
ABSTRACT

Objective: This study verifies the relationship between the remuneration of the board of directors and the remuneration of executives, as well as the relationship between these remunerations, and the economic and financial performance of Brazilian publicly-held companies.

Method: The work promotes the analysis by estimating two regression models with panel data, pooled independent cross-sections and fixed effects.

Originality/Relevance: Scientific studies on remuneration in Brazil have focused on the relationship of remuneration with the economic-financial performance of companies and/or with the characteristics of corporate governance. However, there is still room to investigate possible mechanisms of reciprocity between salary increase of statutory directors and the remuneration increase among members of the boards of directors.

Results: The results indicate that the remuneration of the board of directors is positively related to the remuneration of executives; that these remunerations do not present a significant relation with the economic-financial performance of the companies; and that cash flow risk is negatively related to executive compensation.

Theoretical/Methodological Contributions: The study provides evidence of a synchronism between remuneration of executives and directors, a fact that may explain why the remuneration of these agents is not related to the economic-financial performance of the companies. Also, it shows that executive compensation packages contribute to reducing the risk of the cash flows to which companies are exposed.

Keywords: Performance of the Company; Executive Compensation; Board of Directors.

How to Cite (APA)
1 INTRODUCTION

The scientific researches on manager remuneration are expanding (Araújo, 2017; Beuren, Silva, & Mazzioni; Edmans, Gabaix, & Jenter, 2017; Fama, 1980; Frydman & Jenter, 2010; Jensen, 1993; Rissatti, Souza & Borba, 2019). Companies have modified their pay packages in order to increase the alignment of interests (Edmans, Gabaix, & Jenter, 2017; Frydman & Jenter, 2010), but efforts seem insufficient as cases of financial market scandals continue.

The examples of Enron (2001), Parmalat’s fraudulent bankruptcy (2004), Petrobrás’ corruption scheme (2015) and the involvement of the director of JBS in one of the country’s biggest political scandals (2017), among others, provide signs that the executives of these companies sought to maximize their personal profits. The financial problems faced by the companies did not reduce the volume of bonuses paid to executives in pre-crisis moments. This situation is related to the central problem of Agency Theory, that is, to the agent’s ability to behave opportunistically or to omit information, in order to increase his personal satisfaction (Jensen & Meckling, 1976).

Within agency conflicts, one of the central problems is the fact that the principal does not obtain the information necessary for his administration in the same way as the agent, resulting in informational asymmetry (Hölmstrom, 1979). In this scenario, the role of the board of directors is to guide and monitor management in order to protect shareholders’ interests, including the development of an efficient remuneration system and the use of appropriate criteria for hiring and firing (Fama & Jensen, 1983).

The composition of the Brazilian executives' remuneration, centered on short-term benefits, facilitates the maximization of their own interests to the detriment of the principal's interests in the long term (Souza, Duque & Silva Junior, 2016). This, coupled with the fact that the remuneration of Brazilian executives and board members has grown in recent years, even in a period of economic slowdown (Rissatti, Souza, & Borba, 2019) raises doubts about the effectiveness of boards of directors in complying with their functions (Brick, Palmom, & Wald, 2006).

The literature reports that in weak corporate governance environment, reciprocity mechanisms may emerge, in which counselors feel more comfortable to raise their own salary when they increase the wage of the executives (Boieve, Bednar, & Barker, 2015). They may also avoid constructive criticism and tend to be more flexible in relating managers' performance to their remuneration (Jensen, 1993).

From the indications presented, the study seeks to answer the following research questions: What is the relation between the remuneration of the board of directors and the remuneration of the executives? In which way the remuneration of the board of directors and executives relate to the economic-financial performance of Brazilian companies?

The objective of this research is to verify if there is a relation between the remuneration of the administrative council and the remuneration of the executives. As well as analyzing the relationship of these remunerations with the economic and financial performance of Brazilian publicly-held companies listed in B3 S.A. (Brasil, Bolsa, Balcão) in the period between 2010 and 2014.

This study is structured in five sessions, including this introduction. The theoretical basis is presented below, with emphasis on the remuneration of the board of directors and executives, as well as economic and financial performance. The research method and procedures are then discussed, and the results of the research are presented later. Finally, the final considerations of the study are presented.
2 LITERATURE REVIEW

2.1 Relationship Between the Compensation of Directors, Executives, and Company Performance

Most of the remuneration studies are guided by the Agency Theory (Davis, Bode, & Ketchen, 2013; Murphy, 1999) according to which there is an agency relationship when two parties enter into a contract in which the (principal) contractor engages a person (agent) to execute on his behalf a service that results in the delegation of some decision power to the agent (Jensen & Meckling, 1976). This relationship arises from the informational asymmetry between the agent and the principal, due to the impossibility of observing all the individual actions and, consequently, regulating them by contracts (Hölstrom, 1979).

Among the various approaches under which the theme of executive pay has been addressed in the literature, interaction with corporate governance mechanisms (Armstrong, Core, & Guay, 2014; Essen, Otten, & Carberry, 2015) and economic and financial performance (Armstrong, Ittner, & Larcker, 2012, Cunha, Vogot, & Degenhart, 2016) are among the most important. Thus, governance executed by the board of directors has a central importance in the alignment of interests, since in most publicly-held companies it is this governance that elaborates the remuneration packages (Buck, Liu, & Skvorododa, 2008; Chhaochharia & Grinstein, 2009).

