


# ESG disclosure and pay-performance sensitivity

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## ABSTRACT

This research aims to investigate the moderating effect of environmental, social and governance (ESG) disclosure on the sensitivity of executive pay to market performance (pay-performance sensitivity – PPS) in Brazilian companies listed in the B3 IBRX-100 index. It also investigates the factors that influence PPS in order to seek explanations for the effect of ESG disclosure on PPS and to identify which theoretical perspective (agency theory, stakeholder theory, or the good governance view) can support the results found for Brazilian companies. It highlights the importance of monitoring ESG disclosure in the Brazilian capital market, as well as helping to understand whether or not ESG disclosure contributes to the extraction of shareholder income by executives, and provides insights for new research to be conducted considering ESG disclosure. The results have implications for understanding the principal-agent relationship and for understanding ESG disclosure in conflict mitigation when used by companies to improve PPS. A total of 81 companies were analyzed between 2016 and 2021. The method used for the main analyses was the ordinary least squares regression model (with robust standard errors), while quantile regression was used for the robustness analysis. The results indicate that ESG disclosure maximizes the sensitivity of executive pay to market performance. This study contributes to the literature by providing new evidence on PPS and identifying which theoretical perspective supports the results found in the Brazilian context. It also contributes to organizations by showing that ESG investments can mitigate agency problems and by revealing the importance of ESG implementation for firms, given the evidence of a positive impact on PPS. It contributes to society by encouraging organizations to invest in ESG issues.

**Keywords:** ESG, executive pay, pay-performance sensitivity, performance.

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## Divulgação ESG e sensibilidade da remuneração executiva ao desempenho de mercado

### RESUMO

*Esta pesquisa tem o objetivo de investigar o efeito moderador da divulgação ESG na sensibilidade da remuneração dos executivos ao desempenho de mercado (pay-performance sensitivity) em empresas brasileiras listadas no índice IBrX-100 da B3. Também investiga os fatores que impactam a PPS, de modo a buscar explicações sobre o efeito da divulgação ESG na pay-performance sensitivity e identificar qual perspectiva teórica (Teoria da Agência, Teoria dos Stakeholders e visão da boa governança) possibilita sustentação dos resultados encontrados para empresas brasileiras. Evidencia a importância de se observar as divulgações ESG no mercado de capitais brasileiro, bem como auxilia a compreender se a divulgação ambiental, social e de governança está contribuindo ou não para extração de renda do acionista pelo executivo, e produz insights para que novas pesquisas sejam realizadas considerando a divulgação ESG. Os resultados apresentam implicações para o entendimento da relação agente-principal e para a compreensão da divulgação ESG na mitigação de conflitos, quando utilizada nas empresas para potencializar a PPS. Foram analisadas 81 empresas entre 2016 e 2021. O método utilizado para as análises principais foi o modelo de regressão por Mínimos Quadrados Ordinários (com erros padrões robustos), enquanto para a análise de robustez foi utilizada a regressão quantílica. Os resultados indicam que a divulgação ESG maximiza a sensibilidade da remuneração dos executivos ao desempenho de mercado. Este trabalho contribui com a literatura ao trazer novas evidências sobre a PPS e ao identificar qual perspectiva teórica dá sustentação aos resultados encontrados no contexto brasileiro. Contribui também para as organizações ao evidenciar que investimentos ESG podem mitigar problemas de agência e ao revelar a importância da implementação de questões ESG para as empresas, diante das evidências de influência positiva na PPS. Contribui com a sociedade ao encorajar as organizações a investirem em aspectos ambientais, sociais e de governança.*

**Palavras-chave:** ESG, remuneração dos executivos, pay-performance sensitivity, desempenho.

## 1. INTRODUCTION

Executive pay is the focus of studies aimed at verifying the determinants of remuneration, given its importance in aligning the interests of principals and agents and, consequently, in mitigating agency problems (Blanes et al., 2020). The conflict of interest between shareholders and the Chief Executive Officer (CEO) of a publicly-traded company is a classic example of a principal-agent problem, and in this environment, both the efforts of executives and the opportunities for good investments by shareholders are not perfectly observable (Jensen & Murphy, 1990).

Thus, “agency theory predicts that remuneration policy will be designed to give the manager incentives to select and implement actions that increase shareholder wealth” (Jensen & Murphy, 1990, p. 226). This theory also argues that executive pay should be linked to corporate performance in order to align the interests of principals and agents. Thus, agents of firms with superior performance would be rewarded with higher salaries (Cho & Ibrahim, 2021; Jensen & Meckling, 1976).

In addition, the ideal contracting view predicts that managers need incentives to maximize shareholder value

(Bebchuk & Fried, 2003). In the ideal contracting view, an optimal executive pay contract links CEO pay to performance because it aligns the interests of shareholders and managers, thereby reducing agency problems (Blanes et al., 2020). This linkage would maximize the sensitivity of executive pay to market performance (Blanes et al., 2020; Brandão et al., 2019; Murthy, 1999).

With regard to the sensitivity of executive pay to market performance, its presence is identified when executive pay can be explained by performance. This is known in the literature as pay-performance sensitivity (PPS) (Jensen & Murphy, 1990). In the finance literature, PPS is conceptualized as the relationship between increases in executive pay and increases in the firm’s market value (Jensen & Murphy, 1990). In this context, executive pay that is sensitive to market performance occurs when an increase in market value is responsible for an increase in executive pay (Jensen & Murphy, 1990). The PPS addressed in this study is based on the model of Jensen and Murphy (1990, p. 227), who define it “as the monetary change in CEO wealth associated with a monetary change in

shareholder wealth.” Therefore, a higher PPS is “indicative of a greater alignment of interests between the CEO and his or her shareholders” (Jensen & Murphy, 1990, p. 227).

Executive pay can be sensitive to environmental, social and governance (ESG) disclosure, as contracts may require compliance (Cho & Ibrahim, 2021; Instituto Brasileiro de Governança Corporativa [IBGC], 2021) in response to economic incentives that pressure managers and shareholders to implement an ESG agenda (Monteiro et al., 2021). However, information asymmetry and bargaining power can lead to an unequal distribution of values, meaning that it will not always be a “win-win” relationship (Monteiro et al., 2021).

Corporate actions carried out in this area are referred to as ESG or Corporate Social Responsibility (CSR) (Gillan et al., 2021). In this study, the focus will be on ESG. However, it should be noted that the literature supporting the proposed relationships sometimes refers to CSR (Cai et al., 2011; Chang et al., 2018; Jian & Lee, 2015), and since it has elements that are present in the ESG concept, in this research both will be interpreted in a similar way (Clement et al., 2023), as there are few studies that have analyzed the effect of ESG disclosure on executive pay (Cai et al., 2011; Gillan et al., 2010; Jian & Lee, 2015; Karim et al., 2018; Rath et al., 2020) and the moderating effect of ESG on PPS (Chang et al., 2018; Cho & Ibrahim, 2021; Rath et al., 2020).

One difference between the terms ESG and CSR is that “ESG explicitly includes governance and CSR indirectly includes governance issues related to environmental and social considerations. Therefore, ESG tends to be a broader terminology than CSR” (Gillan et al., 2021, p. 2). ESG refers to a set of environmental, social and governance criteria that have emerged with the incorporation of social concerns into corporate investments and that guide the way businesses are evaluated by socially responsible investors (Monteiro et al., 2021; Pedersen et al., 2021).

