Horizon to Sustainability:
CEO Incentive Duration and Corporate Social Responsibility[*]

Xudong Fu
University of Louisville
xudong.fu@louisville.edu

Rui Shen
Shenzhen Finance Institute, School of Management and Economics
The Chinese University of Hong Kong, Shenzhen
ruishen@cuhk.edu.cn

Tian Tang
University of Louisville
lori.tang@louisville.edu

Xinyan Yan
University of South Florida
xyan@usf.edu

January 2024

[*] We are grateful for helpful comments from Guangli Lu, Sebastien Michenaud, Quentin Moreau, Hongyu Shan, Albert Wang, Jun Yang, and Xintong Zhan as well as from seminar participants at Shenzhen University, Southwestern University of Finance and Economics, The Chinese University of Hong Kong (Shenzhen), and Tianjin University, and conference participants at the 2020 Midwest Finance Association Annual Conference, the 2020 Financial Management Annual Conference, the 2020 Southern Finance Association Annual Conference, the 2023 FMA European Conference, and the Lingnan Workshop of Accounting and Finance. All errors are our own. Send correspondence to Rui Shen, ruishen@cuhk.edu.cn.

Horizon to Sustainability:
CEO Incentive Duration and Corporate Social Responsibility

Abstract

This paper finds that CEO incentive horizons, as measured by CEOs' pay duration, are positively associated with their firms' performance in corporate social responsibility (CSR), particularly for firms facing higher risks of reputation loss or requiring greater stakeholder support. Further tests suggest that longer pay duration incentivizes CEOs to invest in CSR activities that benefit both stakeholders and shareholders in the future. Moreover, we employ various identification strategies to show that endogenous factors are unlikely to drive our conclusions or inferences. We conduct a series of tests to confirm the robustness of our findings. Overall, our evidence indicates the benefits of longer incentive horizons for helping firms align their stakeholders' interests with those of stakeholders and broader goals of society and environment.

Keywords: Managerial Myopia; CEO Pay Duration; Corporate Social Responsibility (CSR); Stakeholders

1. Introduction

In today's world, corporate social responsibility (CSR) has become an increasingly important consideration for businesses.[1] While the debate over whether CSR is beneficial to shareholders continues, a critical yet understudied question is how to incentivize CEOs to engage in the socially responsible initiatives that can ultimately increase shareholders' wealth. Prior literature argues that justifying a commitment to CSR requires a long-term perspective, because "doing good" demands significant upfront investment but the payoff often comes much later and with uncertainty (e.g., Mahapatra, 1984; Graves and Waddock, 1994; Sharfman and Fernando, 2008). These unobserved features of CSR investments create a disparity in understanding the CSR investment's production function, leading to a potential friction between CEOs and investors. Consequently, when investors observe an increase in CSR investments, they may struggle to determine whether this decision is optimal. This friction can lead to a lower short-term valuation for firms with high CSR engagement, thus contributing to managerial myopia (Stein, 1988; 1989). Therefore, our study aims to investigate whether extending the CEO pay duration can effectively incentivize CEOs to promote CSR activities that ultimately benefit shareholders.

Pay duration refers to the length of time over which executive compensation is awarded and vested. It can range from short-term incentive plans that pay out annually to long-term incentive plans that vest over many years. The duration of CEO pay is a critical factor in aligning executive interests with those of shareholders, stakeholders, and society. A longer pay duration may incentivize CEOs to prioritize long-term CSR considerations, whereas a shorter pay duration may prompt a focus on short-term financial performance at the expense of social and environmental

[1] In 2019 the Business Roundtable, a group of CEOs of nearly 200 major U.S. corporations, issued a joint statement introducing a new definition of the "purpose of a corporation" as "investing in employees, delivering value to customers, dealing ethically with suppliers and supporting outside communities".

objectives. Understanding the relationship between CEO pay duration and CSR is important for developing effective executive compensation practices that align with the interests of shareholders and broader goals of society and environment.

