CEO COMPENSATION CUTS

A PANDEMIC OR AN ENDEMIC?

THE DETERMINANTS OF CEO COMPENSATION CUTS

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Abstract:

Executive compensation continues to be a popular topic in the corporate governance literature. Yet, an overwhelming amount of the prior research focuses on the determinants of the rapid growth in executive compensation while the literature on executive compensation reductions is scarce. This study investigates the corporate governance related determinants of the CEO pay cuts phenomenon that occurred in 2020 as a response to the COVID-19 pandemic. The results indicate that, apart from market related factors, CEO tenure, the relative dismissal of employees, and a well-balanced board of directors were significant factors in the decision to cut CEO compensation.

Keywords:

Executive compensation, CEO Pay Cuts, Managerial Power theory, Covid-19

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1. Introduction

The proliferation of research on executive compensation is mirrored by the lively debate on the primary forces shaping executive compensation (van Essen et al., 2015). The interest in understanding the factors determining CEO compensation has arguably increased due to the rapid growth of CEO pay. From 1978 to 2020, real CEO pay increased by 1 322%, while the typical worker's wage and the S&P stock market grew by 18% and 817%, respectively (Mishel & Khandra, 2021). The median CEO in the S&P500 earned $9.6 million in 2011, which represents a sixfold increase since 1980 and contrasts with the much slower rise in the average worker's pay (Edmans & Gabaix, 2016). Furthermore, the large number of high-publicity scandals and the celebrity status of CEOs have created unprecedent public interest in corporate governance (Weisbach, 2007). Outrage over the levels of executive pay reached an all-time high during the financial crisis, when the Prime Minister of Luxembourg called rising executive pay in Europe a 'social scourge' (Adams & Giannetti, 2012). The widespread belief among politicians, the media, labour unions, and much of the general public that CEO pay is inherently excessive and fundamentally broken (Murphy & Jensen, 2018) forced governments to impose a wide range of disclosure requirements, tax policies and governance reforms. Arnold & Grasser (2018) believes that more transparency is beneficial given that public opinion can influence the level and structure of compensation since public outrage resulting in embarrassment and reputational harm can be very costly to the CEO, the board of directors, and to the firm. Even though well intended, regulation has been pointed out as part of the problem given that it has been driven by political agendas and not its ultimate goal, i.e., shareholder value creation. Murphy & Jensen (2018) have made use of the Dutch boy analogy to explain the impact regulation can have as a tool to stop CEO pay increases. As they have explained, the Dutch boy using his fingers to plug holes in a dike, only to see new leaks emerge, reminds of the new set of regulations introduced, which more than anything will just provoke new leaks to emerge in unsuspected places. Taken together, this evidence signals increased public pressure from various stakeholders to limit the amount of executive compensation (Arnold & Grasser, 2018).

Previous research has studied the phenomenon of CEO compensation increases under the light of two main theories, the Market-Based Theory (MBT) and the Managerial Power Theory (MPT). On the one hand, the Market-Based Theory states that CEO pay is determined by the competition for executives and is dependent on general skills that are transferable across firms and industries (Aivazian et al., 2013). Under the MBT, the dramatic rise in the overall level of executive compensation can be explained by the competitive labour market.

As general skills, in contrast to firm-specific skills, become more important, the demand for CEOs with such skills increases and the price for their services follows. Assuming an efficient labour market, the followers of the MBT argue that the rising CEO compensation is the outcome of a market equilibrium where the risk attained to the CEO position is high and the talent needed to succeed is scarce (Fahlenbrach, 2009). On the other hand, the Managerial Power Approach addresses the rising trend on executive compensation as a manifestation of agency problems. Under the MPT, the high executive compensations reflect the problem of managerial rent seeking, i.e., the more power managers have, the greater their ability to extract rents (Arye Bebchuk & Fried, 2003). While the former can be said to explain the increases on CEO compensation on a macro level, with the rises being justified by the competition in the labour market, the latter explains this phenomenon on a micro level, with the CEOs establishing their own pay level.

Highlighting the level of executive compensation during the last decades is the fact that the CEOs of the largest firms in the US earned 320 times as much as a typical worker (Bouteska & Mefteh-Wali, 2021). However, in 2020 the debate around excessive CEO compensation renewed upon the strike of the COVID-19 pandemic, which triggered many CEOs across the globe to announce that they would cut their own salaries as a timely measure to mitigate the impact the spread of the virus had on firms (Lamber, 2021). The pandemic, through the pay cuts, introduced ambiguity into the favourable conditions in which executive compensation had thrived on for the better part of the last 40 years. The unforeseen crisis caused by the SARS-CoV-2 virus differs significantly from other recent systemic crises, such as the Global Financial crisis in 2007 and the European Sovereign Debt crisis in 2011 (Zattoni & Pugliese, 2021), which offers a unique setting to expand the limited research on executive compensation cuts. In this study, the capacity of the Managerial Power Theory to explain the CEO pay cuts is investigated. Contrastingly, the Market-Based Theory will not be the focus of our research, even though we recognize that MBT concepts might have played an important role in the CEO pay cut phenomenon. Acknowledging that in a stifled market and with some firms not surviving the consequences of the COVID-19 pandemic, some CEOs might have been released from their contract, increasing the competition in the labour market and thus potentially contributing to a decrease on the compensation for the whole market. Notwithstanding this fact, an opposite effect can also be explained under the MBT. Taking into consideration the nature of the crisis affecting the period under analysis on this study, the hypothesis of some CEOs facing health problems caused by the virus shall not be neglected, which could have affected their capacities to perform the role temporarily or definitively. In this case, competition in the labour market might have increased which could potentially counterbalance the effect of CEO pay cuts. Acknowledging how the MBT can have an important explanatory power on this study, future research should dwell on this topic. Nonetheless, the emphasis in this study is on getting an understanding of what effects under the MPT can explain the phenomenon of executive compensation

reductions from a perspective of corporate governance and the role it has had during the pandemic. Hence, the study aims to answer the following research question:

What factors determine CEO compensation cuts?

This article fills in the gap in previous research by providing new evidence on the determinants of executive compensation cuts during the COVID-19 pandemic and assessing explanations for the pay cuts that occurred in 2020. The study assumes importance because it provides knowledge that can be used as guidance by both practitioners and policymakers. Understanding the nature of the executive compensation cuts and the way they relate to the Managerial Power Theory and the public opinion in times of crisis, like the COVID-19 pandemic, sets up the way in which one comprehends executive incentives and corporate governance. There is the belief in prior literature that management controlling the board of directors is one of the elements within the corporate governance equilibrium that has prevailed over time (Weisbach, 2007), but does this equilibrium remain valid in times of crisis? Like other market forces, the corporate governance equilibrium is explained by the dispute between several different players in the market: (1) shareholders who look for an optimal incentive system to motivate and align managers with their interests, (2) self-interested managers who tend to extract rents from their firms and (3) regulators and the society in general who follow these dynamics and try to improve corporate governance via regulation. Whenever there is a regulatory demand to make reforms on compensation, all firms tend to respond and adopt these reforms; however, it is still unknown if the timing of adoption is influenced by the level of public outrage (Abernethy et al., 2015), especially during the COVID-19 pandemic. Focusing on three different sets of variables where (1) the CEO exerts influence over the board, (2) the board keeps its independence, and (3) the public opinion constrains the CEO's decision making, this study aims to understand to what extent each of these three sets of variables help explain the recent phenomenon of CEO pay cuts.

Using a sample of 1 026 firms, we first assess the impact each of the three sets of variables have on CEO pay cuts. This study provides several important contributions to the literature. First, this study demonstrates the importance of a well-balanced composition of the board of directors to navigate through the challenges inherent to the process of designing and setting the adequate executive compensation level. Second, the study contributes to prior research by being a pioneer attempt to present a comprehensive overview of CEO compensation cuts with the most recent data after the COVID-19 pandemic. Third, this study contributes to prior research with the introduction of a new variable measuring board independence. Corporate governance regulations have been changing regularly in recent years as a result of increasing pressure from the government bodies; therefore, the introduction of the ratio of compensation committee members on the board reflects the board independence under the light of the new regulations.

The remainder of this paper is organized as follows. A literature review and the development of the study' hypothesis is conducted on Section 2 and 3, respectively. Section 4 starts with an overview of the binary logit model used, followed by an overview of the data collecting and treatment processes. On section 6 the empirical results of the main model are presented and additional analysis is disclosed. To conclude, section 7 proves the significance of the results achieved and section 8 provides the concluding remarks of this research.

2. Theoretical development

2.1. Agency theory

Agency theory offers a framework for evaluating the relationship between the shareholders of a firm and its CEO, as well as the relationship between the CEO and the board of directors. Under analysis is the relationship between a principal and an agent, and the agency theory addresses causes and consequences of goal divergence between the two parties (Boyd, 1994). An agency problem is said to exist whenever a principal (e.g., shareholders) must delegate a task to an agent (e.g., a CEO) whose incentives are not perfectly aligned with those of the principal and, therefore, the established goals of the agent are in conflict with those of the principal (Eisenhardt, 1989). The divergence of interests usually revolves around CEOs focusing on maximizing their own wealth versus working towards maximizing the wealth of the firm. The origin of the problem emerges from the two fundamental conditions that underlie principal-agent relationships: goal incongruence and information asymmetry. To alleviate the problem, firms tend to closely monitor CEO's decision-making and to provide compensation incentives that align CEO's wealth with shareholders' wealth. The former is done by separating the responsibilities for decision management from the responsibilities for decision control (Boyd, 1994). Decision management refers to the responsibility CEOs have on the decision-making of a firm, which makes them accountable to shareholders and stakeholders of the firm; while decision control refers to both external and internal monitoring of CEO's decision management. External controls are market-based factors which measure the public opinion towards a firm and its CEO, and how that might impact CEO's decision management. Internal controls are, however, measures which attest the independence of the Board of Directors when monitoring CEO performance and determining the compensation levels within the firm. An integral part of the functions attributed to the board is to serve as the stockholders' representative on the daily operations of a firm, a control mechanism to better align the different interests of shareholders and top management, i.e., to alleviate the agency problems within the firm. The latter is potentially a double-edged sword given that connecting the manager's compensation too closely to the firm wealth might induce the agent (CEO) to risk-avoiding behavior (Zajac & Westphal, 1994). Furthermore, prior literature has also suggested that the traditional financial measures often do not reflect the real performance of a CEO, given that a CEO's strategic planning and identified growth opportunities might only affect future performance in the form of new business initiatives or investments in new product development with deferred returns (Schiehll & Bellavance, 2009). Hence, it is believed that the more precise and sensitive to managerial effort a measure is, the lower the information asymmetry between the agent and the principal. As such, combining both financial and non-financial information improves both managerial incentive contracting and monitoring by investors. According to Schiehll & Bellavance

(2009), the ideal performance measure should reflect the manager's true contribution to firm value, including both the current action on current profitability but also current actions towards future profitability.

2.1.1. Goal incongruence

Agency Theory re-establishes the importance of incentives given that much of the organizational life is based on self-interests (Eisenhardt, 1989). Even though differences in values do not relate to CEO pay on average, studies show that CEOs are more achievement and power-oriented, and emphasize more self-direction values than the typical members of the population, who emphasize more benevolence and universalism values (Adams & Giannetti, 2012). In fact, the principal and the agent do not only have different goals, but also different "roads to achieve such goals" (Oehmichen et al., 2020). Given the divergence of goals between shareholders and the CEOs, financial incentives are needed to entice CEOs to act in accordance with shareholders' interests. Incentive explicitness is a way to anchor shareholders' goals with the desired means to achieve those goals. Following this approach, the principals explicitly express their preferred road; hence, reducing the agency problems by narrowing down the actions through which the agents can be compensated for. However, such a strategy, when too explicit, reduces the CEO's engagement with the firm and consequently reduces the firm's performance (Oehmichen et al., 2020), constituting a cost for the firm – the so called, double-edged sword. When CEOs perceive that their capacity to make decisions is reduced because the shareholders forecast and dictate the entire strategy, not only do CEOs become subject to firm performance being attributed to the shareholders rather than themselves, but also CEOs are not granted the opportunity to build their reputation and follow other career goals they might have.