Despite the attention given to ESG disclosure, the literature discusses whether this concept contributes to the financial performance and market value of companies, as the conclusions are different (Gillan et al., 2021). The findings on the effect of ESG disclosure on corporate performance are a mixture of positive (Alareeni & Hamdan, 2020), negative (Atan et al., 2018; Duque-Grisales & Aguilera-Caracuel, 2021), and not significant (Nekhili et al., 2017).

The positive results are explained by the fact that ESG activities tend to improve operational efficiency by reducing waste and resources, which consequently creates shareholder value and provides higher returns and lower

volatility and risk in the capital market (Gillan et al., 2021). The negative findings can be interpreted to mean that companies invest in activities that they consider to be more profitable than ESG, and therefore this disclosure tends to provide lower financial performance and market value (Li et al., 2018). The inconclusive results may be related to the fact that ESG activities have higher costs for companies, which can neutralize the benefits of ESG disclosure, resulting in no or even an incipient change in corporate performance (Lin et al., 2020).

The literature discusses a number of theories that support corporate ESG disclosure. One that stands out is agency theory (Jensen & Meckling, 1976), which deals with conflicts between agents and principals. According to this theory, ESG investments would be associated with excessive spending, which increase agency conflicts as executives would obtain private benefits at the expense of shareholders (Cai et al., 2011; Ferrell et al., 2016; Rath et al., 2020). The view based on stakeholder theory argues that managers should be concerned with valuing and satisfying the interests of all the parties involved in the company and not just generating profits for shareholders (Freeman, 1984). In this way, a company can use ESG disclosure as a corporate governance mechanism to resolve potential conflicts between managers and stakeholders (Cai et al., 2011; Rath et al., 2020). There is also the good governance view, which is similar to the view based on stakeholder theory (Ferrell et al., 2016), as it is related to well-governed management decisions and transparency. The research that has used these theories has not yet found a consensus in the results, and all are concerned with managerial incentives (Ferrell et al., 2016), facts that motivate the analysis of the effect of ESG disclosure on PPS.

The studies on PPS are inconclusive (Aguilar & Pimentel, 2017; Brandão et al., 2019; Ghrab et al., 2021; Iglesias et al., 2022; Iyengar & Sundararajan, 2021). In addition, studies on the impact of ESG disclosure on executive pay (Cai et al., 2011; Gillan et al., 2010; Jian & Lee, 2015; Karim et al., 2018; Rath et al., 2020) and the moderating effect of ESG disclosure on the sensitivity of executive pay to market performance (Chang et al., 2018; Cho & Ibrahim, 2021; Rath et al., 2020), a relationship that has not been identified in the national literature, are scarce and inconclusive from a theoretical and empirical point of view.

According to Rath et al. (2020), the top management of companies with ESG disclosures tends to receive lower salaries and engage in ESG activities to improve the institution's performance and benefit stakeholders.

Companies with CSR tend to share more resources with stakeholders, leaving fewer resources available for management (Chang et al., 2018). Thus, CSR disclosures act as a constraint on excessive CEO pay. Therefore, greater CSR engagement is associated with greater PPS (Chang et al., 2018). Companies with ESG disclosures show greater pay sensitivity to shareholder wealth because these disclosures help companies align CEO incentives with shareholder interests, which increases the congruence of company performance with financial and non-financial measures (Cho & Ibrahim, 2021). Chang et al. (2018) found that CSR engagement helps companies strengthen the positive link between top management pay and corporate performance, meaning that greater CSR engagement increases the sensitivity of pay to performance. Cho and Ibrahim (2021) also found evidence that PPS is stronger in companies with ESG disclosures.

On the other hand, based on the agency view (Jensen & Meckling, 1976), CSR disclosure can benefit management to the detriment of other stakeholders, causing agency problems due to the weak link between executive pay and corporate performance. Thus, greater CSR disclosure is associated with lower PPS (Chang et al., 2018). Rath et al. (2020) found that when ESG disclosure and financial and market performance increase, CEO pay decreases. These positive and negative views on the effects of ESG disclosure on PPS (Chang et al., 2018; Cho & Ibrahim, 2021; Rath et al., 2020) motivate this research.

In this sense, this research seeks to add more studies in the national context and bring new evidence on PPS, which lacks greater disclosure in Brazil and needs more clarification (Brandão et al., 2019; Iglesias et al., 2022). Therefore, the gap identified based on the previous literature relates to the possibility of investigating the factors that affect the sensitivity of executive pay to market performance, in order to seek explanations for the effect of ESG disclosure on PPS, in addition to identifying which theoretical perspective (agency theory, stakeholder theory or the good governance view) makes it possible to support this result for Brazilian companies.

Based on the above, in order to contribute to the discussion on the topics proposed in the academic literature, the study seeks to answer the following research question: What is the moderating effect of ESG disclosure on the sensitivity of executive pay to market performance in Brazilian companies listed in the B3 IBrX-100 index?

This study is justified by the relevance of executive pay linked to shareholders' interests, which motivates

managers, through company performance (Tirole, 2006), to act in the alignment of interests between agents and principals (Jensen & Meckling, 1976), thus contributing to the understanding of the effectiveness of corporate governance (CG) mechanisms in the Brazilian capital market (Brandão et al., 2019). The determination of executive pay packages remains an issue that deserves attention, "due to the possible problems that may arise from excessive or insufficient CEO compensation" (Ghrab et al., 2021, p. 1). Therefore, it is necessary to understand how CEO pay can be affected by market performance and other possible factors that can influence PPS. In the case of this research, this means understanding whether or not ESG disclosure contributes to the extraction of shareholder income by the CEO (Ghrab et al., 2021). Thus, this study advances in relation to national research on PPS (Brandão et al., 2019; Iglesias et al., 2022) by including ESG disclosure in this analysis as a factor influencing the sensitivity of executive pay to market performance.

This research is justified by its theoretical, practical and social contributions. From a theoretical point of view, it contributes to the literature on managerial incentives by analyzing PPS (Brandão et al., 2019; Iglesias et al., 2022) and by expanding the research on the topic, shedding light on a new analysis perspective by introducing ESG disclosure to verify its possible influence on PPS, introducing the discussion of the ESG issue in the proposed relationship in the national context and identifying the theory that supports such relationships in the Brazilian context.

In terms of practical contributions, the findings could be used to implement compensation policies and incentives for ESG disclosure, as this practice could influence the mitigation of agency problems. The results could be useful in developing ESG strategies, as they can influence PPS and preserve shareholder wealth. By knowing the influence of ESG disclosure, shareholders as capital holders will be able to make decisions to ensure that such disclosures are maintained (Ghrab et al., 2021).

In terms of social contributions, the results of this research can help society by making organizations aware of the importance of disclosing ESG issues and highlighting their potential impact on management, the environment and society in general. By highlighting the impact of ESG disclosure by companies, this research could motivate this form of management, which has a direct impact on society, given the importance that socio-environmental investments can have for the community.

## 2. THEORETICAL FRAMEWORK AND RESEARCH HYPOTHESES

### 2.1 Sensitivity of Executive Pay to Market Performance

Executive pay, when linked to the interests of the principal, creates incentives for managers through motivation based on firm performance (Tirole, 2006) to reduce agency conflicts between agents and principals (Jensen & Meckling, 1976). In this way, “compensation plans are designed to align the risk aversion and private interests of executives with those of shareholders” (Murphy, 1999, p. 2519). Compensation contracts are efficient when they balance the agency costs of getting the agent to assume the risk, plus the benefits of obtaining greater effort from the executive on behalf of the principal (Cho & Ibrahim, 2021; Holmström, 1979).