We follow Gopalan et al. (2014) to calculate CEO pay duration as the weighted-average duration of four components of a CEO's annual compensation. A CEO with a longer pay duration must wait longer before exercising equity-based compensation and thus has less short-term stock price concern. Using a sample of 10,814 firm-year observations covering the period from 1998 through 2018, we find that firms with longer CEO pay duration are associated with more extensive CSR engagement.

We further explore the mechanisms through which CEO pay duration influences CSR engagement. While some studies view CSR as "window dressing" or a way to distract from poor financial performance or unethical practices, recent literature supports the instrumental benefits of CSR and highlights two key long-term advantages. First, CSR can serve as reputation insurance against negative future events (e.g., Godfrey, Merrill and Hansen, 2009; Minor and Morgan, 2011). The insurance protection of CSR is more important to CEOs with longer pay horizons because unpredictable negative shocks are more likely to impact their future compensation. Therefore, we expect that the positive association between pay duration and CSR engagement is more pronounced in firms that are in greater need of reputation insurance. To confirm the mechanism that the need for reputation insurance drives CSR engagement, we leverage the BP Deepwater Horizon oil spill as an exogenous shock to the affected firms' reputation. We find that the positive relation between CEO pay duration and CSR engagement is strengthened in extractive industries following the BP oil spill. The positive relation is also more pronounced in firms that face potential reputation loss due to firm-level negative shocks, such as high ex-ante risk of litigation, heightened

attention from the IRS, and a high probability of experiencing data breaches. These evidence suggest that CEOs with longer incentive horizons prioritize CSR engagement when reputation insurance becomes more crucial.

The second long-term benefit of CSR engagement is that it helps firms obtain and maintain stakeholder support, which enhances corporate success in the long run (Freeman, 1984; Freeman et al., 2010). For example, CSR engagement can help firms attract and retain dedicated employees (Krueger and Mas, 2004; Flammer and Kacperczy, 2019), obtain customer support (Sen and Bhattacharya, 2001), gain favorable treatments from local communities (Fombrun, Gardberg, and Barnett, 2000), and develop useful relationships with government agencies (Wang and Qian, 2011). Therefore, we expect the positive association between CEO pay duration and CSR engagement to be more salient when stakeholder support is more pivotal. We use *Product Market Fluidity*, *Product Concentration*, and *Unemployment Insurance* as proxies for the need of stakeholder support. We find that the positive association between CEO pay duration and corporate CSR engagement is stronger in firms that face more intense competition or are in states with higher unemployment benefits. These results confirm the stakeholder support mechanism.

We further provide suggestive evidence on CSR engagement undertaken by CEOs with longer incentive horizons can alleviate reputation loss, increase stakeholder support, improve profitability, and enhance shareholder value in the long run. We find that CSR practices led by CEOs who have longer pay duration increase the probability that firms are included in the "100 Best Companies to Work for in America" list issued by Fortune Magazine, reduce firms' future crash risk, and are associated with superior future performance. These results reinforce our argument that CEOs with long pay duration engage in CSR to improve stakeholders' welfare and maximize long-term shareholder value.

The evidence we obtain so far suggests that CSR activities are driven by the long-run instrumental motives of CSR. Nevertheless, the agency issues in CSR can be an alternative explanation for our results. A CEO may use CSR as a means of pursuing their own personal interest rather than those of the company and its shareholders. Masulis and Reza (2015) find a negative market reaction to the disclosure of corporate philanthropy. In such a case, a CEO whose compensation is tightly tied to the near-term stock price is less likely to disclose CSR activities, and therefore rating agencies are possibly unable to give the company a high rating in CSR.