2.1.2. Information asymmetry

Information asymmetry emanates from a situation when a principal has less information than an agent. According to Zajac & Westphal (1994), the principal and the agent are not granted the same information about (1) the characteristics of the agent and (2) the decisions made and the actions taken by the agent. The former has been labelled adverse selection, while the latter has been labelled moral hazard. In the present study the focus is on the moral hazard problem given that the study pivots around corporate governance and aims to understand to what extent board of directors control and monitor the activities of self-interested CEOs, but also the role external stakeholders might have on the *denouement* of the decision-making.

2.2. Managerial power theory

The Managerial Power Theory builds on the agency problem by stating that managers are able to influence the board of directors. Hence, the shareholders do not bargain at arm's length with the top management, effectively allowing the CEO to set favorable terms. (Arye Bebchuk & Fried, 2003). Challenging the optimal contracting approach, in which boards reduce agency problems by designing efficient incentives to maximize shareholder value, the managerial power approach reflects agency problems and states that some features of pay arrangements reflect managerial rent seeking rather than efficient incentives (Arye Bebchuk & Fried, 2003). While the optimal contracting theory argues that the agency problems can be handled by setting a link between pay and performance, the MPT states that incentive contracting cannot be a substitute for board monitoring given that the CEO is able to exert power over the compensation process (Abernethy et al., 2015). In order to distribute the power within the organization, shareholders nominate a board of directors to represent and protect their interests (Schiehll & Bellavance, 2009); however, as one shall analyze next, board independence is not a guaranteed condition per se.

2.2.1. The "go along" incentive

Agency problems are not exclusive to the CEO-shareholder relationships of a firm. The same way it is not assumed that managers will automatically seek to maximize shareholder value, there is no reason to assume directors will either just because they were entitled to pursue that goal (Arye Bebchuk & Fried, 2003). An integral part of the board of director's responsibility is to monitor firm performance and align CEO compensations with the contribution made. Nevertheless, there is a whole range of incentives that might divert directors from acting in the shareholders' best interest. Among these, prior research has highlighted the value attributed by directors to an attractive salary, the prestige and valuable business and social connections linked to the role, as well as the likelihood of being appointed to other boards when directors *go along* with the interests of the CEO (Weisbach (2007), Arye Bebchuk & Fried (2003)). Under such circumstances, it is not the board who monitors the CEO but the CEO who controls the board, an arrangement favorable to the management but suboptimal to the shareholders. The source of the problem is usually said to be the ineffective governance devices created to regulate the compensation contract, which end up being influenced by the CEO to his/her own advantage (Fahlenbrach, 2009).

2.2.2. The Public Outrage constraint

Yet, CEO power has its own limits. The managerial power theory expects CEOs to extract power from the board as long as outsiders do not perceive it negatively and disapprove it. Bebchuk & Fried (2003) argues that CEOs will hesitate to propose, and directors will be

reluctant to approve arrangements that generate more outrage. Outrage usually does not emanate from shareholders, but from other social groups (Murphy & Jensen, 2018) who may constrain the level of executive compensation though the impact such outcry could have on the executives' reputation and how that could lead to decreased shareholder support at shareholders meeting (Arnold & Grasser, 2018). To avoid so, self-interested executives try to minimize outrage by camouflaging their arrangements. Like a cheetah who camouflages in the gray-hued grasses, CEOs adopt the regulatory transparency by trying to legitimize their extraction of rents from the firms. In times of crisis, like the COVID-19 pandemic, CEOs dedicate particular attention to these matters and exert influence over the compensation design by a handful of ways. First, CEOs will foster power-pay relationships, i.e., relationships in which CEOs have relatively more power and, thus, are able to extract higher pay. These relationships are usually seen when, among other reasons, the board is relatively weak or ineffective (Arye Bebchuk & Fried, 2003). Second, CEOs exert power over the Compensation Committee or incentivize the firm to hire external compensation consultants. While such arrangement could be explained within the optimal-contracting framework given that it is expected that these external consultants could provide expertise on the design of compensation packages, compensation consultants can also play a role in camouflaging rents by justifying executive pay rather than optimizing it (Arye Bebchuk & Fried, 2003). Third and arguably the most discussed in previous literature, the introduction of pay without performance schemes. Over the last two decades, institutional investors and regulators encouraged the use of equity-based compensation to provide the desired link between pay and performance. However, CEOs have managed to extract the benefits during good times and design ways to reduce the windfalls during bad times. Fourth, as regulatory reforms were introduced and pay per performance became vastly adopted, powerful CEOs exerted influence over compensation by ensuring that relatively easy and achievable performance targets were incorporated in the pay process (Abernethy et al., 2015). Fifth, by understanding that such regulatory reforms would be inevitable, powerful CEOs were proactive in adopting those plans early on when they still had the chance to camouflage for good governance. By doing so these CEOs are able to influence the introduction of such changes; hence, appearing to conform with those compensation reforms, when in reality they are just camouflaging rent-seeking behaviors (Abernethy et al., 2015). Again, mirroring a cheetah in the gray-hued grasses to obtain a time and space advantage over the preys.

3. Hypothesis

The research hereby conducted has used three different sets of variables which previous studies have established as determinants of the rising executive compensation trend. Hence, the study's plan of action was to follow similar approaches conducted in prior research, but focusing instead on the explanatory power of these variables for the decline in executive compensation during the COVID-19 pandemic. The structure follows the reasoning of the Managerial Power Theory, whereby one tries to assess which of these three factors was the strongest force leading CEOs to take compensation cuts. First, the study focuses on CEO Influence, i.e., the power a CEO potentially has on setting her/his own compensation. The measures of power used are three, namely CEO ownership, CEO tenure and duality. Second, the research backbones on the board independency, i.e., the power the board of directors has to monitor CEO's performance and control her/his compensation. Again, three factors are used, namely the ratio of insiders, board stock ownership, and the ratio of compensation committee members within the board of directors. Lastly, the study considers public outrage and how different external stakeholders to the firm can influence CEO's decision making. To account for this variable a metric of employees' dismissals is used as a way to assess to which degree is the firm exposed to public critique as a consequence of executive rent-seeking behaviours while other employees are being dismissed during a crisis.

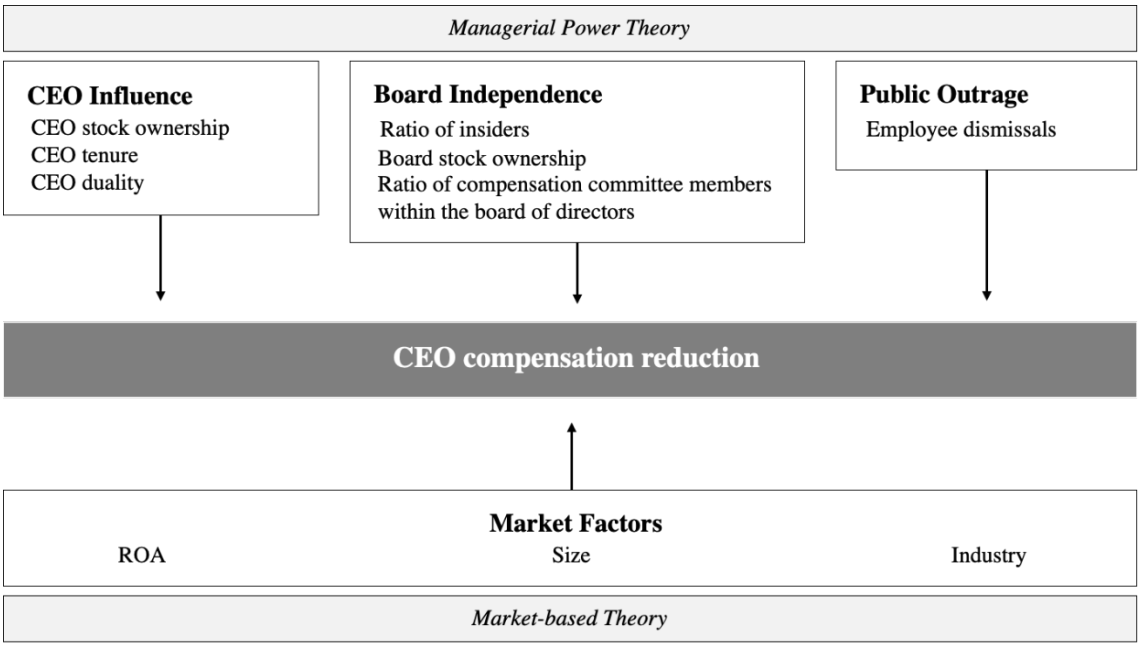

Figure 1. Hypothesis segmentation

3.1. CEO Influence

3.1.1. CEO stock ownership

Prior research on CEO ownership resembles the debate around the agency problems and the arguments in favor and against the optimal contracting theory and the managerial power theory. On the one hand, there is prior literature that predicts CEO ownership as a device to foster goal alignment between the principal and the agent; hence, reducing agency costs (Kimbro & Xu (2016), Zona & Zamarian (2021). On the other hand, there is other research that points out that CEOs with significant equity ownerships are granted too much power due to the combination of their position as CEOs of the firm and the large number of voting rights they hold, which could harm the level and effectiveness of board monitoring (Kimbro & Xu, 2016). The former could be said to align in favor of the optimal contracting theory, while the latter is positioned closer to the managerial power theory. Either way, the past decade saw many firms adopting stock ownership guidelines, i.e., a set of rules that require executives to achieve and hold pre-determined equity ownership standards within a specified period of time (Benson et al., 2016). This decision came as a result of increasing public pressure towards CEOs' capacity to sell the equity compensation attributed by the firm immediately after vesting. The outcome was the elimination of the long-term incentive's alignment between the CEO and the shareholders, as well as the need for shareholders to replenish their holdings. Notice that while principals are considered risk neutral as they are able to diversify their investments across several firms, agents on the other hand are considered risk averse because they are not able to diversify their human capital and, therefore, their income and employment stem from a single firm (Zona & Zamarian, 2021). Consequently, given this requirement to hold their wealth in a less diversified portfolio, risk averse CEOs will demand greater compensation (Zajac & Westphal, 1994), especially in countries with stronger insider trading restrictions (Denis & Xu, 2013). Nevertheless, even if such guidelines forced CEOs to demand higher compensation levels, it is arguably reasonable to expect that higher CEO ownership is linked to a closer goal alignment between the executives of a firm and its shareholders. Especially when in a crisis, public outrage and the impact it could have on the firm will impact CEO's decision making.

Hypothesis 1a: Higher levels of CEO ownership are positively associated with CEO pay cuts.

3.1.2. CEO tenure

Tenure refers to the time (in years) during which someone holds the position of Chief Executive Officer. As time passes by, a CEO is not only able to gain control and influence on the decisions made by the firm due to the expertise accumulated with longer experience in the firm, but also from obtaining more support, trust and credence from people within the firm (Abernethy et al., 2015). Moreover, throughout a CEO's career

and as tenure increases, CEOs tend to feel that there are fewer periods over which they can smooth their compensation and, therefore, their sensitivity to current pay increases (Edmans & Gabaix, 2016). Even though there is no uniform compensation scheme that satisfies and motivates all the CEOs, Hou et al. (2017) has found that incentive pay works differently at different stages of a CEO tenure. Hambrick (1991) splits the CEO tenure into different seasons which remarkedly impact differently the behavior of a CEO. The first years are characterized by the pressure to meet the expectations created by one's selection to the role, i.e., a period where the CEO seeks to please the board of directors and the shareholders by introducing the changes which won her/him the position in the first place. However, as their tenure advances CEOs become less keen on making disruptions in the firm and rather converge to a more stable environment, committing to a *modus operandi* which is more favorable to the CEO (Hambrick, 1991). Hence, the accumulation of firm-specific wealth and expertise is suggested to contribute to the reduction of a CEO's compensation volatility (Hou et al., 2017). Furthermore, prior research has highlighted the fact that CEOs with longer tenures may have been involved in the process of nominating the current board members, who then become loyal to the CEO (Fahlenbrach, 2009), as illustrates evidence that Compensation Committees which have been introduced in the firm after the CEO's appointment date tend to pay more (van Essen et al., 2015). As such, CEOs with longer tenures are expected to have more power and be more sensitive to their current compensation.

