CEOPay and BoardPay versus Real Earnings Management: an Analysis of Brazilian Companies

CEOPay and BoardPay versus Real Earnings Management: uma Análise de Empresas Brasileiras

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ABSTRACT

This study analyzes if the compensation of executives and the board of directors influences the Real Earnings Management (REM) of firms in the IBRX50 index in the period 2017-2020. We used panel regression, considering the level of REM as the dependent variable measured from Roychowdhury (2006). As main results, we find that there is an inverse relationship between CEO compensation and REM and also an inverse relationship between board compensation and REM. Unlike previous studies that focus on the management of accounting results, this study focuses on the management of operating results, and we did not find in Brazil any study of this nature, which also crossed with the compensation of the manager/director, taking a new perspective at the earnings management and compensation practices for Brazilian firms.

Keywords: Real Earnings Management, Executive Board Compensation, Board Compensation, Brazilian Companies.

RESUMO

Este estudo analisa se a compensação dos executivos e do conselho de administração influencia no Real Earnings Management (REM) de firmas do índice IBRX50 no período 2017-2020. Adotou-se regressão em painel, considerando como variável dependente o nível de REM mensurado a partir de Roychowdhury (2006). Como principais resultados, constatou-se que há relação inversa entre compensação do CEO e REM e relação também inversa entre compensação do conselho e REM. Diferentemente de estudos anteriores que focam no gerenciamento de resultados 1 FACIC-UFU – Faculdade de Ciências Contábeis - Universidade Federal de Uberlândia – Uberlândia – MG – CEP. 38400-902 2 ISEPE - Faculdade do Litoral Paranaense e Instituto Superior de Educação de Guaratuba – Guaratuba - PR – CEP. 83280-000 3 FAGEN-UFU – Faculdade de Gestão e Negócios – Uberlândia – MG – CEP. 38400-902 4 IERI-UFU – Instituto de Economia e Relações Internacionais – Universidade Federal de Uberlândia – Uberlândia – MG – CEP. 38400-902 contábeis, este estudo foca no gerenciamento de resultados operacionais, não tendo sido encontrado no Brasil nenhum estudo dessa natureza, e, ainda, cruzado com compensação do gestor/ conselheiro, lançando um novo olhar sobre as práticas de earnings management e compensação para firmas brasileiras. Palavras-chave: Gerenciamento de Resultados Reais, Compensação da Diretoria Executiva, Compensação do Conselho de Administração, Empresas Brasileiras.

1 INTRODUCTION

The relationship between manager compensation and the quality of reported information is not clear in the finance literature (ALKEB- SEE; ALHEBRY; TIAN, 2022). According to Alkebsee, Alhebry and Tian, (2022), the compensation structure of managers plays a key role in deliberations related to earnings management (EM). According to agency theory, the use of share-based compensation for executives can alleviate agency problems by combining the interests of managers with those of shareholders (JEN- SEN; MECKLING, 1976).

However, variable compensation can generate conflicts of interest between managers and shareholders when creating incentives for managers to engage in earnings management practices (YE, 2014). It is assumed that the relationships Board Compensation

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and EM, and Executive Compensation and EM are similar, however, in the first relationship, on the one hand, there is the shareholder, whose objective is to maximize the value of the firm; on the other hand, there is the manager, whose objective is to maximize his individual interests and, in between, there is the board member, who seeks to supervise the former in favor of the latter and the value of the firm (HERMALIN; WESBACH, 2003).

Jensen and Murphy (1990) mention that the remuneration policy for managers can help to align the interests of shareholders and managers in various ways: (1) reviewing salaries and bonuses; (2) using stock options; and (3) threatening to dismiss executives. Murphy (1999) adds to the list: annual bonus plans, long-term incentives and retirement plans.

According to Schipper (1989), opportunistic managers can reduce the quality of accounting information, which is disclosed through EM practices in order to increase their earnings. This happens when managers use their judgment and start to manipulate the preparation of financial statements in order to alter the information disclosed, inducing the perception of stakeholders in relation to the organization's performance (HEALY; WAHLEN, 1999).

Martinez (2013) defines Results Management as a practice of discretionary accounting choices and/or operational or criteria choices to present accounting statements, with the accountant/manager taking advantage of the limitations of accounting standards to promote changes in the results disclosed and thus influencing the perception of users in relation to the accounting facts transmitted.