In this sense, the sensitivity of executive pay to market performance (Jensen & Murphy, 1990) examines whether the compensation policy is effective (Brandão et al., 2019). As mentioned previously, this study is based on the model by Jensen and Murphy (1990), which “regressed the increase in each monetary unit of CEO pay on the increase in each 1,000 monetary units of market value of US companies” (Jensen & Murphy, 1990 *apud* Brandão et al., 2019, p. 33), which justifies the use of market value to measure market performance in PPS. In other words, PPS verifies the “increase in each monetary unit of manager pay per thousand monetary units of market value” (Brandão et al., 2019, p. 30).

A high PPS may indicate that interests are aligned, while the opposite may show that the executive’s pay is not dependent on market performance, indicating the possibility of the emergence of a fat cat, an expression used by Chang et al. (2018, p. 1184) alluding to the fact that executives receive a lot of money without putting in an effort for shareholders. In this way, executives may be compensated beyond their efforts (Chang et al., 2018; Jensen & Murphy, 1990) and remunerated without market performance (Bebchuk & Fried, 2003; Cho & Ibrahim, 2021), which justifies the importance of efficient contracts (Blanes et al., 2020; Cho & Ibrahim, 2021; Holmström, 1979).

When compensation is not aligned with market performance, the payment of excessive compensation may be due to “managerial power and the associated act of extracting income for the manager’s personal benefit” (Ghrab et al., 2021, p. 13). Since excessive CEO pay is a

manifestation of agency costs, it is necessary to use efficient corporate governance practices to align the interests of shareholders and executives (Alves et al., 2016). One mechanism to mitigate the agency problem can be the use of performance pay (Holmström, 1979; Tirole, 2006).

In the same vein, Raithatha and Komera (2016) argue that, according to agency theory, incentive contracts should be designed to align the interests of managers with those of shareholders. However, designing an efficient contract is complex because shareholders want managers to maximize the value of their wealth. However, it is not possible to accurately verify the manager’s efforts, which could be used to serve private interests and deviate from strategies to maximize the value of the company (Bebchuk & Fried, 2003; Holmström, 1979; Jensen & Meckling, 1976; Raithatha & Komera, 2016).

The evidence found in the literature is mixed, and the results on the sensitivity of executive pay to market performance are still inconclusive (Aguiar & Pimentel, 2017; Brandão et al., 2019; Ghrab et al., 2021; Iglesias et al., 2022; Iyengar & Sundararajan, 2021). There are studies that have found positive effects (Aguiar & Pimentel, 2017; Alves et al., 2016; Amzaleg et al., 2014; Brandão et al., 2019; Iyengar & Sundararajan, 2021; Lei et al., 2019; Ouyang et al., 2019; Yang et al., 2021; Zhou et al., 2017), others negative (Ghrab et al., 2021), mixed (Raithatha & Komera, 2016), or not statistically significant (Iglesias et al., 2022).

Based on agency theory and the above arguments, it is expected that executive pay will be sensitive to market performance, i.e. the existence of PPS is assumed, which is verified by a positive and significant coefficient. Therefore, the objective is to determine whether executive pay is sensitive to market performance in Brazilian companies listed in the IBrX-100. The following hypothesis (H<sub>1</sub>) is formulated: There is a positive relationship between market performance and executive pay in Brazilian companies.

### 2.2 ESG Disclosure and Pay-Performance Sensitivity

The term ESG was developed in a 2004 report by CEOs of financial institutions in response to a call by Kofi Annan (Who Cares Wins). ESG refers to how investors and companies integrate environmental, social and governance

issues into their business models (Gillan et al., 2021; Li et al., 2021). ESG disclosure is a set of environmental, social and governance factors that have taken shape due to the social concerns of corporate investments. These factors shed light on the evaluation of businesses by socially responsible investors (Monteiro et al., 2021; Pedersen et al., 2021).

Below is a breakdown of each pillar of ESG disclosure, highlighting the sub-dimensions of each pillar according to the Refinitiv Eikon® database (2022). The environmental pillar is related to three main categories: resource use, emissions and innovation (Refinitiv Eikon®, 2022). Resource use relates to the efficient use of natural resources (eco-efficient company). The emissions category refers to issues such as the company's commitment and effectiveness in reducing emissions and waste in its processes. The innovation category refers to issues such as green revenues, research and development and product innovation, and clean energy products (Bătae et al., 2021; IBGC, 2021; Li et al., 2021; Refinitiv Eikon®, 2022).

The social pillar includes the workforce, human rights, community and product responsibility categories (Refinitiv Eikon®, 2022). The workforce category measures a company's effectiveness in terms of employee satisfaction, the existence of a healthy and safe workplace, and the maintenance of diversity and equal opportunities. The human rights category measures a company's effectiveness in upholding fundamental conventions on individual rights. The community category measures a company's commitment to corporate citizenship, public health and business ethics. The product responsibility category represents a company's ability to produce quality goods and services while addressing issues related to customer health and safety, integrity and data privacy (Bătae et al., 2021; IBGC, 2021; Li et al., 2021; Refinitiv Eikon®, 2022).

The governance pillar consists of the following categories: management, CSR strategies and shareholders (Refinitiv Eikon®, 2022). The management category measures a company's commitment to, and effectiveness in, good corporate governance practices. CSR strategies reflect a company's practices to communicate that it integrates economic (financial), social and environmental dimensions into its decision making, covering issues such as disclosure and transparency. The shareholders category measures a company's effectiveness in treating its shareholders equally (Bătae et al., 2021; IBGC, 2021; Li et al., 2021; Refinitiv Eikon®, 2022).

Kim and Li (2021) argue that companies are increasingly committed to ESG in order to be recognized as socially responsible. According to the IBGC (2021), companies approach ESG investing as a strategic vision.

Just as it is possible to find arguments in the literature arguing that ESG disclosures can help reduce information asymmetries, enhance organizational legitimacy and improve reputation, there are also opinions that these disclosures can be harmful if investors view such a practice as greenwashing, which refers to a company trying to appear to be more aware of ESG disclosure than it actually is (Fatemi et al., 2018).

When analyzing the main theoretical positions on the influence of ESG disclosure on PPS, and according to executive pay, the literature bases possible outcomes of this influence on the perspectives of agency theory, stakeholder theory and the good governance view. According to agency theory (Jensen & Meckling, 1976), CSR is considered an agency problem and represents a waste of resources because managers would use such disclosures for their own promotion (Cai et al., 2011; Ferrell et al., 2016; Rath et al., 2020). Thus, socially responsible investments would reduce PPS and increase executive pay, since in this case we would have an excess of investments in this area as a result of the private interests of executives who seek to invest to enhance their reputation and image. As a result, there would be better job opportunities and they would be able to negotiate better salaries. In this way, executives would have high compensation without corresponding market performance, which would decrease the value of the firm (Cai et al., 2011; Ferrell et al., 2016; Rath et al., 2020).

On the other hand, the stakeholder theory view (Freeman, 1984) and the good governance view argue that socially responsible investments would improve PPS and executive pay would be more aligned (lower), i.e., investments in this area are associated with greater PPS and lower excess compensation. The stakeholder theory view (Freeman, 1984) is based on valuing all stakeholders, and ESG disclosure, as well as socially responsible investing, can be used as a business strategy to resolve conflicts between managers and stakeholders and increase shareholder value (Cai et al., 2011; Deng et al., 2013; Karim et al., 2018; Rath et al., 2020). In the case of the good governance view, the literature argues that socially responsible companies generally adhere to corporate governance practices that increase shareholder value. According to this perspective, companies are well-managed, managers are properly incentivized, and they invest appropriately in socially responsible issues (Ferrell et al., 2016).

