders and allows them to maintain firm control with lower capital investment. As a result, this wedge between voting rights and cash flow rights increases the possibility of using private benefits of control. In fact, prior research shows the detrimental effects of the separation between firm control and firm ownership on firm value (Claessens et al., 2002; P. A. Gompers et al., 2010), on the cost of debt (Boubakri and Ghouma, 2010), on the risk of expropriation (Paligorova and Xu, 2012), and on investment policy (D. R. Mishra, 2011).

Huyghebaert and Wang (2012) find that in a legal and institutional setting with weak shareholder protection as the wedge between voting rights and cash flow rights increases, related party transactions also increase. These transactions are especially harmful to minority investors. Consequently, the demand for better corporate governance is likely to decrease as the separation between voting rights and cash flow rights increases. That is, if the dominant shareholders can retain control of firm decisions by holding the necessary proportion of voting capital, the functioning of other control mechanisms will decline. Although the literature reports a gap between firm control and ownership worldwide, the role of a few controlling shareholders and the use of dual class stock is especially common in emerging markets (Boubakri and Ghouma, 2010) as is the case of Brazil in the Latin American context (Nenova, 2006; Santiago-Castro and Brown, 2007). Given this discussion, our second hypotheses links the power and the incentives of the dominant shareholder to weaken the corporate governance system based on his power due to the wedge between voting rights and cash flow rights which eases the use of private benefits of control:

Hypothesis 2a. Excess of control rights over cash flow rights is negatively related to the quality of the corporate governance system of the Brazilian firms.

Hypothesis 2b. Excess of control rights over cash flow rights is negatively related to the quality of the board of directors of the Brazilian firms.

The power of the largest shareholder can be challenged by other blockholders. Corporate finance literature on the problem of the ownership concentration traditionally compares a dispersed ownership structure (i.e., no shareholder has a significant stake) with a concentrated ownership structure (i.e., one large shareholder effectively controls the firm). However, recent research shows that complex ownership structures with multiple large shareholders are common and stable (Cronqvist and Fahlenbrach, 2009; Laeven and Levine, 2008).

Thus, the literature also explores the possible positive role played by the second and other large reference blockholders in challenging the control power of the dominant largest shareholder. In firms without large blockholders, the power to challenge may help to reduce the possibility that the largest shareholder can extract private benefits because he/she will need to cooperate with others to build a coalition to control the firm. In this situation, the main blockholder's private benefits of control are reduced, and his/her decisions monitored (Jiang and Peng, 2011). For an environment with poor legal protection of shareholders, Huyghebaert and Wang (2012) show that the control rights from the second to the tenth shareholder can alleviate the expropriation of the largest shareholder. By cooperating for control, the other incumbent shareholders reinforce managerial supervision and improve firm performance. This rationale leads to the proposition that the presence of large nonmajor shareholders improve the corporate governance system, which we state in the following hypothesis in two parts:

Hypothesis 3a. The proportion of voting rights held by the second and other large blockholders has a positive effect on the quality of the corporate governance system of Brazilian firms.

Hypothesis 3b. The proportion of voting rights held by the second and other large blockholders has a positive effect on the quality of the board of directors of Brazilian firms.

3. Sample and method

3.1. Sample

Two sources of data comprise this sample. The information on the corporate governance practices comes from the *Reference Form* available at the CVM (*Comissão de Valores Mobiliários* - The Brazilian SEC), which provides firm-level data. The financial information and the data on corporate ownership are collected from the Economática database, an important source for firm-level data source for Latin America firms[1]. Our sample includes 85 listed Brazilian companies for the period 2010–2013, which results in a balanced panel data set of 340 firm-year observations. Table 1 provides a description of sample firms by industry. The sample is relevant for corporate governance studies because it comprises firms with the highest visibility and market presence in Brazil. Sample firms account for 92.84% of the total capitalization of Brazil's stock market.

3.2. Variables, models and method

3.2.1. Variables

Despite the growing research on corporate governance, properly measuring or assessing corporate governance quality is still a challenge. Although the literature proposes different approaches (Aguilera and Desender, 2012; Ahrens et al., 2011; Bebchuk et al., 2009; Black et al., 2006; Larcker et al., 2007), no consensus exists on the best way to assess a firm's corporate governance system. In

Table 1
Firms sample by industry.

Industry	N. obs.		N. firms	
	N	%	N	%
Mining, metals and metal goods	16	4.71	4	4.71
Motor vehicles and parts, and other transport equipment	8	2.35	2	2.35
Wood, Paper and paper products	12	3.53	3	3.53
Communication and media	16	4.71	4	4.71
Textile, clothing, leather and footwear	12	3.53	3	3.53
Petroleum and fuel products	12	3.53	3	3.53
Food, drink and tobacco	24	7.06	6	7.06
Miscellaneous manufacturing industries	20	5.88	5	5.88
Electrical	72	21.18	18	21.18
Building and transportation	32	9.41	8	9.41
Bank and Financial services	44	12.94	11	12.94
Business sector services	20	5.88	5	5.88
Trade and retailing	20	5.88	5	5.88
Miscellaneous services	32	9.41	8	9.41
Total	340	100	85	100

addition, corporate governance practices do not appear to be completely independent from one another, making the proper assessment of corporate governance even more complex (Aguilera et al., 2009a).