To minimize EM, corporate governance has emerged, seeking to reduce agency problems (GHOUMA; BEN-NASR; YAN, 2018), enabling a greater level of control and monitoring of the business by managers and also by shareholders. According to the Agency Theory, manager compensation and board member compensation are seen as CG mechanisms that seek to reduce agency problems (CORREIA; AMARAL; LOUVET, 2011). However, it can be seen that both (manager and board member remuneration) can bring results contrary to what is expected by this theory, as the manager or board member, wishing for even greater remuneration, could use the CG tools and manipulate the results so that they are “artificially” in line with the interests of the shareholders (ALKEBSEE; ALHEBRY; TIAN, 2022).

Based on the scenario presented, the following research questions were developed: **(1): What is the relationship between executive compensation and real results management in Brazilian companies? (2) What is the relationship between board member compensation and real results management in Brazilian companies?**

This study used panel regression to evaluate the companies in B3's IBRX50 index. The research period covered the years 2017 to 2020 as these are three years prior to the Covid-19 pandemic in Brazil and the actual year of its implementation. As a proxy for Real Earnings Management (REM), Roychowdhury's (2006) indicator was adopted, which is based on the concept of OEM (Operational Earnings Management). No other study was found in Brazil dealing with Real Earnings Management (REM) in conjunction with managerial and board compensation. Even abroad, the literature on the subject is scarce and we have as an example the study by Alkebsee, Alhebry and Tian (2022), but it does not deal with board remuneration. This study contributes to the finance literature by taking a fresh look at the relationship between managerial and board compensation and Earnings Management in Brazil.

2 THEORETICAL FRAMEWORK

2.1 Earnings Management

Earnings management (EM) is an expression used to designate a set of practices adopted by managers and accountants in order to obtain the desired accounting results, which normally result from manipulation of data within legal limits (MARTINEZ; CARDOSO, 2009). Martinez and Cardoso (2009) argue that there are two forms of earnings management: EM through accounting decisions, which they call Accounting Results Management (ARM), and EM through operational decisions, which they call Operational Results Management (ORM). According to these authors, the first type involves the accounting practices used by the firm and the second type covers the operational decisions involved in sales and in the level of production, as well as sales, general and administrative expenses (GUNNY, 2005). According to Martinez (2008), ORM is focused on accruals, which are the difference between net income and net operating cash flow, i.e. accrual accounts are those income accounts that are included in the calculation of income, but which do not involve cash movements (e.g. depreciation).

For Cupertino, Martinez and Costa Jr. (2016), Martinez and Cardoso (2009) and Roychowdhury (2006), there is the possibility of companies using these two forms of earnings management (ARM and OMR) simultaneously during the year. Thus, the analysis of management based only on accruals becomes incomplete, since the total value arises from the sum of the value managed from accounting choices and the amount managed by operational decisions.

2.2 Earnings Management and Executive Compensation

The search for better compensation instruments for executives arises from the need to find an appropriate way to monitor their actions and encourage them to care about maximizing the value of the firm (AMZALEG et al., 2014). In order to assess the determinants of executive compensation (CHEN et al., 2019), executive compensation has been frequently investigated in finance studies (ESSEN; OTTEN; CARBERRY, 2012).

Executive compensation is made up of a fixed part and a variable part: the nominal salary, the monetary value received for performing tasks, and the instruments related to results, which include annual bonuses, stock options and long-term incentive plans (SUNDARAM; YERMARK, 2007).

The literature has documented that executive pay is a key motivation for managers to engage in earnings manipulation (WANG; ZHANG, 2019). Thus, the remuneration structure plays an important role in executive performance. Although it aims to align executives' interests with those of shareholders, executive equity-based remuneration can also inflate profits, as capital incentives are linked to share price

The use of accounting and financial figures to determine executive bonuses has the advantage of being a clear and objective method (MACHADO; BEUREN, 2015). However, this method is subject to accounting manipulation, and it is important that there are different forms of remuneration and incentives in order to have an efficient executive remuneration model (MURPHY, 1999).

Managers/executives can use operational decisions to influence and, in certain cases, manipulate the firm's true capacity in relation to the market, thus distorting the company's results and the economic reality of organizations (ALI; ZHANG, 2015).