Hypothesis 1b: CEO tenure is negatively associated with CEO pay cuts.

3.1.3. CEO duality

As representatives of the shareholders of a firm, the board of directors is able to monitor and control the performance of a CEO; hence, reducing managerial power under the assumption of optimal contracting. However, if instead the Managerial Power Theory prevails, the previous role of the board of directors is challenged on the assumption that directors would automatically work towards optimizing shareholder value. In either case, it follows that the CEO and the directors have different responsibilities, independently of the ultimate goal they work towards to. In case an individual accumulates the role of CEO with the Board Chairperson, the MPT predicts that this individual will possess more power on the destiny of the firm for several reasons (van Essen et al., 2015). First, CEO duality increases the power a CEO has to control the nomination process of new directors, which will increase the incentives for directors to *go along*. Second, a dual CEO-chairperson can be seen internally and externally as the highest rank in the corporate hierarchy, which attains more mandate and power to influence the pay setting process. As such, prior research suggests that the agency problems are exacerbated when the CEO is also the board chair (Core et al., 1999), given that the dual-CEO can capture the board of directors and, thus, influence the process in which the compensation level is set.

Hypothesis 1c: CEO duality is negatively associated with CEO pay cuts.

3.2. Board Independence

3.2.1. Ratio of insiders

Decision control may be impacted by the composition of the board of directors, which can be formed by insider and outsider directors. While the former refers to directors who hold management positions within the firm, the latter refers to directors who have never had a professional relation with the firm (van Essen et al., 2015). As such, a director can be more or less susceptible to face conflict of interests, conditioned on the past or current links the director has established with the firm. Nonetheless, the MPT has also suggested several different situations in which independent directors may lose their independence and fall within the trap of managerial influence (van Essen et al., 2015). In both cases, instead of working towards maximizing shareholders' value, the board of directors gets captured by the CEO and works towards her/his interests (Weisbach, 2007). Prior research has shown opposing evidence on the role the composition of the board of directors may have on executive compensation. On the one hand, there are studies which suggest the importance of outside directors on controlling CEO compensation through the prioritization of incentive compensation (Fahlenbrach, 2009). On the other hand, there also exist studies which find that a higher ratio of insider directors on the board is associated with lower CEO compensation (Core et al. (1999), Lambert et al. (1993), Fahlenbrach (2009), Boyd (1994)). Notwithstanding this fact, it is common on prior research to connect insider-dominated boards with the problem of self-monitoring and weak monitoring of the CEO (Zajac & Westphal, 1994). As such, it is expected from independent directors to resist better to CEO power than directors who are or have been linked to the firm. In theory, a greater proportion of independent directors should moderate the amount of remuneration received by the CEO, i.e., limiting managerial rent-seeking behaviors (Abernethy et al. (2015), Bouteska & Mefteh-Wali (2021)). This perspective lies upon the idea that an inside director might not be driven by the same goals and not follow the same strategy as an outside, unrelated director (Schiehll & Bellavance, 2009). Even though an insider-dominated board might have *a priori* more knowledge about the firm; outsider-dominated boards are believed to be more vigilant as they tend to reduce information asymmetry by requesting more information and following more closely the actions taken by the CEO and the firm (Schiehll & Bellavance, 2009).

Hypothesis 2a: The ratio of insiders is negatively associated with CEO pay cuts.

3.2.2. Board stock ownership

The interests of the board depend on the incentives present to them. Jensen & Meckling (1976) suggest that as directors increase their ownership their interests start to converge towards the shareholder's interest. That is, directors holding a considerable amount of wealth in a company's stock are affected by the decisions they make. Presumably, such directors, wanting to avoid negative effects on their wealth, would be reluctant to act in a

manner that does not favor their wealth and by extension the wealth of the other shareholders, regardless of how independent they are (Booth et al., 2002). Consequently, boards in which directors hold larger ownership stakes are hypothesized as being more likely to be positive toward pay cuts.

Hypothesis 2b: Board stock ownership is positively associated with CEO pay cuts.

3.2.3. Ratio of compensation committee members on the board of directors

Research in the United States has had for a long time a tradition of investigating the board of directors and how its different structures and compositions may impact the level of CEO pay (Conyon & Peck, 1998). Prior research, however, could not achieve a consensus on the effect of the compensation committee on the executive pay level. On the one hand, Conyon & Peck (1998) and Main & Johnston (1993) found compensation committees to be associated with higher CEO compensation. On the other hand, research such as Bouteska & Mefteh-Wali (2021) found that the presence of a compensation committee protects employees' interests and restricts excessive executive compensation. Arguably, contending this last train of thought to be true, the Securities and Exchange Commission (SEC) developed certain guidelines relating to the composition of compensation committees. Yet, the global financial crisis of 2007 and the great recession that followed shed a light on the direct and indirect need for more intervention on the increasing executive compensation (Bouteska & Mefteh-Wali, 2021). As a result, the New York Stock Exchange (NYSE, 2013) and the NASDAQ (NASDAQ, 2017) have introduced reforms into their corporate governance guidelines. Similar rules are applied by both stock exchanges, as can be seen below where the set of rules for the NYSE are displayed, and on Appendix C where the guidelines used by NASDAQ are shown.

NYSE - 303A.02 Independence Tests *(continues)*

In order to tighten the definition of "independent director" for purposes of these standards:

(a) (i) No director qualifies as "independent" unless the board of directors affirmatively determines that the director has no material relationship with the listed company (either directly or as a partner, shareholder or officer of an organization that has a relationship with the company).

(ii) In addition, in affirmatively determining the independence of any director who will serve on the compensation committee of the listed company's board of directors, the board of directors must consider all factors specifically relevant to determining whether a director has a relationship to the listed company which is material to that director's ability to be independent from management in connection with the duties of a compensation committee member, including, but not limited to:

(continues)

A) the source of compensation of such director, including any consulting, advisory or other compensatory fee paid by the listed company to such director; and

(B) whether such director is affiliated with the listed company, a subsidiary of the listed company or an affiliate of a subsidiary of the listed company.

NYSE - 303A.05 Compensation Committee

(a) Listed companies must have a compensation committee composed entirely of independent directors. Compensation committee members must satisfy the additional independence requirements specific to compensation committee membership set forth in Section 303A.02(a)(ii).

(i) the committee's purpose and responsibilities – which, at minimum, must be to have direct responsibility to:

(A) review and approve corporate goals and objectives relevant to CEO compensation, evaluate the CEO's performance in light of those goals and objectives, and, either as a committee or together with the other independent directors (as directed by the board), determine and approve the CEO's compensation level based on this evaluation;

Nothing in this provision should be construed as precluding discussion of CEO compensation with the board generally, as it is not the intent of this standard to impair communication among members of the board.

Although prior research has devoted efforts to understand the link between compensation committees and the level of executive compensation before the implementation of the rules above, it was not possible to find any research done on this subject after the great recession. The new guidelines on the NYSE and NASDAQ state that compensation committee members must be independent directors of the firm and they are responsible for the approval of CEO compensation, either alone or with other independent directors of the board. Either way, by following prior research and including the ratio of insiders in the model, this study is able to capture the effect of both situations[1]. In a case where

[1] An important clarification needs to be made. All the directors within the board can be classified as (A) insiders, (B) independent directors who belong to the compensation committee, and (C) independent directors who do not belong to the compensation committee. First, the insiders' ratio is computed by the following formula: (A)/(A+B+C). Second, the ratio of compensation committee members within the board

all the independent directors also vote, the insiders' ratio accounts for that scenario. In the basic case where only the compensation committee members are part of the executive compensation decision, the ratio of compensation committee members within the board of directors captures the relative size of the compensation committee on the board. Under the managerial power theory there is the belief that CEOs tend to exert power over the board of directors in many different ways. As Daily et al. (1998) suggests, one way to attract independent directors to *fall within their trap* is to offer them attractive contracts and consulting agreements. Regulation specifies that a director can be considered independent as long as s(he) has no material relationship with the firm. Taking into consideration that the definition of materiality can be highly subjective and that the requirements to join the compensation committee are more stringent, this study considers the ratio of compensation committee members within the board of directors as a new relevant factor to measure board independency under the light of the new regulation. As such, this study hypothesizes that a higher ratio of compensation committee members within the board of directors will translate into lower CEO power given that these members will be more represented within the board and thus have a higher capacity to avoid being absorbed.

Hypothesis 2c: The ratio of compensation committee members within the board of directors is positively associated with CEO pay cuts.

3.3. Public Outrage

3.3.1. Employees Dismissals

Public outrage can take several different forms. Traditionally public outrage is said to be split into public outrage in the mass media and market outrage at shareholder meetings (Arnold & Grasser, 2018). This study has considered public outrage by studying employee dismissals and how that can provoke a reaction from the public when the compensation of top executives is announced. Among the most common examples of public outrage are the negative media coverage a firm and its executives can get, the pressure emanated from labor unions as well as the political activism towards firm specific practices. Even though there is arguably no amount of executive compensation that is considered fair by most stakeholders (Arnold & Grasser, 2018), which definitely makes it difficult to define precisely what this outrage constraint is, there is no doubt that the public opinion affects executive compensation (Weisbach, 2007). As such, CEOs tend to camouflage their compensation in ways that are typically not discussed in the press (Weisbach, 2007). Again, the Dutch boy analogy could be a good way to describe the

is given by the following formula: (B)/(A+B+C). The former situation is captured by the insiders' ratio given that all the independent directors are part of the executive compensation decision, therefore the computation of (1- insiders ratio) gives us the ratio of directors who were part of the approval. Instead, the latter, under which only the compensation committee members should approve CEO compensation, is captured by the ratio of compensation committee members within the board of directors.

capacity CEOs have to reinvent and reimagine ways to camouflage their compensation. However, there is one metric which executives cannot run away from. This study uses employee dismissals as a proxy to measure how exposed a firm is to public critique and how that can influence public' and other stakeholders' feelings towards the firm and its executive team. Especially in times of crisis, executive compensation becomes a good source of outcry in the event that employees are fired or laid-off. In order to avoid such public outrage, the study hypothesizes that CEOs are keener on taking pay cuts in the event other major changes (such as employee dismissals, the closing of branches, stores or factories, etc.) take place in the firm.

Hypothesis 3b: Employee dismissals is positively associated with CEO pay cuts.

4. Method

This section starts off with an overview of the logit model as well as an explanation on the test design used. Following that a definition of the variables considered in the study and a detailed description of the control variables chosen to be incorporated in the model is provided.

4.1. Test design

To estimate the influence the research variables have on the decision to reduce CEO compensation or not, a model that accommodates the dichotomous nature of the dependent variable well is utilized, namely the logistic regression model.

The dependent variable takes on the value of either 1 or 0, if the decision to reduce compensation for the CEO is made, the dependent variable equals 1, if the decision to not reduce compensation for the CEO is made, the dependent variable equals 0.

$$y = \begin{cases} 1 & if\ CEO\ takes\ a\ pay\ cut \\ 0 & if\ CEO\ does\ not\ take\ a\ pay\ cut \end{cases} \quad (1)$$

The general logistic model follows equation (2)

$$E(y) = \frac{e^{\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+\beta_n x_n}}{1+ e^{\beta_0+\beta_1 x_1+\beta_2 x_2+\cdots+\beta_n x_n}} \quad (2)$$

Where, E(y) = p, the probability of y=1 and, x_i's are the independent variables. Log odds are then derived through a two-step logit transformation. First, the probability of y=1 is put in relation to the probability of y=0, yielding odds. Second, the natural logarithm of the odds is then calculated. The model is then the log odds as a linear function of the independent variables

$$y = \ln\left(\frac{p}{1-p}\right) = \beta_0 + \beta_1 x_1 + \beta_2 x_2 \ldots + \beta_n x_n \quad (3)$$

where β_0 is the intercept and β_i the dependency rates of the independent variables to the dependent variable.