Remuneration is a monetary counterpart provided to employees due to their performance and becomes an important form of incentive (Baker, Jensen, & Murphy, 1988). Companies have substantially changed the way they remunerate executives in pursuit of greater alignment of interests, increasing variable remuneration, especially share-based compensation, and reducing fixed remuneration (Edmans, Gabaix, & Jenter, 2017).

On the other hand, the board of directors receives little stock-based compensation or other incentive related to the firm's success (Yermack, 2004). The remuneration packages are elaborated according to the qualification that the directors have (Fedaseyeu, Linck, & Wagner, 2018); of the functions performed in the board, such as chairing committees, chairing the board and attending meetings (Farrell, Friesen, & Hersch, 2008). In Brazil, the remuneration of board members is composed by approximately 75% fixed remuneration and 25% variable (Rissatti, Souza, & Borba, 2019). In the case of the statutory board of directors, more than 60% is variable (Beissen, Silva, & Mazzioni, 2014; Rissatti, Souza, & Borba, 2019).

However, that does not mean that companies have managed to align interests in Brazil. Sousa, Duque, and Silva Junior (2016) show that most of the companies listed in B3 focus on short-term incentives, and few of them offer post-employment plans. This implies in the maximization of self-interest by the agents, to the detriment of the interests of the principal.

Despite these differences, there is a constant growth in the volume of remuneration, even in periods of economic recession, both of executives (Edmans, Gabaix, & Jenter, 2017; Frydman & Jenter, 2010; Rissatti, Souza & Borba, 2019) and counselors (Boivie, Bednar, & Barker, 2015; Rissatti, Souza, & Borba, 2019), leading to questioning the effectiveness of the directors (Brick et al., 2006). These issues are explained by factors such as the increase in market demand by qualified advisors (Boieve et al., Linck, Netter, & Yang, 2009), due to the increased complexity of business operations, which requires more skills and greater effort on both sides (Brick et al., 2006).

Another explanation is given by the reciprocity mechanisms between the increases granted to executives and those directed to the directors, since the latter may feel more comfortable to raise their own salaries when they increase the wage of the executives (Boivee et al., Linck, Netter, Yang, 2009), reflecting a positive and significant relationship between the board of directors' remuneration and the remuneration of the statutory board of executive
officers Barnea & Guedj, 2006; Brick et al., 2006; Deutsch & Laamanen, 2011; Lin & Lin, 2014). This reflects favoritism, with managers and directors putting their own interests at the forefront of shareholder interests (Brick et al., 2006). From this discussion, the first hypothesis of this research arises:

H1: There is a positive and significant relationship between the compensation of directors and executives.

If, after controlling the effects of the firm, governance and managers already identified in the literature as potential explanations for the remuneration of these agents, the relationship expected in hypothesis 1 is still confirmed, it is appropriate to analyze the relation of the performance of companies with the remuneration of managers and members of the board.

Linking executive pay to company performance contributes to the motivation to improve their economic and financial performance and to increase interest alignment (Croci, Gonen, & Ozkan, 2012). In this sense, it is interesting to use both operational performance indicators, such as return on assets (ROA) and market performance indicators, such as the return on investment (ROI) (Banker et al., 2012).

Some Brazilian studies have tested the effect of these indicators on pay. Beuren, Silva, and Mazzioni (2014) show a positive relationship with the return of the share and a null relation with the return on the assets. Gonzaga, Yoshinaga and Junior (2014) point out the negative relationship of the remuneration with the return on assets and positive with the return of the share.

Evidence such as these may highlight the need to improve the system of corporate governance since, in general, strengthened governance systems increase the sensitivity of the remuneration to the economic and financial performance of companies. At the other extreme, however, in weakened systems this sensitivity can be null or negative, maximizing the agents' interests (Core, Holthausen, & Larcker, 1999; Matolcsy & Wright, 2011; Ozkan, 2011). From this discussion, the second research hypothesis arises:

H2: The effect of the company's performance on the compensation of executives and directors is nil or negative.

This negative or null relationship reflects the sub-optimal performance of management that puts its interests above the interests of shareholders (Brick et al., 2006). When dealing with economic-financial performance, intrinsically addresses business risk. The risk is related to the results of managerial decisions related to the dimensions of the investment, the variance of the probabilities of results and the probability of losing the investment (Sanders & Hambrick, 2007).

Executive compensation may be affected both positively and negatively by the risk of cash flows. Executive compensation is positively affected when they are encouraged to take risks through share-based compensation so that they share both gains and losses (Myers, 1977; Smith & Stulz, 1985; Smith & Watts, 1992). This remuneration is negatively affected when the owner considers it costly or undesirable to give up part of the wealth (shares) to remunerate the executive (Conyon & He, 2011; Conyon & He, 2016; Gormley, Matsa, & Milbourn, 2013). As in Brazil, stock-based compensation represents only 10% of the total; it is assumed that Brazilian executives are remunerated to mitigate the exposure of investments to risk, a consideration that leads to the third hypothesis of research:

H3: The effect of company risk on executive compensation is negative.
3 METHOD
3.1 Sample and Data Collection

Data from Brazilian companies extracted from the Economatica® database and data of the reference forms, items 12.6 / 8 and 13.2, made available by the companies to the market were used by determination of Normative Instruction 480/2009 of the Brazilian Securities and Exchange Commission (CVM). The research population is composed of Brazilian publicly traded companies, whose information is contained in B3 SA. The sample is represented by non-financial companies that disclosed the remuneration information of executives of the statutory board in the period from 2010 to 2014. After eliminating the companies which did not contain all the information for all the analyzed years, the sample was composed of 66 companies and 221 observations.

