Not Dirty Yet Not Green: CEO Incentives and Corporate Social Responsibility

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Abstract

We examine the impact of CEO incentives on corporate social responsibility (CSR). Using a sample of 1,416 U.S. firms from 2000 to 2018, we document that CEO pay-performance sensitivity negatively correlates with CSR strengths and CSR concerns individually. These findings suggest that CEOs can distinguish various types of CSR activities. When CEOs are aligned with shareholders, they act to avoid CSR controversies and also shun proactive CSR activities. In addition, we find CEO incentives also work in building firms' social and environmental profiles separately. Our results indicate that aligning CEO interests with shareholders remains an effective mechanism for deriving optimal CSR actions in today's stakeholder-centric world.

Keywords: Corporate Social Responsibility, Environmental, Social, CEO Compensation, Pay Performance Sensitivity

JEL Classification: G30, G34, G39, J33, M52

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1. INTRODUCTION

As extreme weather impacts the world more frequently and ferociously, governments, corporations, and individuals increasingly face the imperative situation of enhancing sustainability and fostering environmentally and socially responsible actions. At the United Nations Climate Ambition Summit 2023, the U.N. Secretary-General, António Guterres, called for aligning national and international plans and policies with credible and science-based targets. In the corporate world, 96% of S&P 500 firms released sustainability or corporate responsibility reports in 2022.¹ The mutual funds with environmental and social mandates received nearly \$70 billion in net flows in 2021, compared with an old record of \$5 billion in 2018.² In addition, more than 5000 institutional investors and service providers have signed onto the Principles of Responsible Investment (PRI), a UN-supported agreement to incorporate environmental and social issues into their investment analysis and decision-making processes. ³

As various parties ramp up their attention to environmental and social issues, academic research has expanded rapidly. According to Friede et al. (2015), more than 2000 published empirical papers have studied environmental and social issues in management, accounting, finance, and economics. Gillan et al. (2021) define Corporate Social Responsibility (CSR) as the corporate activities that refer to being environmentally and socially responsible and a better corporate citizen. They review the CSR research in corporate finance and summarize the variables that contribute to or are influenced by corporations' CSR performance. Such factors include the markets the firm operates in (Cai et al., 2016; Liang & Renneboog, 2017b), the board and executive characteristics (Borghesi et al., 2014; Ferrell et al., 2016; Iliev & Roth, 2021), the ownership structure (Abeysekera & Fernando, 2020; Gillan et al., 2010; Hong & Kostovetsky, 2012; McGuinness et

¹ https://www.ga-institute.com/research/ga-research-directory/sustainability-reporting-trends/2022-

sustainability-reporting-in-focus.html

² https://www.morningstar.com/articles/1076648/sustainable-fund-flows-dip-for-the-quarter-but-peak-for-the-year

³ https://www.unpri.org/signatories/signatory-resources/signatory-directory

al., 2017), firm risk and the cost of capital (Goss & Roberts, 2011; Hong & Liskovich, 2015; Oikonomou et al., 2012), and firm performance and valuation (Di Giuli & Kostovetsky, 2014; Hong & Kacperczyk, 2009; Liang & Renneboog, 2017a; Servaes & Tamayo, 2013).

The strand of research that focuses on the impact of executives on CSR practices recognizes the unique position of management in corporate decision-making. As agents for the shareholders and other stakeholders, CEOs are authorized to execute essential firm decisions, including CSR activities. Prior papers have concluded that firms with female executives, married CEOs, CEOs with a daughter, and executives with a political leaning toward the Democrats are associated with higher CSR performance (Borghesi et al., 2014; Cronqvist & Yu, 2017; Di Giuli & Kostovetsky, 2014; Hegde & Mishra, 2019). Yet, under-addressed questions remain. How are CEOs' interests related to CSR practices? Are CEOs able to distinguish distinctive types of CSR decisions? Does the CEO compensation incentivize them to reduce socially disapproved actions? Do CEOs go beyond what is required by norms and regulations and engage in proactive CSR activities?

Following the executive compensation literature, we define CEO incentives as the dollar change in the CEO's equity portfolio in response to a 1% change in the stock price, commonly referred to as CEO pay-performance sensitivity (PPS). Using a sample of 1,416 U.S. firms from 2000 to 2018, we find that the CEO PPS is significantly and negatively related to both CSR concerns and strengths. The results remain qualitatively unchanged with alternative CSR and compensation measures and are robust to various endogeneity tests.

CSR concerns capture negative environmental and social practices such as toxic emissions and waste, controversial biodiversity and land use, and human rights concerns. As we learned from the notorious B.P. oil disaster and Volkswagen's "Dieselgate" case, such problems and scandals expose firms to legal disputes, class actions, and substantial regulatory scrutiny. Avoiding CSR weaknesses and concerns will reinforce the firms' legitimacy and prevent them from catastrophic reputation damages and considerable financial losses. On the other hand, CSR strengths reflect positive environmental and social actions such as opportunities in clean tech, emission and waste management, and labour health and safety. While investing in these proactive social and environmental activities may build goodwill, reputation, and social insurance that benefit firms,

firms may overinvest and waste resources that could be used in other valuable investments such as R&D.

Our findings suggest that when CEOs' personal interests are aligned with the firms', they tend to shun CSR practices that are either too dirty or too green. The significantly negative impacts of CEO PPS on CSR strengths and concerns reveal that CEOs, as corporate insiders, can distinguish different types of CSR actions. Those executives who are better aligned with shareholder interests act to reduce firms' exposure to legal and regulatory risks on environmental and social aspects. At the same time, they shy away from green investments beyond the minimum requirements to reduce the misuse of corporate resources, potentially leading to value-destroying for the firm. The alignment of the executives' interests with those of the shareholders makes the CEO choose activities that engage in the neutral or optimum level of CSR investments.

We further slice the CSR strength and concern scores into the environmental and social subcategories. Our results show that the CEO pay-performance sensitivity is not only negatively correlated with environmental strengths and concerns but also negatively associated with social strengths and concerns in a comparable manner. This result is consistent with the choices made by institutional investors when they stay away from the stocks with high environmental risk exposure and those with high environmental greenness (Fernando et al., 2017). Therefore, our paper supports the relevance and effectiveness of CEO incentives. CEO compensation remains a useful tool for aligning executives' interests with those of the shareholders when making CSR decisions.

In addition, we explore potential factors that moderate the negative relationship between the CEO PPS and the CSR strengths and concerns. We find that a corporate environment with high managerial entrenchment and strong CEO power will diminish the effective reduction of CSR controversies attributed to CEO incentives. However, CEO of firms with substantial free cash flow, where executives enjoy more leniency and less monitoring of corporate spending, do not focus on CSR decisions. We conclude that aligning CEO interests with shareholders remains an effective mechanism in deriving the optimal CSR actions in today's corporate world, where stakeholder welfare attracts increasing attention.

The rest of the paper comprises the following: Section 2 presents the literature review and hypothesis development. Section 3 introduces the data and key variables. Section 4 discusses the

empirical analysis and findings, and additional analysis is discussed in Section 5. Lastly, Section 6 concludes.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1 Executive Compensation as Governance Mechanism

When shareholders delegate the management functions to executives, agency issues become inevitable in a corporation. Executive compensation serves as an internal mechanism to mitigate agency problems. Bebchuk & Weisbach (2010) review the corporate governance research and summarize the evidence supporting the optimal contracting view, which considers executive compensation an efficient mechanism for mitigating agency problems (Kaplan & Rauh, 2010; Murphy & Zabojnik, 2007). Bebchuk & Fried (2003) also identify weak pay for performance (pay without performance) as a proxy for firm agency problems and regard it as a symbol of bad governance and incentive misalignment.

