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REFLECTIONS OF CORPORATE GOVERNANCE ON PAY-PERFORMANCE SENSITIVITY: A NEW PERSPECTIVE[1]

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ABSTRACT

Purpose: This research investigates whether the characteristics of corporate governance (executive compensation, board composition, ownership structure, and control) influence the sensitivity of remuneration to firms' performance, the so-called pay-performance sensitivity.

Originality/value: This study brings to the literature a new perspective on the interaction of corporate governance mechanisms aligned with the concept of pay-performance sensitivity. The study shows that governance instruments are not isolated but rather interrelated and interdependent.

Design/methodology/approach: The study sample was composed of Brazil 100 Index (IBRX 100) companies listed on B3 from 2014 to 2018. Data were extracted from the Economatica® database, and the reference forms were accessed on the Securities and Exchange Commission of Brazil's (CVM) website. We use panel data regression models with fixed and random-effects models.

Findings: The board composition (represented by the CEO/Chairman duality) increases the pay-performance sensitivity, while the ownership concentration reduces it. In addition, a greater presence of independent members on the board reduces the variation in executive compensation.

KEYWORDS

Executive compensation. Board composition. Ownership structure and control. Corporate governance. Pay-performance sensitivity.

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1. INTRODUCTION

Executive compensation has been frequently investigated with the objective of assessing its determinants (Essen, Otten, & Carberry, 2012) and the influence of the incentives granted to the manager on his/her behavior (Chen, Goergen, Leung, & Song, 2019).

According to Bebchuk and Weisbach (2010), although the interest in executive remuneration has existed for some time, the 2008 financial crisis intensified it. Regulators worldwide have studied measures to improve the compensation structure. United States' authorities and authorities of other countries have considered ways to improve corporate governance processes to prevent abuses concerning the remuneration of high-level executives.

Jensen and Murphy (1990) argue that the compensation policy to managers can help align interests between shareholders and managers in several ways. Among remuneration mechanisms, they highlighted salary and bonus reviews, stock options, and threats of dismissal. Jensen and Murphy (1990) investigated the effect of these mechanisms on managerial performance and the magnitude of this effect, the so-called pay-performance sensitivity (PPS). Considering a raise of X% in the firm's value and/or performance, the authors investigated the occurrence and the magnitude of the impact of performance on executive compensation.

Due to conflicts of interest between shareholders and managers, executive compensation is a governance mechanism that may help align these interests since it encourages managers to maximize shareholders' wealth (Jensen & Meckling, 1976; Jensen & Murphy, 1990). Executive compensation and an efficient remuneration committee are important conditions for the firm's good performance (Elsayed & Elbardan, 2018). However, the presence of the *chief executive officer* (CEO) in the board of directors negatively affects the efficiency of monitoring executive compensation (Reddy, Abidin, & You, 2015), and, in a context of ownership concentration, executive compensation, is less sensitive to performance (Ataay, 2018).

Thus, our research problem is:

- How is executive compensation sensitive to corporate governance characteristics and to the changes in the firm's market value?

Our general objective is to investigate the relation of executive compensation to corporate governance characteristics and the firm's market value. Specifically, we seek to understand whether the remuneration committee,

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the formation of the board of directors, and the ownership structure/control can interfere with PPS. The study sample included Brazil 100 Index companies listed on B3 from 2014 to 2018.

Several recent studies in the international literature have found a significant relationship between executive compensation and firm performance (Catuogno, Arena, & Viganò, 2016; Degenhart, Martins, & Hein, 2017; Elsayed & Elbardan, 2018; Kanapathippillai, Mihret, & Johl, 2019). In contrast, a theoretical framework has been investigating, in isolation, how corporate governance mechanisms related to the board of directors and the ownership structure can affect PPS in companies (Reddy et al., 2015; Abraham & Singh, 2016; Ataay, 2018; Amzaleg, Azar, Ben-Zion, & Rosenfeld, 2014). Based on the studies mentioned above, we inferred that the corporate governance mechanisms might be effective instruments to raise the sensitivity of managerial remuneration in relation to firm performance.

Even though the authors mentioned having stated that the quality of corporate governance may affect executive compensation and, consequently, firm value, there are still doubts concerning how such mechanisms can be combined to improve the sensitivity of managers' compensation in relation to performance. Most studies on this subject (Silva & Chien, 2013; Ermel & Do Monte, 2018; Brandão, Vasconcelos, Luca, & Crisóstomo, 2019) have focused on the relationship between executive compensation and aspects of performance and value, but only a few studies have analyzed the interrelation between governance mechanisms and their possible impacts on PPS, which we aim to approach in this study.

Brazilian studies on this topic have investigated the effect of corporate governance mechanisms on PPS individually. For example, Brandão et al. (2019) only studied the implication of board composition on the sensitivity of executive compensation to performance, but they did not analyze other mechanisms. Silva, Lana, and Marcon (2018) observed the impact of the shareholders' agreement on the firm value. However, their study assessed the impact of three corporate governance mechanisms (remuneration, board of directors, and ownership property) on the PPS.