To rule out this explanation, we first explore the heterogeneity of firms' media coverage. If a firm is under constant spotlight, its CSR engagement would be covered in a timely way by the media, no matter whether the CEO chooses to disclose it. Therefore, if our baseline results are driven by the alternative explanation, the positive relation between CEO compensation duration and CSR engagement should be weaker in firms that are already well-covered by the media. However, we find no evidence supporting this alternative explanation. Further, we regress corporate donation disclosures on the estimated vesting value and ratio, respectively, and find that when CEOs have equity that is close to vesting, firms are more likely to disclose corporate donations, which is contradictory to the alternative explanation. These findings reinforce our argument that the long-term benefits of CSR are the driving force behind the positive relation between CEO pay duration and CSR engagement.

Our results are not immune to endogeneity concerns. Although we include firm fixed effects in the baseline regressions to control for firm-level unobserved variables, time-variant unobserved variables, such as the nature of investment opportunities, could be associated with both compensation design and CSR engagement and hence drive our main results. To alleviate such endogeneity concerns, we employ three identification strategies. First, inspired by Edmans, Fang,

and Lewellen (2017), we use the estimated value of option and stock grants scheduled to vest in a given year as an alternative measure of a CEO's incentive horizon. This measure directly captures the short-termism perspective caused by the upcoming vesting. It is unlikely to be affected by current CSR engagement because a firm's executive compensation vesting schedules are normally set by the board several years prior and it is implausible to be related to a board's anticipation of CSR needs in that specific year. We find that the value of grants scheduled to vest reduces CSR engagement by a firm in that year, providing a complementary robustness check for our main results.

Second, following Jochem, Ladika, and Sautner (2018) and Ladika and Sautner (2020), we use the adoption of accounting standard FAS 123–R as a plausibly exogenous shock to pay duration. The Financial Accounting Standards Board (FASB) allowed firms to avoid charges on unvested existing options by vesting them before the compliance date, which is the start of each firm's first full fiscal year after June 15, 2005, resulting in a staggered acceleration of option vesting in calendar years 2005 and 2006. This change in policy exogenously shortened incentive horizons after its adoption, enabling us to perform two-stage least squares (2SLS) analyses. Using the subsample that covers the calendar years 2005 and 2006, we find that the results obtained by 2SLS analyses are consistent with the occurrence of a causal effect of CEO pay duration on CSR. Lastly, we include executive-level fixed effects with the full sample to control for unobserved individual-level factors that may drive our results. Our results continue to hold.[2]

We conduct a battery of ancillary tests to provide additional robustness to our findings. These include employing an alternative measure of CEO incentive duration (Gopalan et al., 2014),

[2] We acknowledge that these identification strategies are not perfect individually and that endogeneity concerns might not be fully resolved. We discuss this issue in detail in Section 6 to further explain why several plausible alternative explanations do not affect our conclusions or inferences.

controlling more horizon-related variables, incorporating CSR strengths and concerns, utilizing categorical CSR scores, utilizing different databases (Refinitiv for ESG data and Trucost for carbon emission data), and taking natural logarithm of pay duration. Our results remain robust after we consider these factors.

Our paper contributes to three streams of literature. First, our paper contributes to the managerial compensation literature, especially the growing literature on CEO incentive horizons. While executive compensation's impacts on corporate financial decisions have been extensively studied, only a limited number of papers have explored the effects of compensation structures on CSR activities, yielding mixed evidence. (Mahoney and Thorn, 2006; Deckop, Merriman, and Gupta, 2006; Cai, Jo, and Pan, 2011; Maas, 2018; Gillan, Koch, and Starks, 2021). Previous studies of CEO incentive horizons primarily focus on conflicts of interest between managers and shareholders (e.g., Edmans, Fang, and Lewellen, 2017; Edmans, Fang, and Huang, 2020). Our study extends the literature by showing that CEO incentive horizons play a role in aligning the interests of stakeholders and shareholders.