While aligning the CEO's compensation with shareholders' wealth has been an effective means of corporate governance, its distinctive role from the CSR perspective is under-investigated. Borghesi et al. (2014), Deckop et al. (2006), and McGuire et al. (2003) use the annual dollar amount and the percentage of a single component in the CEO annual compensation to examine the impact of CEO compensation on CSR. A problem with such measures is that they fail to capture the primary monetary alignment between the CEO and the shareholders. As noted in Jensen & Murphy (1990) and Hall & Liebman (1998), it is the changes in the value of the CEO's equity portfolio in response to the firm value, i.e. equity incentives, not the annual flow compensation, accounts for the majority variations motivating executives to increase stock prices.

Using a dummy variable to capture the alignment between CEO compensation and shareholder returns, Ferrell et al. (2016) provide limited evidence that CEO incentives lead to higher CSR scores. However, a binary measure can only identify a connection between two variables; it cannot capture the magnitude of the alignment. McGuire et al. (2019) explore a continuous measure of CEO pay-performance sensitivity and its relationship with firms' CSR performance. While they capture the incentive mechanism built into the CEO compensation package to reduce agency issues,

McGuire et al. (2019) suffer a few empirical testing problems. Their regression results are only based on a small sample with 84 large U.S. firms and 467 firm-year observations. They have yet to verify whether the regression results are robust enough to address the potential endogeneity issue. As a result, how CEO incentives influence the firm's CSR actions and choices remains a largely unanswered question.

2.2 Heterogeneity of CSR Activities

According to the shareholder perspective of corporate governance, firms should maximize shareholders' value. Any endeavours of internalizing the externalities relevant to other stakeholders such as employees, suppliers, customers, and communities indicate a waste of corporate resources and manifest the agency issues inside the firm (Benabou & Tirole, 2010; Borghesi et al., 2014; Friedman, 1970; Jensen & Meckling, 1976; Masulis & Reza, 2015).

However, the stakeholder perspective argues firms' responsibilities go beyond maximizing shareholder wealth to include the welfare of all stakeholders (Freeman, 1984). Gillan et al. (2021) summarize that catering to the expectations of all stakeholders enhances long-term firm value by improving firms' operational performance, reducing the cost of capital, or maximizing shareholder utility. For instance, Dai et al. (2021) report that socially responsible customers lead to better CSR performance, improved operational efficiency and firm valuation in their suppliers. Edmans (2011) documents that employee satisfaction positively correlates with shareholder returns and creates value. Lins et al. (2017) show that better CSR firms build trust with stakeholders, and such social capital becomes extremely valuable during a crisis.

A potential explanation for the mixed picture of CSR lies in the heterogeneity of CSR activities. CSR activities are investments rather than the pure cost of business. Firms conduct a cost-benefit analysis when making CSR decisions. More importantly, different CSR activities entail distinctive cost and benefit implications. Some CSR activities aim to avoid socially disapproved behaviours. Such dubious or risky behaviours will lead to lawsuits, regulatory fines and penalties. Consequently, avoiding CSR scandals and concerns will positively affect firm performance and resources. Other CSR activities invest in proactive environmental and social activities that signal firms' caring for the community and the environment, enhance their greenness, and boost their reputation. However, overspending resources on such CSR activities that go beyond the legal requirements and risk management justifications may cost the firms more than the benefit those activities seek to obtain and consequently will yield inefficient or unwanted results.

Prior studies prove that the investors and the capital market can distinguish the two types of CSR activities. Kappou & Oikonomou (2016) document a negative market reaction to a firm's deletion from the environmental and social-friendly index but no significant market reaction to a firm being added. Oikonomou et al. (2012) find that firms with high social controversies are associated with higher systematic risk, but no relationship exists between social strength and firm risk. Krüger (2015) reports that the market reacts negatively to negative sustainability events; however, there is no significant market reaction to positive sustainability events. In addition, Fernando et al. (2017) report that institutional investors distinguish among different CSR policies and invest less in toxic or green firms than neutral ones. Furthermore, they also find that toxic firms have significantly lower Tobin's Q than neutral firms, and green firms do not increase shareholder value either.

At the centre of corporate operations and investment decision-making, CEOs must possess more cost-benefit information than investors about CSR activities. Do they react differently to the two types of CSR activities? Most importantly, how do CEOs impact the firms' CSR profiles when their interests are aligned with shareholders and other stakeholders?

2.3 Hypothesis Development

It is critical to recognize not all CSR investments are equivalent. The current literature does not focus on distinguishing the two types of CSR activities or provide insight into how CEO incentives influence firms' distinctive CSR choices. We categorize firms' CSR activities into two types: avoiding CSR concerns and promoting CSR strengths. CSR concerns highlight negative environmental and social activities, including toxic emissions and waste, controversial biodiversity and land use, and human rights concerns. CSR strengths capture the positive environmental and social indicators in the material CSR issues, such as opportunities in clean tech, emission and waste management, and labour health and safety.

Although both CSR activities are considered environmentally and socially responsible, we argue they have distinctive cost and benefit implications. CSR concerns capture controversies that make the firms prone to legal disputes and regulatory scrutiny. Any potential benefits or cost savings by engaging in these environmental and social wrong-doings or negligence are not anywhere near the reputation damage and consequent financial losses associated with the violations of regulations (Flammer, 2013; Karpoff et al., 2005). For instance, the Deepwater Horizon oil spill in the Gulf of Mexico, also known as the B.P. oil disaster, in 2010 is considered one of the worst environmental disasters in U.S. history. B.P. faced thousands of lawsuits in the aftermath, and its total financial costs related to the disaster, including fines, settlements, and cleanup costs, have been estimated to exceed \$65 billion.⁴ Another notorious CSR scandal broke out in 2015 when Volkswagen allegedly installed software in diesel engines to cheat emissions tests. The company faced numerous lawsuits and a massive class action, later settling for more than 10 billion dollars.⁵

Suchman (1995) defines legitimacy as "a generalized perception or assumption that the actions of an entity are desirable, proper, or appropriate within some socially constructed system of norms, values, beliefs, and definitions." In the CSR context, the legitimacy theory predicts that firms will strive to avoid controversies that may erode their reputation as responsible corporate citizens, particularly shun scandals that may lead to legal and regulatory punishments and catastrophic financial losses.

In the above scandals, CEOs faced resignation and significant direct and indirect reductions in compensation, such as clawbacks of previous compensation, reductions in future pay, and considerable personal wealth shrinkage due to the reduced value of their equity portfolios. Based on the literature, we consider that executive compensation, especially the CEO pay-performance sensitivity, is designed to align the CEO's interests with the firm. The higher the CEO pay-performance sensitivity, the more relevant the firm's financial performance is in the CEO's decision-making and the less likely the CEOs are to engage in CSR concerns that will expose the firm to lawsuits, litigation, and regulatory scrutiny. This leads to our first hypothesis:

Hypothesis 1: The higher the CEO pay-performance sensitivity, the lower CSR concerns.

On the other side, CSR strengths depict discretionary activities that go beyond the requirements mandated by law and regulation. While investing in these proactive social and environmental

⁴ https://www.reuters.com/article/world/bp-deepwater-horizon-costs-balloon-to-65-billion-idUSKBN1F5005/

⁵ https://www.justice.gov/opa/pr/volkswagen-spend-147-billion-settle-allegations-cheating-emissions-tests-and-deceiving

activities may build goodwill, reputation and social insurance that benefit firms, firms may overinvest or misuse resources which could be used in other valuable investments such as R&D. Fernando et al. (2017) argue that actions to enhance a firm's CSR strengths may create tangible social benefits. Still, such actions may not produce financial benefits beyond incremental costs. They further document that firms increasing greenness do not create shareholder value, and institutional investors shun such stocks. In addition, Kappou & Oikonomou (2016) and Krüger (2015) also report muted market reactions to the positive sustainability events.