Given the different theoretical perspectives (agency theory, stakeholder theory and the good governance view), attempts were made to analyze the effect of ESG disclosure on executive pay and the effect of ESG disclosure on the

sensitivity of executive pay to market performance. Studies examining the impact of CSR and ESG disclosure on executive pay are inconclusive, with results that are positive (Rath et al., 2020), negative (Cai et al., 2011; Gillan et al., 2010; Jian & Lee, 2015), mixed (Karim et al., 2018) and without statistical significance (Cho & Ibrahim, 2021), as well as the incipient evidence found in the literature testing the effect of ESG disclosure on PPS (Chang et al., 2018; Cho & Ibrahim, 2021; Rath et al., 2020). However, this effect is inconclusive from a theoretical and practical point of view, and no studies were found in the national literature that analyzed the moderating effect of ESG disclosure and its pillars on PPS.

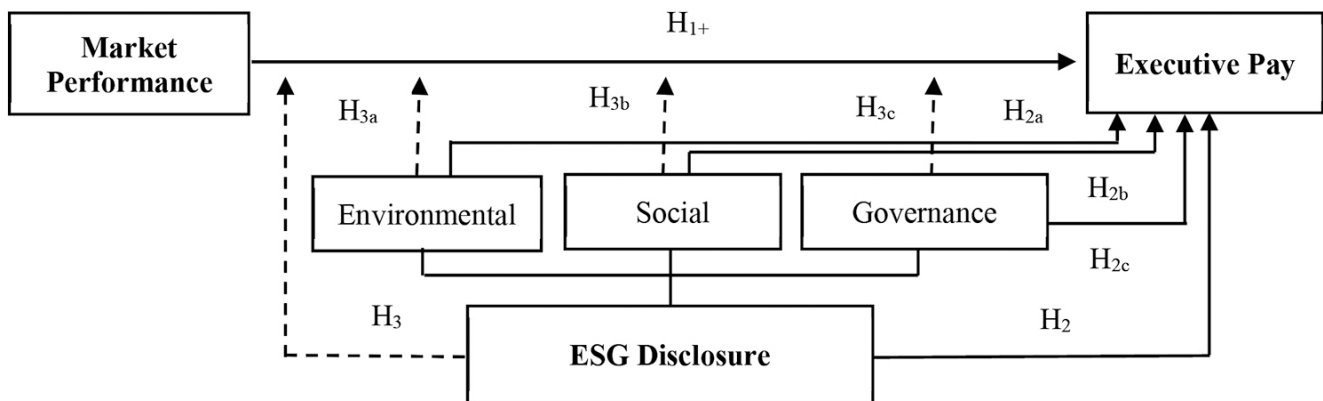
Based on agency theory, stakeholder theory and the good governance view, and on the arguments mentioned above, it is not possible to define in advance the sign of the hypothesis to be tested (whether positive or negative) for Brazilian companies, given that the scenario is unknown (lack of empirical evidence relating these theories in the national context) and the fact that they are theories with opposing views. Thus, according to the results found, it was possible to identify which theory best explains the

relationships proposed for the companies in the sample in the Brazilian context, representing a contribution of this study.

To this end, attempts were made to identify the direct effect (positive/negative) of ESG disclosure on executive pay and the moderating effect (positive/negative) of ESG disclosure and its pillars on the sensitivity of executive pay to the market performance of Brazilian IBrX-100 companies, giving rise to the second hypothesis ( $H_2$ ): There is a relationship between ESG and environmental ( $H_{2a}$ ), social ( $H_{2b}$ ) and governance ( $H_{2c}$ ) disclosure and executive pay in Brazilian companies; and the third hypothesis ( $H_3$ ): There is a moderating effect of ESG and environmental ( $H_{3a}$ ), social ( $H_{3b}$ ) and governance ( $H_{3c}$ ) disclosure on the sensitivity of executive pay to market performance.

### 2.3 Theoretical Analysis Model

Figure 1 shows the theoretical model, which summarizes the proposed relationships.



**Figure 1** Theoretical analysis model

Source: Prepared by the authors.

## 3. METHODOLOGICAL PROCEDURES

### 3.1 Research Design, Population and Sample

A quantitative, descriptive and documentary study was conducted to achieve the objectives of this research. The study population included the companies listed in the B3's IBrX-100 theoretical portfolio, which corresponds to the 100 most tradable and representative assets in the Brazilian stock market. The portfolio used in this

study refers to the period May-August 2022. The choice to analyze companies from the IBrX-100 theoretical portfolio is due to the fact that this group contains the most representative companies in the Brazilian capital market (Brandão et al., 2019; Iglesias et al., 2022).

Of the 100 companies whose stocks made up the IBrX-100 theoretical portfolio, three with two stocks in the portfolio were dropped, leaving a total of 97 companies.

Of these, 16 were excluded because they did not have the necessary information for the analysis, 11 of which were due to missing ESG data for the entire period, indicating a limitation of the study. Thus, the final sample consisted of 81 companies in a universe of approximately 387 unbalanced observations. The data analyzed in this study covers the period from 2016 to 2021.

### 3.2 Data Collection and Research Construct

Table 1 presents the study construct, which includes a description of the variables, their respective operationalizations, the source of the data collection, and the authors who have used these variables in their research and support their use in this study.

**Table 1**  
*Research construct*

Variable	Operationalization	Source	Authors
<b>Dependent Variables – Compensation of Executive Directors</b>			
Variation in total executive board compensation ( $\Delta\text{COMT}$ )	Difference between total management compensation in t and t-1 (in R\$ units) weighted by total assets in t-1 (in R\$ thousands)	Item 13.2 of the B3 Reference Form.	Amzaleg et al. (2014); Brandão et al. (2019); Ferrell et al. (2016); Gillan et al. (2010); Iglesias et al. (2022); Jensen e Murphy (1990); Jian e Lee (2015); Lei et al. (2019); Ouyang et al. (2019); Rath et al. (2020); Zhou et al. (2017).
Change in executive board compensation per capita ( $\Delta\text{COMPC}$ )	Difference between the per capita compensation of the board of directors in t and the compensation in t-1 (in R\$ units) weighted by total assets in t-1 (in R\$ thousands)		Brandão et al. (2019); Jensen & Murphy (1990); Lei et al. (2019); Ouyang et al. (2019); Zhou et al. (2017).
<b>Independent Variable – Market Performance</b>			
Change in market value ( $\Delta\text{MV}$ )	Difference between the company's market value in t and its value in t-1 (in R\$ thousands) weighted by total assets in t-1 (in R\$ thousands)	Economática®	Brandão et al. (2019); Ferrell et al. (2016); Iglesias et al. (2022); Jensen & Murphy (1990); Rath et al. (2020).
<b>Moderating Independent Variables – Environmental, Social and Governance (ESG)</b>			
ESG	According to the Refinitiv Eikon® report (2022), this refers to an overall score, covering environmental, social and corporate governance aspects.		Cho & Ibrahim (2021); Ferrell et al. (2016); Gillan et al. (2010); Jian & Lee (2015); Rath et al. (2020);
Environmental disclosure (ENV)	According to the Refinitiv Eikon® report (2022), this refers to the environmental score. It covers aspects related to the use of resources, emissions, and environmental innovation.	Refinitiv Eikon®	Ferrell et al. (2016); Gillan et al. (2010); Rath et al. (2020).
Social disclosure (SOC)	According to the Refinitiv Eikon® report (2022), this refers to the social score. It covers aspects related to human rights, employees, community and product responsibility.		Ferrell et al. (2016); Gillan et al. (2010); Rath et al. (2020).
Governance disclosure (GOV)	According to the Refinitiv Eikon® report (2022), this refers to the governance score. It covers aspects related to management, shareholders and corporate social responsibility (CSR) strategy.		Ferrell et al. (2016); Gillan et al. (2010); Rath et al. (2020).
<b>Control Variables – Corporate Governance</b>			
Compensation committee (COMC)	Presence of a compensation committee on the Board of Directors (dichotomous variable)	Refinitiv Eikon® and Item 12.1 and 12.7/8 of the B3 Reference Form	Brandão et al. (2019); Ferrell et al. (2016); Iglesias et al. (2022).
Concentration of voting rights (PROP)	Percentage of ordinary shares held by the company's largest shareholder in t.	Economática®	Brandão et al. (2019); Iglesias et al. (2022); Lei et al. (2019); Ouyang et al. (2019); Yang et al. (2021).
<b>Control Variables – Company Specific</b>			
Return on assets (ROA)	Ratio between the company's net income and its total assets in t.	Economática®	Ghrab et al. (2021); Lei et al. (2019); Ouyang et al. (2019); Rath et al. (2020); Yang et al. (2021); Zhou et al. (2017).
Financial slack (FS)	Ratio between the company's current assets and its current liabilities in t.	Economática®	Kim et al. (2008).