Previous literature adopts two main approaches to achieve a simple metric of corporate governance. The first approach is based on the voluntary fulfillment of good corporate governance practices as compiled in many corporate governance codes (Aguilera and Cuervo-Cazurra, 2004; 2009b; Aguilera et al., 2009a). These practices usually relate to governance factors such as board size and composition, CEO duality, and board mandate. The second approach proposes a corporate governance index consisting of several corporate governance practices to provide a more comprehensive view of the quality of the firm's corporate governance system as a whole. Such indices are usually based on shareholder rights, the procedures and structure of the board, the disclosure guidelines, or the characteristics of the ownership structure (Claessens and Yurtoglu, 2013). However, indices calculated for Anglo-Saxon countries are not completely applicable to other institutional settings given the differences in the mechanisms of corporate governance (Bebchuk et al., 2009; P. Gompers et al., 2003; Klein et al., 2005). Thus, other studies suggest complementary corporate governance indices for different markets, including Brazil (Correia et al., 2011; Dey, 2008; Ntim, 2013; Silva and Leal, 2005; Silveira and Barros, 2008).

In this work we use a recently proposed index for corporate governance quality that integrates a set of good corporate governance practices highlighted as relevant (Brandão and Crisóstomo, 2015). Such corporate governance practices are grouped into ten distinct dimensions, which important market institutions in Brazil identify as the most relevant practices, following the international trend (CVM, 2002; IBGC, 2015; PREVI, 2012): stockholder, shares, board structure, board composition, board practices, executive management, firm disclosure, fiscal committee, auditing, and conflict management.

In total, the corporate governance index comprises 41 items for 28 voluntary good corporate governance practices recommended for Brazilian firms by the Brazilian Institute of Corporate Governance (IBGC, 2015). Appendix A provides the details for these practices. As previously noted, the information on the corporate governance of each firm is disclosed in the Reference Form, which is available from the CVM (The Brazilian SEC) since 2010. Different from previous indices in the Brazilian market, the index used in this work leaves ownership structure out of it, given that it is suggested to be a determinant of corporate governance quality.

We calculate the annual Index of Corporate Governance Quality (ICGQ) for each firm from these 28 corporate governance practices (see Appendix A). When a practice has several items,[2] the score of the practice is the sum of all the items. Thus, the score of each practice ranges from zero (worst score for the corporate governance practice) to 1 (the best score). We then calculate the ICGQ as the average of the 28 practices. Thus, the ICGQ annual score varies from 0 (worst corporate governance) to 1 (the firms that accomplished all the items of all the practices of good governance).

Similarly, we compute a specific index for the quality of the composition of the board of directors (BOARDC) by focusing on the four practices within "board composition": segregation of CEO and chairperson, proportion of external directors, proportion of independent directors, and minority shareholders representative (see Appendix A). ICGQ and BOARDC are dependent variables in the specific proposed models (1), (2), (3) and (4).

A set of metrics for ownership structure (OWNSTR) is used in models (1), (2), (3) and (4). We define three measures for the aspects of ownership structure taken into account: the proportion of voting rights (VOC); the difference between control rights and cash flow rights (WEDGE); and ownership concentration in hands of the four main shareholders other than the first largest blockholder (OC) as the power to contest the dominance of the largest shareholder.

Ownership concentration is measured by the proportion of voting rights held by the largest shareholder (VOC1), by the three largest shareholders (VOC3), and by the five largest shareholders (VOC5). Under Hypothesis 1 rationale, it is expected that ownership concentration negatively affects the whole corporate governance quality to ease the use of private benefits of control (expropriation effects) and, specifically, the quality of the board composition (substitution effects).

The difference between control rights and cash flow rights is also computed for the first largest (WEDGE1), the three largest (WEDGE3), and the five largest shareholders (WEDGE5). According to Hypothesis 2, the difference between voting and cash flow rights is able to increase the use of private benefits of control, leading to a negative effect over the whole corporate governance system quality (expropriation effects) and, specifically, the quality of the board composition (substitution effects).

The ability of large blockholders to contest the control of the largest controlling blockholder is measured by ownership concentration in hands of the four main shareholders other than the first largest blockholder in four variables: the voting rights of the second shareholder (OC2), the second and third largest shareholders (OC23), the second through the fourth largest shareholders (OC234), and the second through fifth largest shareholders (OC2345). Contesting the power of the main voting blockholder must cause a positive effect over the quality of the corporate governance system and of the board composition, as proposed by Hypothesis 3.

We control for some possible determinants of firm corporate governance as suggested by the literature: profitability, firm size, growth opportunities, and industry. Profitability (ROA) is measured as the ratio of net income to total assets. Firm size (SIZE), proxied by the logarithm of total assets, is included because large firms are supposed to have more complex agency relations and, thus, they require different corporate governance mechanisms than small firms (Durnev and Kim, 2005; Holm and Schøler, 2010; Klapper and Love, 2004).

The rationale underlying firm growth opportunities (GOPP) is that a firm with more investment opportunities need more funding, so the quality of the corporate governance system becomes more relevant to access external funds (Durnev and Kim, 2005; Klapper and Love, 2004; Silveira et al., 2010). Growth opportunities (GOPP) are proxied by average firm's Tobins' q, i.e., the ratio of the firm's market value (the sum of equity at market value plus debt at book value) to book value, following relevant prior literature that considers it adequate for such purpose (Moyen, 2004; Villalonga and Amit, 2006). We also include industry and time dummies in the models.