Overall, our study presents a new approach to the analysis of corporate governance mechanisms associated with the concept of PPS. We aim to demonstrate that governance instruments do not act in isolation, but rather connectedly and interdependently. To the best of our knowledge, no other study in Brazil has connected these three mechanisms and assessed the impact of each of them separately on the sensitivity of executive compensation to performance.

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2. THEORETICAL FRAMEWORK

2.1 Executive compensation and pay-performance sensitivity

The creation of instruments for managerial compensation comes from the necessity to find a proper way of controlling managers' actions and to encourage them to care for the improvement of the firm's performance and, at the same time, to add value to shareholders (Amzaleg et al., 2014; Essen et al., 2012). Among compensation mechanisms, we can highlight salary reviews, stock options, bonuses, and payment for performance (Essen et al., 2012; Jensen & Murphy, 1990; Song & Wan, 2019). Krauter (2013) points out that executives can be granted direct financial compensation, which is a value received in cash – fixed and/or variable –, or indirect financial compensation, which represents other benefits such as health and life insurance. They can also receive non-financial compensations, which include investments in career and continuous education.

There is no consensus among scholars on the effectiveness of compensation policies on firm value. Some authors have argued that these executive compensation mechanisms cannot fully align executives' interests with those of shareholders. Some studies have argued that compensation alone cannot avoid entrenchment behaviors that may harm performance (Kabir, Li, & Veld-Merkoulova, 2013; Livne, Markarian, & Mironov, 2013; Newton, 2015). Other studies have argued that executive compensation models are very efficient in solving agency conflicts and, at the same time, in improving firm performance and value (Karim, Lee, & Suh, 2018; Song & Wan, 2019).

In the midst of such divergence, some studies have presented evidence on the relationship between executive compensation and firm performance and firm value in several countries (Amzaleg et al., 2014; Sheikh, Shah, & Akbar, 2017), including Brazil (Degenhart et al., 2017; Ermel & Do Monte, 2018; Brandão et al., 2019).

Amzaleg et al. (2014) investigated whether CEOs' compensation was sensitive to firm performance in a sample of 135 Israeli public companies. They found a positive relationship between compensation and performance. Amzaleg et al. (2014) found a higher compensation level for CEOs who had a high power of control in the board when compared to those who did not have this capacity. In Pakistan, Sheikh et al. (2017) studied the same subject with a sample of 225 listed companies from 2005 to 2012. Their findings revealed that the performance of the previous year had a significant, positive effect on the current executive compensation.

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Brazilian studies that have approached the sensitivity of compensation to firm performance are controversial. While some studies have found a positive association (Brandão et al., 2019; Degenhart et al., 2017), others have not found any significant effect between executive compensation and firm performance (Silva & Chien, 2013; Ermel & Do Monte, 2018; Veloso, Santos, Pimenta, Cunha, & Cruz, 2019). In a study with 66 non-financial listed companies from 2010 to 2014, Veloso et al. (2019) found no association between executive compensation and economic and financial performance.

Degenhart et al. (2017) analyzed a sample of 219 firms listed on BM&FBovespa from 2011 to 2015. They found a positive variation between return on assets and fixed, variable and total pay of CEOs. From 2010 to 2014, in a study with 350 companies, Elsayed and Elbardan (2018) identified a positive relationship between executive compensation and firm performance, corroborating previous authors.

From a distinct perspective, Brandão et al. (2019) focused on the data analysis of 96 companies that participated in the Brazil 100 Index (IBRX 100) of BM&FBovespa from 2013 to 2015. They observed a positive relationship between executive compensation and the market value of companies. In France, Zoghlami (2020) investigated 155 companies between 2009 and 2018 and observed that executive compensation positively impacted companies' economic and financial performance, but it negatively affected their market value. Zoghlami (2020) emphasized that firm performance may be reached through reforms on incentives of executive compensation aligned to the structure of corporate governance. Blanes, Fuentes, and Porcuna (2020) pointed out that the CEO's remuneration is sensitive to performance variations in both the accounting and market approaches.

In addition to executive compensation, organizations have created committees to determine the level of executive compensation, the so-called "remuneration committees". When CEOs have some bargaining power over the board of directors, they can influence the elaboration of contracts and impose the inclusion of clauses that increase their benefits (Bebchuk & Fried, 2003; Murphy, 2013). According to Conyon (2014), the remuneration committee is essential for elaborating executive payment policies that reflect the market's reality and that are coherent to the efforts made by the company to raise the shareholders value, reducing the conflicts of interests between the parties.

This fundamental role places remuneration committees in an outstanding position in the literature that addresses their composition (Conyon, 2014; Strobl, Rama, & Mishra, 2016) and their relation to sensitivity and perfor-

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mance (Catuogno et al., 2016; Conyon, 2014; Kanapathippillai et al., 2019). Aspects of the remuneration committee have been used in many countries as alternatives to connect the sensitivity of the CEOs' pay to the increase in firm performance.