4.2. Model specifications

4.2.1. Dependent and independent variables

As explained before, this study aims to understand the phenomenon of CEO compensation cuts taken during the fiscal year of 2020. Prior literature focusing on executive compensation has studied numerous variables to investigate which factors have been impacting the evolution seen on the executive compensation level. Following a similar approach, this study has considered several of the previously studied variables to examine if these are also significant when trying to understand the recent phenomenon of CEO pay cuts.

The dependent variable in the model is labelled Pay_Cuts_i and refers to the variation of total compensation as reported in the SEC fillings[2] for the fiscal years of 2019 to 2020. In case the total compensation of a CEO has decreased for firm *i* from 2019 to 2020, the dependent variable takes the value of 1 and 0 otherwise.

$CEO\_Ownership_i$ is an independent variable representing the percentage of total shares owned by the CEO of firm *i* in 2020. It is expected that this variable is positively correlated with the dependent variable as higher CEO ownership should contribute to the reduction of the agency problems, thus aligning the incentives of a CEO with the goals of the shareholders of a firm. As such, *ceteris paribus* a CEO with higher ownership should be more likely to take a compensation cut if that decision is aligned with the wishes of the remaining shareholders of the firm.

CEO_Tenure_i is an independent variable which represents the years someone has held the position of Chief Executive Officer in firm *i*. The measure is made as of December 31, 2020 and should be positively correlated with a compensation cut.

$CEO\_Duality_i$ is an independent variable which accounts for the combined holding of the positions of Chief Executive Officer and Chairperson of the board of directors in firm *i*. In the case the CEO is also the Chairperson this variable takes the value of 1 and it is expected that the dual role of a CEO grants her/him more power over the board of directors. As such, CEO duality should be negatively correlated with compensation cuts taken by the CEO her/himself.

$Insiders\_Ratio_i$ is an independent variable which measures the percentage of independent directors within the board. A director can be classified as independent in case she or he does not hold any executive position in firm *i* and is not linked to the firm in any other way than the director role one is having at the moment. A director may be linked with a firm even though is not an employee of the firm if, for example, the director has family members working for the firm or the director has provided consulting or other projects to

[2] Total compensation as reported in SEC Filings is the sum of the salary, bonus, stock awards, option awards, non-equity incentives, pension, and other compensation paid by the firm to the CEO.

the firm. As such, in case a director is also an employee of the firm *i* or is linked to the firm, one can expect the director to behave as an insider; thus, have a scanty monitoring over CEO compensation given the CEO is able to influence more an insider director than an outsider/independent director. Hence, the insider's ratio should be negatively correlated with CEO compensation cuts.

$Board\_Ownership_i$ is an independent variable that measures the percentage of total shares owned by the directors of firm *i* in the fiscal year 2020. Similar to the agency problems which characterize the relationship between the shareholders of firm *i* and its management team, which are believed to be reduced with higher CEO ownership's rates, also board ownership should be positively correlated with CEO compensation cuts. Notice that a board of directors with a larger share of ownership in firm *i* is likely to act towards favoring their own wealth and thus protect their own interests which also become the interests of the remaining shareholders. As such, high board ownership also reduces the agency problems between the shareholders of a firm and its board of directors, which is positively correlated with the decision of the CEO of firm *i* taking pay cuts.

CC_Ratio_i is an independent variable which measures the percentage of compensation committee members within the board of directors of firm *i*. As prior literature has mentioned, compensation committee members have been important employees' representatives within the board and have as their main functions the monitoring of the firm's compensation levels. As such, the ratio of compensation committee members within the board of directors should be positively correlated with CEO compensation cuts.

$Var\_Employees_i$ is an independent variable representing the variation of the number of employees of firm *i* from 2019 to 2020. Employees dismissals assume a relevant role as a measure of public outrage given that when firms set the CEO compensation levels for the year, the variation on the number of employees can elicit public outcry inside and outside the firm. As such, this independent variable should be positively correlated with CEO compensation cuts.

4.2.2. Control Variables

This study is primarily concerned with the corporate governance factors that affect the decision to reduce CEO compensation. To control for effects stemming from non-governance sources, non-governance factors are included in the model. The control variables included are variables deemed important by previous research on CEO compensation. Firstly, the model includes the natural logarithm of assets as a measure of firm size. Prior research (Gabaix et al. (2014), Core et al. (1999) theorizes that as firms grow, their willingness to pay for talent elevates, as a result CEO compensation increases. Bouteska & Mefteh-Wali (2021) justifies the need for talented CEOs in larger firms as these are more complex and difficult to run firm; therefore, a higher compensation is demanded from the CEOs able to live up to the task. MCGUIRE et al. (1962) studying

size through a sales proxy, argues that executive compensation is determined primarily by previous sales achievements. Galbraith (1985) hypothesizes that an increase in output implies an expansion of the organizations technostructure. As more jobs with more responsibility are added, promotions and compensation increases follow. While there exists disagreement on the causal link between CEO compensation and firm size, the association is ubiquitous (Finkelstein & Hambrick, 1989). Secondly, the model includes ROA as a measure of firm profitability. Finkelstein & Hambrick (1989) find that firm profitability affects CEO compensation through the bonus component which is often tied to performance benchmarks. Prior research strongly suggests significantly higher CEO compensation for firms performing well (Fahlenbrach, 2009). Lastly, the model includes industry in order to capture industry specific fixed effects. As such, ROA_i, $Size_i$, and $Industry_i$ are the three control variables introduced in the model.

ROA_i stands for return on assets and is a control variable that gives the ratio of net income over total assets for firm *i* in 2020. Following prior literature, this metric is composed by the net income of firm *i* in 2020 divided by the total assets at the beginning of the fiscal year. This variable controls for the impact the financial performance of the firm can have on the decision of a CEO taking compensation cuts. We therefore hypothesize that ROA is negatively correlated with compensation cuts as lower ROA might prompt compensation cuts.

$Size_i$ is represented by the natural logarithm of total assets in 2020 for firm *i* and controls for the effect a different firm size has on the decision to take compensation cuts. We hypothesize that larger firms have a lower likelihood of taking CEO pay cuts given that their size grants them other options to deal with a crisis or any liquidity problem. As such, it is expected that Size is negatively correlated with CEO compensation cuts.

To conclude, $Industry_i$ is a dummy control variable which has been incorporated in the model using the two digits SIC[3] Code of firm *i* and is expected to capture variations in CEO compensation cuts across industries. Nothing can be said *a priori* on the expected correlation this variable can have with the dependent variable given that the aim of including it in the model is rather to explore which industries have had a larger impact from the COVID-19 pandemic and if that has translated to more firms taking CEO compensation cuts.

[3] SIC stands for Standard Industry Classification Code.

Table 1. Variable's definition

Variables	Definition of variables	Expected sign
Pay_Cuts	Categorical variable which assumes the value of 1 if the CEO of a firm took a compensation cut in 2020; 0 otherwise	
CEO_Ownership	Percentage of total shares owned by the CEO	+
CEO_Tenure	Time (in years) someone has held the CEO position as of 31/12/2020	-
CEO_Duality	Dummy variable which assumes the value of 1 when the CEO also assumes the role of Chairperson of the board; 0 otherwise	-
Insiders_Ratio	Percentage of independent members within the board of directors	-
Board_Ownership	Percentage of total shares owned by the board of directors	+
CC_Ratio	Percentage of compensation committee members within the board of directors	+
Var_Employees	Percentage change on the number of employees of a firm from 2019 to 2020	-
ROA	Ratio of net income to total assets	-
Size	Natural logarithm of total assets	-
Industry	Two-digit SIC code	

5. Empirics

This section is composed of a review of the sample selection process, an overview from where was the data collected as well as a quality check on the data used in the study. To conclude, we provide some descriptive statistics and Spearman correlations for the variables used in our model.

5.1. Sample selection

The final sample used in this study is a combination of data extracted from three databases, namely the Execucomp, ISS: Institutional Shareholder Services, and Compustat. To obtain a clean sample, one must follow the sequential steps explained below and that can also be seen on Table 2.

First, the sample selection process starts by limiting the study to firms trading on the New York Stock Exchange (NYSE) or on the National Association of Securities Dealers Automated Quotation System (NASDAQ) stock market, as these have been the largest stock exchange operators worldwide by market capitalization (Business Insider, 2020). The Execucomp database clarifies if a certain director is the current CEO or not; hence, one shall start by focusing on firms with a current CEO and which trade at NSYE or NASDAQ, as mentioned before.

Second, one has to exclude from the sample all the firms on the Execucomp that do not provide information on CEO compensation for the years of 2019 and 2020. In order to be kept on the sample, Execucomp has to provide information for both years on (1) the variation on percentual terms of the total compensation as per the SEC[4] Fillings, and (2) CEO ownership presented both in total amount of shares held by the CEO as well as the corresponding percentage.

Third, in order to be able to compute the CEO tenure, one needs to exclude from the sample firms which do not provide information on the date when the current CEO became the CEO of the firm. Notice that the focus here is on the date when the CEO initiated her/his mandate and not when the current CEO joined the firm, given that the two dates might differ from each other in the event the CEO was internally appointed.

Fourth, one ought to limit the sample to firms which have not changed the CEO during the time horizon considered for research. Taking into consideration that the focus of the study is on understanding the role corporate governance might have on explaining the phenomenon of CEO pay cuts taken during the year of 2020, one must only focus on the variation on total compensation from 2019 to 2020 to CEOs who have kept their positions

[4] SEC stands for the U.S. Securities and Exchange Commission.

during this time period. As such, variations in CEO compensation occurring because a different CEO was hired during this period are not the aim of this research.

Fifth, one has to merge for the first-time data from the ISS database with the data already considered in the sample from Execucomp. By doing so, some firms included in the sample at stage four of this process are no longer contained on the ISS database and as such have to be excluded from our sample.

Sixth, aiming to compute the total number of shares held by all the directors to get the total board stock ownership, one has to exclude from the sample firms which do not disclose the shares held by one or more directors in 2020. Notice that a director may not hold any shares, in which case a value of zero should be assigned to her/him. Under such circumstances, a firm with a director with no ownership would be part of the sample. Contrastingly, whenever a dataset returns blanks to any given variable under analysis, one must exclude that firm from the sample to avoid making an assumption that the blank stands for an amount equal to zero. As such, firms with directors whose total ownership have not been disclosed on the ISS database shall be excluded from the sample.

Lastly, following the same reasoning made on the fifth step, one has to exclude firms which were part of the previous databases but are not among the firms included in the next database to add to the sample. Consequently, firms which were part of the Execucomp and ISS databases but were not part of the Compustat database were removed from our sample.

To conclude, by following these seven steps one must be able to get a final sample of 1 026 firms with data available for all the variables considered in our study for the fiscal year of 2020. As such, this method allows to test which variables identified in prior literature do indeed contribute to explain the CEO pay cuts taken in 2020 as well as grants the opportunity to capture the relative importance of each factor.

Table 2. Sample selection process

Current CEOs in Execucomp database whose firms trade on the NYSE or NASDAQ	1 570
Reasons for deletions	
Compensation dataset is not available for the fiscal years of 2019 and 2020 *(a)*	103
No information about the date the current CEO started his/her mandate	4
Firm has changed the CEO between 01/01/2019 and 31/12/2020	291
Firm included in the Execucomp sample is not among the ISS data sample	135
Shares held by the directors in ISS is not available for all the directors of the firm	8
Firm on Execucomp and ISS samples is not among the Compustat database	3
Total number of firms deleted	544
Total number of firms in the study	1 026

(a) The variables included were the total compensation percentual change year-to-year as per the SEC Fillings and the percentage of total shares owned as reported for the fiscal years of 2019 and 2020.