3.2.2. Models

Our models test the expropriation and substitution hypotheses from the perspective of the principal–principal agency model. Model (1) assesses the effect of the ownership structure on the quality of corporate governance system (ICGQ). Ownership structure (OWNSTR) stands for voting ownership concentration (VOC) or for the difference between control and cash flow rights (WEDGE) in specific model estimates.

$$ICGQ_{i,t} = \beta_0 + \beta_1 OWNSTR_{i,t} + \beta_2 ROA_{i,t} + \beta_3 GOPP_{i,t} + \beta_4 SIZE_{i,t} + \delta_t + \alpha_i + \mu_{i,t}$$

(1)

Model (2) estimates the impact of the ownership structure over the quality of the board composition (BOARDC), to assess the hypothesized negative effect on the board composition as proposed under the proposal of the substitution effect. In a similar way of model (1), ownership structure (OWNSTR) stands for voting ownership concentration (VOC) or for the difference between control and cash flow rights (WEDGE) in specific model estimates.

$$BOARDC_{i,t} = \beta_0 + \beta_1 OWNSTR_{i,t} + \beta_2 ROA_{i,t} + \beta_3 GOPP_{i,t} + \beta_4 SIZE_{i,t} + \delta_t + \alpha_i + \mu_{i,t}$$

(2)

Models (3) and (4) are used to assess the possible power of shareholders other than the largest blockholder to contest the excess dominance of the main voting shareholder in determining the corporate governance system. The hypothesized negative effect of high dominance of the largest blockholder is expected to be defeated by the contest power of other large shareholders. Model (3) assesses the effect of contest power (CONTEST) and voting ownership concentration held by the largest blockholder (VOC1) over the quality of the corporate governance system (ICGQ) as a whole.

$$ICGQ_{i,t} = \beta_0 + \beta_1 CONTEST_{i,t} + \beta_2 VOC1_{i,t} + \beta_3 ROA_{i,t} + \beta_4 GOPP_{i,t} + \beta_5 SIZE_{i,t} + \delta_t + \alpha_i + \mu_{i,t}$$

(3)

Model (4) appraises the influence of contest power and voting ownership concentration held by the largest blockholder over the corporate governance practices related to the board of directors (BOARDC).

$$BOARDC_{i,t} = \beta_0 + \beta_1 CONTEST_{i,t} + \beta_2 VOC1_{i,t} + \beta_3 ROA_{i,t} + \beta_4 GOPP_{i,t} + \beta_5 SIZE_{i,t} + \delta_t + \alpha_i + \mu_{i,t}$$

(4)

In all models, subscript t refers to the time period and subscript i refers to the firm. δ_t is the error term related to time-specific effects; α_i is the error term associated with firm-specific effects, which includes unobservable firm-specific characteristics; and $\mu_{i,t}$ is the random error term.

3.2.3. Method

The financial literature underlines the possible endogeneity of corporate governance (Roberts and Whited, 2013; Wintoki et al., 2012). That is, although corporate governance is most commonly assumed to affect firms' financial performance, the opposite relation may also hold (Holm and Schøler, 2010; Love, 2011; Silveira et al., 2010). Thus, both models are estimated using panel data methodology, which allows us to address the unobservable heterogeneity associated with the fixed firm effects and the possible endogeneity (Dang et al., 2015; Flannery and Hankins, 2013). Coefficients are estimated using the system estimator of the Generalized Method of Moments (GMM-sys), which provides efficient estimates for relatively short periods (Blundell and Bond, 1998). GMM-sys is a combination of GMM in first differences (GMM-diff) with level transformations. GMM-diff uses variables in differences to eliminate unobservable heterogeneity (Arellano and Bover, 1995). Then, the potentially endogenous variables are instrumented. Because GMM-diff instruments may be not correlated with the possible endogenous variables under certain circumstances, the level transformation is performed by converting the instruments in differences to make them exogenous to the fixed effects. Low-quality instruments can lead to poor asymptotic precision (Alonso-Borrego and Arellano, 1999). This problem can be alleviated by substituting the specification in differences with the original regression specified in levels, as the system estimator does (Blundell and Bond, 1998; Öztekin and Flannery, 2012). In this way, the system estimator involves two kinds of equations with specific instruments. The first set of equations is in levels, and the instruments are the lagged differences of the dependent and independent variables. The second set of equations consists of equations in first differences with the levels of the dependent and the independent variables as instruments (Wooldridge, 2002).

The Hansen test of over-identification of restrictions tests the validity of the model specifications. This test examines the lack of correlation between the instruments and the error term. We also report the AR(2) test of second order autocorrelation. Given the use of first-difference transformations, we expect some degree of first-order serial correlation, although this correlation does not invalidate the results. However, the presence of second-order serial correlation would invalidate the results.

4. Results

Table 2 exhibits some descriptive statistics of the main variables. On average, the index of corporate governance quality (ICGQ) is around 61% and the index for the board composition quality (BOARDC) is about 55%. Note the high ownership concentration (VOC1, VOC3 and VOC5), which is consistent with previous research on Brazil (Leal and Carvalhal-da-Silva, 2007). On average, the voting rights of the largest shareholder (VOC1) is 49.4%, and the five largest shareholders (VOC5) account for 70.7% of the voting rights.

Table 2
Descriptive statistics.