It should be noted that in the analyzed period, Brazil was going through a period of economic expansion. GDP (Gross Domestic Product) increased by 7.5% in 2010, slowing in 2011/2014 to 2.4% a year on average; and that in 2015-2016 the economy went into recession, with an average negative growth of -3.7% per year., pulled down by the service and industrial sectors (Paula & Pires, 2017). Therefore, the period analyzed in the study does not cover the phase of economic recession, which occurred after 2014. Incorporating this phase would require the inclusion of variables in the study that would hinder the analysis. Therefore, it focuses on a range whose data could be analyzed together.

Also, the study establishes three research hypotheses, the first two (H1 and H2) were constructed from evidence of previous studies, and the third (H3) emerged from the research results, which brought relevant aspects about the risk of the cash flows on the remuneration of agents.

3.2 Variables of the Research

The variables of the research are presented along with the respective operational definitions and the expected signal in the regression analyzes. All variables were placed at the winsorized mean at 5% to eliminate the effects of outliers.

The total remuneration paid to the members of the statutory board and the company's board of directors are proxies indicated to analyze the effects on the remuneration of a business organization (Fernandes et al., 2012; Mehran, 1995, Ozdemir & Upneja, 2012). Therefore, the dependent variables of this research are the total remuneration of the executives and the total remuneration of the directors (Table 1).

The empirical evidence from previous studies suggests that the tendency is for directors' compensation to be positively related to executive compensation (Barnea & Guedj, 2006; Brick et al., 2006; Deutsch & Laamanen, 2011; Lin & Lin, 2014).

Independent Variables: When the dependent variable is executive compensation, the independents will be the total remuneration of the directors, the return on assets (ROA), the stock return (SR) and the cash flow risk (CFR). When the dependent variable is the board's remuneration, the independent ones will be the return on assets (ROA) the stock return (SR) and the cash flow risk (CFR) (Brick et al., 2006).

Control variables: The control variables of this research are representative of the characteristics of the organization, governance, and executives. These variables aim to control the effects of other possible explanations for the phenomenon under study, considerably reducing potential problems with endogeny (Table 2). Among these variables is the complexity of the firm, which plays an important role in determining the remuneration of directors. The proxy used to control the effects of firm complexity is the size of the firm. Remuneration of
executives and directors may also be associated with other characteristics of the governance structure, such as the executive's role as chairman of the board and to control such effect the Chief Executive Officer's duality variable is used as a proxy. Also, the literature indicates that the larger the company, the higher the complexity of operations and that this, therefore, requires a greater number of executives to manage it and a higher total remuneration. The same explanation applies to the relationship between the remuneration of the board of directors and the number of directors, that is, the larger the company, the larger the size of boards of directors and the greater the remuneration of these directors (Brick et al. 2006; Frydman & Jenter, 2010).
Table 2
Independent and Control Variables

<table>
<thead>
<tr>
<th>Variable</th>
<th>Name</th>
<th>Operational Definition</th>
<th>Expected Signal</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>Q&lt;sub&gt;t-1&lt;/sub&gt; (Q from Tobin)</td>
<td>The market value of the common shares plus the carrying amount of the total debt divided by the book value of the total assets. Operational Source: Economatica®.</td>
<td>(+)</td>
</tr>
<tr>
<td>SALES</td>
<td>Sales&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>Natural logarithm of the sum of sales in the previous year. Operational Source: Economatica®.</td>
<td>(+)</td>
</tr>
<tr>
<td>CFR</td>
<td>Cash Flow Risk</td>
<td>The standard deviation of first differences in ROA for the previous 8 years. Operational Source: Economatica®.</td>
<td>(-)</td>
</tr>
<tr>
<td>ROA</td>
<td>ROA&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>Earnings before interest, taxes, depreciation and amortization (EBITDA), divided by the total assets of the company. Operational Source: Economatica®.</td>
<td>(+)</td>
</tr>
<tr>
<td>SR</td>
<td>Stock Return&lt;sub&gt;t-1, t-3&lt;/sub&gt;</td>
<td>The stock return in the last three years, equal to the ratio between the price at the end of year t-1 and the end of year t-4, adjusted for dividends and splits, less 1. Operational Source: Economatica®.</td>
<td>(+)</td>
</tr>
<tr>
<td>D&amp;A</td>
<td>Debt&lt;sub&gt;t-1&lt;/sub&gt; / Assets&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>The ratio of total debt to total assets in year t-1. Operational Source: Economatica®.</td>
<td>(-)</td>
</tr>
<tr>
<td>I&amp;A</td>
<td>Investments&lt;sub&gt;t-1&lt;/sub&gt; / Assets&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>The proportion of capital expenditures in total assets. Operational Source: Economatica®.</td>
<td>(-)</td>
</tr>
<tr>
<td>C&amp;A</td>
<td>CAPEX&lt;sub&gt;t-1&lt;/sub&gt; / Asset&lt;sub&gt;t-1&lt;/sub&gt;</td>
<td>The CAPEX (Capital Expenditure) ratio divided by total assets. Operational Source: Economatica®.</td>
<td>(-)</td>
</tr>
<tr>
<td>NE</td>
<td>Number of Executives</td>
<td>Number of executives belonging to the statutory board. Operational Source: B3, item 13.2 of the reference forms, made available according to Normative Instruction 480/2009 of CVM.</td>
<td>(+)</td>
</tr>
<tr>
<td>NC</td>
<td>Number of Counselors</td>
<td>Number of directors on the board of directors. Operational Source: B3, item 13.2 of the reference forms, made available according to Normative Instruction 480/2009 of CVM.</td>
<td>(+)</td>
</tr>
<tr>
<td>CEOD</td>
<td>CEO Duality</td>
<td>CEO duality is a dummy that assumes 1 (one) value when the CEO also accumulates the position of chairman of the board of directors and 0 (zero) when there is no accumulation of such positions. Operational Source: B3, item 13.2 of the reference forms, made available according to Normative Instruction 480/2009 of CVM.</td>
<td>(+)</td>
</tr>
</tbody>
</table>