Catuogno et al. (2016) studied some characteristics in a sample of 72 Italian companies from 2008 to 2010, which included board independence, board interlocking, and councils elected by minority shareholders. They investigated whether the quality of the committee favored the alignment of compensation and performance. Catuogno et al. (2016) found that the remuneration committee influences the use of plans of stock options as an incentive to improve firm performance. Similarly, Kanapathippillai et al. (2019) studied the same relationship with a sample of 5303 firm-year observations collected from 2005 to 2015. They found that the existence and effectiveness of the remuneration committee positively influence the sensitivity of total executive compensation to the performance of Australian companies.

Elsayed and Elbardan (2018) indicated the relevance of remuneration committees in the definition of executive compensation packages. They defended that these packages are connected not only to firm performance in previous periods but also to future goals as a strategy to motivate executives.

In Brazil, there is still a lack of studies on the influence of the remuneration committee on PPS. In this context, we elaborated hypothesis H_1:

- H_1: The presence of a remuneration committee increases the PPS of companies that compose the IBRX100.

2.2 Board composition and pay-performance sensitivity

The board of directors has a broad range of roles: to follow up the management impartially, to contribute to the development of strategies, risk management, and succession planning, and to guarantee integrity in the production of reports (Wong, 2009). According to Hermalin and Weisbach (2003), the outcomes reached by the company are better when the board is mostly independent and when there is no duality of roles between the president of the board and the CEO. When it fully plays its role, the board has the power to control managerial actions and defines the remuneration committee members. In companies with low levels of governance, executives can use their free will to influence the board's decisions, seeking to increase their own benefits disproportionally in relation to the efforts to increase firm performance (Baixauli-Soler & Sanchez-Marin, 2014; Newton, 2015).

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To reinforce the monitoring of managers, the quality and composition of the board may be a key aspect to reduce the bargaining power of managers, seeking a balance between compensation and the increase in firm performance. Therefore, attributes as the duality of the roles of CEO and Chairman and the independence of the board have been used in international (Amzaleg et al., 2014; Chen, Lin, Lu, & Zhang, 2015; Jaiswall & Bhattacharyya, 2016; Sheikh et al., 2017) and national research (Abraham & Singh, 2016; Brandão et al., 2019; Veloso et al., 2019) to verify how executive compensation is sensitive to variations in performance.

In terms of international literature, Amzaleg et al. (2014) measured the board of directors through the following variables: the CEO/Chairman duality and the percentage of independent board members and outsiders. They analyzed the effects of these variables on PPS. Amzaleg et al. (2014) investigated a sample of 135 Israeli companies from 1998 to 2002. They found that the CEO/Chairman duality and the size of the board positively influenced the sensitivity of compensation to performance.

Reddy et al. (2015) investigated listed companies from New Zealand from 2005 to 2010. The authors observed that, in companies whose CEO was also a member of the board, executive compensation was higher, which suggests less efficient monitoring of the CEO's remuneration due to his/her influence on the board's decisions. Reddy, Abidin, and You (2015) did not identify a significant relationship between the proportion of independent members of the board and executive compensation.

In India, Jaiswall and Bhattacharyya (2016) studied a sample of 770 companies listed on Bombay Stock Exchange (BSE) from 2002 to 2013. Overall, the authors found that the CEO/Chairman duality, institutional shareholders, and outsiders positively affected the sensitivity of compensation to performance.

Regarding Brazilian companies, Abraham and Singh (2016) observed that the separate roles of CEO and Chairman affect the influence of blockholders concerning their returns. Thus, when this separation exists, executives are rewarded in accordance with increments on returns made to blockholders. When there is a CEO/Chairman duality, the payment of salaries is inconsistent with performance. Brandão et al. (2019) analyzed the influence of board attributes on the PPS of the 100 companies that compose the IBRX from 2013 to 2015. They found that the CEO/Chairman duality and board members elected by minority shareholders did not affect PPS. However, PPS had a negative relationship with the proportion of independent board members. Veloso et al. (2019) identified a significant, negative relationship

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between the CEO/Chairman duality and executive compensation, in opposition to previous authors.

In view of this background, there is no consensus on the way the variables of the board influence the sensitivity of compensation to performance. However, most studies have shown that these variables can provide better results in companies with low levels of governance (Amzaleg et al., 2014; Baixauli-Soler, & Sanchez-Marin, 2014; Jaiswall & Bhattacharyya, 2016).

Based on the aforementioned studies, we propose the following hypotheses:

- H_2: The CEO duality increases the PPS of companies that compose the IBRX100.
- H_3: The greater presence of independent board members increases the PPS of companies that compose the IBRX100.

2.3 Ownership structure/control and pay-performance sensitivity

Among the determinants of executive compensation, Correia, Amaral, and Louvet (2014) pointed out ownership structure/control, represented by ownership concentration. These authors studied Brazilian companies from 1997 to 2006 and noticed that companies with a less concentrated ownership structure/control had a greater incidence of profit-sharing programs for managers.