Variable	Average	Median	Min	Max	Std Dev	Coefficient of Variation
ICGQ	0.611	0.611	0.273	0.882	0.099	0.161
BOARDC	0.555	0.551	0.036	0.904	0.148	0.267
VOC1	0.494	0.505	0.020	1.000	0.256	0.518
VOC3	0.674	0.708	0.020	1.000	0.246	0.364
VOC5	0.707	0.752	0.020	1.000	0.232	0.328
WEDGE1	0.097	0.000	−0.206	0.581	0.157	1.623
WEDGE3	0.104	0.000	−0.062	0.568	0.161	1.552
WEDGE5	0.096	0.000	−0.070	0.549	0.150	1.559
OC2	0.135	0.106	0.000	0.480	0.116	0.861
OC23	0.181	0.167	0.000	0.545	0.140	0.775
OC234	0.204	0.200	0.000	0.566	0.155	0.760
OC2345	0.213	0.216	0.000	0.579	0.161	0.756
ROA	0.110	0.094	−0.029	0.302	0.088	0.806
GOPP	1.789	1.391	0.053	8.718	1.479	0.827
SIZE	15.389	15.086	12.315	20.057	14.268	0.093

ICGQ is the index for Corporate Governance Quality. BOARDC is the index for the quality of the board composition. VOC1 is the voting ownership concentration held by the main voting shareholder. VOC3 and VOC5 stand, respectively, for such concentration held by up to the three, and up to the five main voting shareholders. WEDGE1 is the excess voting rights over cash flow rights held by the main shareholder. WEDGE3 and WEDGE5 refer to such measure relative to the three and five main shareholders, respectively. OC2 is ownership held by the second largest shareholder, OC23 is ownership held by the second and third main shareholders, OC234 is ownership held by the second until the fourth largest shareholders, and OC2345 is ownership held by the second until the fifth main shareholder. GOPP stands for growth opportunities, proxied by Tobin's Q. SIZE is firm size, proxied by Ln of total assets.

The low coefficient of variation highlights the homogeneity of firms in terms of high ownership concentration.

The possible contest power of large shareholders, represented by voting ownership concentration held by the second through the fifth main shareholder (OC2, OC23, OC234, and OC2345) is relatively low, ranging from 13.5% to 21.3%. Thus, a big gap exists between the corporate control held by the largest shareholder and the corporate control held by other large shareholders. This gap may underlie the relation of contest between the largest controlling shareholder and the other blockholders.

Table 3, which provides a deeper analysis of high concentrated ownership, provides the number of blockholders (NB50) required to achieve control of the firm (i.e., to reach 50% of voting rights). Panel A shows that a high proportion of firms (52.35%) has one large blockholder who holds more than 50% of the voting capital. In 20.59% of the firms, two blockholders combined hold more than 50% of the votes, leading to a cumulative percentage of 72.94% of firms controlled, at most, by only two blockholders. As a whole, 82.06% of Brazilian firms are controlled by five or less blockholders.

Panel B of Table 3 provides additional information about the voting shares held by the five largest shareholders of Brazilian firm. The picture that emerges is a huge concentration of voting power in Brazilian firms. In the firms in the first row, which account for 52.35% of firms, the largest shareholder controls more than two-thirds (68.88%) of the votes. For the firms in the second row, which account for 20.59% of firms, the agreement between the two largest shareholders hold 63.16% of the votes. The difference between column 2 and column 1 emphasizes the big difference between the largest shareholder and the second largest shareholder. The largest controlling shareholder can easily control the firm or build a coalition to control it, impose his/her interests, and take advantage of the private benefits of control. Taken together, Table 3 gives an impression of exacerbated corporate control in the hands of very few shareholders. In such scenario, the interests of minority shareholders are at risk, and the principal–principal agency problem tends to be prominent.

Panel C of Table 3 reports on the evolution of our metrics of corporate governance conditional on the number of controlling shareholders. Both ICGQ and BOARDC are lower for firms with smaller number of controlling blockholders. This divergence is even higher for the index of quality of the board composition. Although not conclusive, this finding is an initial indication that highly concentrated ownership tends to weaken the corporate governance system.

As previously discussed, the Eqs. (1) and (2) are estimated taking into account distinct ownership structure characteristics. First, models are estimated with the independent variable OC, which is the concentration of voting power in hands of the main shareholders, defined as the largest stockholder (VOC1), the three largest stockholders (VOC3), and the five largest stockholders (VOC5). Second, the main explanatory variable is the difference between control and cash flow rights for the main shareholder (WEDGE1), the three main shareholders (WEDGE3), and the five main shareholders (WEDGE5). Finally, to assess the ability of other main shareholders to contest the power of the largest shareholder, we estimate the models separating the voting power held by the second through the fifth main voting shareholders (OC2, OC23, OC234, OC2345) from the voting power held by the largest shareholder.

Table 4, Panel A, shows, in line with Hypothesis 1a, that the concentration of voting rights (VOC1, VOC3, VOC5) has a negative impact on corporate governance quality (ICGQ). This adverse influence signals that large shareholders prefer weaker corporate governance. Similarly, the results in Panel B are consistent with Hypothesis 1b. The concentration of corporate control in the hands of a few shareholders (VOC1, VOC3, VOC5) also has a negative impact on the quality of the board composition (BOARDC). This result suggests that large controlling shareholders have incentives to weaken the board composition given that they do not need a powerful board to monitor managers, who are strongly subordinate to their interests.

Table 3
Number of shareholders holding more than 50% of voting capital.

| Panel A | | | | Panel B | | | | | Panel C | |
| Number of controlling shareholders | | | | Sum of voting ownership concentration held by up to the five largest shareholders (%) | | | | | Values of ICGQ and BOARDC | |
NB50	N	%	Cum%	1	2	3	4	5	ICGQ	BOARDC
1	178	52.35	52.35	68.88	80.40	82.93	83.47	83.67	0.58	0.53
2	70	20.59	72.94	40.39	63.16	70.71	74.93	76.04	0.60	0.48
3	11	3.24	76.18	27.33	45.45	55.81	62.41	64.38	0.67	0.58
4	12	3.53	79.71	23.85	38.99	47.27	54.31	59.15	0.65	0.58
5	8	2.35	82.06	20.40	32.56	41.54	47.54	51.26	0.68	0.65
> 5	61	17.94	100	15.47	23.00	27.97	31.12	32.72	0.69	0.70
Total	340	100		49.36	62.83	67.44	69.76	70.70	0.61	0.56

NB50 = number of shareholders that, together, hold more than 50% of voting stocks. N = number of firm-year observations for each NB50. In Panel B, each column contains ownership concentration up to the five main (1–5) voting shareholders by each NS50. Panel C exhibits mean ICGQ and BOARDC for each NB50.