**Table 1**  
Cont.

Variable	Operationalization	Source	Authors
<b>Control Variables – Company Specific</b>			
Company size (SIZE)	Natural logarithm of the company's total assets in t-1.	Econômática®	Brandão et al. (2019); Chang et al. (2018); Iglesias et al. (2022); Lei et al. (2019); Ouyang et al. (2019); Rath et al. (2020); Yang et al. (2021);
<b>Control Variables – Fixed Effects</b>			
Sector fixed effects	Company's main activity. Dichotomous variable. Bovespa economic sector classification.	Econômática®	Aguiar & Pimentel (2017); Brandão et al. (2019); Iglesias et al. (2022); Jian & Lee (2015); Lei et al. (2019); Ouyang et al. (2019).
Year fixed effects	Analysis period: 2016 to 2021. Dichotomous year variable.	-	-

**Source:** Prepared by the authors.

ESG disclosure includes ten categories across the environmental, social and governance pillars: resource use, emissions, innovation, workforce, human rights, community, product responsibility, management, CSR strategies and shareholders. Refinitiv Eikon® provides overall ESG, environmental, social, governance, combined ESG and ESG controversy scores (collected from global media sources). These scores are calculated through questionnaires sent to companies and are designed to transparently and objectively measure a company's ESG performance, commitment and effectiveness, based on the data it reports (Refinitiv Eikon®, 2022). Companies answer questions with yes, no or nil, and the data are converted into numerical values to calculate the percentage score (Refinitiv Eikon®, 2022).

Refinitiv Eikon® collects and calculates more than 630 company-level ESG metrics, from which a subset of 186 of the most comparable and material metrics by sector drive the overall company evaluation and scoring process. Weights vary by industry for the environmental and social categories. Governance weights are the same for all sectors. Pillar weights are normalized to percentages ranging from zero to 100. It is important to note that some indicators are sector-specific and, therefore, not

relevant for all companies. Therefore, if the indicator is not relevant, it is excluded from the calculation of ESG scores (Refinitiv Eikon®, 2022).

### 3.3 Econometric Model Specification and Robustness Test

The empirical model used to measure the sensitivity of executive pay to market performance (PPS) is that proposed by Jensen and Murphy (1990, p. 227). To analyze hypothesis H<sub>1</sub>, the regressions presented in Equations 1 and 2 were operationalized, and for hypothesis H<sub>2</sub>, Equations 3 and 4 were operationalized. For hypothesis H<sub>3</sub>, the main equations (Equations 1 and 2) included the ESG disclosure variables and an additional interaction term between them and market performance. The equations used are shown in Equations 5 and 6. In models 3, 4, 5 and 6, the ESG variable was replaced by the individual aspects (environmental, social and governance). It should be noted that the  $\Delta MV$  variable, when included in models 5 and 6, had values not recommended by the variance inflation factor (VIF) literature and was therefore not considered individually in these regression models.

$$\Delta COMT = \beta_0 + \beta_1 \Delta MV + \beta_2 COMC + \beta_3 PROP + \beta_4 ROA + \beta_5 FS + \beta_6 SIZE + \text{Sector Fixed Effects} + \text{Year Fixed Effects} + \varepsilon \quad 1$$

$$\Delta COMPC = \beta_0 + \beta_1 \Delta MV + \beta_2 COMC + \beta_3 PROP + \beta_4 ROA + \beta_5 FS + \beta_6 SIZE + \text{Sector Fixed Effects} + \text{Year Fixed Effects} + \varepsilon \quad 2$$

$$\Delta COMT = \beta_0 + \beta_1 \Delta MV + \beta_2 ESG + \beta_3 COMC + \beta_4 PROP + \beta_5 ROA + \beta_6 FS + \beta_7 SIZE + \text{Sector Fixed Effects} + \text{Year Fixed Effects} + \varepsilon \quad 3$$

$$\Delta COMPC = \beta_0 + \beta_1 \Delta MV + \beta_2 ESG + \beta_3 COMC + \beta_4 PROP + \beta_5 ROA + \beta_6 FS + \beta_7 SIZE + \text{Sector Fixed Effects} + \text{Year Fixed Effects} + \varepsilon \quad 4$$

$$\Delta\text{COMT} = \beta_0 + \beta_1\text{ESG} + \beta_2\Delta\text{MV} * \text{ESG} + \beta_3\text{COMC} + \beta_4\text{PROP} + \beta_5\text{ROA} + \beta_6\text{FS} + \beta_7\text{SIZE} \\ + \text{Sector Fixed Effects} + \text{Year Fixed Effects} + \varepsilon \quad \boxed{5}$$

$$\Delta\text{COMPC} = \beta_0 + \beta_1\text{ESG} + \beta_2\Delta\text{MV} * \text{ESG} + \beta_3\text{COMC} + \beta_4\text{PROP} + \beta_5\text{ROA} + \beta_6\text{FS} \\ + \beta_7\text{SIZE} + \text{Sector Fixed Effects} + \text{Year Fixed Effects} + \varepsilon \quad \boxed{6}$$

Ordinary least squares (OLS) regression models were estimated with robust standard errors and sector and year controls. First, all continuous variables were winsorized in order to minimize the effect of outliers in the sample. The VIF test (Fávero et al., 2009) was used to identify multicollinearity problems, and the Durbin-Watson test (Hair et al., 2009) was used to identify autocorrelation problems. In addition, descriptive statistics of the variables and Pearson's correlation matrix were used to identify the correlation between the variables.

As a robustness test, quantile regressions were run to check how the variables behave in the quantiles, for example, when the variation in compensation is low, median, or high. The quantiles were chosen arbitrarily by the researcher. The use of quantile regression is recommended in research using accounting and financial data, since heteroscedasticity and outliers are common in these types of data. In this way, this estimation method is more robust and less sensitive to the conditions present in the data in this area of research (Duarte et al., 2017).

## 4. RESULTS

### 4.1 Descriptive Statistics

Table 2 presents the descriptive statistics for the variables.