In order to identify the influence of executive remuneration policy on the accounting and operating EM of companies in the industrial sector in Brazil, the USA and the UK, between 2007 and 2010, Machado (2012) found that companies in the USA had higher remuneration. However, the highest level of EM was found for English companies and the highest discretionary accruals were identified in Brazilian companies.

The study by Assenso-Okofo, Ali and Ahmed (2021) sought to examine the effects of the 2008 global financial crisis on chief executive officers (CEOs) and the relationship between remuneration and EM. Specifically, the authors investigated whether the financial crisis moderated the relationship between CEO bonuses and discretionary accruals. The results indicated that there is a relationship between CEO remuneration and changes in EM in times of crisis.

Alkebsee, Alhebry and Tian (2022) investigated the association between the compensation of Chief Executive Officers (CEOs) and the compensation of Chief Financial Officers (CFOs) and Real Earnings Management (REM). The authors used data from all companies listed on the Shanghai and Shenzhen stock exchanges from 2009 to 2017. They found that CEO and CFO compensation is associated with REM for their sample and that CFO compensation has a more significant influence on REM than CEO compensation, suggesting that CFO financial and accounting knowledge strengthens their power over the quality of financial reporting.

In the work of Assenso-Okofo, Ali and Ahmed (2021), the moderating influence of corporate governance on the relationship between CEO remuneration and earnings management in Australia was addressed. The authors used data from companies listed on the Australian Stock Exchange from 2005 to 2010. The results indicate a positive relationship between CEO compensation and earnings management, and also show that CEO compensation and EM are influenced by the economics of the environment.

In this study, it was decided to follow the line of authors Assenso-Okofo, Ali and Ahmed (2021) and Sousa and Ribeiro (2020), who point out that when CEOs are well remunerated, there is generally a lower level of REM. Hypothesis 1 was therefore developed:

H_1: The higher the annual remuneration of the executive board, the lower the level of Real Earnings Management

2.3 Earnings Management and Board Compensation

The board of directors plays a strategic role in the corporate governance system of firms, and its functions have expanded over the years (DAH; FRYE, 2017). According to Collins, Chen and Melessa (2017), the board of directors has broad and diverse functions, such as: contributing to the development of the firm's strategies; representing the interests of shareholders/members; monitoring and supervising the work of executives/managers in an impartial manner; carrying out risk management and succession planning; ensuring integrity in the preparation of financial reports, among others.

The literature on corporate governance, the codes of the Brazilian Institute of Corporate Governance (IBGC) and the Securities and Exchange Commission (CVM) booklet show that there is a need for independent directors and to separate the roles of chairman and CEO, as well as suggestions as to the "optimal" size of the board to improve its coordination and effectiveness (PEIXOTO et al., 2014).

When it is well structured and complies with good corporate governance practices, the board of directors becomes the guardian of the owners' interests (HERMALIN; WEISBA- CH, 2003). However, as noted by Ribeiro and Colauto (2016), when there is an increase or decrease in the number of board members, this is related to the practice of earnings management. Another point to take into consideration is that the dual role of CEO/Chairman of the Board ends up reducing management efficiency, increasing the chances of violating accounting principles and raising the risk of EM practices (CHEN; CHENG; WANG, 2015).

When studying compensation from the perspective of the board of directors, it is suggested that the best compensation alternative involves a negotiation between the board and the CEO (ELNAH- ASS; SALAMA; TRINH, 2020). In situations where managers have greater discretion to make decisions (JENSEN; MECKLING, 1976), the board of directors has the role of designing compensation packages that are able to establish the alignment of interests between shareholders and managers.

For Li and Singal (2019), incentives through executive remuneration enable companies to achieve an increase in their accounting performance at the end of the period. With a view to controlling excess compensation and ensuring that shareholders regain confidence in board management, several authors (RYAN; WIGGINS, 2004) propose increasing the level of independence of the Board of Directors.

The work by Oxelheim and Clarkson (2014) examined how the chairman of the board should be remunerated without affecting his efforts to monitor the company's results. They used Swedish public companies listed from 2005 to 2009 as a sample. The results showed that there is a significant positive relationship between the chairman's remuneration in one year and the CEO's remuneration in the previous year.