Table 5, which addresses hypothesis 2, reports the results about the effect of the divergence between control rights and cash flow rights (WEDGE1, WEDGE3, WEDGE5) on the corporate governance. Both Panels A and B show that no simple pattern exists across all the columns. The difference of the rights of the largest shareholder (WEDGE1) negatively affects both ICGQ and BOARDC variables (columns 1 and 4). This finding shows that excess of control rights in hands of the largest shareholder is detrimental to corporate governance. Nevertheless, in columns 2 and 5 (columns 3 and 6), the separation of rights held by the top three (five) shareholders is not significant. Thus, the negative influence of the separation of rights of the largest shareholder is not as harmful to corporate governance when diluted among other blockholders. These findings raise the question about whether other blockholders collude or contest the largest shareholder.

The results presented thus far raise the question about the relations among blockholders and the impact of such relations on the corporate governance. Do blockholders collude to weaken the mechanisms of corporate governance? Alternatively, do some blockholders contest the power of the dominant shareholder to protect their interests as shareholders by implementing better corporate governance? These questions are related to our third hypothesis.

To address these issues, we test the contesting power of the second through the fifth largest blockholders. Table 6 shows the

Table 4
The effect of ownership concentration on the quality of corporate governance practices and on the board composition.

| | Panel A | | | Panel B | | |
| | The effect of ownership concentration on the quality of corporate governance practices (Dependent variable: ICGQ) | | | The effect of ownership concentration on the quality of the board composition (Dependent variable: BOARDC) | | |
	(i)	(ii)	(iii)	(i)	(ii)	(iii)
VOC1	−0.2470 ***			−0.2907 **		
	(0.079)			(0.126)		
VOC3		−0.2256 *			−0.5149 **	
		(0.124)			(0.219)	
VOC5			−0.2080 ***			−0.5770 ***
			(0.069)			(0.215)
ROA	0.0823	0.0492	−0.0465	0.4888	0.0786	0.0545
	(0.153)	(0.176)	(0.068)	(0.665)	(0.339)	(0.278)
GOPP	−0.0117	−0.0113	−0.0071	0.0284	0.0236	0.0185
	(0.010)	(0.007)	(0.007)	(0.040)	(0.027)	(0.021)
SIZE	0.0132	0.0213	0.0139	0.0811	0.0166	0.0213
	(0.026)	(0.029)	(0.016)	(0.071)	(0.041)	(0.043)
Intercept	0.5128	0.3913	0.4873 *	−0.7277	0.6163	0.6037
	(0.425)	(0.429)	(0.282)	(1.211)	(0.647)	(0.637)
N. Obs.	340	340	340	340	340	340
N. Firms	85	85	85	85	85	85
F	6.69	7.89	7.6	2.66	2.89	3.82
p-value	0.000	0.000	0.000	0.001	0.000	0.000
AR2	0.481	0.344	0.551	0.111	0.104	0.152
Hansen	16.28	12.13	32.76	3.53	7.75	6.71
p-value	0.699	0.735	0.429	0.74	0.859	0.917

VOC1 = ownership concentration held by main shareholder. VOC3 and VOC5 stand for ownership concentration held by up to the three and the five main shareholders, respectively. ROA = Return on assets. GOPP stands for growth opportunities (Tobin's Q). SIZE = firm size (Ln(total assets)). Models are estimated by two step system generalized method of moments (GMM). Estimated coefficients and standard errors (in parentheses) are robust to heteroskedasticity. ***, **, and * denote statistical significance of the coefficients at 0.01, 0.05, and 0.1 levels.

Table 5
Effect of the difference between control and cash flow rights on Corporate Governance.

	Panel A Dependent variable: ICGQ			Panel B Dependent variable: BOARDC		
	(i)	(ii)	(iii)	(i)	(ii)	(iii)
WEDGE1	−0.3408 **			−0.5285 *		
	(0.157)			(0.278)		
WEDGE3		−0.1935			0.1872	
		(0.153)			(1.922)	
WEDGE5			−0.0103			1.0544
			(0.134)			(1.021)
ROA	−0.0483	−0.0934	−0.0824	−0.1375	−1.7795	−2.1717
	(0.129)	(0.167)	(0.055)	(0.198)	(1.253)	(1.414)
GOPP	−0.0197 ***	−0.0187 ***	−0.0095	0.0025	0.064	0.0635
	(0.006)	(0.007)	(0.007)	(0.021)	(0.047)	(0.055)
SIZE	0.0100	0.0018	−0.0183	0.0141	−0.101	−0.1968
	(0.029)	(0.028)	(0.026)	(0.046)	(0.092)	(0.142)
Intercept	0.4773	0.5822	0.8469 **	0.3904	2.106	3.7066
	(0.466)	(0.450)	(0.397)	(0.729)	(1.561)	(2.351)
N. Obs.	340	340	340	340	340	340
N. Firms	85	85	85	85	85	85
F	8.95	5.2	5.27	2.07	1.92	1.74
p-value	0.000	0.000	0.000	0.011	0.021	0.043
AR2	0.645	0.748	0.94	0.196	0.389	0.782
Hansen	14.83	13.05	27.06	14.26	2.37	3.22
p-value	0.786	0.875	0.253	0.817	0.796	0.864

WEDGE1 = excess voting rights over cash flow rights held by the main shareholder. WEDGE3 and WEDGE5 refer to such measure relative to the three and five main shareholders, respectively. ROA = Return on assets. GOPP stands for growth opportunities (Tobin's Q). SIZE = firm size (Ln (total assets)). Models are estimated by two step system generalized method of moments (GMM). Estimated coefficients and standard errors (in parentheses) are robust to heteroskedasticity. ***, **, and * denote statistical significance of the coefficients at 0.01, 0.05, and 0.1 levels.

impact of the power to contest on the quality of the corporate governance as a whole (ICGQ), and Table 7 reports the results specifically concerning the effect on the quality of the board composition (BOARDC). We analyze the effect of contestability power (CONTEST) competing with the power of the largest shareholder (VOC1).