Jensen and Meckling (1976) already discussed the role of the ownership structure/control. They argued that a greater dispersion of ownership provides less incentive for monitoring decisions. Conyon and He (2011) state that greater concentration leads to a greater capacity of shareholders to protect their interests. When analyzing Chinese companies, they identified that companies with a concentrated ownership structure presented lower salaries and incentives to executives. Chen et al. (2015) also studied Chinese companies and investigated whether changes in the incentive of the controlling shareholder affected the sensitivity of payment for performance. They observed that the alignment between the interests of controlling and minority shareholders is associated with greater sensitivity, positing that a better alignment leads to more efficient remuneration contracts.

Ownership concentration was also investigated concerning the sensitivity of compensation. From 2004 to 2011, Baixauli-Soler and Sanchez-Marin (2014) analyzed data from 119 Spanish companies. They found that concentration negatively impacted the sensitivity of executive compensation in relation to performance, while the presence of independent board members

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was not significant. Similarly, Reddy et al. (2015) identified that ownership concentration was negative and significant in relation to the performance of firms in New Zealand, which demonstrates that shareholders are more interested in their own benefits than in monitoring practices. Ataay (2018) investigated Turkish companies from 2009 to 2013 and observed that executive compensation is sensitive to performance. However, when ownership concentration is higher, this sensitivity is lower.

Based on the studies presented, we propose hypothesis H_4:

- H_4: Ownership concentration reduces the PPS of companies that compose the IBRX100.

A governance mechanism associated with ownership structure/control is the shareholders' agreement. On a legal basis, Miliauskas (2013) defines the shareholders' agreement as a written or oral agreement between two or more firm shareholders. From the perspective of the agency theory, the idea of the shareholders' agreement arouse from studies by Jensen and Meckling (1976), La Porta, Lopez-de-Silanes, and Shleifer (1999) and La Porta, Lopez-de-Silanes, Shleifer, and Vishny (2002) on the legal protection of shareholders, emphasizing the existence of conflicts of interests between minority and majority shareholders. It is expected that, in countries that offer low legal protection to investors and companies with a strong ownership concentration, majority shareholders use their power of voting to approve board decisions that increase their wealth, which not always favors minority shareholders.

To protect themselves against the expropriation of their rights by majority shareholders and prevent the executives' entrenching behavior, minority shareholders sign agreements with each other, aiming to form a kind of coalition to optimize their powers in voting deliberative decisions of the board of directors (Cremers & Ferrell, 2014). According to Miliauskas (2013), shareholders' agreements are generally performed in companies with a diluted ownership structure, in which a group of shareholders enters into agreements to concentrate their power of voting and reinforce their influence. Empirical studies have shown that contracts signed between shareholders influence the firm value (Barontini & Bozzi, 2010; Baglioni, 2011; Carvalhal, 2012; Silva et al., 2018).

Barontini and Bozzi (2010) analyzed the impact of shareholders' agreements on the sensitivity of executive compensation to the performance in a sample of 175 Italian companies from 1998 to 2002. Utilizing a panel data regression, they concluded that the shareholders' agreement exerts a

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moderator effect on executive compensation, mainly in companies with a high level of ownership concentration. Barontini and Bozzi (2010) also observed excessive compensation negatively related to the performance of family businesses that do not have a shareholders' agreement.

In the Brazilian scenario, Carvalhal (2012) built an index of shareholders' agreement based on 24 questions, which involved stock transference, payments of dividends, financing, and corporate governance. He investigated the relationship between the index and firm value. To do so, the author analyzed 366 listed companies from 1995 to 2009, of which 88 firms had a shareholders' agreement. Carvalhal (2012) observed that companies with shareholders' agreements are more valued. In addition, the level of protection provided by agreements positively influenced firm value.

Silva et al. (2018) adopted the same methodology as Carvalhal (2012) and analyzed the relationship between shareholders' agreements and the firm value of 472 Brazilian firms (86 of them with signed agreements) from 1999 to 2013. They showed that a positive variation of firm value might be related to the strengthening of minority shareholders' rights conquered through agreements.

According to the studies presented above, shareholders' agreements have taken an important position in reducing the problems of expropriation of minority shareholders' rights, and they have positively affected firm performance. Based on this overview, we developed hypothesis H_5:

- H_5: The presence of a shareholders' agreement increases the pay-performance sensitivity of companies that compose the IBRX100.

3. METHODOLOGICAL PROCEDURES

3.1 Sample and data source

To achieve our objective, we analyzed companies that were part of the Brazil 100 Index (IBRX 100) and were listed on B3 from 2014 to 2018. The index is composed of the top 100 companies in terms of negotiation and representativeness in the Brazilian capital market. It was adopted in accordance with the method proposed by Brandão et al. (2019).