The research by Du, Jian and Lai (2017) investigated the monitoring power that independent directors had to prevent EM. The sample consisted of Chinese listed companies from 2004 to 2012. To analyze EM, they used the modified Jones model, according to Dechow, Sloan and Sweeney (1995). The results showed that EM was less evident compared to other types of companies. They concluded that independent directors improved their monitoring of managers and financial statements. Based on the literature, the following hypothesis emerged:

H2: The higher the annual remuneration of board members, the lower the level of Real Earnings Management.

3 METHODOLOGY

3.1 Sample and data source

The sample for this research involved the 50 companies in the IBRX50 index, as adopted by Lima et al. (2020). The IBrX 50 is an indicator of the average performance of the prices of the 50 most tradable assets on the Brazilian stock market. In this study, the composition of the index for October 2021 was collected from B3. After removing Petrobrás, whose shares were preferred and common (keeping only the common shares), the final sample totaled 49 firms

The period from 2017 to 2020 was selected, involving three years pre-pandemic period of Covid-19 in Brazil and the actual year of the The information was collected from Economática® and CVM. Economic and financial data was taken from the former and corporate governance data from the latter. CG data was collected manually. Information related to manager com-

pensation and board compensation was collected from the CVM Reference Forms.

The analysis method was panel data regression. As dependent variable in all models was the level of Real Earnings Management. REM was calculated as the combination of three Roychowdhury (2006) proxies, namely: abnormal cash flow operations, abnormal production costs and abnormal discretionary expenses. expenses. Each of these components is explained below:

Abnormal cash flow operations: companies manage their earnings by accelerating the timing of sales and increasing earnings by offering discounts and lenient credit conditions. The following regression was used to calculate abnormal cash flow operations regression (ROYCHOWDHURY, 2006):

$$AbnCFO_{ti}\frac{CSFO_t}{A_{t-1}} = \beta_0 + \beta_1 * 1/A_{t-1} + \beta_2 * (\Delta S_t/A_{t-1}) + \varepsilon_t$$

Where *CFOt* is the cash flow from operations in year *t*; *At-1* is the lag of total assets in year *t*; *St* is the total sales in year *t*; and Δ*St* is the change in total sales during year *t*.

Abnormal production costs: Managers can also manipulate earnings by reducing the cost of goods sold by producing more products than necessary in order to allocate costs across many units, which increases the profit margin (PAPPAS; WALSH; XU, 2019). To calculate the abnormal production costs, the following cross-sectional regression models were used (ROYCHOWDHURY, 2006):

$$AbnPROD_{ti}\frac{PROD_t}{A_{t-1}} = \beta_0 + \beta_1 * 1/A_{t-1} + \beta_2 * (S_t/A_{t-1}) + \beta_3 * (\Delta S_t/A_{t-1}) + \beta_4 * (\Delta S_t/A_{t-1}) + \varepsilon_t$$

Where *PRODt* is the production costs in period (*t*); Δ*St-1* is the difference between total sales in the current and previous years; and the other variables are similar to those already defined in equation 1.

Abnormal discretionary expenses: The conventional way of manipulating profits is by managing expenses such as research and development (R&D), advertising, sales and administration, employee training and maintenance. In this case, managers can, for example, delay R&D expenses or reduce advertising expenses to reduce cash outflow and increase profit.

The following regression model was used to calculate abnormal discretionary expenses (ROYCHOWDHURY, 2006):

$$AbnDISEXPEN_{ti}\frac{EXPEN_t}{A_{t-1}} = \beta_0 + \beta_1 * 1/A_{t-1} + \beta_2 * (S_{t-1}/A_{t-1}) + \varepsilon_t$$

Where *DISEXPENt* are discretionary expenses; and the other variables are those defined in equation (1). Since consolidated EMN is used to measure the dependent variable. methodology of Roychowdhury (2006) is used to calculate the REM:

$$REM_{t,i} = Abn\ CFO_{\ t,i} * + Abn\ DISEXP_{\ t,i} ** - \ Abn\ PROD_{t,i,} ***$$

Where REM*i,t* is the comprehensive REM in company (*i*) in year (*t*); and AbnCFO*t,i* is the abnormal cash flow operations in company (*i*) in year (*t*), which is the residual calculated in equation (1). AbnDISEXP*t,i* is the abnormal discretionary expenditure in company (*i*) in year (*t*), which is the residual calculated in equation (2). Finally, Abn PROD*t,i* is the abnormal production cost in company (*i*) in year (*t*), which is the calculated in equation (3).

3.2 Variables selected in the research

Table 1 describes the variables used in this research.