Furthermore, the overinvestment view argues that proactive actions to enhance CSR greenness, particularly those beyond regulation or legitimacy justifications, manifest the agency issues. Barnea & Rubin (2010) assert that the shareholders bear the cost of excessive investments in CSR while the benefits accrue to executives. Consistent with the overinvestment perspective, investments in CSR activities that aim to increase CSR strength are perceived as undesired by the shareholders and the stakeholders. Therefore, better-aligned CEO compensation schemes reduce the agency problem in the firm and curtail the overinvestment issues, leading to reduced CSR strengths. This leads to our second hypothesis:

Hypothesis 2: The higher the CEO pay-performance sensitivity, the lower CSR strengths.

3. DATA AND VARIABLES

3.1 CSR Data

Our primary data on the firms' CSR scores, our key dependent variables, are collected from the MSCI ESG KLD STATS database, formerly known as KLD (Chen et al., 2020; Hong & Kostovetsky, 2012; Ng & Rezaee, 2015). This database has been widely used in previous studies to examine agendas related to CSR performance as it provides access to the negative and positive environmental, social, and governmental (ESG) data and ratings for the 3000 largest U.S.-based public companies that are part of the major MSCI world indices. Although the KLD dataset starts in 1999, complete coverage, including 2000+ companies and their respective ESG performance records, begins in 2003. We consider the following six categories of environmental and social activities to construct our CSR scores following Borghesi et al. (2014), Hegde & Mishra (2019),

and Bu et al. (2021): community, diversity, product, employee relations, human rights, and environment. Then, we further group the first five categories into the social (*SOCIAL*) score to contrast them with the environmental (*ENVIRONMENT*) dimension.

The KLD database quantifies these categories in a binary format to measure strengths and concerns. Strength indicators constitute positive CSR activities, such as investment in innovations (sources of clean technologies or renewable energy) and pollution prevention. In contrast, concern indicators constitute negative CSR activities, such as toxic emissions of waste and controversies in investments. We define the overall environmental and social strength score (*STRENGTH*) as the sum of positive indicators, including community, diversity, product, employee relations, human rights, and environment. The overall concern score (*CONCERN*) is the sum of negative indicators across all six categories.

One advantage of using the KLD database is that it offers separate measures of CSR strengths and concerns. Following Fernando et al. (2017), we use *STRENGTH* to measure the CSR activities that go beyond risk management justifications and legal requirements and use *CONCERN* to gauge the CSR activities falling short of risk management justifications and legal requirements. *STRENGTH* capture proactive CSR actions that intend to boost a firm's reputation and enhance social capital but potentially overinvest or misuse firm resources that could have been used in other investments such as R&D. On the other hand, *CONCERN* measure CSR controversies and hazards that are prone to lawsuits, fines and class actions.

Lins et al. (2017) identify the maximum number of c and concerns variation over time for all six categories. For example, the maximum number of strengths in 2015 was 16 for the environment category, whereas in 2005, it was only 5. We complement our primary strength and concern measures with alternatives to normalize the impact of the varying maximum scores over the years. We divide the raw strength (concern) by the maximum possible strength (concern) for each CSR category in the year following Amin et al. (2020) and Lins et al. (2017). The *SCALED STRENGTH* (*CONCERN*) is the sum of the normalized strength (concern) scores across all six categories.

3.2 CEO Pay-performance Sensitivity

Consistent with prior literature (Coles et al., 2006; Core & Guay, 2002; Dunbar et al., 2020), we define CEO incentives as the dollar change (in \$000s) of the CEO's equity portfolio for a 1% change in the firm's stock price (CEO pay-performance sensitivity), applying the Black & Scholes (1973) option valuation model with Merto's (1973) modification for dividends. Following Dunbar et al. (2020), we download CEO pay-performance sensitivity (*DELTA*) data from Dr. Lalitha Naveen's website.⁶ Hence, *DELTA* proxies for the CEO pay-performance sensitivity, capturing the dollar change in the executive's equity portfolio for their performance. According to Coles et al. (2013), *DELTA* effectively measures the alignment between the CEO and the shareholders. An increase in *DELTA* indicates that CEOs are better incentivized to maximize the firm's value.

In line with McGuire et al. (2019) and Brick et al. (2012), we use the logarithm of the delta measure, *log(DELTA)*, as our key independent variable in all our regressions to get rid of high kurtosis and skewness. We also employ an industry-adjusted measure to verify our results' robustness. To construct the alternative measure, we first calculate the median of the delta by each industry and year. Then, we divide the difference between the firm's delta and the year and industry median by the latter to get the industry-adjusted delta measure, *DELTA_adj*. This industry and year-wise normalized measure is constructed because executive compensation is greatly influenced by industry practices and the market condition over the years (Murphy, 2013). For instance, executives in high-tech firms are compensated well by equity grants compared to other non-tech firms and bear markets.

3.3 Control Variables

Following the literature, we include control variables commonly used and important in CSR studies. We classify these variables into firm-level variables, corporate governance measures, and CEO characteristics.

We control for firm-level fundamentals (firm size, firm age, cash, market-to-book, profitability, tangibility, R&D, leverage, stock return, institutional ownership, advertising expenses), as often

⁶ Coles et al. (2013) review the compensation data reporting change in *Execucomp* due to the accounting rule changes imposed by the Financial Accounting Standards Board (FASB). As a result, the option deltas in the CEO's equity portfolio must be computed differently pre-2006 vs. post-2006. Thanks to Dr. Lalitha Naveen who posted the compensation incentive measures on the website and for Dr. Jeff Coles and his research assistant Jie Yang for updating the data, we download the delta measure from this website https://sites.temple.edu/Inaveen/data/.

the prior financial performance of the firms is correlated with CSR scores (Bu et al., 2021; Deckop et al., 2006; McGuire et al., 2019). Prior literature has also documented that CSR scores are associated with corporate governance measures such as board size, tenure, and independence (Benabou & Tirole, 2010; Gillan et al., 2021; Iliev & Roth, 2021). We also control for CEO duality and gender as they have been well-documented to impact CSR performance (Borghesi et al., 2014; Cronqvist & Yu, 2017; Hegde & Mishra, 2019).

Data on firm fundamentals are obtained from the Compustat database, while variables such as stock return and firm age are constructed using the CRSP database. Information on institutional ownership is retrieved from the Thomson Reuters 13F database. The corporate governance and CEO information are obtained from the BoardEx and Execucomp databases. Variable descriptions are available in Appendix A.

4. EMPIRICAL ANALYSIS

4.1 Description Statistics

After merging all the datasets, the initial sample consists of 3,405 firms and 44,337 firm-year observations from 2000 to 2018. Following Jian & Lee (2015), we eliminate observations that belong to firms in the regulated industry (SIC code – 4900 to 4999) and financial industry (SIC code – 6000 to 6999). We also delete the observations with missing variables, reducing our final sample to 1,416 firms and 11,726 firm-year observations. We further winsorize all the variables at 1% and 99% levels and lag the independent variables by one year to mitigate endogeneity and reverse causality concerns. Table 1 reports the descriptive statistics of the primary variables in our sample.