**Table 2**  
*Descriptive statistics*

Panel A – Descriptive statistics for executive pay and market value in gross values							
Variables	Obs.	Mean	SD	Minimum	Maximum	CV	
Total compensation	In the period	398	47,098,202	92,579,147	71,060	818,051,847	1.966
	Annual variation	396	4,627,582	24,418,715	-124,239,960	202,455,017	5.277
Per capita compensation	In the period	398	5,309,943	4,619,729	17,765	27,683,502	0.870
	Annual variation	396	610,367	2,775,770	-16,307,952	17,642,355	4.548
Market value	In the period	397	45,852,137	72,756,586	1,024,061	448,610,718	1.587
	Annual variation	396	5,183,508	21,537,497	-94,800,744	175,273,233	4.155
Panel B – Descriptive statistics for the main independent, dependent and control variables							
Variables	Obs.	Mean	SD	Minimum	Maximum	CV	
$\Delta\text{COMT}$	396	0.187	0.506	-0.636	1.599	2.706	
$\Delta\text{COMPC}$	396	0.041	0.107	-0.111	0.349	2.610	
$\Delta\text{MV}$	396	0.155	0.360	-0.368	1.14	2.323	
COMC	398	0.407	0.492	0	1	1.209	
PROP	398	0.388	0.209	0.077	0.784	0.539	
ROA	398	0.042	0.045	-0.041	0.139	1.071	
FS	391	1.628	0.664	0.735	3.019	0.408	
SIZE	398	17.260	1.332	15.363	20.711	0.077	
Panel C – Descriptive statistics for the independent moderating variables							
Variables	Obs.	Mean	SD	Minimum	Maximum	CV	
ESG	398	0.568	0.189	0.204	0.854	0.333	
ENV	398	0.540	0.239	0.094	0.885	0.443	
SOC	398	0.601	0.209	0.232	0.911	0.348	
GOV	398	0.555	0.206	0.179	0.877	0.371	

**Note:** Total and per capita compensation in units of reais; market value in thousands of reais. The variables are described in Table 1.

SD = standard deviation; CV = coefficient of variation.

**Source:** Prepared by the authors.

Panel A shows the descriptive statistics for executive compensation (total and per capita) and market value in their original amounts (in units of reais for compensation and in thousands of reais for market value). It can be seen that the average pay of the executive board in the period analyzed for the companies in the sample reaches a value of around R\$ 47 million, while the average per capita compensation reaches a value of around R\$ 5.3 million, both higher than the sample obtained by Brandão et al. (2019) when studying the period from 2013 to 2015, as well as Iglesias et al. (2022) for the average compensation in the period from 2014 to 2018. It can be seen that the annual variation in executive pay is high, a behavior similar to that shown by Brandão et al. (2019).

Regarding the market value of the companies in the sample, the average value over the period is R\$45.8 million, with an increase in value over the interval analyzed (coefficient of variation of 4.15), which is different from the study by Brandão et al. (2019), in which there was a significant loss. The average market value in this study is higher than that found by Brandão et al. (2019) and Iglesias et al. (2022), with the latter showing an intermediate value between the study by Brandão et al. (2019) and this study.

In addition to the descriptive statistics for the gross values, Panels B and C show the descriptive statistics of the variables used in the statistical analysis. It can be seen that the variation in total and per capita compensation, as well as the variation in market value, have positive averages ( $\Delta\text{COMT} = 0.187$ ;  $\Delta\text{COMPC} = 0.041$ ;  $\Delta\text{MV} = 0.155$ ), indicating that there was an average growth in director pay and market value during the period under study, which differs from the study by Brandão et al. (2019), who found a positive average variation in total compensation and per capita compensation, but a negative average variation in market value, while Iglesias et al. (2022) showed a negative average variation in total compensation, indicating a decrease in executive pay over the period, and a positive average variation in market value.

As for the control variables, the compensation committee (COMC) represents approximately 40% of the observations in the sample. As for the concentration of voting rights (PROP), on average 38.8% of the ordinary shares are held by the company's largest shareholder. Accounting performance, measured by return on assets (ROA), showed a positive average result (0.042). Financial slack (FS) had a positive average and was greater than 1 (1.628). The SIZE variable showed homogeneous behavior. The average size of the companies is 17.260.

With respect to the moderating variables (ESG and its pillars), according to the descriptive statistics in Panel C, the average ESG disclosure score of the companies in the sample is 56.80%, with a minimum of 20.40% and a maximum of 85.40%. For the environmental, social and governance pillars, the average scores are 54.00%, 60.10% and 55.50%, respectively, with the minimum scores being 9.40%, 23.20% and 17.90%, and the maximum scores being 88.50%, 91.10% and 87.70%, in that order. It can be seen that among the three pillars, the companies in this study have the lowest score in the environmental area and the highest in the social area. The same goes for the average score, which partially corroborates the findings of Rath et al. (2020), who observed in the Indian context a lower average and minimum score for the environmental pillar and maximum value for the social pillar, but with a higher average score in the governance pillar.

After the descriptive statistics, a correlation was performed to check for problems of multicollinearity, which, according to the results of the correlation matrix, were not identified between the variables used in the regression models (Hair et al., 2009).

## 4.2 Regression Analysis and Robustness Test

Table 3 presents the results of the study equations. It shows the existence of PPS (Panel A), the effect of ESG disclosure on executive pay (Panel B), and the moderating effect of ESG disclosure on PPS (Panel C).

**Table 3**  
Regression results

<b>Panel A – Sensitivity of executive pay to market performance</b>								
	<b>Eq. 1 – Dependent variable: <math>\Delta\text{COMT}</math></b>				<b>Eq. 2 – Dependent variable: <math>\Delta\text{COMPC}</math></b>			
$\Delta\text{MV}$	0.313***				0.067***			
COMC	-0.001				-0.002			
PROP	-0.192				-0.037			
ROA	-0.650				-0.268**			
FS	0.001				-0.006			
SIZE	-0.088***				-0.023***			
Constant	1.564***				0.435***			
ANOVA	0.0000***				0.0000***			
R <sup>2</sup>	23.17%				23.18%			
DW	2.0634				1.9442			
Sector FE	Yes				Yes			
Year FE	Yes				Yes			
Average VIF	1.85				1.85			
Obs.	387				387			
<b>Panel B – Direct effect of ESG and its pillars on variation in executive pay</b>								
	<b>Eq. 3 – Dependent variable: <math>\Delta\text{COMT}</math></b>				<b>Eq. 4 – Dependent variable: <math>\Delta\text{COMPC}</math></b>			
$\Delta\text{MV}$	0.308***	0.304***	0.308***	0.314***	0.066***	0.064***	0.066***	0.068***
ESG	-0.283				-0.088***			
ENV		-0.158				-0.055**		
SOC			-0.281*				-0.082***	
GOV				-0.036				-0.024
COMC	0.004	0.000	-0.009	0.001	-0.001	-0.008	-0.004	-0.001
PROP	-0.233*	-0.188	-0.242*	-0.202	-0.049*	-0.035	-0.051*	-0.043*
ROA	-0.713	-0.692	-0.658	-0.668	-0.287**	-0.283**	-0.271**	-0.280**
FS	-0.003	-0.000	-0.001	-0.000	-0.007	-0.006	-0.006	-0.006
SIZE	-0.068**	-0.073***	-0.064**	-0.087***	-0.016***	-0.018***	-0.016***	-0.022***
Constant	1.399***	1.398***	1.347***	1.571***	0.384***	0.378***	0.372***	0.439***
ANOVA	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
R <sup>2</sup>	23.93%	23.53%	24.11%	23.19%	24.81%	24.15%	24.96%	23.35%
DW	2.0774	2.0749	2.0874	2.0632	1.9684	1.9577	1.9771	1.9501
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average VIF	1.85	1.86	1.85	1.83	1.85	1.86	1.85	1.83
Obs.	387	387	387	387	387	387	387	387
<b>Panel C – Moderating effect of ESG and its pillars on PPS</b>								
	<b>Eq. 5 – Dependent variable: <math>\Delta\text{COMT}</math></b>				<b>Eq. 6 – Dependent variable: <math>\Delta\text{COMPC}</math></b>			
ESG	-0.386**				-0.107***			
$\Delta\text{MV}*\text{ESG}$	0.645***				0.127***			
ENV	-0.246*				-0.073***			
$\Delta\text{MV}*\text{ENV}$	0.655***				0.135***			
SOC	-0.382**				-0.102***			
$\Delta\text{MV}*\text{SOC}$	0.611***				0.120***			
GOV	-0.123				-0.038			
$\Delta\text{MV}*\text{GOV}$	0.587***				0.113***			
COMC	0.001	-0.005	-0.009	-0.002	-0.003	-0.004	-0.006	-0.003
PROP	-0.207	-0.171	-0.217*	-0.163	-0.046*	-0.034	-0.048*	-0.037
ROA	-0.778	-0.594	-0.713	-0.719	-0.284**	-0.253**	-0.266**	-0.269**
FS	-0.003	-0.008	0.000	-0.000	-0.007	-0.007	-0.006	-0.006
SIZE	-0.066**	-0.076***	-0.063**	-0.087***	-0.016***	-0.018***	-0.015***	-0.022***