It can be observed the negative impact of the largest blockholder's voting power (VOC1) is very strong and counterbalances the

Table 6
Effect on corporate governance quality (ICGQ) by the contest for control exercised by second until the fifth main voting shareholders.

Model:	(i)	(ii)	(iii)	(iv)
Variable	Contest: OC2	Contest: OC23	Contest: OC234	Contest: OC2345
CONTEST	−0.0131	−0.0251	−0.0046	−0.0030
	(0.134)	(0.137)	(0.118)	(0.120)
VOC1	−0.3090 ***	−0.3267 ***	−0.2893 ***	−0.2868 ***
	(0.097)	(0.101)	(0.090)	(0.092)
ROA	0.2736	0.2849	0.1961	0.1660
	(0.277)	(0.260)	(0.220)	(0.230)
GOPP	0.0040	0.0066	0.004	0.0037
	(0.012)	(0.011)	(0.010)	(0.010)
SIZE	0.0338	0.0220	0.0278	0.0289
	(0.033)	(0.021)	(0.024)	(0.027)
Intercept	0.1771	0.3769	0.2712	0.2541
	(0.531)	(0.335)	(0.389)	(0.458)
N. obs.	340	340	340	340
N. firms	85	85	85	85
F	210.73	146.61	110.17	95.09
p-value	0.000	0.000	0.000	0.000
AR(2)	0.515	0.492	0.546	0.556
Hansen	12.62	13.24	11.99	11.49
p-value	0.319	0.278	0.365	0.403

Dependent variable: ICGQ (index for Corporate Governance Quality). CONTEST is cumulated ownership held from the second up to the fifth main shareholder (OC2, OC23, OC234, OC2345). VOC1 = ownership concentration held by the main shareholder. ROA = Return on Assets. GOPP = firm growth opportunities (Tobin's Q). SIZE = firm size (Ln of total assets). Models are estimated by two step system generalized method of moments (GMM). Estimated coefficients and standard errors (in parentheses) are robust to heteroskedasticity. ***, **, and * denote statistical significance of the coefficients at 0.01, 0.05, and 0.1 levels.

Table 7

Effect on board composition (BOARDC) by the contest for control exercised by second until the fifth main voting shareholders.

Model:	(i)		(ii)		(iii)		(iv)	
Variable	Contest: OC2		Contest: OC23		Contest: OC234		Contest: OC2345	
CONTEST	−0.2017		−0.2227		−0.2769		−0.3242	
	(0.208)		(0.190)		(0.214)		(0.251)	
VOC1	−0.2332	**	−0.3076	*	−0.3768	**	−0.4211	***
	(0.106)		(0.159)		(0.156)		(0.158)	
ROA	0.0442		−0.0783		0.1867		0.2655	
	(0.099)		(0.751)		(0.496)		(0.447)	
GOPP	−0.0034		0.0194		0.0097		0.0134	
	(0.009)		(0.039)		(0.035)		(0.038)	
SIZE	−0.0062		0.035		0.0339		0.0333	
	(0.032)		(0.058)		(0.058)		(0.058)	
Intercept	0.8319		0.1751		0.2213		0.2470	
	(0.502)		(1.002)		(1.030)		(1.007)	
N. obs.	340		340		340		340	
N. firms	85		85		85		85	
F	47.20		49.48		28.35		20.26	
p-value	0.000		0.000		0.000		0.000	
AR(2)	0.108		0.110		0.148		0.149	
Hansen	30.31		12.03		14.47		13.95	
p-value	0.502		0.361		0.633		0.671	

Dependent variable: BOARDC (index for the quality of the board composition). CONTEST is cumulated ownership held from the second up to the fifth main shareholder (OC2, OC23, OC234, OC2345). VOC1 = ownership concentration held by the main shareholder. ROA = Return on Assets. GOPP = firm growth opportunities (Tobin's Q). SIZE = firm size (Ln of total assets). Models are estimated by two step system generalized method of moments (GMM). Estimated coefficients and standard errors (in parentheses) are robust to heteroskedasticity. ***, **, and * denote statistical significance of the coefficients at 0.01, 0.05, and 0.1 levels.

other blockholder's ability to contest his/her power, so that he/she is powerful enough to shape corporate governance to meet his/her interests (Table 6).

Table 7 shows that the voting power of the largest shareholder is actually strong, and, consistent with our previous results, negatively affects the quality of the board composition overcoming any possible interest of other shareholder in contesting his/her power. In fact, the largest blockholder seems to rely on special mechanisms of corporate governance other than the board of directors, whose composition can be complex and costly, to monitor managers.