The mean (median) values of *STRENGTH* and *CONCERN* are 1.73 (1.00) and 1.23 (1.00), respectively. There are significant variations among firms in both variables, with *STRENGTH* (*CONCERN*) ranging from 0 (0) to 11 (8). They are comparable to the values reported by Amin et al. (2020) and Dunbar et al. (2020). The data indicates that the average firm in our sample has slightly more CSR strengths than concerns. After factoring in the maximum possible strengths (concerns) per category and year, the scaled strength (concern) measure has an average of 0.30

(0.32), indicating comparable levels of positive and negative CSR indicators for the average sample firm.

The average (median) estimates of *DELTA* show that CEO's incentive for performance increases by \$715,560 (\$245,990) for a 1% increase in stock price, which is consistent with the statistics reported by Dunbar et al. (2020) and McGuire et al. (2019). The CEO variables in our sample show that the CEOs have an average age of 56 years and have served in their role for an average of 7.11 years. It also shows that 53% of CEOs in our sample firms also act as chairpersons of the board, and about 3% of CEOs are female. In addition, the statistics suggest that, on average, the sample firms have 17% cash in proportion to book asset value, leverage of 20%, profitability of 14% and a market-to-book ratio of 3.44. Moreover, the average board has nine members with 8.57 years of board experience. 78% of the board members are not affiliated with the firm.

According to the prior literature, CSR measures vary greatly across industries. Following Dunbar et al. (2020), we categorize the industries into the following: basic industry, capital goods, construction, consumer durables, food and tobacco, leisure, petroleum, unregulated utilities, services, textiles and trade, transportation, and others. Table 2A reports the number of observations classified by the industries, which shows the top three industries with the most observations are consumer durables (17.93%), capital goods (17.78%), and services (16.96%). Tables 2B and 2C display the industry rankings according to *STRENGTH* and *CONCERN*. Interestingly, some industries score relatively higher than others on positive and negative CSR dimensions, while others score lower on both. For example, the food and tobacco industry ranks first with strength indicators and second with concern indicators. Similarly, the Petroleum industry ranks fourth and first on *STRENGTH* and *CONCERN*, respectively. Such an observation reveals that some firms associated with environmental and social controversies are not necessarily acting to mitigate these risk factors but rather engaging in proactive CSR activities that may overinvest or misuse firm resources.

4.2 **Baseline Regressions**

We apply the following regression model to examine the impact of CEO incentives on firms' CSR positive and negative scores while controlling other well-documented determinants.

CSR strength/concern score = f (Delta, CEO Characteristics, Firm Fundamentals, Governance Characteristics, Industry and Year fixed-effects)

The dependent variables and the primary independent, capturing the CEO's pay-performance sensitivity, have been explained in Section 3. Control variables depict factors featuring firms' fundamentals, corporate governance, and other CEO characteristics. All the explanatory variables are lagged one year to mitigate the reverse causality concerns. In addition, we also control for industry and year effects in all our regressions, as CSR practices differ across industries and years (McGuire et al., 2003). Robust standard errors are clustered at the firm level.

Table 3 reports the regression results of our baseline model. Regressions (1) and (2) use our primary dependent variables, STRENGTH and CONCERN, which capture the firm's positive and negative indicators, respectively, combining all six CSR dimensions, i.e. community, diversity, product, employee relations, human rights, and environment. Consistent with our hypotheses, we observe significantly negative relationships between CEO pay-performance sensitivity and strengths and concerns. The coefficients of the delta measure are statistically significant at the 1% level and economically meaningful. In Regression (1), the point estimate for the log of delta is -0.0782. It indicates that a one-standard-deviation increase in pay for performance sensitivity (1.42) is associated with a 0.11 (-0.0782x1.42) decrease in the strength measure, or 6.36% lower at the mean score (0.11/1.73). Therefore, the regression result supports our hypothesis that a high payperformance sensitivity discourages CEOs from taking proactive environmental and social actions. Such a finding is consistent with the small sample result reported by McGuire et al. (2019). Coupled with evidence documented by Fernando et al. (2017), our result indicates that when CEOs' incentives are better aligned with shareholders via their compensation packages, they will make decisions to avoid misusing firm resources in CSR practices beyond legitimacy justifications and regulatory requirements.

In addition, Regression (2) indicates that a high pay-performance sensitivity will motivate CEOs to curb CSR concerns. The coefficient for the log of delta in the second specification is -0.0552, meaning that a one-standard-deviation increase in CEO pay-performance sensitivity (1.42) results in a 0.08 (-0.0552x1.42) decrease in the concern measure or 6.50% lower at the mean score (0.08/1.23). CSR investments that reduce firm exposure to lawsuits, controversies, and fines have

proven to decrease the cost of financing expenses, underinvestment and financial distress, resulting in value enhancement for all shareholders and stakeholders. Collectively, our results point out that when CEOs are incentivized for their performance, they invest in neutral CSR activities, which reduce legal and regulatory risks and, at the same time, curb misuse of corporate resources.

We further replace the strength and concern variables with their alternative measures, *SCALED STRENGTH* and *SCALED CONCERN*, in Regression (3) and (4). The results are qualitatively unchanged, indicating our findings are robust enough to adjust for the maximum strength and concern indicators each year.

In addition, several of our control variables have explanatory power of strengths and concerns in the regressions. Firms that are older, larger, and have a high cash balance, low leverage, and low institutional ownership are associated with more CSR strengths and concerns. Firms with high R&D or advertising expenses only take actions to increase their CSR positive indicators but are indifferent to CSR negative indicators. Interestingly, firms with a female CEO are more likely to engage in proactive CSR practices to promote strengths but also take actions to avoid CSR concerns that could expose the firms to legal and regulatory troubles. When the CEO takes the dual role of the Chairperson on the board, firms are associated with more CSR concerns, but duality has no impact on CSR strengths. Along the corporate governance dimensions, more independent directors generally increase both strengths and concerns. Larger boards tend to increase strengths but reduce concerns. Our findings are consistent with those of Borghesi et al. (2014), who state that CSR investments are affected by multiple firms, governance, and executive characteristics. Our findings emphasize a significant but long-missed point in the literature: CSR strengths and concerns are driven by different dynamics; therefore, they should be analyzed separately. Most importantly, CEO incentives are essential in determining firms' positive and negative CSR practices, among other factors.

4.3 Robustness Check

Next, we conduct various tests to ensure our findings are robust to alternative incentive measures and endogeneity concerns.

4.3.1 Alternative Incentive Measure

In Table 4, we replicate the settings of Table 3, replacing only our key independent variable, log_DELTA , with an industry-adjusted delta, $DELTA_adj$. The purpose is to check the robustness of the results after adjusting for the industry and year effect on the CEO compensation. All the independent variables, including this new delta measure, are lagged by one year. Congruent with our previous findings, Regressions (1) – (4) present a consistent negative correlation between the industry and year-adjusted pay-performance sensitivity with CSR strengths and concerns. The coefficients of the alternative delta for concerns and scaled concerns, as shown in Regressions (2) and (4), are statistically significant at 5%. The coefficient for strengths in Regression (3) becomes insignificant. These results reveal that higher than industry-median CEO pay-performance, as the downside of CSR concerns can result in more prominent adverse outcomes than the gains of CSR strengths (McGuire et al., 2019). Overall, the regression results using the alternative industry and year-adjusted CEO pay-performance sensitivity are qualitatively consistent with our main findings.

4.3.2 Endogeneity Analysis

We employ the two-stage least squares regressions with instrumental variables (IVs) to address potential endogeneity concerns about omitted variables and reverse causality. We need to find relevant and valid instruments to conduct the IV test. These conditions require that the instruments be correlated with the suspected endogenous independent variable (*log_DELDA*). At the same time, the instruments should be related to the dependent variable (*STRENGTH* and *CONCERN*) only through the endogenous independent variable.