Second, our paper is the first to link the role that managerial compensation structure plays in reducing managerial short-termism to corporate CSR decisions.[3] By connecting managerial compensation structure with reduced short-termism in corporate CSR decision-making, our study compliments Ferrell, Liang, and Renneboog (2016), who find that firms with stronger corporate governance achieve better CSR performance. Our study highlights the importance of aligning shareholder and stakeholder interests through incentive horizons that encourage CEOs with long-

[3] Fabrizi, Mallin, and Michelon (2014) investigate the impacts of CEO's monetary incentives, measured by CEOs' equity incentives and annual bonus, on CSR. Our study goes beyond the level of CEO's pay by focusing on a more important dimension, namely the duration of pay, and how it has impacts on managerial myopic actions and CSR decisions.

term incentives to invest in CSR. This strategy can lead to long-lasting benefits to both the firm and its stakeholders.

Lastly, this study also yields important practical implications that contribute to the growing interest in understanding whether a firm can develop a social responsibility conscience that comes into play in corporate decision-making. There have been active debates over executive compensation design, such as whether executives are rewarded with sufficient equity-based compensation or whether "pay arrangements that reward executives for short-term results can produce incentives to take excessive risks" (Bebchuk and Fried, 2010). By linking pay duration to corporate CSR activities, our findings suggest that socially responsible firms can strategically design vesting periods for CEO compensation to influence managers' incentives to engage in CSR activities.

The rest of the paper is structured as follows. In Section 2 we explain the sample used in our research and in Section 3 we discuss the baseline tests and results. In Section 4, we present mechanism analyses and outcome tests. We discuss the alternative explanation in Section 5 and address the endogeneity concerns in Section 6. In Section 7 we report additional robustness test results. Section 8 concludes.

2. Sample and Variable Construction

2.1 Data and Sample

Our sample period runs from 1998 through 2018 because 1998 was the first year in which variables related to CEO pay duration became available from Incentive Lab, a database that contains in-depth information drawn from corporate reports and proxy statements about equity awards such as vesting schedules for S&P 500 (Large-cap) and S&P 400 (Mid-cap) firms (e.g.,

Bettis et al., 2013). We obtain financial information from Compustat and stock return data from CRSP. Our primary sample contains 10,814 firm-year observations from 1,144 firms for the sample period, although sample size varies with the need to use additional variables in further analysis.

2.2. CEO Pay Duration

Following Gopalan et al. (2014), we construct *CEO Pay duration* as the weighted-average duration of four components of a CEO's annual compensation: salary, bonus, restricted stocks, and stock options:

$$\frac{(Salary+Bonus)\times 0+\sum_{i=1}^{n_s} Restricted\ stock_i \times y_i+\sum_{j=1}^{n_o} Option_j \times y_j}{Salary+Bonus+\sum_{i=1}^{n_s} Restricted\ stock_i+\sum_{j=1}^{n_o} Option_j}, \quad (1)$$

where *Salary* and *Bonus* are the dollar values of a CEO's yearly salary and bonus, *Restricted stock*$_i$ is the dollar value of the i^{th} equity compensation of restricted stocks with vesting period y_i (in years), and *Option*$_j$ is the dollar value of the j^{th} equity compensation of stock options with vesting period y_j (in years). Because an executive may be awarded multiple equity grants over several vesting periods in any given year, we use n_s and n_o as the total numbers of such grants in stocks and options, respectively. The dollar values of equity awards are estimated at the end of a fiscal year.

Incentive Lab provides information on newly granted options and stocks, so our primary CEO pay duration measure relies on the assumption that newly granted options and stocks represent CEOs' entire portfolios of firms. Gopalan, Milbourn, Song, and Thakor (2014) develop an alternative CEO pay duration measure that calculates the pay-for-performance sensitivity of stock and option grants using executives' entire compensation portfolios, including all prior-year grants. However, the construction of this alternative measure relies on several additional assumptions, such as equal installments over the vesting period for graded vesting and no early

vesting or grant reloads, making it nosier than our primary measure in Eq. (1). Therefore, following Gopalan, Milbourn, Song, and Thakor (2014), we do not use the alternative measure as the main independent variable throughout the paper, but we use it to conduct a robustness check. We discuss this alternative measure's assumptions and detailed robustness tests in Section 8.1.