5.2. Data collection

As mentioned in section 5.1, all the data used in this study was collected from three different databases, namely the Execucomp, ISS: Institutional Shareholder Services and Compustat. The access to these databases was made via the Wharton Research Data Services, having all the data been collected during April 2022. Execucomp database was used to collect all the information relative to the CEO, specifically the total compensation received in 2019 and 2020, the decomposition of total compensation into its parts (salary, bonuses, options, etc), as well as the CEO ownership, the CEO tenure and CEO duality. On the other hand, the ISS database was used to extract data on the board of directors, namely the ratio of insiders, board stock ownership, and the ratio of compensation committee members within the board of directors. Additionally, the Compustat database was used to extract the total number of employees for each firm for both years; hence, allowing the analysis of employees' dismissals from 2019 to 2020.

5.3. Descriptive statistics

Descriptive statistics, including means, standard deviations and quartiles, for the variables used in our model are presented in Table 3. The variables *Pay_Cut*, *CEO_Ownership* and *Board_Ownership* are expressed as percentage values. *Insiders_Ratio, CC_Ratio* and *Var_Employees* are ratios expressed in decimal form. *CEO_Tenure*, *Size* and *ROA* are expressed as nominal values. Lastly, the model uses two dummy variables, *CEO_Duality* and *Industry*. The former takes the value of 1 when a CEO is also the chairperson, taking the value of 0 if there is non-duality. The latter represents industry by indicating the first 2-digit SIC Code of each firm.

The sample is composed by 1 026 firms, of which 40% decreased the total CEO compensation during 2020. Similarly, 40% of the CEOs in the sample are also the chairperson of the firm. The average (median) CEO in the sample holds 1.57% (0.44%) of the total number of shares outstanding of the firm, whilst the average (median) board of directors holds around 0.04% (0.01%). However, it is worth mentioning that more than 75% of the CEOs and boards in the sample have lower ownership levels than the 1.57% and 0.04% represented by the average firm, respectively. The average (median) CEO has spent around 9.5 years (7.0 years) at the firm as of 31/12/2020; however, it is important to notice that the minimum tenure allowed has been set at 2 years as the study requires firms to keep the CEO in both years to detect changes in total compensation that cover the entirety of each fiscal year. Furthermore, on average the board has 86% of independent directors and 29% of the directors belong to the compensation committee. The public outrage measured by the percentage of employee dismissals has shown that the average firm in the sample has actually increased the total number of employees by 2%. Notwithstanding that, the minimum observed for this variable (-71%) is also illustrative of the employee dismissals' cases often seen during the pandemic.

The entire sample is classified according to the firm 2-digit SIC Code, which is presented in Table 4. The sample is predominantly constituted by three industries, namely (1) manufacturing, (2) finance, insurance and real estate, and (3) services.

Table 3. Summary statistics for all the variables

Variable	N	Mean	Std. dev.	Min	Q1	Q2	Q3	Max
Pay_Cut	1 026	0.40	0.49	0.00	0.00	0.00	1.00	1.00
Decision Management								
CEO_Ownership	1 026	1.57	4.59	0.00	0.16	0.44	1.09	59.83
CEO_Tenure	1 026	9.49	7.62	2.00	4.00	6.97	12.34	53.04
CEO_Duality	1 026	0.40	0.49	0.00	0.00	0.00	1.00	1.00
Decision Control								
Insiders_Ratio	1 026	0.14	0.07	0.00	0.10	0.11	0.14	0.63
Board_Ownership	1 026	0.04	0.11	0.00	0.00	0.01	0.03	2.21
CC_Ratio	1 026	0.29	0.15	0.00	0.18	0.30	0.38	0.89
Public Outrage								
Var_Employees	1 026	0.02	0.37	- 0.71	- 0.07	0.00	0.06	9.54
Control Variables								
ROA	1 026	0.04	0.13	- 0.61	0.00	0.03	0.07	2.41
Size	1 026	8.74	1.61	4.28	7.56	8.63	9.73	15.04
Industry	1 026	48.49	18.70	10.00	35.00	49.00	63.00	99.00

Notes: This table reports the summary statistics for the sample firms included in the regression. The sample contains 1 026 firm observations for the fiscal year of 2020. See Table 1 for detailed variable explanations.

Table 4. Industry summary statistics

SIC Code	Code	Industry Classification	No. firms	Percentage
10 – 14	B	Mining	33	3.2%
15 – 17	C	Construction	20	1.9%
20 – 39	D	Manufacturing	389	37.9%
40 – 49	E	Transportation & Public Utilities	89	8.7%
50 – 51	F	Wholesale Trade	28	2.7%
52 – 59	G	Retail Trade	62	6.0%
60 – 67	H	Finance, Insurance & Real Estate	266	25.9%
70 – 89	I	Services	137	13.4%
99	K	Non-classifiable Establishments	2	0.2%

Note: Detailed information on every firm in the sample can be found on Appendix B.

5.4. Spearman correlations

This study utilizes spearman correlations as it best accommodates the data with regard to the assumptions of comparable alternatives. Table 6 presents the correlations between the research variables. No pair of variables show apparent collinearity issues.

Unsurprisingly, the correlation analysis reveals that CEO pay cuts are mostly correlated with performance and the relative degree of employee dismissals. Firms that perform worse financially tend to cut CEO pay more often than firms that perform better. Similarly, firms that dismiss relatively more employees tend to cut pay more often than firms that dismiss relatively less employees. Additionally, size and CEO tenure show weak positive correlations to pay cuts.

Among the independent variables, the most correlation is found between CEO ownership and board ownership, in firms where the CEO has a higher ownership percentage, board ownership tends to be higher as well. CEO ownership is also positively correlated with tenure and negatively correlated with firm size with relatively high correlation coefficients. Expectedly, performance and the relative dismissal of employees are positively correlated, firms that perform better tend to hire relatively more employees.

Table 5. Spearman correlations

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(1) Pay_Cuts	1.0000										
(2) CEO_Ownership	0.0102	1.0000									
(3) CEO_Tenure	0.0605*	0.4932***	1.0000								
(4) CEO_Duality	0.0112	0.1379***	0.2916***	1.0000							
(5) Insiders_Ratio	-0.0049	0.3478***	0.1955***	-0.0788**	1.0000						
(6) Board_Ownership	0.0198	0.6054***	0.3491***	-0.0096	0.4543***	1.0000					
(7) CC_Ratio	-0.0496	0.0267	-0.0730**	-0.0380	0.0977***	-0.0792**	1.0000				
(8) Var_Employees	-0.2161***	0.0051	0.0489	-0.0189	-0.0158	-0.0248	0.0548*	1.0000			
(9) ROA	-0.2476***	-0.0607*	0.0221	0.0495	-0.0087	-0.0227	-0.0480	0.3109***	1.0000		
(10) Size	0.0904***	-0.4927***	-0.0925***	0.1326***	-0.4232***	-0.4478***	-0.1440***	-0.0038	-0.0903***	1.0000	
(11) Industry	0.0045	0.0581*	0.0805***	-0.0393	0.0962***	-0.0559*	-0.0009	0.0216	-0.0648**	0.0892***	1.0000

Pay_Cuts is the percentual change on the CEO total compensation from the fiscal year 2019 to 2020, *CEO_Ownership* is the percentage of total shares outstanding owned by the CEO, *CEO_Tenure* is the number of years the CEO has held the position as of 31/12/2020, *CEO_Duality* is a dummy variable that refers to cases where the CEO is also the Chairperson of the firm, *Insiders_Ratio* is the percentage of non-independent insider directors within the board, *Board_Ownership* is the percentage of total shares outstanding owned by the board of directors, *CC_Ratio* is the percentage of compensation committee members within the board of directors, *Var_Employees* is the percentual change on the number of employees of a firm from 2019 to 2020, *ROA* is a performance metric that consists on the ratio between the net income of 2020 and the total assets of a firm in the beginning of 2020, *Size* is the natural logarithm of total assets in 2020, and *Industry* is a dummy variable that consists on the two-digit SIC code of every firm in the sample. The total number of observations is 1 026.

The significance levels indicate if the variables have a significant correlation in a t-test.

***, **, * indicate significance at 1%, 5%, 10% levels respectively (1-tailed for all variables).

6. Results and analysis

This section presents the results from the binary logit model conducted and connect these findings with prior literature. Next, an additional analysis is conducted in order to further explore the rare phenomenon of CEO compensation reductions.

6.1. Main Model

As previously laid out in section 4.1, the research hereby conducted has focused on understanding the phenomenon of CEO compensation cuts which has happened after the COVID-19 outbreak. To this effect, a statistically significant binomial logistic regression model was run for a total sample of 1 026 firms. Prior literature has highlighted the role CEO influence, board independence, as well as public outrage have on the executives' compensation level. Even though the independent variables have been aggregated into these three segments, they have been tested individually as determining factors on the compensation cut decision made during the fiscal year of 2020. The control variables' coefficients are shown for the performance and size factors; however, the industry-indicator coefficients are not disclosed as these are not relevant for the analysis conducted on this section.

In terms of the explanatory power, the binary logit model shows that total CEO compensation cuts is significantly associated with CEO power, board independence, and public outrage (pseudo-R^2 = 9.76%, p=0.0000). The output of the binary logistic regression is disclosed on Table 6 and additional tests have been conducted on section 6.2 to attest the quality of the model.

CEO Influence

Influence is defined[5] as the power to have an effect on people or things; to affect or change how someone or something develops, behaves or thinks. One could argue that such effect can be exerted in several different ways, among which certainly are the three independent variables used in this research. First, prior literature has found evidence that the ownership a CEO has of the firm can generate a more powerful position to the CEO, ultimately leading to a strong CEO position limiting the effectiveness of board monitoring. Such perspective stems from the combination of the faculty the CEO position grants, but also from the weight one exerts when possessing a relevant share of ownership in the firm. Nonetheless, as it has been hypothesized in this research, there are other lines of though which support the argument that CEO ownership can actually align the interests of the CEO with the remaining shareholders. In such a case, the higher the ownership the more

[5] Definition retrieved from the online Cambridge Dictionary in May 2022.

alleviated the agency problem becomes. Both perspectives have been studied mostly to understand the rising CEO compensation level; however, the research hereby conducted focus on a distinctive element given it pivots interest on the declines seen on CEO compensation during 2020. As such, it was hypothesized that in times of crisis the goal alignment approach should stand out and, thus, the higher the ownership of a CEO, the higher the likelihood (s)he would take pay cuts. Yet, the output on Table 6 does not grant support to this point of view as CEO ownership is statistically insignificant on a 90% confidence level.

An alternative way a CEO exerts influence over the board of directors is through the effect of time, more specifically the time spent at the firm. CEO tenure refers to the number of years someone has held the Chief Executive Officer position of a firm and it has been hypothesized as being negatively correlated to the dependent variable. The theoretical background lies upon the argument that time brings more experience to the CEO, which in turn helps the CEO to build trust and support within the firm. As such, the longevity of a CEO enables the creation of power-relationships from the CEO towards the employees of the firm, but also the board of directors. The combination of power-relationships with a higher sensitivity to current pay as tenure increases is expected to decrease the likelihood of CEO pay cuts. The findings of this study show, however, a different reality. CEO tenure is a statistically significant variable and its positive coefficient shows that longer tenures are positively associated with a pay cut decision. In fact, per each additional year of tenure a CEO has, the decision of taking a pay cut becomes more probable 1.025 times. In other words, the odds of a CEO pay cut are 2.5% larger for each additional year of CEO tenure. This result does not find support on prior literature; however, different lines of thought could justify the new finding. On the one hand, one could interpret this outcome as a consequence of the association Gong (2011) established between CEO tenure and higher firm value, as one's longevity on the role is commonly justified by performances that please the shareholders. On the other hand, other researchers believe that long-tenured CEOs are usually adopters of a *play safe* strategy, preferring stability and efficiency over the unknown that characterizes innovation (Hou et al., 2017). Either because CEOs with longer tenures are used to ingratiate themselves with the board of directors and the shareholders, or because they give preference to a stable efficiency as their long tenure entails more to lose, the results show that longer tenure CEOs are positively associated with the pay cuts taken after the COVID-19 outbreak. As such, we recommend further research to be devoted into this finding in order to get an understanding of the true reasons justifying this phenomenon.