Many theoretical and empirical studies posit that managerial compensation is an endogenous response to the contracting environment (Holmstrom, 1979; Holmstrom & Milgrom, 1991; Jensen & Murphy, 1990). Following Palia (2001), we use CEO age and tenure as instruments for CEO compensation. CEO age and tenure are expected to capture the CEO's experience and career

concerns and explain the variations in CEO pay-performance sensitivity. Conversely, CEO age and tenure are not connected to firms' CSR actions in any obvious way.⁷

We report the regression results of both stages and the diagnostic tests in Table 5. In the first stage, we regress *log_DELTA* on CEO age and tenure. The regression result is reported in Column (1) and duplicated in Column (3). CEO age and tenure are significantly correlated with the CEO payperformance sensitivity, with younger CEOs and CEOs with a longer tenure contracting with a higher delta. In the second stage, the predicted value of the first stage, *log_DELTA_L1_hat*, is used to explain CSR strengths and concerns, with the corresponding results reported in Columns (2) and (4), respectively. Estimates of both second-stage regressions support our previous findings that the higher the CEO incentives, the lower the CSR strengths and concerns. The coefficients of the predicted delta measures are statistically significant at the 1% level, and the magnitudes are even stronger than those in Table 3.

The diagnostic tests are reported at the bottom of Table 5. We first perform under-identification and weak-identification tests on our two IVs to ensure our choice of IVs is appropriate. The Kleibergen-Paap rk L.M. and Kleibergen-Paap rk Wald F statistics reject the null hypothesis that the IVs are irrelevant. In addition, the Hansen J statistics in the over-identification test suggest that we cannot reject the null hypothesis that the two IVs are exogenous. Overall, these results indicate that our IVs are both relevant and valid, which supports the robustness of our findings against the endogeneity concerns.

5. ADDITIONAL ANALYSIS

5.1 CEO Pay-performance Sensitivity on CSR Subcategories

So far, we have established that CEO incentives lead firms to reduce both positive and negative CSR indicators. As described in Section 3, both strength and concern measures combine environmental and social dimensions. Fernando et al. (2017) focus on environmental performance

⁷ Although there are papers documenting younger CEOs are more likely to invest in CSR (Borghesi et al., 2014), there also exist papers reporting a mixed correlation or no relationship between CEO age and CSR (Dunbar et al., 2020; McGuire et al., 2019). In unreported regressions, we find neither CEO age nor CEO tenure has direct impact on CSR activities in our sample. We will further conduct diagnostic tests to confirm the validity of the instruments.

only and document institutional ownership and value implications for those with different environmental strengths and concerns. To our knowledge, no studies have investigated the strengths and concerns of environmental and social subcategories separately. It will be interesting to examine whether the negative relationships exist when we split the combined strength and concern measures into social strengths, environmental strengths, social concerns, and environmental concerns.

Table 6 reports the split regression results. All regressions point to the consistent conclusion that high CEO incentives lead to reduced environmental and social investments, which aim to boost the firm's positive indicators. At the same time, high CEO incentives also curtail environmental and social concerns, which may expose the firm to litigation risk and regulation scrutiny. The result indicates that CEOs do not differentiate the root cause of the CSR activities.

Most control variables behave similarly when explaining social indicators vs. environmental indicators. As an outlier, the CEO's gender only significantly impacts the social dimension while remaining irrelevant to the environmental indicators. Firms with a female CEO engage in social practices promoting social strengths and simultaneously act to reduce social controversies. This finding complements the prior research studying the CEO's gender and the firm's overall CSR performance.

5.2 Mitigating Factors in the PPS and Strength/Concern Relationship

Our main findings reveal that CEOs, as corporate insiders, can distinguish CSR actions that mitigate firm risks and lawsuits from those that go beyond what is mandated by laws and regulations. When CEOs are incentivized by their compensation and equity portfolios, in particular, they tend to make decisions aligned with shareholders and stakeholders. How will they react differently when the corporate environment brings them more power? We intend to investigate this question next.

We capture the dynamics of corporate governance and CEO power with two new measures, CEO entrenchment and firms' free cash flow, as well as one previously used variable, CEO duality. Then, we interact with each of them using *log_DELTA*. Following Lins et al. (2017) and Bebchuk et al. (2009), we construct the entrenchment index as the summation of a poison pill, a classified board,

a golden parachute, a supermajority requirement for amending by-laws and charter, and other antitakeover provisions. A high entrenchment dummy of one (*High Entrenchment*) is assigned to the firms with above median managerial entrenchment, which indicates strong CEO protection and consequently more CEO power. In addition, we measure Free Cash Flow as earnings before interest and tax plus depreciation and amortization minus capital expenditures and change in working capital as a percentage of total assets. *High FCF* equals one for the firms with above median free cash flows and zero otherwise. Prior papers (Ferrell et al., 2016; Masulis et al., 2009) argue that firms with abundant free cash flows provide managers more latitude in spending and, therefore, are associated with more agency problems. Hence, a higher value of these three measures indicates more agency problems and a stronger CEO power. The coefficients of the three interaction terms should capture any mitigating effect of the CEO pay-performance sensitivity on CSR strength or concerns.

Table 7 reports the regressions of CSR strengths and concerns on our primary independent variable, *log_DELTA*, and its interaction with the above three governance measures, one at a time. The coefficients of these three measures and those of the original control variables have been suppressed to save space. First and foremost, the negative relationship between CEO pay-performance sensitivity and strengths/concerns remains statistically significant at the 1% level in all regression specifications. Interestingly, the interaction terms in Models (2) and (4) are significantly positive at the conventional level. We interpret the result as the diminishing effect of CEO incentives on curtailing CSR concerns when the CEO becomes entrenched and enjoys more power. Nevertheless, entrenchment and duality do not impact the effectiveness of CEO incentives on controlling investments on CSR strengths, as shown in Models (1) and (3). In addition, Models (5) and (6) show that substantial free cash flow does not affect the relationship between CEO incentives and CSR decisions. In summary, we argue that aligning CEO interests with shareholders remains effective for executives to make appropriate CSR decisions, although limits exist in some circumstances.

6. CONCLUSION

This study complements the developing literature on CSR investments by emphasizing the role of CEO incentives on corporate environmental and social policies. Our findings reveal that CEOs distinguish between distinctive types of CSR activities, i.e. CSR controversies that lead to legal and regulatory reckoning vs. proactive CSR actions that go beyond risk and litigation justifications. When CEOs are better incentivized with their compensation packages, they take actions to reduce both CSR strengths and concerns by creating a neutral position toward CSR investments, which is consistent with the choices made by institutional shareholders documented in Fernando et al. (2017). Furthermore, our results indicate that aligning CEO interests with shareholders acts effectively in a weaker corporate governance environment where CEOs are indulged with abundant free cash flows.

Our findings are essential for regulators, investors, and other stakeholders to understand executives' motives for CSR investments. Indeed, firms can exhibit complexity in determining the appropriate level of CSR investments, for which we split CSR measures into strengths and concerns to investigate the different dynamics between CEO pay-performance sensitivity and various CSR activities. The empirical evidence provides new insights and points to a potential new line of research which supports a more neutral position concerning CSR scores and activities. Our findings suggest that CSR activities are not equivalent, and CEOs balance the costs and the benefits of the distinctive types of CSR activities separately when their interests are aligned with those of shareholders.

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Table 1: Summary statistics

This table reports descriptive statistics for our final sample, comprising 11,726 firm-year observations over the fiscal years 2000-2018. Appendix A defines the variables and presents the data sources.