2.3. CSR Scores

We collect data on corporate social responsibility from the MSCI ESG KLD STATS database (formerly known as KLD). Developed by a for-profit company, in this database CSR scores are similar to credit ratings.[4] To comprehensively reflect the relation between a CEO's pay duration on the firm's social and environmental engagement, we use both social benefits (strengths in the database) and harms (concerns in the database). We follow common practice in the corporate social responsibility literature and calculate the score by subtracting the sum of concerns from the sum of strengths across the six categories comprising the environment, community, diversity, employee relations, human rights, and product quality and safety.

While the raw CSR measure indicates the absolute level of a company's totality of social endeavors, it could be biased due to the construction methodology (Deng, Kang, and Low, 2013). To provide robustness, we construct our scaled CSR measure as follows: consistent with Servaes and Tamayo (2013), we divide the number of strengths (concerns) for each firm-year within each CSR category by the maximum possible number of strengths (concerns) in that category year to obtain a category strength (concern) ratio. We then subtract the concern ratio from the strength ratio to obtain a category net ratio of CSR endeavors, which ranges from −1 to +1. Lastly, we sum

[4] MSCI ESG KLD STATS scans public databases such as those that have experienced employee strikes and Environmental Protection Agency (EPA) violations and uses a team of analysts to measure these and other social-responsibility dimensions of firm production. The database has been used frequently in the relevant literature on corporate social responsibility (see e.g. Flammer, 2015; Lins, Servaes, and Tamayo, 2017; Cao, Liang, and Zhan, 2019).

the category net ratios for all categories and obtain an overall net measure, *Scaled CSR*, which is related to *Raw CSR* and ranges from −6 to +6. For robustness purposes, we use both raw and scaled CSR measures in our empirical tests.

2.4. Empirical Design

For the baseline tests, we regress CSR scores on CEO pay duration and firm characteristics variables, including state×year fixed effects (α_{st}) and firm fixed effects (θ_i):

$$CSR_{i,t+1} = \alpha_{st} + \theta_i + bX_{i,t} + \gamma\ CEO\ Pay\ Duration_{i,t} + \varepsilon_{i,t+1}, \quad (2)$$

where CSR alternates between *Raw CSR* and *Scaled CSR*. $X_{i,t}$ denotes a vector of annual firm characteristics variables, which include CEO delta, CEO vega, firm size, Tobin's Q, profitability, free cash flow, leverage, capital expenditures, product concentration, and director independence.

Although Gopalan et al. (2014) propose that the duration of executive compensation captures a novel dimension of managerial incentives, it may be correlated with other dimensions such as the convexity of executive compensation. We hence include CEO delta and vega, proxies for risk-taking incentives that have been shown to affect corporate investment decisions. CEO delta is the change in the dollar value of a CEO's stock and option portfolio with respect to a 1% change in current stock prices, and CEO vega is the change in the dollar value of a CEO's stock and option portfolio with respect to a 1% change in the annualized standard deviation of stock returns. The resource-based view of CSR suggests that larger companies (McWilliams and Siegel, 2000) with higher asset valuation and superior accounting performance (McGuire, Sundgren, and Schneeweis, 1988) spend more resources on CSR investments. Capital expenditures are related to CSR endeavors (McWilliams and Siegel, 2000; Masulis and Reza, 2019), whereas leverage poses a constraint that discourages managers from spending corporate resources on social philanthropy (Krueger, 2015). Cash holding and free cash flow measure the resource slack that CEOs can afford

as well as the magnitude of potential agency issues. We also include product market competition to control for the need of stakeholder support and the proportion of independent directors on a board to control for corporate governance quality (Hoberg and Philips, 2010; Weisbach, 1988). Product market competition is expected to be negatively correlated with CSR engagement because firms facing weak competition are less concerned about stakeholder support (Tang et al., 2016). The proportion of independent directors is a measure of the effectiveness of corporate governance.