3.3 Econometric models

Two unbalanced panel regression models were constructed. The dependent variable in all models was the level of EMR. Model 1 analyzed whether the average annual remuneration of the executive board influences REM. In addition, the length of the executive directors' mandate, the independence of the board, the duality of the CEO, the size of the board and whether the fact that the company is audited by one of the Big4 influences the level of real EM were checked. It is expected that, according

Table 1 - Research variables

VARIABLE	METRIC	EXPECTED RELATIONSHIP	AUTHORS	COLLECTION SOURCE
DEPENDENT				
REM Real Earnings Management	REM t, i = $AbnCFO_{t,i*}$ + $AbnDISEXP_{t,i**}$ - $AbnPROD_{t,i***}$	-	Guo et al. (2015); Roychowdhury (2006);	Economática
INDEPENDENT				
BOARDINDEP	Percentage of independent members of the board of directors.	Positive signal	Duru, Iyengar and Zampelli (2016).	CVM FR 12.5/6
CEODUALITY	Dummy variable equal to 1 if the CEO is also the Chairman of the Board and 0 otherwise.	Negative signal	Brandão et al. (2019); Duru, Iyengar and Zampelli (2016).	CVM FR 12.5/6
BIGFOUR	Dummy variable equal to 1 if the company is audited by one of the big four independent audit firms and 0 otherwise.	Positive signal	Devos, Huang and Zhou (2021).	CVM Reference Form 2.1/2.2
CEOLONG	Long CEO tenure is a dummy variable that is equal to 1 for the CEO who has held the position for the entire period analyzed and 0 otherwise.	Negative signal	Dal Magro, Dani and Klann (2019).	CVM Reference Form 12.5/6

VARIABLE	METRIC	EXPECTED RELATIONSHIP	AUTHORS	COLLECTION SOURCE
CHAIRMAN LONG	Chairman's long term in office is a dummy that is equal to 1 for the Chairman of the Board who has held the position for the entire period analyzed and 0 otherwise.	Negative signal	Adapted from Dal Magro, Dani and Klann (2019).	CVM Reference Form 12.5/6
CEOPAY	The logarithm of the average annual remuneration of the company's CEOs.	Negative signal (Hypothesis 1)	Hossain and Monroe (2015);Alkebsee, Alhebry and Tian (2022).	CVM Reference Form, 13.2.
BOARDPAY	The logarithm of the average annual remuneration of the company's Board of Directors.	Negative signal (Hypothesis 2)	Oxelheim and Clarkson (2015); Zittei, Moura and Hein(2015),	CVM Reference Form, 13.2.
CONTROL				
BOARDSIZE	Number of members of the Board of Directors	Positive	Duru, Iyengar and Zampelli(2016); Guo et al. (2015).	CVM Reference Form, 13.2.
CFO	Cash flow from operations for year t scaled by total assets at the beginning of year t.	Positive	Dal Magro, Dani e Klann (2019); Guo et al. (2015), Roychowdhury (2006).	Economática
TAM	Log of total assets in year t.	Positive	Dal Magro, Dani and Klann(2019); Guo et al. (2015); Kim, Wang and Zhang (2019).	Economática
ALAVANC it-1	Total debt weighted by total assets at the beginning of year t.	Positive	Dal Magro, Dani and Klann (2019).	Economática
ROA it-1	Return on assets at the beginning of year t.	Negative	Dal Magro, Dani and Klann(2019); Guo et al. (2015); Kim, Wang and Zhang (2019).	Economática
LOSS it-1	Dummy variable that equals one (1) for companies with a net loss for year t-1 and zero (0) otherwise.	Negative	Dal Magro, Dani and Klann (2019).	Economática

Fonte: Elaborado pelos autores.

to Harakeh, El-Gammal and Matar (2019), the higher the average annual remuneration of the executive board, the lower the level of REM.

$$REM = \beta_0 + \beta_1 \text{ceopay} + \beta_2 \text{ceolong} + \beta_3 \text{ boardindep} + \beta_4 \text{ceoduality} + \beta_5 \text{boardsize} + \beta_6 \text{bigfour} + \beta_8 \text{alavac}_{it-1} + \beta_9 \text{roa}_{it-1} + \beta_{10} \text{perda}_{it-1} + \beta_{11} \text{cfo} + \beta_{13} \text{tamanho} + \varepsilon_{it}$$