Variables	Ν	Mean	Median	Stdev	P1	P99
CSR Measures						
STRENGTH	11726	1.73	1.00	2.46	0.00	11.00
SCALED STRENGTH	11726	0.30	0.13	0.47	0.00	2.27
CONCERN	11726	1.23	1.00	1.58	0.00	8.00
SCALED CONCERN	11726	0.32	0.20	0.39	0.00	1.93
SOCIAL STRENGTH	11726	1.34	1.00	2.02	0.00	9.00
SCALED SOCIAL STRENGTH	11726	0.26	0.10	0.43	0.00	2.06
SOCIAL CONCERN	11726	1.06	1.00	1.32	0.00	6.00
SCALED SOCIAL CONCERN	11726	0.30	0.20	0.38	0.00	1.70
ENVIRONMENTAL STRENGTH	11726	0.42	0.00	0.91	0.00	4.00
SCALED ENVIRONMENTAL STRENGTH	11726	0.05	0.00	0.11	0.00	0.50
ENVIRONMENTAL CONCERN	11726	0.19	0.00	0.62	0.00	3.00
SCALED ENVIRONMENTAL CONCERN	11726	0.03	0.00	0.09	0.00	0.43
CEO Variables						
DELTA_L1	11726	715.56	245.99	1543.34	6.69	11331.15
log(DELTA)_L1	11726	5.54	5.51	1.42	1.90	9.34
DELTA_adj_L1	11726	2.47	0.23	7.17	-0.96	50.67
DUALITY_L1	11726	0.53	1.00	0.50	0.00	1.00
FEMALE_L1	11726	0.03	0.00	0.17	0.00	1.00
AGE_L1	11726	55.66	56.00	6.98	40.00	74.00
TENURE_L1	11726	7.11	5.00	6.91	0.00	33.00
Firm Variables						
log(FIRM_AGE)_L1	11726	2.98	3.04	0.84	0.69	4.48
FIRM_SIZE_L1	11726	7.55	7.41	1.53	4.67	11.72
CASH_L1	11726	0.17	0.11	0.17	0.00	0.73
MARKET_TO_BOOK_L1	11726	3.44	2.55	3.90	-9.86	24.09
PROFITABILITY_L1	11726	0.14	0.14	0.09	-0.15	0.42
TANGIBILITY_L1	11726	0.25	0.18	0.21	0.01	0.87
R&D_L1	11726	0.03	0.01	0.05	0.00	0.26
LEVERAGE_L1	11726	0.20	0.18	0.17	0.00	0.71
ADVERTISING_L1	11726	0.01	0.00	0.03	0.00	0.15
RETURN_L1	11726	0.17	0.13	0.44	-0.70	1.91
INSTHOLD_L1	11726	0.80	0.83	0.17	0.28	1.16
BOARD_SIZE_L1	11726	9.16	9.00	2.25	5.00	15.00
BOARD_TENURE_L1	11726	8.57	6.60	7.47	0.20	35.40
BOARD INDEPENDENCE LI	11726	0.78	0.80	0.13	0.38	1.00

Table 2A: Sample composition by industry

	Industry	Ν	Percentage
1	Consumer Durables	2102	17.93%
2	Capital Goods	2085	17.78%
3	Services	1989	16.96%
4	Basic Industry	1782	15.20%
5	Textiles and Trade	857	7.31%
6	Leisure	561	4.78%
7	Petroleum	531	4.53%
8	Food and Tobacco	467	3.98%
9	Others	463	3.95%
10	Transportation	420	3.58%
11	Construction	298	2.54%
12	Unregulated Utilities	171	1.46%
	Total	11726	100.00%

This table reports the sample composition for our final sample by industry, comprising 11,726 firm-year observations over the fiscal years 2000-2018.

Table 2B: Ranked industry list by CSR strengths

This table ranks the industries based on the CSR strength scores.

Ranking	Industry	STRENGTH
1	Food and Tobacco	3.52
2	Unregulated Utilities	2.85
3	Basic Industry	2.19
4	Petroleum	1.89
5	Transportation	1.76
6	Leisure	1.64
7	Capital Goods	1.63
8	Others	1.56
9	Textiles and Trade	1.56
10	Consumer Durables	1.53
11	Services	1.39
12	Construction	0.65

Table 2C: Ranked industry list by CSR concerns

This table ranks the industries based on the CSR concern scores.

Ranking	Industry	CONCERN
1	Petroleum	2.34
2	Food and Tobacco	1.93
3	Unregulated Utilities	1.87
4	Basic Industry	1.61
5	Others	1.37
6	Transportation	1.33
7	Textiles and Trade	1.24
8	Construction	1.21
9	Consumer Durables	1.09
10	Leisure	1.05
11	Capital Goods	0.99
12	Services	0.80

Table 3: The effects of log delta on strengths & concerns

This table reports the OLS regression results of CEO pay-performance sensitivity on strengths and concerns. Our sample comprises 11,726 firm-year observations over the fiscal years 2000-2018. Models (1) and (2) examine *STRENGTH* and *CONCERN*. Models (3) and (4) examine *SCALED STRENGTH* and *SCALED* CONCERN. All the independent variables are lagged by one year. Robust standard errors clustered at the firm level are presented in parentheses. *, **, and *** represents statistical significance at levels of 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	STRENGTH	CONCERN	SCALED STRENGTH	SCALED CONCERN
log_DELTA_L1	-0.0782***	-0.0552***	-0.0172***	-0.0105**
	[0.005]	[0.004]	[0.002]	[0.033]
DUALITY_L1	0.0636	0.1621***	0.0195	0.0347***
	[0.337]	[0.001]	[0.136]	[0.004]
FEMALE_L1	0.5026**	-0.1708	0.1022***	-0.0687**
	[0.011]	[0.183]	[0.004]	[0.048]
log_FIRM_AGE_L1	0.1128**	0.1265***	0.0197**	0.0248**
	[0.024]	[0.001]	[0.031]	[0.012]
FIRM_SIZE_L1	1.0786***	0.4621***	0.1838***	0.1039***
	[0.000]	[0.000]	[0.000]	[0.000]
CASH_L1	1.2451***	0.3142**	0.2222***	0.0910**
	[0.000]	[0.046]	[0.000]	[0.026]
MARKET_TO_BOOK_L1	0.0295***	0.0014	0.0040***	0.0006
	[0.000]	[0.804]	[0.004]	[0.649]
PROFITABILITY_L1	2.9285***	-0.2474	0.4127***	-0.1315*
	[0.000]	[0.379]	[0.000]	[0.063]
TANGIBILITY_L1	0.2649	0.5693***	0.0812*	0.1642***
	[0.240]	[0.002]	[0.072]	[0.001]
R&D_L1	7.3536***	0.0641	1.2428***	0.0047
	[0.000]	[0.911]	[0.000]	[0.974]
LEVERAGE_L1	-1.3099***	-0.4749***	-0.2336***	-0.1251***
	[0.000]	[0.004]	[0.000]	[0.003]
ADVERTISING_L1	8.5463***	0.5144	1.6060***	-0.0180
	[0.000]	[0.636]	[0.000]	[0.948]
RETURN_L1	-0.0503	0.0685**	-0.0145*	0.0081
	[0.215]	[0.025]	[0.072]	[0.303]
INSTHOLD_L1	-1.6019***	-1.1683***	-0.2576***	-0.2956***
	[0.000]	[0.000]	[0.000]	[0.000]
BOARD_SIZE_L1	0.0700***	-0.0322**	0.0116***	-0.0147***
	[0.001]	[0.029]	[0.002]	[0.000]
BOARD_TENURE_L1	0.0001	-0.0027	0.0003	-0.0005
	[0.987]	[0.428]	[0.747]	[0.596]
BOARD_INDEPENDENCE_L1	1.4987***	0.4178*	0.2950***	0.0419