The data source was the Economatica® database. The reference forms were collected from the website of the Securities and Exchange Commission of Brazil (CVM). Four companies were excluded from the sample due to repetition in ordinary and preference shares. Other four companies were

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excluded because they did not provide the information needed. We also excluded observations with negative equity throughout the analyzed period. The final sample was composed of 92 companies.

3.2 Study variables

Figure 3.2.1 shows the study variables.

Figure 3.2.1

DESCRIPTION OF THE STUDY VARIABLES

Variable	Symbol	Metrics	Expected signal	Theoretical background	Database
Total executive compensation	ΔREMT	Total executive compensation of the current year - total compensation of the previous year / market value in t-1.	(+)	Jensen and Murphy (1990), Victor (2013), and Brandão et al. (2019)	2
CEO duality	DCEO	A dummy variable that assumes 1 if the CEO is also the chairman and 0 if not.	(+)	Amzaleg et al. (2014) and Jaiswall and Bhattacharyya (2016)	2
Board independence	IND	Proportion of independent board members in the board of directors.	(+)	Hermalin and Weisbach (2003)	2
Ownership concentration	CAC	Percentage of ordinary shares held by the three largest shareholders.	(-)	Chen et al. (2015) and Brandão et al. (2019)	2
Shareholders' agreement	AC	A dummy variable that assumes 1 for the presence of a shareholders' agreement and 0 for its absence.	(+)	Silva et al. (2018)	2
Remuneration committee	CREM	A dummy variable assumes 1 for the presence of a remuneration committee and 0 for its absence.	(+)	Brandão et al. (2019) and Kanapathippillai et al. (2019)	2
Variation in the market value	ΔVM	(Market value of the current year - market value of the previous year)/ market value of the previous year.	(+)	Jensen and Murphy (1990) and Brandão et al. (2019)	1
Return on equity	ROE	Net profit of the company in the current year / company's equity in t-1.	(+)	Brandão et al. (2019)	1
Company size	TAM	Ln (total assets) in t-1.	(+)	Brandão et al. (2019)	1
Company sector	SETOR	A dummy variable for each sector of activity classified by Economática.	(+)	Brandão et al. (2019)	1
Period of analysis	ANO	A dummy variable for each year of analysis.		Brandão et al. (2019)	1

Database: (1) Economática®; (2) CVM.

Source: Elaborated by the authors.

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3.3 Econometric models of the study

Four regression models were built with data in an unbalanced panel, alternating between fixed and random effects according to the results of the diagnostic tests. In all models, we considered the variation of the total executive compensation as a dependent variable (ΔREMT). The control variables were the return on equity (ROE), company size (TAM), sector of activity (SETOR), and period of analysis (ANO). The test independent variables were: 1. remuneration committee; 2. board composition; 3. ownership concentration; and 4. shareholders' agreement.

Model 1 aimed to identify the possible impact of the remuneration committee on the variation of the total executive compensation through the following independent variables: remuneration committee (CREM), variation in the market value (ΔVM) – which was inserted in the model to assess the sensitivity of compensation to changes in the firm market value –, and the interaction variable of variation in the market value with the remuneration committee (ΔVM*CREM), as Equation 1 shows. Equation 1 tests hypothesis H_1: "The presence of a remuneration committee increases PPS of companies that compose IBRX100".

$$\Delta REMT_{it} = \beta_0 + \beta_1 CREM_{it} + \beta_2 \Delta VM_{it} + \beta_3 \Delta VM_{it} \times CREM_{it} + \beta_4 ROE_{it} + \beta_5 TAM_{it} + \beta_6 SETOR_{it} + \beta_7 ANO_{it} + u_{it} \quad \text{(Equation 1)}$$

In model 2, the independent variables were related to board composition, namely CEO duality (DCEO) and proportion of independent board members (IND), and the variation in the market value (ΔVM). As proposed by Brandão et al. (2019), the main variables of the board interacted with the variation in the market value (ΔVM*DCEO; ΔVM*IND) to test H_2 and H_3 of this study. They test the impact of the board on PPS (H_2: "The CEO duality increases the PPS of companies that compose the IBRX100"; and H_3: "The greater presence of independent board members increases the pay-performance sensitivity of companies that compose the IBRX100"). Equation 2 shows the model 2 of this research.

$$\Delta REMT_{it} = \beta_0 + \beta_1 DCEO_{it} + \beta_2 \Delta VM_{it} + \beta_3 \Delta VM_{it} \times DCEO_{it} + \beta_4 IND_{it} + \beta_5 \Delta VM_{it} \times IND_{it} + \beta_6 ROE_{it} + \beta_7 TAM_{it} + \beta_8 SETOR_{it} + \beta_9 ANO_{it} + u_{it} \quad \text{(Equation 2)}$$

Models 3 and 4 focused on the analysis of the ownership structure/control. Model 3 is general, and model 4 is specific, as it involves the variable shareholders' agreement. Model 3 had the following independent variables:

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ownership concentration (CAC), variation in the market value (ΔVM), and the interaction variable of the variation in the market value with the ownership concentration (ΔVM*CAC), as shown in Equation 3. Model 3 (Equation 3) was prepared to test hypothesis H_4: "Ownership concentration reduces the PPS of companies that compose the IBRX100".

$$\Delta REMT_{it} = \beta_0 + \beta_1 CAC_{it} + \beta_2 \Delta VM_{it} + \beta_3 \Delta VM_{it} \times CAC_{it} + \beta_4 ROE_{it} + \beta_5 TAM_{it} + \beta_6 SETOR_{it} + \beta_7 ANO_{it} + u_{it} \quad \text{(Equation 3)}$$

Model 4 focused on the effect of the presence of shareholders' agreements on PPS. Its independent variables were shareholders' agreement (AC), variation in the market value (ΔVM), and the interaction variable of the variation in the market value with shareholders' agreement (ΔVM*AC), as shown in Equation 4. Model 4 tested hypothesis H_5: "The presence of a shareholders' agreement increases the PPS of companies that compose the IBRX100".

$$\Delta REMT_{it} = \beta_0 + \beta_1 AC_{it} + \beta_2 \Delta VM_{it} + \beta_3 \Delta VM_{it} \times AC_{it} + \beta_4 ROE_{it} + \beta_5 TAM_{it} + \beta_6 SETOR_{it} + \beta_7 ANO_{it} + u_{it} \quad \text{(Equation 4)}$$

To define the abovementioned models, the normality of data was analyzed using the Kolmogorov-Smirnov test to identify the normal distribution of data. The variance inflation factor (VIF) test was performed and presented an average of 1.17, indicating that there is no multicollinearity between the variables included in the models. The results from the Breusch-Pagan, Chow, and Hausman tests rejected the null hypotheses and confirmed that the random effect was the most adequate for the regressions of models 1, 2, and 3. However, there was not enough evidence to reject the null hypothesis in model 4; therefore, the fixed-effects regression was adopted. The Wooldridge and Wald tests showed the presence of autocorrelation and heteroscedasticity. Both events were treated with the White robust standard error.

4. RESULTS AND DISCUSSION

4.1 Descriptive analysis

Figure 4.1.1 shows the descriptive statistics of the study variables. The average annual executive compensation in the sample, from 2014 to 2018, was BRL 35,589,534.44, with high variability (standard deviation of 68,067,839.41).

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Considering the variation in executive compensation, the companies presented on average a negative variation, which indicates that executive compensation decreased in the period analyzed.

Figure 4.1.1

DESCRIPTIVE STATISTICS OF VARIABLES

Variable	Obs.	Average	Standard deviation	Min.	Max.
ΔREMT	514	-0.04	1.28	-3.96	2.27
REMT	530	35,589,534.44	68,067,839.41	0.00	670,825,000.00
DCEO	450	0.03	0.17	0.00	1.00
CAC	451	0.51	0.19	0.12	1.00
AC	491	0.53	0.50	0.00	1.00
CREM	491	0.30	0.46	0.00	1.00
IND	451	0.35	0.23	0.00	1.00
TAM	543	16.81	1.42	14.56	20.45
ΔVM	520	0.44	1.44	-0.83	5.29
VM	527	29,837,857.93	56,487,353.17	252,914.86	371.608.254.46
ROE	532	0.17	0.26	-0.17	0.99

Source: Elaborated by the authors.

Regarding governance variables, approximately 53% of the companies had shareholders' agreements, 30% had a remuneration committee, and only 3% of CEOs were also the Chairman of the board. The percentage of CEO/Chairman duality was lower than the one verified by Brandão et al. (2019), which corresponded to approximately 6% of the sample. In respect to ownership concentration, on average 51.25% of ordinary shares were held by the three largest shareholders. Independent board members represented 35% of the sample, whereas Brandão et al. (2019) found 25% of independent board members.

In relation to performance variables, the return on equity (ROE) presented an average of 17% with a standard deviation of 26%, and the market value revealed an average of BRL 29,837,857.93.

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4.2 Discussion and analysis of regression results

Figure 4.2.1 presents the results of our four estimated models, as explained in the methodology. The models tested if governance characteristics affected PPS.

Figure 4.2.1

RELATIONSHIP BETWEEN PAY-PERFORMANCE SENSITIVITY AND GOVERNANCE CHARACTERISTICS

	Model 1	Model 2	Model 3	Model 4
CREM	-0.0577			
	(0,1151)			
ΔVM	-0.0765	-0.1476	0.2813	-0.1656
	(0.0801)	(0.1425)	(0.1895)	(0.1188)
ΔVM*CREM	0.1943			
	(0.159)			
ROE	-0.3455	0.0837	0.1072	-0.5273
	(0.3061)	(0.2704)	(0.2587)	(0.3867)
TAM	-0.0902**	-0.0573*	-0.0389	-0.4140***
	(0.0447)	(0.0319)	(0.0297)	(0.01464)
DCEO		-0.1472		
		(0.2975)		
ΔVM*DCEO		0.5015**		
		(0.2343)		
IND		-0.4006**		
		(0.19)		
ΔVM*IND		0.2903		
		(0.3193)		
CAC			0.0004	
			(0.002)	
ΔVM*CAC			-0.0060*	
			(0.0036)	