**Table 3**

Cont.

Constant	1.434***	1.514***	1.391***	1.605***	0.387***	0.395***	0.376***	0.443***
ANOVA	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***	0.0000***
R <sup>2</sup>	24.40%	22.88%	24.40%	23.77%	24.88%	23.59%	29.94%	23.31%
DW	2.1111	2.0969	2.1162	2.1009	1.9741	1.9542	1.9763	1.9628
Sector FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Average VIF	1.83	1.83	1.83	1.81	1.83	1.83	1.83	1.81
Obs.	389	389	389	389	389	389	389	389

*Eq.* = Equation;  $\Delta MV*ESG$  = interactive variable of market value variation with ESG;  $\Delta MV*ENV$  = interactive variable of market value variation with ENV;  $\Delta MV*SOC$  = interactive variable of market value variation with the SOC;  $\Delta MV*GOV$  = interactive variable of market value variation with GOV; DW = Durbin-Watson; Sector FE = sector fixed effects; Year FE = year fixed effects; VIF = variance inflation factor. \*\*\*, \*\*, \* = significant at 1%, 5% and 10%, respectively.

**Source:** Prepared by the authors.

According to Table 3, the regression models were significant at the 1% level, confirming their validity. The R<sup>2</sup> indicates that the independent variables explain, on average, 23.70% of the variation in total compensation and 24.68% of the variation in per capita compensation. The result of the Durbin-Watson test shows values close to two, which indicates the reliability of the data (Hair et al., 2009). No multicollinearity problems were observed, as the VIF for the models was a maximum of 1.86 (Fávero et al., 2009).

With regard to estimations 1 and 2 (Panel A), it can be seen that the variation in market value ( $\Delta MV$ ) has a positive and significant impact, at the 1% level, on the variation in executive directors' compensation, both with respect to the variation in total compensation ( $\Delta COMT$ ) and in relation to per capita compensation ( $\Delta COMPC$ ). By including the ESG variables and the environmental, social and governance pillars in the models (Equations 3 and 4, Panel B), it can be seen that in all the estimations the positive and significant influence of the variation in market value on the variation in executive compensation ( $\Delta COMT$  and  $\Delta COMPC$ ) was maintained at the 1% level, showing that PPS is maintained in the presence of the ESG variables. With respect to the variables for ESG and its pillars, it can be seen that ESG disclosure and the environmental pillar only had an impact on the variation in per capita compensation, which was negative and statistically significant at the 1% and 5% levels, respectively. These findings show that higher general and environmental ESG scores result in a lower variation in per capita pay. The social score negatively affected the variation in total executive compensation and per capita compensation, with statistical significance at the 10% and 1% levels, respectively. The results show that the greater the companies' social disclosure, the lower their

executive pay tends to be, both in terms of the variation in total pay and in terms of the variation in per capita pay. The governance variable, although negative, was not statistically significant in these models.

When analyzing the moderating effect of ESG disclosure on the sensitivity of executive pay to market performance (Equations 5 and 6, Panel C), the results show negative effects of the individual variables ESG, environmental and social scores, which are significant at the 5%, 10% and 5% levels, respectively, for total pay, and significant at the 1% level for per capita pay. The governance pillar alone, although also having a negative coefficient, did not show a statistically significant relationship in any of the estimations. Looking at the moderating effect of the variables for ESG and its pillars, the interactions between the variation in market value and the ESG ( $\Delta MV*ESG$ ), environmental ( $\Delta MV*ENV$ ), social ( $\Delta MV*SOC$ ) and governance ( $\Delta MV*GOV$ ) scores were positive and significant at the 1% level. It should be noted that when looking at the coefficients of the  $\Delta MV$  variable for total and per capita compensation (estimates 1 and 2) compared to the coefficients of the moderating variables (estimates 5 and 6), it can be seen that the coefficients of the interactive variables are higher, indicating the predominance of the moderating effect.

With regard to the robustness test based on the quantile regressions, PPS, as well as the direct effect of the ESG variables on executive pay and their moderating effect on PPS, appear in most of the estimations carried out in the highest quantiles, i.e. in the cases where the variation in executive pay is greatest. It was found that the sign of the coefficient of the relationships tested remained the same, with a positive coefficient for PPS, a negative coefficient for the direct relationship between ESG and compensation, and a positive coefficient for the interactive

variables in PPS. The results of the robustness test confirm the results of the main analysis, indicating the relevance of the values found.

### 4.3 Discussion

The purpose of this section is to review the results on PPS ( $H_1$ ), the results on the effect of ESG disclosure on executive pay ( $H_2$ ) and the moderating effect of ESG disclosure on PPS ( $H_3$ ). Based on these, the proposed hypotheses are discussed along with their implications and a review of the theory underlying the results. In this way, the findings of this study can be understood from both a theoretical and an empirical perspective.

Regarding the existence of sensitivity of executive pay to market performance (estimations 1 and 2), the  $\Delta MV$  variable showed a positive and significant coefficient (at the 1% level) for  $\Delta COMT$  and  $\Delta COMPC$ . This finding indicates that executive pay is sensitive to market performance (Jensen & Murphy, 1990). Therefore, hypothesis  $H_1$ , that there is a positive relationship between market performance and executive pay in Brazilian companies, cannot be rejected, which provides evidence that executive pay depends on market performance and indicates that interests are aligned (Chang et al., 2018). The results of the estimations to answer  $H_1$  support the perspectives of agency theory, as the results confirm the existence of PPS. These results corroborate the findings of Aguiar and Pimentel (2017), Alves et al. (2016), Brandão et al. (2019), Iyengar and Sundararajan (2021), Raithatha and Komera (2016), and Zhou et al. (2017), and diverge from Ghrab et al. (2021) and Iglesias et al. (2022).

In this sense, the variation in market performance (variation in shareholder wealth) positively affects the variation in total and per capita executive compensation. Empirical evidence suggests that PPS exists in firms because a change in executive wealth is associated with a change in shareholder wealth. In this case, an increase in market value helps to explain an increase in executive pay (Jensen & Murphy, 1990), which reveals the effectiveness of pay policy (Brandão et al., 2019), which becomes a motivating mechanism when sensitive to market performance (Tirole, 2006), aligning interests and reducing agency conflicts (Blanes et al., 2020; Jensen & Meckling, 1976).