Source: Adapted from Brick et al. (2006)

Sequentially, the models were estimated for each dependent variable, according to the basic models presented in Equations 1 and 2. The first refers to the pooled model and the second the fixed effects model.

$$TER_{it} = \beta_1 + \beta_2 TBR_{it} + \beta_3 QT_{it-1} + \beta_4 \text{SALES}_{it-1} + \beta_5 \text{CFR}_{it} + \beta_6 \text{ROA}_{it-1} + \beta_7 \text{SR}_{it-3, t-1} + \beta_8 \text{D&A}_{it-1} + \beta_9 \text{I&A}_{it-1} + \beta_{10} \text{C&A}_{it-1} + \beta_{11} \text{NE}_{it} + \beta_{12} \text{NC}_{it} + \beta_{13} \text{CEOD}_{it} + U_{it}$$  

(1)

$$TBR_{it} = \beta_1 + +\beta_2 QT_{it-1} + \beta_3 \text{SALES}_{it-1} + \beta_4 \text{CFR}_{it} + \beta_5 \text{ROA}_{it-1} + \beta_6 \text{SR}_{it-3, t-1} + \beta_7 \text{D&A}_{it-1} + \beta_8 \text{I&A}_{it-1} + \beta_{9} \text{C&A}_{it-1} + \beta_{10} \text{NE}_{it} + \beta_{11} \text{NC}_{it} + \beta_{12} \text{CEOD}_{it} + U_{it}$$  

(2)

On what:
TER<sub>it</sub> = Total remuneration of the executives of a company i at time t,
TBR<sub>it</sub> = Total remuneration of directors of a company i at time t,
QT<sub>t-1</sub> = Tobin Q of a company i at time t-1,
SALES<sub>t-1</sub> = Logarithm Natural of sales of a company i at time t-1,
CFR_{it} = \text{Company cash flow risk of a company i at time t},
ROA_{it-1} = \text{Return on the assets of a company i at time t-1},
SR_{it-3:t-1} = \text{Average return of the shares of a company i at time t-3 to t-1},
D&A_{it-1} = \text{Debt over the assets of a company i at time t-1},
I&A_{it-1} = \text{Investment on the assets of a company i at time t-1},
C&A_{it-1} = \text{CAPEX on the assets of a company i at time t-1},
NE_{it} = \text{Number of executives of a company i at time t},
NC_{it} = \text{Number of counselors of a company i at time t},
CEOD_{it} = \text{Duality of CEO in a company i in period t};
\epsilon_{ij} = \text{Regression error}

4 RESULTS

The descriptive statistics of the variables used in the study are shown in Table 3. When observing this Table, it is noted that the lowest remuneration provided to executives was 4.6 million, paid by the company Vale S.A. On the other hand, the highest executive compensation granted was 60.9 million, paid by Br Malls Participações S.A.

Sequentially, it is observed that the minimum remuneration of the administrative council is equivalent to 30 thousand, paid by Cia Habitasul de Participações. The highest remuneration of the administrative council corresponds to 13.7 million and refers to the company Klabin S.A.

It should be noted that, according to item 13.2 of the reference form, the number of executives in the sample may not be presented in integral numbers, due to the turnover of executives in the period. Therefore, if an executive leaves the company throughout the year and is not replaced, the number is informed proportionally to the period in which he was in the company.