The second model analyzed whether the average annual remuneration of the board of directors influences firms' EMR. In addition, it was checked whether the term of office of the chairman (Chairmanlong), the independence of the board, the duality of the CEO, the size of the board and the fact that the company is audited by one of the Big4 influences the level of real EM of the firms. According to Dal Magro, Dani and Klann (2019), who studied the remuneration of the board of directors; greater EM will occur when there are long terms of office for board chairmen.

$$\text{REM} = \beta 0 + \beta 1 \text{boardpay} + \beta 2 \text{chairmanlong} + \beta 3 \text{ boardindep} + + \beta 4 \text{ceoduality} + \beta 5 \text{boardsize} + \beta 6 \text{bigfour} + \beta 8 \text{alavac} -1 + + \beta 9 \text{roa} -1 + \beta 10 \text{perda} -1 + \beta 11 \text{cfo} + \beta 13 \text{tamanho} + \varepsilon it$$

To define the models, a normality analysis was conducted. In addition, the Variance Inflation Factor (VIF) test was conducted, which showed an average below 10 for all variables, indicating that there is no multicollinearity between the variables. The results of the Breusch and Pagan and Chow tests indicated that that the random effects model is the best for both models. No heteroscedasticity and autocorrelation were identified for the Wald and Wooldridge tests.

4 ANALYSIS AND DISCUSSION OF RESULTS

Table 2 shows the description of the research variables, with means, standard deviation, minimum and maximum values for each of them.

The results in Table 2 show that the average remuneration of the executive board was R$49,300,000.00 and the average remuneration of the board of directors was R$8,273,946.00. Still in relation to the descriptive data, the frequency distributions of the dummy variables defined for the study are shown in Table 3.

Table 2 - Description of variables

VARIABLE	OBSERVATIONS	MEANS	STANDARD DEVIATION	MINIMUM	MAXIMUM
CEOPAY	237	R$49.300.000,00	R$96.500.000,00	0	R$654.000.000,00
BOARDPAY	243	R$8.273.946,00	R$13.000.500,00	R$57.094,20	R$79.500.000,00
BOARDINDEP	230	40,35934	23,40672	0	100
BOARDSIZE	230	9,426087	4,102531	3	28
ALAVAC	209	0,59	2,50	0	34,8
ROA	244	5,968018	6,56433	0,061327	35,32721
CFO	209	0,1019223	0,3850979	0,0000405	5,201724
SIZE	245	17,38973	1.612919	13,27332	21,34802

Source: Elaborated by the authors based on the survey results.

Table 3 - Frequency distribution of dummy variables

VARIABLE	OBSERVATIONS	DUMMY^0	DUMMY^1
CEOLONG	245	110	135
BIGFOUR	245	196	49
CEODUALITY	245	243	2
CHAIRMANLONG	245	140	105

Source: Elaborated by the authors based on the survey results.

The frequency of the dummy variables used in the research shows that, for the variable CEOLONG, there are 135 observations which indicate that the CEO was the same person throughout the period under investigation (CEO's long tenure), representing 55.10% of the total sample. For the variable BIG4, there are 49 observations, which show that there was an audit performed by one of the four largest auditing companies, representing 20% of the total. For the variable CEODUALITY, there are 2 observations, according to which the CEO and the Chairman of the Board were the same person, representing 0.82% of the total, which shows an evolution of the firms in the sample with regard to the CG aspect. And for the variable CHAIRMANLONG, there were 105 observations, which indicate that the Chairman of the Board was the same person during the period analyzed, representing 42.86% of the total.

Table 4 shows the results of Pearson's R coefficient for the variables. have a significant and positive correlation with each other. There is also a significant but negative correlation between the variables of executive and board remuneration and ROA. For this study, we can also highlight the correlations between the variable firm size, which showed significance with all the other variables.

Another interesting detail of the variable SIZE is that it has a significant negative correlation with the variable independent directors (BOARDINDEP) and a significant positive correlation, in the same order as the previous variable, with the variable size of the board of directors.

As far as the models in this study are concerned, the first used the independent test variables CEOPAY and CEOLONG. The second model used the test variables BOARDPAY and CHAIRMANLONG. The dependent variable for both was REM. Table 5 shows the results of the relationship between executive remuneration and board remuneration and the firms' level of Real Earnings Management.