Additional models were estimated to test the contestability power of the second and third largest blockholders by using interacted variables comprising voting ownership of the main shareholder and the second and third largest shareholders (Table 8). In models (i) and (ii), the index for Corporate Governance Quality (ICGQ) is the dependent variable. As can be depicted from model (i) estimates, ownership held by the main shareholder (VOC1) has a negative effect on Corporate Governance quality, and the contest power, proxied by an interacted variable (VOC1XOC2) that corresponds to the product of ownership held by the main shareholder (VOC1) and ownership in hands of the second largest shareholder (OC2), is not able to effectively contest the power of the main shareholder given the non significant coefficient of the contest power (Main_other). Similar results are found in model (ii) in which there is change of the explanatory variable for VOC1XOC23 that takes into account ownership in hands of the second and third main shareholders. In a similar fashion, the voting ownership in hands of the second and third largest shareholders is not able to contest the power of the main shareholder.

In models (iii) and (iv) (Table 8), the index for the quality of the board composition (BOARDC) is the dependent variable. As can be observed in model (iii) estimates, ownership held by the main blockholder (VOC1) has a negative effect on the quality of the board. Besides, the contest power, proxied by an interacted variable (Main_other = VOC1XOC2) that corresponds to the product of ownership held by the main shareholder (VOC1) and the ownership in hands of the second largest shareholder (OC2) is not able to contest the power of the main blockholder. Similar results are found in model (iv) in which there is a change of the explanatory variable (Main_other for the interaction VOC1XOC23) and that takes into account ownership in hands of the second and third main blockholders (OC23) who are not able improve the board quality.

5. Conclusions

We analyze how some issues of the ownership structure, namely, the distribution of power among blockholders affects the quality of corporate governance in an important emerging market. Brazil is an interesting framework because, unlike the Anglo-Saxon countries, it provides poor legal protection for investors, and Brazilian firm ownership is extremely concentrated. This distribution of the ownership raises a principal–principal agency problem among shareholders, so that conflicts of interests are likely to arise between the largest controlling shareholder and other blockholders. Although the effects of such conflicts on firm value have been widely studied, new research is still needed on the effect of these conflicts on the design of the mechanisms for corporate control and on the quality of corporate governance.

Table 8

Models that test the effect of contestability on corporate governance as a whole (ICGQ) and on board composition (BOARDC) by using cross variables between the main shareholder and the second and second and third main shareholders.

	Effect of contestability on corporate governance quality (ICGQ)		Effect of contestability on board composition (BOARDC)	
Model:	(i)	(ii)	(iii)	(iv)
Variable	Main_other: VOC1XOC2	Main_other: VOC1XOC23	Main_other: VOC1XOC2	Main_other: VOC1XOC23
VOC1	−0.2753 **	−0.2891 ***	−0.3169 **	−0.2538 *
	(0.112)	(0.099)	(0.151)	(0.132)
CONTEST: OC2 (i, iii); OC23 (ii, iv)	0.2277	0.1272	−0.9858	−0.0206
	(0.748)	(0.224)	(0.648)	(0.801)
Main_other	−0.6952	−0.2382	1.2208	−0.6881
	(1.446)	(0.398)	(1.110)	(1.539)
ROA	−0.1297	0.1264	−0.0567	−0.3595
	(0.267)	(0.159)	(0.112)	(0.678)
GOPP	0.0038	0.0061	−0.0002	0.0007
	(0.010)	(0.009)	(0.010)	(0.035)
SIZE	0.0340	0.0043	0.0010	−0.0108
	(0.041)	(0.027)	(0.045)	(0.058)
Intercept	0.2743	0.6673	0.8009	0.9912
	(0.634)	(0.389)	(0.622)	(0.907)
N. obs.	340	340	340	340
N. firms	85	85	85	85
F	4.40	4.54	3.50	2.41
p-value	0.000	0.000	0.000	0.002
AR(2)	0.639	0.663	0.125	0.156
Hansen	11.80	29.89	25.53	31.11
p-value	0.544	0.523	0.545	0.185

We take advantage of a new set of information on the corporate governance of Brazilian firms that only recently has become available and, based on this comprehensive information and on a recent proposal in the Brazilian literature, an index for corporate governance quality is proposed taking into account a set of good corporate governance practices that are beyond those required by the legal system.

Results show that ownership concentration is detrimental to the quality of the corporate governance system and that blockholders other than the dominant one are not able to challenge the main blockholder's power. In line with the expropriation hypothesis, the more voting rights the largest controlling shareholder holds, the less the incentives he/she has to implement a better corporate governance system. This finding confirms that controlling shareholders may be interested in extracting private benefits, and, in turn, the implementation of an efficient set of corporate governance practices is not a priority for these shareholders. We also find that the incentives for private benefits of control increases with the wedge between voting rights and cash flow rights in hands of the main shareholder.

Overall, our findings bring light to the principal–principal agency problem in the Brazilian market, an environment different from the Anglo-Saxon framework but having many common features with a number of other emerging markets around the world. We show that, under such circumstances, power distribution among shareholders may be a key to understand the combination of mechanisms of corporate control implemented in each firm.

The work shows that large shareholders may not be interested in better corporate governance for personal interests. Thus, our research raises new questions about the possible influences of this inefficiency on certain corporate issues such as the definition of firm strategy, the impact of financial constraints, and the scrutiny of firms by capital markets. In this context, a number of directions exist for future research concerning how the incentives of the dominant shareholder to extract private benefits may be curbed by external agents such as creditors, auditors, and financial analysts. Whether this external oversight can offset the resistance of the largest shareholder to implement better corporate governance practices is still a question that remains unclear.

Acknowledgments

Appendix A

Exhibit 1 Corporate governance practices taken into for the index of quality of the corporate governance (ICGQ).