Even though we have controlled for many firm characteristics, it remains a concern that unobserved firm-level factors may drive our results. Thus, we include firm fixed effects in all analyses. In addition, both CSR and executive compensation can be driven by state-level policies and regulations. CSR has become more prevalent over time and the KLD database has changed its strength and concern coverage in some years. Hence, state-level policy effects and time effects are included along with state×year dummies. We define all control variables in detail in the Appendix.

3. Main Results

(Insert Table 1 around here)

In Table 1 we report the summary statistics for our full sample. All non-dummy variables are winsorized at the 1st and 99th percentiles. The average raw (scaled) CSR score is 0.905 (0.049). After we break down these scores into strengths and concerns, the average raw (scaled) strength score is 2.525 (0.444) while the average raw (scaled) concern score is 1.620 (0.395). The average CEO pay duration is 1.761 years and the median pay duration is 1.868 years. These numbers suggest that CEOs on average need to wait almost two years to receive their full compensation. Delta and vega also indicate that CEOs are well incentivized: measured in 2016 dollars, a 1% stock

price change impacts a CEO's wealth by about 1.644 million dollars on average, whereas a 1% change in stock volatility impacts a typical CEO's wealth by about $233,000.

Given the data structures of KLD and Incentive Lab databases, our sample leans toward large firms, as the average firm size is $19.584 billion in assets (in 2016 dollars). We also show in Table 1 that the average Tobin's Q is 1.897 and the average annual profit (ROA) is 5.7%. Average firm leverage is about 25.3% of total assets in book value. Cash holding, free cash flow, and capital expenditures are 14.3%, 6.4%, and 5.2% of total assets, respectively. On average 78.3% of the board members of these firms are independent directors.

(Insert Table 2 around here)

Table 2 shows the Pearson correlation coefficients between CEO pay duration and other variables. In this table, correlation coefficients are shown in the first row and *p*-values are reported in parentheses in the second row, below each correlation. We show that CEO pay duration is positively related to both raw CSR score and scaled CSR score.

(Insert Table 3 around here)

We present the baseline regression results in Table 3. We use both raw CSR scores and scaled CSR scores as dependent variables to provide a more complete picture of CSR decisions. We use actual CEO pay duration in the regressions to be consistent with prior literature (Gopalan et al., 2014).[5] As shown in Table 3, CEO pay duration matters for CSR decisions. The positive and significant association between CSR scores and CEO pay duration indicates that firms that provide their executives with longer-duration incentives are more likely to receive higher CSR scores. The economic impact is not trivial. For example, a one-standard-deviation increase in CEO pay duration (about 1.022) leads to a 0.130 increase in *Raw CSR*, as seen in column (1), which is

[5] The regression estimations using the logarithm term of CEO pay duration hold as well and are available in the Internet Appendix.

economically meaningful given the mean is 0.905. These results are consistent with our proposition that a CEO with long incentive duration increases corporate social philanthropy.

In connection with CEO compensation, it is worth noting that CEO vega has a negative effect on CSR, suggesting that CEOs whose compensation packages are positively related to firm volatility tend to reduce their firms' CSR engagement. This is consistent with studies reporting that some firms use CSR to reduce short-term volatility (Petrovits, 2006; Ioannou and Serafeim, 2015). In addition, the coefficient of CEO delta is negative but not significant. The findings indicate that the effects of vega and delta on CSR run in opposite directions relative to the effects of pay duration, also highlight the importance of CEO pay duration as a new aspect to be incorporated into executive-incentive studies. Results pertaining to other control variables are generally consistent with those reported in the existing literature. Firm size is positively associated with CSR scores, suggesting that larger firms are better able to devote resources to socially responsible investments (McWilliams and Siegel, 2000). Companies with better profitability (Krueger, 2015) also have more resources they can utilize to engage in socially responsible endeavors. Free cash flow is also related to the effort a corporation makes to conduct its socially responsible activities, which is consistent with the slack-resource theory according to which an abundance of financial resources increases CSR activities (Flammer and Luo, 2017). Leverage has a positive effect that can be seen in both columns, suggesting that debtholders help improve CSR as one type of stakeholder. The proportion of independent directors is positively correlated with firms' CSR efforts, suggesting that corporate governance improves CSR.