	[0.000]	[0.055]	[0.000]	[0.439]
Constant	-8.2880***	-2.0989***	-1.4043***	-0.3177***
	[0.000]	[0.000]	[0.000]	[0.003]
Observations	11,726	11,726	11,726	11,726
Adjusted R-squared	0.52	0.39	0.45	0.33
Fixed Effects	Year & Industry	Year & Industry	Year & Industry	Year & Industry

Table 4: The effects of the industry-adjusted delta on strengths & concerns

This table reports the OLS regression results of industry-adjusted CEO pay-performance sensitivity on strengths and concerns. Our sample comprises 11,726 firm-year observations over the fiscal years 2000-2018. Models (1) and (2) examine *STRENGTH* and *CONCERN*. Models (3) and (4) examine *SCALED STRENGTH* and *SCALED CONCERN*. All the independent variables are lagged by one year. Robust standard errors clustered at the firm level are presented in parentheses. *, **, and *** represents statistical significance at levels of 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)
VADIADIEC	OTDENCTH	CONCERN	SCALED STRENGTH	SCALED CONCERN
VARIABLES	SIKENGIH	CUNCERN	SIKENGIH	CONCERN
DELTA adi II	0.0100*	0.0007**	0.0022	0.0021**
DELIA_uuj_L1	-0.0109*	-0.009/**	-0.0022	-0.0021
	[0.085]	[0.021]	[0.120]	[0.039]
DUALITI_LI	0.0304	[0.002]	0.0117	[0.0314
EEMALE 11	[0.032]	[0.002]	[0.331]	[0.007]
FEMALE_LI	0.3181***	-0.1010	0.1038***	-0.00/1*
	[0.010]	[0.204]	[0.004]	[0.052]
log_FIRM_AGE_L1	0.11/8**	0.1285***	0.0210**	0.0250**
	[0.017]	[0.001]	[0.021]	[0.011]
FIRM_SIZE_L1	1.0594***	0.4523***	0.1791***	0.1026***
	[0.000]	[0.000]	[0.000]	[0.000]
CASH_L1	1.2319***	0.3118**	0.2185***	0.0914**
	[0.000]	[0.045]	[0.000]	[0.023]
MARKET_TO_BOOK_L1	0.0283***	0.0008	0.0037***	0.0005
	[0.001]	[0.883]	[0.008]	[0.683]
PROFITABILITY_L1	2.8181***	1*** -0.3077 0.3864***		-0.1406**
	[0.000]	[0.271]	[0.000]	[0.045]
TANGIBILITY_L1	0.2938	0.5875***	0.0879*	0.1674***
	[0.195]	[0.002]	[0.054]	[0.001]
R&D LI	7.2538***	0.0086	1.2190***	-0.0038
_	[0.000]	[0.988]	[0.000]	[0.979]
LEVERAGE LI	-1.2996***	-0.4730***	-0.2307***	-0.1255***
—	[0.000]	[0.004]	[0.000]	[0.003]
ADVERTISING L1	8.4981***	0.5063	1.5923***	-0.0161
—	[0.000]	[0.640]	[0.000]	[0.953]
RETURN L1	-0.0724*	0.0547*	-0.0196**	0.0057
	[0.068]	[0.065]	[0.015]	[0.455]
INSTHOLD L1	-1.6183***	-1.1910***	-0.2599***	-0.3014***
	[0,000]	[0.000]	[0,000]	[0,00,0]
ROARD SIZE 1.1	0 0712***	-0.0318**	0.0120***	-0.0147***
	[0 000]	[0 030]	[0 001]	[0000]
BOARD TENURE 11	-0 0008	-0.0033	0 0000	-0 0006
	[0.852]	[0.336]	[0.951]	[0.518]

BOARD_INDEPENDENCE_L1	1.5192***	0.4235*	0.3005***	0.0418
	[0.000]	[0.052]	[0.000]	[0.440]
Constant	-8.5109***	-2.2510***	-1.4539***	-0.3458***
	[0.000]	[0.000]	[0.000]	[0.002]
Observations	11,726	11,726	11,726	11,726
Adjusted R-squared	0.52	0.39	0.45	0.33
Fixed Effects	Year & Industry	Year & Industry	Year & Industry	Year & Industry

Table 5: The instrumental variable approach

Using the instrumental variable approach, this table reports the effects of CEO pay-performance sensitivity on strengths and concerns. Our sample comprises 11,726 firm-year observations over the fiscal years 2000-2018. The endogenous regressor is the log of the delta measure. In the first stage, as shown in Models (1) and (3), we employ the CEO's age and tenure as the instrument variables. The dependent variables are *STRENGTH* and *CONCERN* in the second stage. As shown in Models (2) and (4), we use the predicted delta value, i.e. *log_DELTA_L1_hat*, from the first stage as the independent variable in the second stage. All the independent variables are lagged by one year. Robust standard errors clustered at the firm level are presented in parentheses. *, **, and *** represents statistical significance at levels of 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	log_DELTA_L1	STRENGTH	log_DELTA_L1	CONCERN
	(1st stage)	(2nd stage)	(1st stage)	(2nd stage)
AGE_L1	-0.0040**		-0.0040**	
	[0.016]		[0.016]	
TENURE_L1	0.0739***		0.0739***	
	[0.000]		[0.000]	
log_DELTA_L1_hat		-0.1516***		-0.0910***
		[0.000]		[0.000]
Constant	2.4660***	-8.1911***	2.4660***	-1.8541***
	[0.000]	[0.000]	[0.000]	[0.000]
Control Variables	Yes	Yes	Yes	Yes
Observations	11,726	11,726	11,726	11,726
R-squared	0.50	0.52	0.50	0.39
Fixed Effects	Year & Industry	Year & Industry	Year & Industry	Year & Industry
Underidentification test				
Kleibergen-Paap rk LM		1209.043		1209.043
P-value		0		0
Weak identification test				
Kleibergen-Paap rk Wald F		916.519		916.519
Stock-Yogo critical value		19.93		19.93
Overidentification test				
Hansen J		1.344		0.294
P-value		0.2463		0.588

Table 6: The effects of log delta on social and environmental strengths and concerns

This table reports the OLS regression results of CEO pay-performance sensitivity on social and environmental strengths and concerns. Our sample comprises 11,726 firm-year observations over the fiscal years 2000-2018. Models (1) and (2) examine *SOCIAL STRENGTH* and *SOCIAL CONCERN*, respectively. Models (3) and (4) examine *ENVIRONMENTAL STRENGTH* and *ENVIRONMENTAL CONCERN*, respectively. All the independent variables are lagged by one year. Robust standard errors clustered at the firm level are presented in parentheses. *, **, and *** represents statistical significance at levels of 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)
VARIABLES	SOCIAL	SOCIAL	ENVIRONMENTAL	ENVIRONMENTAL
	SIKENGIH	CONCERN	SIKENGIH	CONCERN
log_DELTA_L1	-0.0662***	-0.0435**	-0.0250**	-0.0172**
	[0.004]	[0.011]	[0.022]	[0.047]
DUALITY_L1	0.0408	0.1080***	0.0274	0.0582***
	[0.483]	[0.008]	[0.286]	[0.002]
FEMALE_L1	0.4169***	-0.2602***	0.0894	0.0689
	[0.009]	[0.005]	[0.416]	[0.234]
log_FIRM_AGE_L1	0.0637	0.0629**	0.0582***	0.0704***
	[0.145]	[0.043]	[0.001]	[0.000]
FIRM_SIZE_L1	0.8396***	0.3690***	0.3005***	0.1251***
	[0.000]	[0.000]	[0.000]	[0.000]
CASH_L1	0.9845***	0.3320**	0.2911***	0.0474
	[0.000]	[0.014]	[0.000]	[0.444]
MARKET_TO_BOOK_L1	0.0178***	0.0037	0.0095**	-0.0028
	[0.007]	[0.436]	[0.021]	[0.150]
PROFITABILITY_L1	2.3863***	-0.2755	0.8286***	0.0979
	[0.000]	[0.249]	[0.000]	[0.380]
TANGIBILITY L1	0.2588	0.4335**	0.0140	0.1567**
—	[0.163]	[0.014]	[0.865]	[0.044]
R&D LI	6.6532***	0.3620	1.2504***	-0.2277
_	[0.000]	[0.436]	[0.000]	[0.302]
LEVERAGE L1	-1.2060***	-0.3012**	-0.1647**	-0.2304***
—	[0.000]	[0.034]	[0.048]	[0.001]
ADVERTISING L1	7.7968***	0.6040	1.6961***	-0.2607
—	[0.000]	[0.539]	[0.009]	[0.485]
RETURN L1	-0.0394	0.0296	-0.0143	0.0443***
	[0.243]	[0.269]	[0.359]	[0.000]
INSTHOLD L1	-1.2134***	-1.0311***	-0.5839***	-0.2876***
—	[0.000]	[0.000]	[0.000]	[0.000]
BOARD SIZE L1	0.0450***	-0.0391***	0.0188**	0.0103*
	[0.008]	[0.002]	[0.023]	[0.088]
BOARD_TENURE_L1	0.0012	-0.0020	-0.0014	-0.0021