Table 3

Descriptive Statistics

<table>
<thead>
<tr>
<th>Variable</th>
<th>Obs</th>
<th>Mean</th>
<th>Std.Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>*TER</td>
<td>374</td>
<td>R$ 10.172</td>
<td>R$ 10.028</td>
<td>R$ 4.627</td>
<td>R$ 60.900</td>
</tr>
<tr>
<td>*TBR</td>
<td>359</td>
<td>R$ 1.748</td>
<td>R$ 2.287</td>
<td>R$ 30</td>
<td>R$ 13.700</td>
</tr>
<tr>
<td>Q_{t-1}</td>
<td>362</td>
<td>2.147</td>
<td>5.533</td>
<td>-0.0767</td>
<td>36.23</td>
</tr>
<tr>
<td>SALES_{t-1}</td>
<td>364</td>
<td>14.26</td>
<td>1.39</td>
<td>11.14</td>
<td>17.93</td>
</tr>
<tr>
<td>CFR</td>
<td>357</td>
<td>-2.879</td>
<td>0.811</td>
<td>-6.478</td>
<td>0.347</td>
</tr>
<tr>
<td>ROA_{t-1}</td>
<td>358</td>
<td>0.105</td>
<td>0.066</td>
<td>-0.051</td>
<td>0.311</td>
</tr>
<tr>
<td>SR</td>
<td>307</td>
<td>1.182</td>
<td>0.426</td>
<td>0.205</td>
<td>2.632</td>
</tr>
<tr>
<td>D&amp;A_{t-1}</td>
<td>364</td>
<td>0.55</td>
<td>0.214</td>
<td>0.11</td>
<td>1.116</td>
</tr>
<tr>
<td>I&amp;A_{t-1}</td>
<td>364</td>
<td>0.243</td>
<td>0.194</td>
<td>0.001</td>
<td>0.74</td>
</tr>
<tr>
<td>C&amp;A</td>
<td>364</td>
<td>49.92</td>
<td>57.49</td>
<td>-199.7</td>
<td>254.3</td>
</tr>
<tr>
<td>NE</td>
<td>374</td>
<td>5.805</td>
<td>3.239</td>
<td>2.0</td>
<td>31.83</td>
</tr>
<tr>
<td>NC</td>
<td>374</td>
<td>7.06</td>
<td>2.762</td>
<td>2.0</td>
<td>22</td>
</tr>
</tbody>
</table>

Table 4 shows the correlation of Pearson, which allows to evaluate the existence of a linear association between the variables. It is verified that there is no strong correlation between any of the variables of the model since all the values are distant of 0.5 (mean). This explains the absence of multicollinearity pointed out in the estimation of the model.

It is also shown that the highest correlations found between the dependent variable total executive remuneration (TER) and the independent variables were: TBR (0.464), NE (0.420), SALES_{t-1} (0.383), NC (0.222) and CFR (-0.300). Regarding the board’s total compensation variable, it is more correlated to the variables SALES_{t-1} (0.411), NC (0.243), and ROA_{t-1} (0.203). Besides the association between such variables, the association between the variable SALES_{t-1} and the variables NC (0.358) and CFR (-0.311) stands out; between ROA_{t-1} and SR...
(0.416) and, finally, between SR and D&A (0.305). The results are in line with previous studies, which also verified a low correlation between such variables, such as Beuren, Moura, and Theiss (2016), Brick et al. (2006), Cebon and Hermalin (2014), Cunha, Vogot, and Degenhart (2016).

Table 4
Pearson’s Correlation Coefficient

<table>
<thead>
<tr>
<th></th>
<th>TCE</th>
<th>TCD</th>
<th>Q₁</th>
<th>Salesₑ₁</th>
<th>CFR</th>
<th>ROAₑ₁</th>
<th>SR</th>
<th>D&amp;Aₑ₁</th>
<th>I&amp;Aₑ₁</th>
<th>C&amp;A</th>
<th>ES</th>
<th>BS</th>
<th>CEODₑ₁</th>
</tr>
</thead>
<tbody>
<tr>
<td>TER</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>TBR</td>
<td>0.464</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Q₁</td>
<td>-0.093</td>
<td>0.010</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Salesₑ₁</td>
<td>0.383</td>
<td>0.411</td>
<td>-0.169</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CFR</td>
<td>-0.300</td>
<td>-0.019</td>
<td>0.165</td>
<td>-0.311</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ROAₑ₁</td>
<td>0.234</td>
<td>0.203</td>
<td>-0.129</td>
<td>0.031</td>
<td>-0.066</td>
<td>1</td>
<td></td>
<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>SR</td>
<td>0.069</td>
<td>0.001</td>
<td>-0.178</td>
<td>-0.127</td>
<td>-0.065</td>
<td>0.416</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D&amp;Aₑ₁</td>
<td>0.015</td>
<td>0.004</td>
<td>0.149</td>
<td>0.171</td>
<td>-0.000</td>
<td>-0.105</td>
<td>0.305</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>I&amp;Aₑ₁</td>
<td>-0.105</td>
<td>0.103</td>
<td>0.001</td>
<td>0.048</td>
<td>0.184</td>
<td>-0.044</td>
<td>-0.107</td>
<td>0.037</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>C&amp;A</td>
<td>0.162</td>
<td>0.177</td>
<td>-0.052</td>
<td>0.212</td>
<td>-0.220</td>
<td>0.138</td>
<td>0.117</td>
<td>0.133</td>
<td>0.062</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NE</td>
<td>0.420</td>
<td>0.148</td>
<td>-0.108</td>
<td>0.290</td>
<td>-0.129</td>
<td>0.212</td>
<td>0.122</td>
<td>0.003</td>
<td>-0.217</td>
<td>0.106</td>
<td>1</td>
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<tr>
<td>NC</td>
<td>0.222</td>
<td>0.243</td>
<td>0.016</td>
<td>0.358</td>
<td>-0.186</td>
<td>0.050</td>
<td>-0.097</td>
<td>0.110</td>
<td>-0.006</td>
<td>0.137</td>
<td>0.189</td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>CEODₑ₁</td>
<td>-0.037</td>
<td>0.118</td>
<td>-0.057</td>
<td>0.185</td>
<td>0.065</td>
<td>0.137</td>
<td>0.120</td>
<td>-0.063</td>
<td>0.097</td>
<td>0.075</td>
<td>0.078</td>
<td>-0.036</td>
<td>1</td>
</tr>
</tbody>
</table>