Lastly, CEO duality has been hypothesized by prior research as CEO power metric given that duality, as the highest rank in the corporate hierarchy, attains more power and improves the chances of a CEO influencing the board of directors. The results of this study are inconsistent with this hypothesizes, yet they do suggest a negative link between this independent variable and the dependent variable.

Board Independence

The independent variables: insiders' ratio, board ownership and the ratio of compensation committee members, are collectively referred to as board independence. Board independence reflects the degree to which the board of a company is able to control and monitor influences that are not in the interest of the shareholders.

It was hypothesized, based on the arguments of managerial power, that the ratio of insiders to the board would be negatively associated with pay cuts. The study finds that insiders' ratio is significant in the decision to cut CEO compensation. However, the results indicate that firms with a higher insiders' ratio are more likely to cut CEO compensation, rejecting the hypothesis and lending support to the findings of Lambert et al. (1993). Board ownership was hypothesized to align the interests of the board members with that of the shareholders and as a result be positively associated with CEO pay cuts. However, the evidence does not support the hypothesis, the variable is not significant on a 90% confidence level. The ratio of compensation committee members in the board to the whole board was expected to be positively associated with CEO pay cuts. However, the variable is not significant on the conventional 90% confidence level, but it is still worth considering with a p-value of 0.109. The association is not positive, as hypothesized, but negative, indicating that firms with a higher ratio of compensation committee board members to board members are less likely to cut CEO compensation.

Public Outrage

Public outrage can take several different forms and can be unleashed by different stakeholders. According to the market-based theory the talent needed to succeed in the CEO role is scarce, which fosters the rise of CEO compensation level. Yet, if there is something which emanates from the CEO and is not scarce is the talent of a CEO to camouflage her/his compensation. The managerial power theory suggests that the CEO will extract rents from the firm as long it does not engage in more public outrage. To that effect, CEOs usually apply their talent to find new ways of camouflaging their compensation. This study, however, has used a metric which arguably CEOs cannot innovatively camouflage from. The percentage of employees' dismissals taken by a firm from one period to another has been hypothesized as being positively correlated to CEO pay cuts. The results are statistically significant at a 99% confidence interval, showing that the odds of a CEO pay cut decision are 65.3% higher for an additional 1% decrease on the total number of employees. This finding supports the argumentation of Arye Bebchuk & Fried (2003) which states that the impact public outrage has on the CEO decision-making is dependent on how much outrage is expected to be generated from that decision. As such, given the importance attributed to employees' dismissals by the media,

labor unions, political parties and several other stakeholders, CEOs cannot camouflage this metric and, therefore, the board of directors takes into consideration the public outrage that could emanate from their decision on executive compensation.

Control variables

For completeness, the main model includes non-governance variables. Specifically, it considers the effect of performance, size and industry on the decision to reduce CEO compensation. Performance is significant and has a positive association with pay cuts, the results are in line with previous research (MCGUIRE et al. (1962), Gabaix et al. (2014), Bouteska & Mefteh-Wali (2021), Core et al. (1999), Galbraith (1985)). Size is also a significant variable, however, the results from the main model suggest that larger firms are more likely to reduce CEO compensation.

Table 6. Estimation results of the binary logit regression model

Variables	Coefficient	Std. Err.	z-value	p-value	Odds Ratio
CEO Influence					
CEO_Ownership	-0.007	0.021	-0.34	0.734	0.993
CEO_Tenure	0.025	0.011	2.32	0.020	1.025
CEO_Duality	-0.087	0.159	-0.55	0.586	0.917
Board Independence					
Insiders_Ratio	2.215	1.213	1.83	0.068	9.161
Board_Ownership	-0.567	0.695	-0.82	0.415	0.567
CC_Ratio	-0.801	0.499	-1.60	0.109	0.449
Public Outrage					
Var_Employees	-1.059	0.396	-2.68	0.007	0.347
Control Variables					
ROA	-3.661	0.886	-4.13	0.000	0.026
Size	0.150	0.054	2.74	0.006	1.162
Constant	-1.547	0.338	-0.98	0.329	0.213

Note: The coefficients shown are expressed in log-odds units, which can be converted into odds ratios by exponentiating the coefficients.
The industry-indicator variables are statistically insignificant and, therefore, the industry effects are omitted in the table 6.

6.2. Robustness checks

This section explores the structural validity of the main model. It starts by identifying the assumptions of the logit model and moves on to presenting the results of the robustness tests conducted.

6.2.1. Assumptions of the model

The logistic regression utilizes maximum likelihood estimation which assumes, no multicollinearity between the independent variables, no sparse data and linearity of independent variables and log odds (Osborne, 2015). If the assumptions are not satisfied, the results may include biased coefficients, inefficient estimates or invalid statistical inferences (Menard, 2002). Consequently, for the results of the study to be reliable, the structural validity of the model needs to be intact.

6.2.2. Multicollinearity

Multicollinearity arises when a variable is correlated with another variable. At high levels of correlation, the standard errors of the variables become large which often causes coefficients to become statistically insignificant, when they might in fact be significant (Menard, 2002). To measure multicollinearity, variance inflation factors (VIF) are estimated, the results are presented in table 7. The VIF estimates reveal no factor levels above the level 10 threshold, furthermore, no tolerance levels below the level 0.1 threshold are found, indicating that multicollinearity is not a problem in the model.

Table 7. Multicollinearity

Variable	VIF	SQRT VIF	Tolerance	R-Squared
Pay_Cuts	1.05	1 .03	0.9479	0.0521
CEO_Ownership	1.57	1.25	0.6370	0.3630
CEO_Tenure	1.34	1.16	0.7478	0.2522
CEO_Duality	1.18	1.09	0.8492	0.1508
Insiders_Ratio	1.28	1.13	0.7785	0.2215
Board_Ownership	1.36	1.17	0.7347	0.2653
CC_Ratio	1.05	1.03	0.9496	0.0504
Var_Employees	1.37	1.17	0.7278	0.2722
ROA	1.08	1.04	0.9258	0.0742
Size	1.56	1.25	0.6408	0.3592
Industry	1.09	1.04	0.9213	0.0787

Mean VIF 1.25

6.2.3. Sparse data

Sparse data refers to zero cell issues. Zero cell count occurs when an independent categorical variable value has no variation in the dependent variable. For instance, the sample used in this study includes industry as an independent categorical variable and in one industry, 53 (General merchandise store), all observations increased pay (did not cut CEO pay), as a result a zero-cell issue occurred. To overcome this issue, all values that presented the problem were eliminated.

6.2.4. Linearity in the independent variables

Logistic regression assumes that the independent variables are linearly related to the log odds. To identify potential non-linearity, a Box-Tidwell test was conducted. The Box-Tidwell transformation does not allow for negative values or values of zero; therefore, the variables *CEO_Ownership*, *Insiders_Ratio*, *Board_Ownership*, *CC_Ratio*, *Var_Employees* and *ROA* are anchored at 1 (Osborne, 2015). The test did not reveal any significant interaction terms ($p \leq 0.05$), accordingly, no non-linear relationships are concluded.

7. Additional Analysis

7.1. The magnitude of a CEO pay cut

Understanding the phenomenon of CEO compensation requires one to acknowledge the different factors contributing to such decision, but also to recognize to what extent pay cuts were made and what could explain the differences on the magnitude of those cuts. In order to fill such gap, this study has adapted the main model and restricted the sample only to firms which took pay cuts in 2020. As such, instead of having a binomial logistic model, the study of the dependent variable is now made using a multiple linear regression model. Notice that the binomial dependent variable gives place to a continuous dependent variable measuring the percentage decrease of total compensation as reported in the SEC Fillings. The sample restriction to firms who took CEO pay cuts in 2020 causes a decrease on the total number of observations to 410 observations; yet, no material changes on the descriptive statistics are detected (Appendix D). As expected, the mean and median of the independent variable representing the employees' dismissals and the control variable for firm's performance has decreased, which reflects the notorious impact of focusing solely on firms whose CEOs have decreased their total compensation.

The multiple regression model has significant explanatory power, as can be inferred from the R^2 of 24.12% and the p-value of 0.0002. The hypothesis made for the main model on section 3 are adapted to the regression model as the decision to take pay cuts is substituted by the magnitude of the pay cut. Hence, the independent variables hypothesized as being positively (negatively) correlated with the decision of a CEO pay in the model, are now negatively (positively) correlated with the magnitude of the pay cut taken. In other words, independent variables hypothesized with a positive coefficient in the main model should be interpreted on this section as contributing to substantial compensation cuts. Table 8 illustrates the changes on the coefficients of each independent variable. Table 9 discloses the output of the multiple regression model, whose assumptions are tested at the end of this section.

CEO Influence

The magnitude of a CEO pay cut is expected to be negatively associated with the influence a CEO is able to yield on the board of directors. As such, while CEO tenure and CEO duality are expected to decrease the extent of the pay cut and therefore be positively correlated with the dependent variable, CEO ownership is the only metric expected to increase the size of the executive compensation cuts. The agency theory predicts that higher CEO ownership aligns the incentives of shareholders and top management; therefore, a higher compensation cut should be expected. Similar to the results on the main model, CEO ownership and duality are statistically insignificant at a 90%

confidence level. CEO tenure, on the other hand, remains a significant factor and is positively associated with the magnitude of the pay cuts. CEOs with longer tenure are therefore more likely to take sizeable compensation cuts given that an increase of 1 year in the tenure decreases CEO compensation by 0.281%. This result is inconsistent with the hypothesis, but it is aligned with the outcome of the main model.

Board Independence

The conclusions taken from the binary logit model highlighted the importance of the ratio of insiders on a compensation reduction decision by the CEO. In fact, the arguably surprising results have shown that a larger share of insiders would increase the likelihood of a CEO pay cut. Out of the three variables, the ratio of insiders was the only significant variable; the inverse of what is seen on the multiple regression model. These results provide evidence on the importance of board composition and stock ownership in the magnitude of executive pay cuts. Statistically significant at a 99% confidence level, the percentage share of board ownership is negatively associated with the magnitude of CEO pay cuts. As such, a 1% increase in board ownership decreases the total compensation of a CEO by 36.560%. These findings support the view that the incentive alignment factor does work for both the CEO and the board of directors. Furthermore, the ratio of compensation committee members on the board of directors is statistically significant at a 90% confidence level. Even though there was insufficient evidence to conclude the effect of the *CC_Ratio* on the pay cut decision, these results advocate the importance of the compensation committee members on the extent of the pay cut taken by the CEO. A 1% increase on the ratio of compensation committee members on the board tends to decrease CEO compensation by 12.215%.

The findings of this study provide support to the importance of a well-balanced board of directors. On the one hand, the results suggest that insider-dominated boards apply their internal knowledge and powerfully exert influence towards a pay cut decision. On the other hand, this study brings evidence to the importance of compensation committee members and how their independency can be effective on the design of executive compensation. Moreover, the results do not cast doubt on the positive incentives ownership has on making one ought to avoid any negative impact on one's wealth. All in all, these findings illustrate how positive a well-balanced and independent board may be towards pay cuts.

Public Outrage

Mirroring the ratio of insiders, the employees' dismissals was a significant factor on the binary logit model; however, statistically insignificant at a 90% confidence level on the

multiple regression model. The results suggest that public outrage assumes relative importance on the pay cut decision, rather than on its magnitude.