(continue)

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Figure 4.2.1 (conclusion)

RELATIONSHIP BETWEEN PAY-PERFORMANCE SENSITIVITY AND GOVERNANCE CHARACTERISTICS

	Model 1	Model 2	Model 3	Model 4
AC				0.0638
				(0.3269)
ΔVM*AC				0.1667
				(0.1469)
_cons	0.9314	0.15	1.1822**	6.2260**
	(0.7988)	(0.645)	(0.4857)	(2.5797)
SETOR	Yes	Yes	Yes	Yes
ANO	Yes	Yes	Yes	Yes
N	462	420	422	462
VIF	1.42	2.68	3.98	1.79
Hausman	0.0666	0.9548	0.6937	0.0113
Wooldridge	0.3566	0.9593	0.4802	0.3507
Wald	0.0000	0.0000	0.0000	0.0000

Asterisks indicate significance levels: *p < 0.10, **p < 0.05, and ***p < 0.01. The models were estimated as dummies for sector and year, and the variables ROE (return on equity) and TAM (company size) were used as a control in all four models of this study. The dependable variable for all models was ΔREMT (total executive compensation). The independent variables CREM (remuneration committee), ΔVM (variation in the market value), DCEO (CEO duality), IND (board independence), CAC (ownership concentration), and AC (shareholders' agreement) differed in the models as follows: model 1 (CREM; ΔVM; ΔVM*CREM); model 2 (DCEO; ΔVM; ΔVM*DCEO; IND; ΔVM*IND); model 3 (CAC; ΔVM; ΔVM*CAC); and model 4 (AC; ΔVM; ΔVM*AC). In each model, the variable ΔVM interacted with the other independent variables of the equation.

Source: Elaborated by the authors.

Figure 4.2.1 shows that there was no significant relationship between ΔVM and ΔREMT in any of the four models.

Regarding model 1, hypothesis H_1 was not confirmed, which investigated the presence of a remuneration committee and the increase in the sensitivity of executive compensation to performance. The interaction between the variation in the market value with the existence of a remuneration committee (ΔVM*CREM) and executive compensation was not significant. This result differs from the findings by Catuogno et al. (2016) and

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Kanapathippillai et al. (2019), which indicated a positive relationship between the presence of a remuneration committee and PPS.

However, model 2 showed that the interaction of the variation in the market value with CEO duality (ΔVM*DCEO) was positive and significant at a 5% level. We can infer that CEO duality increases the sensitivity of executive compensation to firm performance, confirming hypothesis H_2 of this study. This result corroborates Amzaleg et al. (2014) and Jaiswall and Bhattacharyya (2016), who also had positive results in the relationship between CEO duality and PPS, but it differs from Brandão et al. (2019), who did not find a significant relationship in this variable. According to Amzaleg et al. (2014), understanding that the CEO as the Chairman can influence the board to grant him/her greater benefits is not fully correct, since high salaries without proper justification may lead to intense objection from other regulators in the company. Amzaleg et al. (2014) also highlighted that a high level of compensation is easy to be monitored, so initiatives that create benefits for the CEO and that are contrary to the company's performance demand more sophistication to be disguised.

Also, in model 2, we identified a negative, significant relationship between the proportion of independent board members and the variation in the total executive compensation. Although this result does not confirm hypothesis H_3 – since this variable does not interact with the market value –, it shows that the existence of independent board members reduces executive compensation. According to Brandão et al. (2019), a possible understanding of this relation is in the efficiency of constant monitoring, which consequently lowers the necessity of raising the salary of executives to improve firm performance.

Concerning company size (TAM), none of the models proposed by Brandão et al. (2019) showed a significant relationship regarding PPS. However, our results indicated a negative, significant relationship in models 1, 2, and 4, at 10%, 1%, and 5% significance levels, respectively.

Such evidence differs from the study by Amzaleg et al. (2014), which stated that managerial compensation is positively linked to company size. According to Amzaleg et al. (2014), managing larger companies requires greater skills, knowledge, and responsibility from executives; therefore, this work should reflect in higher levels of remuneration.

In Brazil, the period between 2014 and 2018 was marked by an economic-financial crisis combined with a slowdown in the job market (Cunha, 2014). This phenomenon reduced remuneration and benefits for executives. The percentage of executive officers who earned salaries over BRL 30,000.00

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dropped 10%. There is also evidence of changes of executive officers motivated by a search for better performance and a 25% drop in the recruitment of managers and executives compared to 2010. In this context, we can understand the negative relationship between company size and executive compensation in the present study.