Note: This table provides the correlation matrix between the compensation variables for the 86 companies in the sample. TER is the total compensation of executives, TBR is the total compensation of directors, Q₁ corresponds to Tobin’s Q, Salesₑ₁ is the natural logarithm of sales, CFR is cash flow risk, ROAₑ₁ corresponds to return on assets, SR is the stock return, D&Aₑ₁ refers to the debt on the total assets, I&Aₑ₁ is the investment on the assets, C&A the ratio of capital expenditures to total assets. The variable NE is the total number of members of the statutory board, the NC variable is the total number of board members and the variable CEODₑ₁ is the duality of the CEO.

It should be noted that there is a moderate and positive correlation (0.464) between the total remuneration of the board of directors and the total compensation of executives, corroborating the findings of Brick et al. (2006), who also found a positive correlation (0.514) between the total compensation of executives and the total remuneration of the administrative council.

In this sense, Cebon and Hermalin (2014) investigated whether when the board of directors determines executive compensation limits, the performance of the company tends to be higher and also benefits the shareholders of the companies. The results indicated that when the board influences the remuneration by assigning a limit, it tends to generate efficiency both in the performance of the executive and in the performance of the company.

To reinforce the analysis, the statistical significance of these correlations was evaluated through the regression models, presented in Table 5. The first two models were used to test the first and third hypotheses of this research and the last two for the test of the second hypothesis. The F-test statistic presented p-value less than 5%, and this indicates that at least one of the independent variables of the model is significant. The normality of the data was tested using the Jarque-Bera and Shapiro-Wilk tests and the data were normalized when necessary.

The results of regressions 1 and 2, presented in Table 5, support the H1 and H3 hypothesis of this study, since the executive compensation is positively and significantly related to the remuneration of the directors, confirming H1; and the risk of cash flows has a negative impact on executive compensation, confirming H3. Regressions 3 and 4 support H2 hypothesis, since the return of the stock and the return on the assets, did not affect the remuneration of the agents studied.

Table 5
Relationship between the Remuneration of the Board and the Remuneration of Executives and of these with the Economic-Financial Performance of the Brazilian Companies

<table>
<thead>
<tr>
<th>Variables</th>
<th>Regressions on Executive Remuneration (Regressions)</th>
<th>Regressions on Remuneration of the Board (Regressions)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1 Grouped 2 Fixed Effect 3 Grouped 4 Fixed Effect</td>
<td></td>
</tr>
<tr>
<td>TER</td>
<td>(7.300)* 6.150*</td>
<td></td>
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<tr>
<td>TBR</td>
<td>0.325 0.211</td>
<td></td>
</tr>
<tr>
<td>Q_{t-1}</td>
<td>(-0.100) (-0.440) (0.610) 0.0400</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.000 -0.003 0.0071 0.000464</td>
<td></td>
</tr>
<tr>
<td>SALES_{t-1}</td>
<td>(0.200) (1.440) (4.790)* 3.590*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.009 0.105 0.299 0.351</td>
<td></td>
</tr>
<tr>
<td>CFR</td>
<td>(-3.610)* (-2.130)** (1.690)*** 0.510</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.250 -0.148 0.156 0.057</td>
<td></td>
</tr>
<tr>
<td>ROA_{t-1}</td>
<td>(2.970) (0.620) (1.550) -0.770</td>
<td></td>
</tr>
<tr>
<td></td>
<td>1.940 0.450 1.805 -0.953</td>
<td></td>
</tr>
<tr>
<td>SR</td>
<td>(0.256) (0.170) (0.010) 0.230</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.119 -0.014 -0.001 -0.034</td>
<td></td>
</tr>
<tr>
<td>D&amp;A_{t-1}</td>
<td>(0.770) (-0.290) (-1.020) 0.0400</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.190 -0.0964 -0.338 0.019</td>
<td></td>
</tr>
<tr>
<td>I&amp;A_{t-1}</td>
<td>(-0.330) (0.080) (0.090) -1.120</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.0881 0.027 0.031 -0.569</td>
<td></td>
</tr>
<tr>
<td>C&amp;A</td>
<td>(-0.980) (-1.100) (0.690) 1.180</td>
<td></td>
</tr>
<tr>
<td></td>
<td>-0.000 -0.000 0.000 0.001</td>
<td></td>
</tr>
<tr>
<td>NE</td>
<td>(5.670)* (5.290)* (-3.310) -0.530</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.088 0.110 -0.006 -0.016</td>
<td></td>
</tr>
<tr>
<td>NC</td>
<td>(0.760) (-0.200) (2.040)** 2.650*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0.014 -0.004 0.050 0.0918</td>
<td></td>
</tr>
<tr>
<td>CEOD_{it}</td>
<td>(-3.630)* (-1.890)** (1.940) (2.210)**</td>
<td></td>
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<tr>
<td></td>
<td>-0.694 -0.245 0.381 0.509</td>
<td></td>
</tr>
<tr>
<td>Cons</td>
<td>(12.07)* (10.59)* (11.040)* (6.610)*</td>
<td></td>
</tr>
<tr>
<td></td>
<td>9.379 10.300 9.612 8.515</td>
<td></td>
</tr>
<tr>
<td>Number of Observation</td>
<td>292 292 292 292</td>
<td></td>
</tr>
<tr>
<td>R²</td>
<td>0.382 0.412 0.152 0.185</td>
<td></td>
</tr>
</tbody>
</table>