Control Variables

The control variables for size and performance are statistically insignificant at a 90% confidence level when predicting the extent of the pay cuts taken by the CEOs. The industry fixed effects included in the multiple regression model reveals five industries positively associated with the extent of a CEO pay cut. The leather products (31), the electronic & other electric equipment (36), the automotive dealers & service stations (55), the business services (73), and the amusement & recreation services' industries were found to have a considerable higher reduction on the total compensation of its CEO. For example, with a confidence level of 99%, a leather products' firm tends to have a 39.11% bigger CEO pay cut. It is important, however, to make a distinction between the industries which tend to reduce CEO compensation the most and the industries most severely hit by the COVID-19 pandemic.

Table 8. A binomial logit model and multiple regression model comparison

Variables	Definition of variables	Binomial logit	Multiple regression
Pay_Cuts	Percentual decrease on the total compensation of a CEO in 2020		
CEO_Ownership	Percentage of total shares owned by the CEO	+	-
CEO_Tenure	Time (in years) someone has held the CEO position as of 31/12/2020	-	+
CEO_Duality	Dummy variable which assumes the value of 1 when the CEO also assumes the role of Chairperson of the board; 0 otherwise	-	+
Insiders_Ratio	Percentage of independent members within the board of directors	-	+
Board_Ownership	Percentage of total shares owned by the Board of Directors	+	-
CC_Ratio	Percentage of compensation committee members within the board of directors	+	-
Var_Employees	Percentage change on the number of employees of a firm from 2019 to 2020	-	+
ROA	Ratio of net income to total assets	-	+
Size	Natural logarithm of total assets	-	+

Table 9. Estimation results of the multiple regression model

Variables	Coefficient	Std. Err.	z-value	p-value
CEO Influence				
CEO_Ownership	-0.166	0.297	-0.56	0.576
CEO_Tenure	-0.281	0.146	-1.92	0.055
CEO_Duality	1.677	2.109	0.80	0.427
Board Independence				
Insiders_Ratio	-10.402	14.928	-0.70	0.486
Board_Ownership	-36.560	13.840	-2.64	0.009
CC_Ratio	-12.215	6.986	-1.75	0.081
Public Outrage				
Var_Employees	1.497	5.253	0.29	0.776
Control Variables				
ROA	16.253	11.191	1.45	0.147
Size	0.722	0.718	1.01	0.316
Industry				
31	-39.114	13.608	-2.87	0.004
36	-11.514	6.861	-1.68	0.094
55	-25.541	13.752	-1.86	0.064
73	-9.522	5.711	-1.67	0.096
79	-24.344	10.013	-2.43	0.016
Constant	-16.116	9.077	-1.78	0.077

Note: In total the multiple regressor model has 49 industry-indicator variables. Table 9 only displays the statistically significant industry-indicator variables. The remaining are omitted.

The new multiple linear regression model was tested on its assumptions in order to guarantee a consistent and efficient estimation of all the factors. The first step taken was to investigate if the conditional mean was correctly specified, i.e., if the conditional mean was linear and all the relevant variables were included in the model. To do so, a Ramsey regression specification-error test (RESET) was conducted to prove the correct specification of the model as the null hypothesis was not rejected for both cases. Second, the multiple regression model requires the variance of the error term to be constant. In other words, the error terms are required to be homoscedastic, which is the case in this model as shown by the application of White (1980)'s general test. Third, the model needs to be tested for the multicollinearity problem. In the event the multiple independent variables are highly correlated with each other, the model can produce estimations with the wrong sign and with implausible magnitude (O'brien, 2007). As such, in order to avoid severe estimation problems this model has been tested for multicollinearity by examining the tolerance levels and the variance inflation factor (VIF). The results have shown a mean VIF of 1.51, with no independent variable and control variable with an

amount higher than 1.94. Exception needs to be made to the industry-indicator variables given that the industry 67 (Holding & Other Investment Offices) registered the highest VIF of 3.19, a value still below the rules of thumb for VIF values suggested by prior literature.

8. Conclusions

Researching executive compensation cuts is to assess a very contemporary field of studies, yet with very limited research conducted. The COVID-19 pandemic grants an opportunity to fill this gap by analyzing this phenomenon with the most recent firm-level data set.

The findings of this study show the relative importance of CEO tenure when explaining CEO compensation reductions, contradicting prior literature that attributes a higher sensitivity to current pay to longer tenure executives. Under the managerial power theory CEO tenure has been referenced as a powerful way to gain control over the board as the accumulated experience in the firm helped building trust and support. The results have shown, however, that longer tenures are positively associated with the likelihood and the extent of CEO pay cuts. These findings seem to suggest that the trust and support proposed by the MPT had the oppositive effect on the decision made by CEOs. Instead of using the power to exert influence on the board and thus avoid a reduction on their compensation, the results illustrate a situation where the CEOs demonstrated more sensitivity to the effects of the pandemic than their younger peers. It is common on prior research to link the longevity in the firm to the capacity of creating firm value and please both the shareholders and the board of directors. On the other hand, this result could also be linked with a more skeptical perspective on the phenomenon, which tries to justify the decision-making of long tenured CEOs with a more conservative management style. The longevity in the firm not only grants more trust and support from everyone in the firm, but it also carries a sizeable financial and emotional investment that could be lost.

Furthermore, the combination of the ratio of insiders with the ratio of compensation committee members within the board of directors in the study signals the importance of updating the classical metrics of measuring the independence of the board of directors. Prior research has casted doubt over the years on the argumentation that outsider directors were more independent than insider directors (Core et al., 1999). This study has shown that insiders indeed contribute to the CEO pay cut decision; however, it is the compensation committee members who magnify the compensation reduction. Reflecting the more stringent guidelines, the results suggest that a higher ratio of compensation committee members is linked to lower executive compensation.

Lastly, public outrage is once again found to be a significant factor on controlling for executive compensation. The study has considered the percentage of employees' dismissals given its relevance as a hard metric to camouflage, which the results have showed support for. The media, labor unions, political parties and other relevant factors may fall into the Dutch boy analogy in many cases; however, it is difficult for CEOs to camouflage the variation of the number of employees.

The results of the current study are important to the practitioners, policymakers and regulatory authorities as it uses the most recent data and examines executive compensation under the light of the recently introduced regulation. However, the study has its limitations. First, the study only addresses a limited number of factors contributing to the total level of compensation. Second, some industries are omitted from the main model as there are not enough observations to perform a relevant industry analysis. Nevertheless, further research could perform a similar test with a bigger sample size and introduce CEO compensation changes for CEOs who were hired during the time period.

References

Abernethy, M., Kuang, Y., & Qin, B. (2015). The Influence of CEO Power on Compensation Contract Design. *The Accounting Review, 90*(4), 1265-1306. 10.2308/accr-50971

Adams, R. B., & Giannetti, M. (2012). Is Pay a Matter of Values? *International Review of Finance; Int.Rev.Finan, 12*(2), 133-173. 10.1111/j.1468-2443.2012.01155.x

Aivazian, V. A., Lai, T., & Rahaman, M. M. (2013). The market for CEOs: An empirical analysis. *Journal of Economics and Business, 67*, 24-54. 10.1016/j.jeconbus.2013.02.001

Arnold, M. C., & Grasser, R. (2018). What is a fair amount of executive compensation? Outrage potential of two key stakeholder groups. *Journal of Business Finance & Accounting, 45*(5-6), 651-685. 10.1111/jbfa.12309

Arye Bebchuk, L., & Fried, J. M. (2003). Executive Compensation as an Agency Problem. *The Journal of Economic Perspectives, 17*(3), 71-92. 10.1257/089533003769204362

Benson, B. W., Lian, Q., & Wang, Q. (2016). Stock ownership guidelines for CEOs: Do they (not) meet expectations? *Journal of Banking & Finance, 69*, 52-71. 10.1016/j.jbankfin.2016.04.006

Booth, J. R., Cornett, M. M., & Tehranian, H. (2002). Boards of directors, ownership, and regulation. *Journal of Banking & Finance, 26*(10), 1973-1996. 10.1016/S0378-4266(01)00181-9

Bouteska, A., & Mefteh-Wali, S. (2021). The determinants of CEO compensation: new insights from United States. *Journal of Applied Accounting Research, 22*(4), 663-686. 10.1108/JAAR-08-2020-0176

Boyd, B. K. (1994). Board control and ceo compensation. *Strategic Management Journal; Strat.Mgmt.J, 15*(5), 335-344. 10.1002/smj.4250150502

Conyon, M. J., & Peck, S. I. (1998). Board Control, Remuneration Committees, and Top Management Compensation. *Academy of Management Journal, 41*(2), 146-157. 10.2307/257099

Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics, 51*(3), 371-406. 10.1016/S0304-405X(98)00058-0

Daily, C. M., Johnson, J. L., Ellstrand, A. E., & Dalton, D. R. (1998). Compensation Committee Composition as a Determinant of CEO Compensation. *Academy of Management Journal, 41*(2), 209-220. 10.2307/257103

Denis, D. J., & Xu, J. (2013). Insider trading restrictions and top executive compensation. *Journal of Accounting & Economics, 56*(1), 91-112. 10.1016/j.jacceco.2013.04.003

Edmans, A., & Gabaix, X. (2016). Executive Compensation: A Modern Primer. *Journal of Economic Literature, 54*(4), 1232-1287. 10.1257/jel.20161153

Eisenhardt, K. M. (1989). Agency Theory: An Assessment and Review. *The Academy of Management Review, 14*(1), 57-74. 10.2307/258191

Fahlenbrach, R. (2009). Shareholder Rights, Boards, and CEO Compensation. *Review of Finance, 13*(1), 81-113. 10.1093/rof/rfn011

Finkelstein, S., & Hambrick, D. C. (1989). Chief executive compensation: A study of the intersection of markets and political processes. *Strategic Management Journal, 10*(2), 121-134. 10.1002/smj.4250100203

Gabaix, X., Landier, A., & Sauvagnat, J. (2014). CEO Pay and Firm Size: An Update After the Crisis. *The Economic Journal (London), 124*(574), F40-F59. 10.1111/ecoj.12084

Galbraith, J. K. (1985). *The new industrial state* (4th ed.). Houghton Mifflin.

Gong, J. J. (2011). Examining Shareholder Value Creation over CEO Tenure: A New Approach to Testing Effectiveness of Executive Compensation. *Journal of Management Accounting Research, 23*(1), 1-28. 10.2308/jmar-10105

Hambrick, D. C. (1991). THE SEASONS OF A CEO'S TENURE. *The Academy of Management Review, 16*(4), 719-742. 10.5465/AMR.1991.4279621

Hou, W., Priem, R. L., & Goranova, M. (2017). Does One Size Fit All? Investigating Pay–Future Performance Relationships Over the "Seasons" of CEO Tenure. *Journal of Management, 43*(3), 864-891. 10.1177/0149206314544744

Kimbro, M. B., & Xu, D. (2016). Shareholders have a say in executive compensation: Evidence from say-on-pay in the United States. *Journal of Accounting and Public Policy, 35*(1), 19-42. 10.1016/j.jaccpubpol.2015.08.003

Lamber, L. (2021, Aug 31,). CEOs promised to take pay cuts during the pandemic. Did they? *Fortune* https://fortune.com/2021/08/31/ceo-pay-cuts-covid-pandemic-salaries-compensation/

Lambert, R. A., Larcker, D. F., & Weigelt, K. (1993). The Structure of Organizational Incentives. *Administrative Science Quarterly, 38*(3), 438-461. 10.2307/2393375

Main, B. G. M., & Johnston, J. (1993). Remuneration Committees and Corporate Governance. *Accounting and Business Research, 23*, 351-362. 10.1080/00014788.1993.9729903

MCGUIRE, J. W., CHIU, J. S. Y., & ELBING, A. O. (1962). Executive Incomes, Sales and Profits. *The American Economic Review, 52*(4), 753-761.