Dimension	Item	Corporate governance practice measurement	Data source
Shareholder	Voting right	Voting rights of each class of shares (DVON or DVPN) (0: no right; 0.5: restrict; 1:full) multiplied by the proportion of each class of shares (%ON x DVON) + (%PN x DVPN) DVON = Voting rights of ordinary shares DVPN = Voting rights of preferential shares	FR, item 18.1
	Tag along	*Tagalong* proportion multiplied by the proportion of each class relative to total shares: (%ON x TAON) + (%PN x TAPN)	FR, item 18.1
	Firm annual meeting	Minimum period of notice of 30 days for the Annual Meeting (0.25: yes; 0: no)	FR, item 12.2
		Electronic transmission of the Annual Meeting (0.25: yes; 0: no)	FR, item 12.2
		Availability of communication means between company and shareholders on the agendas of the Annual Meeting through the Internet (0.25: yes; 0: no)	FR, item 12.2
		Inclusion of shareholders proposals on the agenda of the Annual Meeting is allowed (0.25: yes; 0: no)	FR, item 12.2
Shares	Voting shares	Percentage of common shares issued by the company (common shares / total shares)	FR, item 15.1
	Free float	Percentage of shares outstanding (outstanding shares / total shares)	FR, item 15.3
Board Structure	Board size	Board composition from 5 to 11 effective members (1: yes; 0: no)	FR, items 12.6/8
	Board Committees	The Board has the Audit Committee (0.33: yes; 0: no)	FR, items 12.1/7
		The Board has a Remuneration Committee (or equivalent) (0.33: yes; 0: no)	FR, items 12.1/7
		The Board has a Corporate Governance Committee (or equivalent) (0.33: yes; 0: no)	FR, items 12.1/7
Board composition	CEO duality	Segregation of the President of the Board (Chairperson) and CEO (1: yes; 0: no)	FR, items 12.6/8
	External board members	Proportion of directors with no other link with the firm (external directors / total board members)	FR, items 12.6/8
	Independent board members	Independent board members / total board members)	FR, items 12.6/8
	Minority shareholders representative	Effective board members not nominated by the controller shareholder (minority board members / total board members)	FR, items 12.6/8
Board practices	Board's mandate	One year (1), two years (0.5), three years (0)	FR, item 12.1, or company statute
	Board assessment	Existing assessment mechanisms for the board, and/or board members (1: yes; 0: no)	FR, item 12.1 or company statute
	Floating board compensation	1: yes; 0: no	FR, items 13.1/2
Executive management	Floating executive compensation	1: yes; 0: no	FR, items 13.1/2
	Stock options	The firm has compensation plans based on stock options for executive managers (1: yes; 0: no)	FR, items 13.1/2
	Mandate of Executive Management	one year (1); two years (0.5); three years (0)	FR, item 12.1, or company statute
	Executive management assessment	Assessment of Executive management or of its members (1: yes; 0: no)	FR, item 12.1, or company statute
Disclosure	Accounting information quality	Punctually on financial disclosure CVM (0.33: yes; 0: no)	CVM Web site
		Firm not notified by CVM to reissue any financial report (0.33: yes; 0: no)	CVM Web site
		Independent Audit Opinion with no restriction (0.33: yes; 0: no)	DFP
	Voluntary Disclosure	Firm issues in its website sustainability report or similar (0.5: yes; 0: no)	Firm web site / Bm &Bovespa
		The company publishes projections about future performance (0.25: yes; 0: no)	FR, item 11.1
		The company discloses nonfinancial performance indices (0.25: yes; 0: no)	FR, item 3.2
Fiscal committee	Fiscal committee presence	Fiscal committee installed: permanent (1); installed for the year but not permanent (0.5); Not installed in the year (0)	FR, item 12.1, or company statute
	Fiscal committee compensation	Fiscal committee members do not receive variable compensation (0.5: yes; 0: no)	FR, item 13.1/2
		The firm does not have compensation plan based on stock for Fiscal committee members (0.5: yes; 0: no)	FR, item 13.1/2
	Minority shareholder representation	Proportion of Fiscal committee members nominated by minority shareholders(number of Fiscal committee members nominated by minority shareholders / total Fiscal committee members)	FR, items 12.6/8
Independent audit process	Independence of audit firm	Independent auditor firm contracted for less than five years (0.5: yes; 0: no)	FR, items 2.1/2
		Independent auditor firm provides exclusive audit services (0.5: yes; 0: no)	FR, items 2.1/2
	Independent audit firm reputation	Independent auditor firm is one of the *big four* (1: yes; 0: no)	FR, items 2.1/2
Guidance for conflicts of interest	Managing conflicts of interest	The firm has formal ways that allow identification and solution of conflicts of interests (1: yes; 0: no)	FR, items 12.2/4
	Mediation and arbitration	Statute of the company has arbitration clause to the resolution of conflicts among shareholders and between them and the issuer through arbitration (1: yes; 0: no)	FR, item 12.5
	Transparency	The company has and makes public the "Code of conduct" (0.33: yes; 0: no)	CVM Web site
		The company has and makes public the "share trading policy" (0.33: yes; 0: no)	CVM Web site
		The company has and makes public the "risk management policy" (0.33: yes; 0: no)	FR, item 5.2

Note: The index was first used by Brandão and Crisóstomo (2015).

NOTES

1. See https://economatica.com/ for more information about Economática.

2. For instance, "shareholder meetings" has four items: whether a minimum period of notice exists for the general shareholders meeting, whether the meeting is broadcasted, whether the communication between firm and shareholder on the agenda of the meeting is allowed, and whether shareholders proposals can be included in the agenda of the meeting. Thus, each item is scored to a maximum of 0.25.

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