Regarding the impact of ESG disclosure on executive pay, the  $\Delta COMT$  variable was negatively affected by the SOC variable (at 10% statistical significance), while the  $\Delta COMPC$  variable was negatively related to ESG (at

the 1% level), ENV (at the 5% level), and SOC (at the 1% level). GOV did not show a statistically significant relationship in any estimation. Thus, hypothesis  $H_2$  that there is a relationship between ESG and environmental ( $H_{2a}$ ), social ( $H_{2b}$ ) and governance ( $H_{2c}$ ) disclosure and executive pay in Brazilian companies is partially rejected.

Specifically, for ESG disclosure (in general) and for the environmental ( $H_{2a}$ ) and social ( $H_{2b}$ ) pillars, the hypothesis cannot be rejected, unlike for the governance pillar ( $H_{2c}$ ). These results are corroborated by the findings of Cai et al. (2011), where investments in CSR were negatively associated with executive pay, and Jian and Lee (2015), who also found a negative and significant relationship, revealing that well-governed companies reduce executives' incentives by increasing investment in CSR. They also differ from the findings of Cho and Ibrahim (2021), who found no significant relationship, and Rath et al. (2020), who found a positive and significant relationship between ESG disclosure and executive pay.

Regarding the moderating effect of ESG disclosure on the sensitivity of executive pay to market performance, the interactions between the variation in market value and disclosure of ESG and its pillars ( $\Delta MV * ESG$ ,  $\Delta MV * ENV$ ,  $\Delta MV * SOC$  and  $\Delta MV * GOV$ ) were positive and significant (at the 1% level), suggesting that ESG disclosure increases the sensitivity of executive pay to market performance. Moreover, the moderating effect was predominant, as its coefficients were higher than those shown by the variation in the market value of executive pay in the initial estimates (PPS). Therefore, hypothesis  $H_3$ , that there is a moderating effect of ESG and environmental ( $H_{3a}$ ), social ( $H_{3b}$ ) and governance ( $H_{3c}$ ) disclosure on the sensitivity of executive pay to market performance, was not rejected.

The aforementioned findings differ from those of Rath et al. (2020) because the authors interpreted the use of ESG moderation without using the interactive variable, but only observing the behavior of the relationship between performance and compensation by including the ESG variable. However, when observing the behavior of market performance variables with executive pay, they found no PPS, and the negative relationship between market performance and compensation was strengthened by including ESG variables in the models. Chang et al. (2018) also found positive results for the moderation of the CSR variable, but in the sensitivity of pay to accounting performance. Cho and Ibrahim (2021) found statistical significance when using the ESG moderator with accounting performance, although it did not show significance with market performance.

The results of the estimations to meet the second and third hypotheses of this research support the perspectives of stakeholder theory and the good governance view. Socially responsible companies are considered to be well governed, with executives properly incentivized and with appropriate investments in socially responsible issues (Ferrell et al., 2016). According to these authors, from a good governance perspective, socially responsible investments are associated with higher PPS or lower excess executive pay, which supports the findings of this research, as the ESG variables reflect higher PPS while resulting in lower remuneration or more adjusted remuneration (Gillan et al., 2021). Similar to this interpretation, according to stakeholder theory, socially responsible practices are negatively associated with remuneration and investments in this area are considered strategic for businesses (Deng et al., 2013; Karim et al., 2018), as such companies are concerned with the interests of all stakeholders and not only with generating resources for shareholders (Freeman, 1984).

In practice, the evidence shows that greater disclosure of aspects related to resource use, emissions, innovation, workforce, human rights, community, product responsibility, investments in management, CSR strategies and good practices involving shareholders (Bätae et al., 2021; IBGC, 2021; Li et al., 2021; Refinitiv Eikon®, 2022) leads to lower executive pay in terms of a more aligned compensation, and ESG investments increase PPS.

## 5. CONCLUDING REMARKS

The purpose of this study was to examine the moderating effect of ESG disclosure on the sensitivity of executive pay to market performance (PPS) (Jensen & Murphy, 1990). The findings show the existence of PPS in the sample companies, which confirms the tenets of agency theory (Bebchuk & Fried, 2003; Jensen & Meckling, 1976). Regarding the effect of ESG disclosure on the proposed relationships, the results showed that disclosure on general ESG and its pillars increases PPS, while directly representing more adjusted compensation. In this way, ESG disclosure contributes to the non-extraction of income from shareholders by executives (Ghrab et al., 2021), and the results confirm what is suggested by stakeholder theory and the good governance view.

The results contribute to the theory by showing the sensitivity of executive pay to market performance, adding new conclusions and confirming similar ones, revealing possible determinants of executive pay, and contributing

to the continuous advancement of the literature in this field of study. Furthermore, by including ESG disclosure as a moderating variable for PPS, this study advances the national literature, as no studies were found in Brazil that verified the effect of ESG disclosure on PPS. This research also identified, for the country's context, which theoretical perspective supports the results found, which sheds light on the possibility of developing new studies to corroborate or counter the results of this research from the point of view of these theories (agency theory, stakeholder theory and the good governance view), encouraging debate and the constant development of the theoretical field.

On a practical level, the findings of this study provide important evidence for stakeholders, particularly potential investors and shareholders, to consider companies' ESG disclosure in their decision making, as it helps to align the interests of executives with those of shareholders.

With respect to the environment, the findings of this research indicate that companies that improve supply chain management, have a good performance and capacity to reduce the use of materials, energy or water, and seek to find more eco-efficient solutions, for example (Bätae et al., 2021; IBGC, 2021; Li et al., 2021; Refinitiv Eikon®, 2022), tend to present, in addition to more adjusted executive pay – without excessive payments – investments that contribute to an increase in PPS.

On the social side, the results show that when the company is effective in terms of employee satisfaction – a consequence of a healthy and safe workplace that produces quality goods and services that integrate customer health and safety – its integrity and data privacy, for example (Bätae et al., 2021; IBGC, 2021; Li et al., 2021; Refinitiv Eikon®, 2022), tend to be reflected in lower salaries for its executives (more adjusted salaries), in line with their efforts, thereby increasing PPS.

In terms of governance, the results suggest that even if the company is more committed and effective in following the principles of best governance practices, more effective in terms of equal treatment of shareholders, and more effective in communicating that the organization integrates the economic (financial), social and environmental dimensions in its daily decision-making processes (Bätae et al., 2021; IBGC, 2021; Li et al., 2021; Refinitiv Eikon®, 2022), these aspects do not tend to have a direct impact on executive pay, but they do tend to increase PPS.

The results help companies understand the benefits of ESG initiatives, identify these investments in their processes, review their ESG practices and rethink the direction of the organization in terms of sustainable (environmental, social and governance) practices, focusing on socially responsible investments in their planning. It encourages a management style with ESG disclosures, given that shareholders, as capital holders, may demand mechanisms to ensure that ESG disclosures are maintained, as this increases PPS. In addition, these findings could contribute to the implementation of compensation policies.

From a social perspective, the results contribute to society by making organizations aware of the importance of ESG investments in terms of their impact on company management, the environment and society in general. By investing in ESG, companies play an important role in

society through activities related to the conscious use of natural resources, the reduction of pollutant emissions, the promotion of CSR strategies, among others. By highlighting the positive impacts of ESG on company management, this research encourages such behavior and contributes to society.

This study has limitations that point to the possibility of future research, such as the small sample size due to the small number of ESG disclosures, which are voluntary in nature. Therefore, we suggest extending this research to all companies listed on the B3 and considering additional measures of ESG disclosure. We also recommend using different market performance measures such as Tobin's Q and market-to-book and adding accounting performance measures such as return on equity (ROE). In addition, we suggest separating out variable compensation to see if the results differ from using total compensation.

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