Menard, S. W. (2002). *Applied logistic regression analysis* (2nd ed.). SAGE.

Mishel, L., & Khandra, J. (2021). *CEO pay has skyrocketed 1,322% since 1978* . (). https://www.epi.org/publication/ceo-pay-in-2020/

Murphy, K. J., & Jensen, M. C. (2018). The Politics of Pay: The Unintended Consequences of Regulating Executive Compensation. *Journal of Law, Finance and Accounting, 3*(2), 189-242. 10.1561/108.00000030

NASDAQ. (2017). *5600. CORPORATE GOVERNANCE REQUIREMENTS.* https://listingcenter.nasdaq.com/rulebook/nasdaq/rules/nasdaq-5600-series

NYSE. (2013). *Listen Company Manual.* https://nyseguide.srorules.com/listed-company-manual/document?treeNodeId=csh-da-filter!WKUS-TAL-DOCS-PHC-%7B0588BF4A-D3B5-4B91-94EA-BE9F17057DF0%7D--WKUS_TAL_5667%23teid-73

O'brien, R. M. (2007). A Caution Regarding Rules of Thumb for Variance Inflation Factors. *Quality and Quantity, 41*(5), 673-690. https://doi.org/10.1007/s11135-006-9018-6

Oehmichen, J., Jacobey, L., & Wolff, M. (2020). Have we made ourselves (too) clear?—Performance effects of the incentive explicitness in CEO compensation. *Long Range Planning, 53*(3), 101893. 10.1016/j.lrp.2019.101893

Osborne, J. W. (2015). *Best practices in logistic regression*. SAGE.

Schiehll, E., & Bellavance, F. (2009). Boards of Directors, CEO Ownership, and the Use of Non-Financial Performance Measures in the CEO Bonus Plan. *Corporate Governance : An International Review, 17*(1), 90-106. 10.1111/j.1467-8683.2008.00723.x

van Essen, M., Otten, J., & Carberry, E. J. (2015). Assessing managerial power theory: A meta-analytic approach to understanding the determinants of CEO compensation. *Journal of Management, 41*(1), 164-202. 10.1177/0149206311429378

Weisbach, M. S. (2007). Optimal Executive Compensation versus Managerial Power: A Review of Lucian Bebchuk and Jesse Fried's Pay without Performance: The Unfulfilled Promise of Executive Compensation. *Journal of Economic Literature, 45*(2), 419-428. 10.1257/jel.45.2.419

White, H. (1980). A Heteroskedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroskedasticity. *Econometrica, 48*(4), 817-838. 10.2307/1912934

Zajac, E. J., & Westphal, J. D. (1994). The Costs and Benefits of Managerial Incentives and Monitoring in Large U.S. Corporations: When is More not Better? *Strategic Management Journal, 15*(S1), 121-142. 10.1002/smj.4250150909

Zattoni, A., & Pugliese, A. (2021). Corporate Governance Research in the Wake of a Systemic Crisis: Lessons and Opportunities from the COVID-19 Pandemic. *Journal of Management Studies, 58*(5), 1405-1410. 10.1111/joms.12693

Zona, F., & Zamarian, M. (2021). The Behavioral Agency Model and Innovation Investment: Examining the Combined Effects of CEO and Board Ownership. *Group & Organization Management,* , 105960112110582. 10.1177/10596011211058276

Appendix

Appendix A. Variable's definition, sources and codes retrieved from the databases

Variable	Definition	Source®	Source's code
Pay_Cuts_i	Categorical variable which assumes the value of 1 if the CEO of a firm took a compensation cut in 2020; 0 otherwise	Execucomp	$TOTAL\_SEC\_PCT_i$
$CEO\_Ownership_i$	Percentage of total shares outstanding owned by the CEO	Execucomp	$SHROWN\_TOT_i$
CEO_Tenure_i	Time (in years) someone has been the CEO as of 31/12/2020	Execucomp	$\frac{LEFTOFC_i - BECAMECEO_i}{365}$
$CEO\_Duality_i$	Dummy variable which assumes the value of 1 when the CEO also assumes the role of Chairperson of the board; 0 otherwise	Execucomp	$PCEO_i$ & $TITLE_i$
$Insiders\_Ratio_i$	Percentage of independent members within the board of directors	ISS	$CLASSIFICATION_i$
$Board\_Ownership_i$	Percentage of total shares outstanding owned by the board of directors	ISS Compustat	$\frac{NUM\_OF\_SHARES_i}{CSHO_i}$
CC_Ratio_i	Percentage of compensation committee members within the board of directors	ISS	$COMP\_MEMBERSHIP_i$
$Var\_Employees_i$	Percentage change on the number of employees of a firm from 2019 to 2020	Compustat	$\frac{EMP_{i,t} - EMP_{i,t-1}}{EMP_{i,t-1}}$
ROA_i	Ratio of net income to total assets	Compustat	$\frac{NI_{i,t}}{AT_{i,t-1}}$
$Size_i$	Natural logarithm of total assets	Compustat	$AT_{i,t}$
$Industry_i$	Two-digit SIC code	Compustat	$SICCD_i$

Appendix B. Sample distribution across industries

SIC Code	Industry	Total
B	**Mining**	**33**
10	Metal	1
12	Coal	2
13	Oil & Gas	27
14	Nonmetallic Minerals, except Fuels	3
C	**Construction**	**20**
15	General Building Contractors	11
16	Heavy Construction, except Building	4
17	Special Trade Contractors	5
D	**Manufacturing**	**389**
20	Food & Kindred Products	28
21	Tobacco Products	1
22	Textile Mill Products	1
23	Apparel & Other Textile Products	8
24	Lumber & Wood Products	5
25	Furniture & Fixtures	8
26	Paper & Allied Products	8
27	Printing & Publishing	3
28	Chemical & Allied Products	74
29	Petroleum & Coal Products	9
30	Rubber & Miscellaneous Plastic Products	7
31	Leather Products	5
32	Stone, Clay & Glass Products	1
33	Primary Metal Industries	13
34	Fabricated Metal Products	18
35	Industrial Machinery & Equipment	51
36	Electronic & Other Electric Equipment	62
37	Transportation Equipment	27
38	Instruments & Related Products	55
39	Miscellaneous Manufacturing Industries	5
E	**Transportation & Public Utilities**	**89**
40	Railroad Transportation	4
42	Trucking & Warehousing	8
44	Water Transportation	7
45	Transportation by Air	10
47	Transportation Services	5
48	Communications	15
49	Electric, Gas & Sanitary Services	40
F	**Wholesale Trade**	**28**
50	Durable Goods	18
51	Nondurable Goods	10
G	**Retail Trade**	**62**
52	Building Materials & Gardening Supplies	2
53	General Merchandise Stores	9
54	Food Stores	1
55	Automotive Dealers & Service Stations	11
56	Apparel & Accessory Stores	9
57	Furniture & Home-furnishing Stores	2
58	Eating & Drinking Places	17
59	Miscellaneous Retail	11
H	**Finance, Insurance & Real Estate**	**266**
60	Depository Institutions	84
61	Non-depository Institutions	10
62	Security & Commodity Brokers	21
63	Insurance Carriers	41
64	Insurance Agents, Brokers & Service	7
65	Real Estate	6
67	Holding & Other Investment Offices	97
I	**Services**	**137**
70	Hotels & Other Lodging Places	2
72	Personal Services	4
73	Business Services	86
75	Auto Repair, Services & Parking	1
78	Motion Pictures	3
79	Amusement & Recreation Services	7
80	Health Services	15
82	Educational Services	4
87	Engineering & Management Services	15
K	**Non-classifiable Establishments**	**2**
99	Non-classifiable Establishments	2

Appendix C. NASDAQ – Corporate governance requirements

5605. Board of Directors and Committees

(a) Definitions

(2) "Independent Director" means a person other than an Executive Officer or employee of the Company or any other individual having a relationship which, in the opinion of the Company's board of directors, would interfere with the exercise of independent judgment in carrying out the responsibilities of a director. For purposes of this rule, "Family Member" means a person's spouse, parents, children, siblings, mothers and fathers-in-law, sons and daughters-in-law, brothers and sisters-in-law, and anyone (other than domestic employees) who shares such person's home.

IM-5605. Definition of Independence — Rule 5605(a)(2)

It is important for investors to have confidence that individuals serving as Independent Directors do not have a relationship with the listed Company that would impair their independence. The board has a responsibility to make an affirmative determination that no such relationships exist through the application of Rule 5605(a)(2). Rule 5605(a)(2) also provides a list of certain relationships that preclude a board finding of independence.

IM-5605-1. Majority Independent Board

Majority Independent Board. Independent Directors (as defined in Rule 5605(a)(2)) play an important role in assuring investor confidence. Through the exercise of independent judgment, they act on behalf of investors to maximize shareholder value in the Companies they oversee and guard against conflicts of interest. Requiring that the board be comprised of a majority of Independent Directors empowers such directors to carry out more effectively these responsibilities.

IM-5605-5. The Audit Committee Responsibilities and Authority *(continues)*

(d) Compensation Committee Requirements

(1) Compensation Committee Charter

Each Company must certify that it has adopted a formal written compensation committee charter and that the compensation committee will review and reassess the adequacy of the formal written charter on an annual basis. The charter must specify:

> (B) the compensation committee's responsibility for determining, or recommending to the board for determination, the compensation of the chief executive officer and all other Executive Officers of the Company;

IM-5605-5. The Audit Committee Responsibilities and Authority *(continues)*

(2) Compensation Committee Composition

(A) Each Company must have, and certify that it has and will continue to have, a compensation committee of at least two members. Each committee member must be an Independent Director as defined under Rule 5605(a)(2). In addition, in affirmatively determining the independence of any director who will serve on the compensation committee of a board of directors, the board of directors must consider all factors specifically relevant to determining whether a director has a relationship to the Company which is material to that director's ability to be independent from management in connection with the duties of a compensation committee member, including, but not limited to:

(i) the source of compensation of such director, including any consulting, advisory or other compensatory fee paid by the Company to such director; and

(ii) whether such director is affiliated with the Company, a subsidiary of the Company or an affiliate of a subsidiary of the Company.

IM-5605-6. Independent Director Oversight of Executive Compensation

Independent oversight of executive officer compensation helps assure that appropriate incentives are in place, consistent with the board's responsibility to act in the best interests of the corporation. Compensation committees are required to have a minimum of two members and be comprised only of Independent Directors as defined under Rule 5605(a)(2).

In addition, Rule 5605(d)(2)(A) includes an additional independence test for compensation committee members.

Appendix D. Additional analysis - summary statistics for all the variables

Variable	N	Mean	Std. dev.	Min	Q1	Q2	Q3	Max
Pay_Cut	410	-18.76	19.17	-99.99	-24.19	-12.40	-5.54	0.00
Decision Management								
CEO_Ownership	410	1.46	4.19	0.00	0.17	0.43	1.15	48.81
CEO_Tenure	410	10.04	8.07	2.00	4.42	7.70	12.70	50.03
CEO_Duality	410	0.41	0.49	0.00	0.00	0.00	1.00	1.00
Decision Control								
Insiders_Ratio	410	0.14	0.07	0.06	0.10	0.11	0.15	0.63
Board_Ownership	410	0.04	0.09	0.00	0.00	0.01	0.03	0.57
CC_Ratio	410	0.28	0.14	0.00	0.18	0.29	0.38	0.75
Public Outrage								
Var_Employees	410	-0.03	0.19	- 0.68	- 0.11	-0.02	0.03	1.20
Control Variables								
ROA	410	0.01	0.10	- 0.61	-0.01	0.01	0.05	0.71
Size	410	8.92	1.66	5.25	7.74	8.78	9.99	14.85
Industry	410	48.57	19.10	13.00	35.00	49.00	63.00	99.00

Notes: This table reports the summary statistics for the sample firms included in the regression. The sample contains 410 firm observations for the fiscal year of 2020. See Table 1 for detailed variable explanations.