In model 3, we observed a negative, significant relationship in the interaction of market value with ownership concentration (ΔVM*CAC), which corroborates findings by Baixauli-Soler and Sanchez-Marin (2014). Such evidence confirms hypothesis H_4, which states that ownership concentration reduces the PPS of companies that compose the IBRX100. Correia et al. (2014) found an inverse relationship between the percentage of the voting capital of the five largest shareholders and the variation in the compensation in cash. The authors did not test PPS, but they proved their hypothesis that companies with more concentrated control have lower executive compensation.

Regarding model 4, we did not confirm the significance of the interaction between variation in market value with the presence of shareholders' agreement (ΔMV*AC) and executive compensation. Therefore, hypothesis H_5 was not confirmed, although Barontini and Bozzi (2010) presented pieces of evidence of this relationship.

5. FINAL REMARKS

This study sought to investigate whether governance characteristics – remuneration committee, board composition, and ownership structure/control – influenced the sensitivity of executive compensation to firm performance, also called PPS. We investigated a sample of companies participating in the IBRX100 from 2014 to 2018. The method consisted of panel data regression with fixed and random effects.

Our study proved hypothesis H_2 (the CEO duality increases PPS for companies that compose the IBRX100) and H_4 (ownership concentration reduces PPS for companies that compose the IBRX100), corroborating the studies by Baixauli-Soler and Sanchez-Marin (2014) and Ataay (2018). This study found a negative relationship between company size and the variation in executive compensation, a contrary result to the one found in Amzaleg et al. (2014). Furthermore, we observed an inverted relationship between the proportion of independent board members and the variation in executive compensation. This result may indicate that the higher the number of independent board members, the greater the monitoring to contain increases in executive compensation, which corroborates Brandão et al. (2019).

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The agency theory suggests that a high level of PPS can motivate high-level executives to concentrate their efforts on improving the company's performance, which would benefit shareholders (Bebchuk & Fried, 2003). Since the present study is about three governance mechanisms associated with PPS, we observed a trade-off between monitoring and compensation: as the board of directors becomes more independent, its monitoring capacity increases; then, their need to offer financial incentives to align their interests with those of managers decreases; thus, this change reduces the variation in executive compensation and PPS. In the Brazilian context, the expressive ownership concentration incites the agency conflict between majority and minority shareholders. Considering this, monitoring measures tend to be less effective, since owners, which concentrate ownership, focus on their own benefits over the company's benefits.

Thus, the results of this study provide interesting insights to researchers, board members, managers, and capital market regulators, and it brings implications to the comprehension of agency relations in the Brazilian reality.

Executive compensation is one of the elements of the governance system capable of motivating executive officers and emphasizing firm value generation. Scholars have debated how governance mechanisms interact and influence each other mutually to verify if board composition and ownership structure and control can impact executive compensation policies in the national and international literature. This paper contributes to the literature by showing that the board structure and ownership concentration can influence executive compensation and, as a consequence, firm value. Thus, this paper expands the previous analysis, as it included PPS in the study of the interrelations between the governance mechanisms. To the best of our knowledge, the Brazilian literature has not yet crossed three governance characteristics and analyzed the role of each one in PPS.

This study presents limitations regarding sample selection and the analyses carried out. Future studies can expand the sample and the analysis horizon and reach other corporate governance aspects or mechanisms.

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REFLEXOS DA GOVERNANÇA CORPORATIVA SOBRE A *PAY-PERFORMANCE SENSITIVITY*: UMA NOVA PERSPECTIVA

RESUMO

Objetivo: Esta pesquisa se propõe a investigar se as características de governança corporativa – compensação dos executivos, composição do conselho de administração e estrutura de propriedade/controle – influenciam na sensibilidade da remuneração ao desempenho da firma, a chamada *pay-performance sensitivity*.

Originalidade/valor: O estudo contribui ao apresentar um novo olhar sobre a interação dos mecanismos de governança corporativa alinhada ao conceito de *pay-performance sensitivity*, evidenciando que os instrumentos de governança corporativa não atuam de forma isolada, mas sim de maneira entrelaçada e interdependente.

Design/metodologia/abordagem: A amostra do estudo é composta das empresas participantes do Índice Brasil 100 (IBRX 100) listadas na B3 no período de 2014 a 2018. Os dados foram extraídos da base Economatica® e dos formulários de referência acessados no *site* da Comissão de Valores Mobiliários (CVM). O método utilizado para análise dos dados foi regressão com dados em painel, adotando modelos de efeitos fixos e aleatórios.

Resultados: Os resultados evidenciam que a composição do conselho (representada pela dualidade de funções entre CEO e presidente do conselho) aumenta a sensibilidade da remuneração dos executivos ao desempenho das empresas, ao passo que a concentração acionária a reduz. Ademais, percebeu-se que uma maior presença de membros independentes no conselho reduz a variação da remuneração dos executivos.

PALAVRAS-CHAVE

Compensação dos executivos. Composição do conselho de administração. Estrutura de propriedade/controle. Governança corporativa. *Pay-performance sensitivity*.

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