Note: This table shows the coefficients estimated from the regressions on the remuneration of directors and executive compensation. The values in parentheses are the z and t statistics of the variables. The characters *, ** and *** indicate significance at the 1%, 5% and 10% level, respectively.

5 DISCUSSION OF RESULTS

From the results of the regressions, it is possible to draw the graph of Figure 1. There is a significant difference in the value of executive compensation, represented by continuous line, concerning that of the directors, represented by dotted line. It is worth mentioning that the profile of the remuneration of directors differs from the remuneration of executives, since part of the remuneration of the directors depends on the functions assumed, such as the chairmanship of committees, the council presidency, and attendance at meetings (Farrell, Friesen & Hersch). In addition, a board member may participate in boards of several companies, an effect not contemplated in this analysis.

On the other hand, the remuneration of these agents is strongly correlated; there is a clear similarity in the upward trend in the remuneration of executives and directors. This result indicates that in the Brazilian market, there are indications of reciprocity between the increases
granted to executives and directors. That is, counselors may be comfortable working to raise their own salaries by giving executives wage increases (Boieve et al., 2015).

Alternatively, it can be shown that the period of analysis coincides with a phase of economic growth in Brazil (Paula & Pires, 2017), which results in growth in the size and complexity of companies and, consequently, greater demand for more qualified executives and advisors (Brick et al., 2006; Boieve et al., 2006; Linck, Netter, & Yang, 2009).

Regarding the second hypothesis, none of the coefficients of the variables representing the company's performance, i.e. ROA and SR, were significant in any of the estimated models. However, the signs of the coefficients of the SR variable were negative in all models, which may be related to the low utilization and immaturity of the Brazilian stock market. This result supports the second hypothesis of this research since it indicates that the effect of the company's performance on the compensation of executives and directors is nil or negative. This finding can be better observed in Figure 2.

The continuous line in the chart to the left of Figure 2 indicates the executive compensation, in the chart to the right this line indicates the board's compensation and the dotted line represents the ROA in the two charts. In both cases, the remuneration shows an upward trend, while the performance (ROA) remains constant. It should be noted that the relationship shown in Figures 1 and 2 for the ROA variable is similar to that identified when the variable is SR.

Brick et al. (2006) found similar results, however, in the model analyzed by them the coefficient of the stock return variable was significant and negative, on the other hand, in this work the coefficient was negative, but there was no significance.

A possible explanation for this fact may be the share-based remuneration volume used in the United States approximately 85% in 2005 (Frydman & Jenter, 2010), versus 10% in Brazil in 2016 (Rissatti, Souza & Borba, 2019). Thus, it is inferred that while in the US market the remuneration packages are designed to encourage long-term return, through the growth of share value, in the Brazilian market such incentive is still little used. The continuous line in the chart to the left of Figure 2 indicates the executive compensation, in the chart to the right this line indicates the board's compensation and the dotted line represents the ROA in the two charts. In both cases, the remuneration shows an upward trend, while the performance (ROA) remains constant. It should be noted that the relationship shown in Figures 1 and 2 for the ROA variable is similar to that identified when the variable is SR.

Figura 1. Relationship between the Remuneration of Executives and the Board

![Graph showing the relationship between remuneration and performance.](image)
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The fact that there is no statistical significance between executive compensation and the return on assets and shares may also be related to the greater information asymmetry between agent and principal of Brazilian companies. According to Aggarwal and Samwick (2003) and Devers et al. (2007) the increase of information asymmetry reduces the sensitivity of the remuneration to the performance of the company.

Regarding the third hypothesis, the results of the regressions show that there is a negative and significant relationship with the cash flow risk for the two models that deal with executive compensation, that is, the higher the cash flow risk, the lower the remuneration of the executive of Brazilian companies. The economic intuition of this result is that executives are encouraged to mitigate the risk of the company. These results corroborate the findings of Brick et al. (2006). On the other hand, for the board of directors, the higher the company's risk, the higher the remuneration, as shown in the grouped regression for board members. This result shows that in determining executive compensation, directors are likely to establish criteria to mitigate company risk, but do not use such measures to define their own salaries.