	[0.737]	[0.492]	[0.386]	[0.117]
BOARD_INDEPENDENCE_L1	1.0653***	0.0726	0.4679***	0.3396***
	[0.000]	[0.693]	[0.000]	[0.000]
Constant	-5.6640***	-1.1679***	-2.9691***	-1.0354***
	[0.000]	[0.001]	[0.000]	[0.000]
Observations	11,726	11,726	11,726	11,726
Adjusted R-squared	0.45	0.33	0.38	0.30
Fixed Effects	Year & Industry	Year & Industry	Year & Industry	Year & Industry

Table 7: Mitigating effect of governance characteristics on PPS and strengths/concerns relationship

This table reports the OLS regression results of adding interaction terms of governance characteristics and the delta measure to the original models of CEO pay-performance sensitivity on strengths and concerns. Our sample comprises 11,726 firm-year observations over the fiscal years 2000-2018. Models (1) and (2) present the results of adding *High Entrenchment* and its interaction with *log_DELTA_L1*. Models (3) and (4) present results of adding *Duality* and its interaction. Models (5) and (6) present results of adding *High FCF* and its interaction. All the independent variables are lagged by one year. Robust standard errors clustered at the firm level are presented in parentheses. *, **, and *** represents statistical significance at levels of 10%, 5%, and 1%, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	STRENGTH	CONCERN	STRENGTH	CONCERN	STRENGTH	CONCERN
log_DELTA_L1	-0.1257***	-0.0828***	-0.0969***	-0.0916***	-0.1073***	-0.0578**
	[0.005]	[0.009]	[0.006]	[0.000]	[0.002]	[0.019]
log_DELTA_L1*High						
Entrenchment	0.1196	0.1010*				
	[0.160]	[0.057]				
log_DELTA_L1*Duality			0.0362	0.0706**		
			[0.420]	[0.026]		
log_DELTA_L1*High FCF					0.0508	0.0185
					[0.105]	[0.512]
Constant	-10.2007***	-3.8816***	-8.2191***	-1.9645***	-7.8606***	-2.4663***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Control Variables	Yes	Yes	Yes	Yes	Yes	Yes
Observations	5,287	5,287	11,726	11,726	10,029	10,029
Adjusted R-squared	0.54	0.48	0.52	0.39	0.53	0.40
- I	Year &	Year &	Year &	Year &	Year &	Year &
Fixed Effects	Industry	Industry	Industry	Industry	Industry	Industry

Variables	Description	Source
STRENGTH	The sum of all strengths across six categories: human rights, environment, diversity, product, employee relations, and environment	KLD
SCALED STRENGTH	Dividing strengths by maximum possible strengths in each category for each year and adding the scaled measures across six categories	KLD
CONCERN	The sum of all concerns across six categories: human rights, environment, diversity, product, employee relations, and environment	KLD
SCALED CONCERN	Dividing concerns by maximum possible concerns in each category for each year and adding the scaled measures across six categories	KLD
SOCIAL STRENGTH	The sum of all strengths across five social categories: human rights, environment, diversity, product, and employee relations	KLD
SCALED SOCIAL STRENGTH	Dividing strengths by maximum possible strengths in each category for each year and adding the scaled measures across five social categories	KLD
SOCIAL CONCERN	The sum of all concerns across five social categories: human rights, environment, diversity, product, and employee relations	KLD
SCALED SOCIAL CONCERN	Dividing concerns by maximum possible concerns in each category for each year and adding the scaled measures across five social categories	KLD
ENVIRONMENTAL STRENGTH	Strengths of the environmental category	KLD
SCALED ENVIRONMENTAL STRENGTH	Dividing strengths by maximum possible strengths in the environmental category for each year	KLD
ENVIRONMENTAL CONCERN	Concerns of the environmental category	KLD
SCALED ENVIRONMENTAL CONCERN	Dividing concerns by maximum possible concerns in the environmental category for each year	KLD
DELTA_L1	Dollar change in the CEO equity portfolio for a 1% change in stock price (in \$000s)	Coles et al. (2006) and Dr. Naveen's website https://sites.temple.ed u/lnaveen/data
log(DELTA)_L1 DELTA_adi_L1	The natural logarithm of the delta	
DUALITY_LI	Equal to 1 if the CEO is also the Chairperson, 0 otherwise	ExecuComp

Appendix A: Variable definitions and data sources

FEMALE_L1 AGE_L1	Equal to 1 if the CEO is female, 0 otherwise CEO's age	ExecuComp ExecuComp
TENURE_L1	The number of years the executive has been CEO at this firm	ExecuComp
log(FIRM_AGE)_L1	The natural logarithm of the difference between the observation year and the listing year	CRSP
FIRM_SIZE_L1	The natural logarithm of total book assets	Compustat
CASH_L1	Cash and cash equivalents divided by total book assets	Compustat
MARKET_TO_BOOK_L1	Stock price multiplied by the number of shares outstanding divided by total book shareholders' equity	CSRP & Compustat
PROFITABILITY_L1	Operating income before depreciation divided by total book assets	Compustat
TANGIBILITY_L1	Net property, plant, and equipment divided by total book assets	Compustat
<i>R&D_L1</i>	R&D expenses divided by total book assets (set to zero when missing)	Compustat
LEVERAGE_L1	Total short- and long-term debt divided by total book assets	Compustat
ADVERTISING_L1	Advertising expenses divided by total book assets (set to zero when missing)	Compustat
RETURN_L1	One-year raw stock return over the firm's fiscal year	CRSP
INSTHOLD_L1	Percentage of shares held by institutional owners	Thomson Reuters 13F
FCF_L1	Earnings before interest and tax plus depreciation and amortization minus capital expenditures and change in working capital as a percentage of total book assets	Compustat
ENTRENCHMENT INDEX_L1	Summation of a poison pill, a classified board, a golden parachute, a supermajority requirement for amending by-laws and charter, and other anti-takeover provisions	Thomson Reuters 13F
BOARD_SIZE_L1	The number of directors on the board	BoardEx
BOARD_TENURE_L1	The average year of serving on the board across the boardroom	BoardEx
BOARD_INDEPENDENCE_L1	The percentage of independent directors on the board	BoardEx