Model 1 in Table 5 shows that hypothesis 1 of the study was corroborated by the results ("The higher the remuneration of the executive board, the lower the level of REM"), as a negative and significant coefficient was observed for the variable CEOPAY. This result is in line with the studies by Assenso-Okofo, Ali and Ahmed (2021), Sousa and Ribeiro (2020) and Alkebsee, Alhebry and Tian (2022), who also studied the relationship between CEO remuneration and EM. With regard to the control variables, mo-

Table 4 - Pearson's correlation between the research variables

VARIABLES	CEOPAY	BOARD PAY	BOARD INDEP	BOARD SIZE	ALAVAC	ROA	CFO	SIZE
CEOPAY	1							
BOARDPAY	0,6318*	1						
BOARDINDEP	-0,0378	0,0471	1					
BOARDSIZE	0,1757*	0,2855*	-0,0227	1				
ALAVAC	0,0265	-0,0083	-0,1586*	0,0161	1			
ROA	-0,1603*	-0,1331*	-0,037	-0,1359*	0,0269	1		
CFO	0,0546	0,0101	-0,1458*	-0,014	0,9707*	0,0684	1	
SIZE	0,4177*	0,3264*	-0,2319*	0,2652*	0,2244*	-0,1744*	0,1809*	1

Note: a) (*) statistically significant at the 10* level; b) absence of an asterisk represents a non-significant coefficient. | **Source:** Elaborated by the authors based on the research results.

The results obtained from the correlation analysis show that exactly the two variables annual remuneration of executives (CEOPAY) and annual remuneration of board members (BOARDPAY), used in the models to measure the research hypotheses, del 1 shows that operating cash flow and firm size are positively related to the level of REM, indicating that companies favor a good level of cash flow scaled by total assets and that larger firms manage their real results more. On the other hand, ROA was

Table 5 - Association between executive remuneration and board remuneration with the level of Real Earnings Management

VARIABLES	MODEL 1	MODEL 2
CEOPAY	-0,0181753** (0,0091848)	
CEOLONG	-0,0071271 (0,0280428)	
BOARDPAY		-0,0194406** (0,0090243)
CHAIRMANLONG		0,0453862* (0,0247433)
BOARDINDEP	0,0002032 (0,0004104)	0,0002223 (0,0003808)
CEODUALITY	-0,0270182 (0,0654304)	-0,0230005 (0,0640053)
BIGFOUR	0,002846 (0,0156302)	-0,0016186 (0,0150752)
CFO	0,9858345*** (0,0747726)	0,9699486*** (0,0719341)
SIZA	0,0220969** (0,0107539)	0,0211865** (0,0098467)
ALAVAC	0,0030205 (0,042817)	-0,0065404 (0,0410031)
ROA	-0,0041112** (0,0017777)	-0,0040814** (0,0017108)
LOSS	-0,0106612 (0,0165812)	-0,0136928 (0,0158771)
BOARDSIZE	-0,0032975 (0,003117)	-0,0012347 (0,0028924)
ObservaTIONS	119	124
Number of groups	41	42
RHO	0,67333651	0,64117561
Breusch AND Pagan Test	0,0000	0,0000
Chow Test	0,0000	0,0000
Hausman Test	0,0017	0,0429
Wald Test	0,0000	0,0000
Wooldridge Test	0,3414	0,6126
Fixed effect	SIM	SIM

Note: a) Standard error is in brackets; b) (*) statistically significant at the 10% level; (**) statistically significant at the 5% level; (***) statistically significant at the 1% level. | **Source:** Research results

negatively related to REM, which was also expected. The results for these variables (cash flow, firm size and ROA) corroborate Dal Magro, Dani and Klann (2019) and Guo et al. (2015).

Model 2 in Table 5, in turn, also proved hypothesis 2 of the study (The higher the remuneration of the Board of Directors, the lower the level of EMR), i.e. a negative and significant sign was found for the variable BOARDPAY, corroborating the studies by Du, Jian and Lai (2017) and Ribeiro and Colauto (2016), who state, for example, that a greater proportion of independent directors improves the quality of the accounting information reported. In addition, model 2 (Table 5) showed that when the Chairman of the Board has a long mandate (CHAIRMANLONG), he tends to manage actual results more, which corroborates the work of Dal Magro, Dani and Klann (2019). In the control variables, model 2 found a positive relationship between CFO and firm size with REM and a negative relationship between ROA and REM, as was found in model 1, which corroborates Dal Magro, Dani and Klann (2019) and Guo et al. (2015).