Regarding the control variables, there is a positive significance between executive compensation and the number of executives in the sample. For this result, the literature explains that the higher the company, the higher the complexity of the operations, and this, therefore, demands a greater number of executives to manage it and a higher total remuneration (Brick et al., 2006; Frydman & Jenter, 2010). This same explanation applies to the positive and significant relationship found between the remuneration of the board of directors and the number of directors, that is, the larger the company, the larger the size of the boards of directors and the higher the remuneration of these directors (Brick et al., 2006; Frydman & Jenter, 2010).

It can also be seen from the regression analysis that the remuneration of the board is positively and significantly related in both models, with the sales variable; and, in the grouped regression, with the risk of cash flows. These results indicate that the board's remuneration tends to be assigned to monitor the risks related to returns on assets and sales volume, not necessarily
related to the company's financial performance, measured by the return of the share. These results reinforce the ones found by Brick et al. (2006).

The CEO duality variable positively and significantly impacts the remuneration of directors in the fixed effects model, and although it does not present statistical significance, the signal presented in the grouped regression model is also positive. In such circumstances, the CEO has greater control over the board of directors and can influence even the selection of new board members (Brick et al., 2006). This situation denotes greater information asymmetry and tends to generate greater problems of agency, in its classic main-agent meaning. In this circumstance, executives can also use the function to increase their salary. It is observed, however, that this is not the case in the regression analysis since the CEO's duality negatively and significantly affects executive compensation in both the fixed-effects model and the grouped regression model.

This result differs from previous results found in the literature, which point to an increase in remuneration when the manager also holds the position of chairman of the board of directors (Ghosh, 2006; Petra & Dorata, 2008). A possible explanation for this divergency is found on the study of Beuren et al., (2014) in which, although the results do not have statistical significance, the coefficient of variation is negative for variable remuneration and positive for fixed remuneration, indicating that the CEO, when acting as chairman of the board, acts to reduce variable remuneration and increase fixed remuneration.

In general, these results indicate that there is favoritism of the administrative council to the executives, a form of "cronyism" between these agents. The results also indicate that this favoring is independent of the manager's performance, clearly demonstrating a failure of governance mechanisms in the Brazilian market to contain this agency conflict. This type of empirical evidence is even more alarming in an emerging-economy country such as Brazil, which, unlike developed economies, the agency relationship is, most of the time, between managers and minority shareholders, given the strong concentration of property.

6 FINAL REMARKS

The purpose of this study was to verify the relationship between the remuneration of the board of directors and the remuneration of executives with the performance of Brazilian publicly traded companies listed in B3 SA in the period from 2010 to 2014. In order to achieve the proposed objectives were used data panel analysis model, a pooled independent cross-sections and fixed effects (OLS).

The results indicate a positive and significant relationship between executive compensation and board remuneration, and this supports the first hypothesis of this study. Another evidence from the study is that Brazilian executive compensation packages encourage a reduction in risk-taking. This understanding is reinforced by the fact that the remuneration of the board of directors grows due to the reduction of the risks of cash flows. When considering the history of financial instability in Brazil, which raises the risk of the business, this result shows that companies seek to encourage executives to mitigate these risks, seeking to reduce the level of uncertainty about the business.

It was noticed that the remunerations of the executives and the board of directors are impacted by several variables tested in the study. However, it is not possible to affirm that the economic-financial performance of the business impacts them. Possibly this is related to the existence of greater informational asymmetry, that is, the objectives of the owners of the organization may be misaligned with the objectives of the agents studied, thus providing support for the Agency Theory.
The limitations of this study focus on the non-use of other variables that may affect the compensation of executives and directors, such as the concentration of ownership and personal characteristics of executives, such as age and training. Also, other possible variables that help to explain executive pay could be included to improve confidence in results.

It is suggested for future researches the extension of the sample to other periods, the use of other performance indicators and more detailed studies on the behavior of the CEO's duality.

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RESUMO

Objetivo: Este estudo verifica a relação existente entre a remuneração do conselho administrativo e a remuneração dos executivos, bem como analisa a relação destas remunerações com o desempenho econômico-financeiro das empresas brasileiras de capital aberto.

Método: O trabalho promove as análises por meio da estimação de dois modelos de regressão com dados em painel, o pooled independent cross-sections e o de efeitos fixos.

Originalidade/Relevância: Estudos científicos sobre remuneração no Brasil têm focado na relação da remuneração com o desempenho econômico-financeiro das empresas e/ou com as características da governança corporativa. Entretanto, ainda há espaço para investigar possíveis mecanismos de reciprocidade entre aumento salarial dos diretores estatutários e o aumento da remuneração dos membros dos conselhos de administração.

Resultados: Os resultados indicam que a remuneração do conselho administrativo está positivamente relacionada à remuneração dos executivos; que essas remunerações não apresentam relação significativa com o desempenho econômico-financeiro das empresas; e que o risco dos fluxos de caixa está negativamente relacionado à remuneração dos executivos.

Contribuições teóricas/metodológicas: O estudo fornece evidências de sincronismo entre a remuneração dos executivos e a remuneração dos conselheiros, fato que pode explicar por que a remuneração desses agentes não está relacionada ao desempenho econômico-financeiro das empresas. Além disso, evidencia que os pacotes remuneratórios dos executivos contribuem para reduzir o risco dos fluxos de caixa ao qual as empresas estão expostas.

Palavras-chave: Desempenho da Empresa, Remuneração Executiva, Conselho de Administrativo.


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