This result corroborates the findings of Oxelheim and Clarkson (2014), Zittei, Moura and Hein (2015), in similar studies, which indicate that when board members are well remunerated, there is generally a lower level of earnings management (Real Earning Managements). In addition, the positive relationship between REM and CHAIRMALONG shows that the longer the chairman of the board remains unchanged, the greater the companies' earnings management, which corroborates the research by Chen, Cheng and Wang (2015), who identified that the duality of concentrating authority in the same leader reduces management efficiency and increases the chances of violating accounting principles by practicing EM. However, the result between this variable and earnings management contradicts the relationship expected in the study, as adapted from Dal Magro,

Dani and Klann (2019), who expected greater earnings management if there were long board mandates.

Also in relation to model 2, the results show that there was statistical significance with REM only for the variables CFO, SIZE and ROA, at the same levels as for model 1, presenting the same results regarding the relationship expected in the study, as verified in the research by Dal Magro, Dani and Klann (2019) and Guo et al. (2015) for CFO, and Dal Magro, Dani and Klann (2019), Guo et al. (2015) and Kim, Wang and Zhang (2019) for size and ROA.

5 FINAL CONSIDERATIONS

This research sought to investigate whether the compensation of executives and the board of directors influences the level of Real Earnings Management of Brazilian IBRX50 firms from 2017 to 2020. In addition, it analyzed whether the length of term of executives and directors, the independence of the board of directors, the duality of the CEO, the size of the board and the fact that the company is audited by the Big4 affect the level of REM of the firms.

The analysis method adopted was panel regression with random effects model. To measure the level of Real Earnings Management (REM), Roychowdhury's (2006) proxy was used, which detects the manipulation of real activities by analyzing abnormal movements in operating cash flow, discretionary expenses and production costs. This study does not focus on the management of accounting results based on accruals, but rather on the management of operating results based on activities related to the firm's operating dynamics. It is considered that this perspective of Earnings Management (EM) is innovative and has been little used in empirical studies in Brazil. The main independent variables used to measure the compensation of executives and directors were the logarithm of the average annual compensation of the firm's CEOs and the logarithm of the average annual compensation of the members of the board of directors of the organizations. With regard to the research results, the study proved its two hypotheses, i.e. there was an inverse relationship between executive compensation and REM and an also inverse relationship between board member compensation and REM, corroborating the studies by Assenso-Okofo, Ali and Ahmed (2021), Sousa and Ribeiro (2020) and Alkebsee, Alhebry and Tian (2022) regarding hypothesis 1, and by Oxelheim and Clarkson (2014) and Zittei, Moura and Hein (2015) regarding hypothesis 2.

The article also showed that there is a positive relationship between REM and the time in office of the Chairman of the Board (CHAIRMANLONG), i.e. the longer the firm remains without changing the chairman of the board, the greater the earnings management tends to be, corroborating the research by Chen, Cheng and Wang (2015). For the control variables (CFO, firm size and ROA), the signs pointed out in the literature were confirmed in this study, i.e., there was a positive relationship between cash flow and firm size with REM and a negative relationship between ROA and REM, corroborating, for example, the findings of Dal Magro, Dani and Klann (2019).

With regard to the research's contributions to the finance literature, it should be noted that no other study was found in Brazil that analyzed Real Earnings Management combined with executive and board member compensation, which denotes the innovative nature of the work. When it comes to the board of directors versus REM, the literature is scarce, even abroad. It is believed that there is much to be researched on this subject and that the compensation of managers and board members can still be addressed in its components, both fixed and variable, in order to reduce agency problems, strengthen monitoring/control in firms and greatly reduce potential earnings management practices in Brazilian firms.

The main limitations of the study are the size of the sample. For future studies, we suggest expanding the sample and the analysis horizon. A comparison of countries within Latin America could also be analyzed, for example, and/or other proxies for earnings management and compensation of managers and board members could be adopted. This article contributes to the literature by showing that the size of the board, the length of time in office and the compensation of the board can influence the manager's remuneration and, consequently, the earnings management of companies, taking a new look at the compensation of CEOs and the board, as well as Earnings Management practices in Brazil.

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