4. Mechanism Analyses and Outcome Tests

In this section, we aim to investigate the mechanisms through which CEO pay duration influences CSR engagement by examining the long-term benefits of CSR, primarily focusing on reputation insurance and stakeholder support. Additionally, we conduct a series of outcome tests to provide further evidence of our findings.

4.1. Reputation Insurance

CSR activities can serve as an effective insurance mechanism against negative reputational shocks (Godfrey, Merrill and Hansen, 2009; Fu, Tang, and Yan, 2019). In this subsection we study whether executives with longer pay duration increase CSR scores because of the capacity of CSR to function as reputation insurance. We measure the potential negative impacts on firms' reputations using 1) an industry-wide negative shock that increased the reputational need for focal firms, and 2) the probability that a company encounters firm-specific reputation-damaging events in the future.

4.1.1. BP Deepwater Horizon Oil Spill

We first exploit the BP Deepwater Horizon oil spill of May 2010 as another quasi-natural experiment that provides us with a shock to companies' reputation-insurance needs. Dyck et al. (2019) argue that this unexpected event represents an exogenous shock to BP's reputation, dragging down the reputations of all extractive industries. Following their methodology, we use a four-year sample period running from 2009 through 2012 to study the post-shock CSR behavior of firms operating in extractive industries. We treat 2009–2010 as the pre-event years and 2011–2012 as the post-event years (Dyck, Lins, Roth, and Wagner, 2019). To conduct the difference-in-differences analysis, we interact *CEO pay duration* with the *Post Event* indicator. Our test results, which are reported in columns (1) and (2) of Table 4, indicate that CEOs with long-term incentives

in firms that operate in extractive industries are associated with higher CSR scores following the disaster.

(Insert Table 4 around here)

We conduct the first set of tests within extractive industries, so one might suspect that the implications of this analysis are limited to one or a few industries. To generalize our analysis, we isolate firms that were treated with a reputation shock, namely firms operating in extractive industries, thus creating a clean control group, namely firms that do not operate in these industries. As such, this analysis uses a difference-in-differences-in-differences setting, which provides further robustness confirming that the identifying assumptions are satisfied. The focal variable of interest is the triple interaction term *CEO Pay Duration * Post Event * Treated Firm*, where *Treated Firm* takes the value of one if a firm is in an extractive industry and zero otherwise. This is equivalent to the double interaction terms in Columns (1) and (2). We find that the coefficients of the triple interaction term are positive and significant, as shown in columns (3) and (4) of Table 4. This provides evidence that long-term incentivized CEOs in these extractive industries invest in CSR to a greater extent after the oil spill. Since we include firm fixed effects and state×year fixed effects, the stand-alone terms for the post-event dummy and the treated firm dummy are absorbed by these fixed effects.

4.1.2. Firm-level Future Negative Events

We further test whether the insurance-like benefits of CSR engagement provide incentives to executives with long-term pay to use CSR as insurance against unpredictable negative firm-level events, and in Table 5 we report the results of examining the joint effects of the risk of future negative events and CEO pay duration, using the following model:

$$CSR_{i,t+1} = \alpha_{st} + \theta_i + bX_{i,t} + \gamma\ CEO\ Pay\ Duration_{i,t} + \delta\ Future\ Negative\ Event_{i,t} + \eta\ CEO\ Pay\ Duration_{i,t} * Future\ Negative\ Event_{i,t} + \varepsilon_{i,t+1}, \quad (3)$$

where *Future Negative Event* is a variable that alternates between ex-ante litigation probability, IRS attention, and data breaches.

(Insert Table 5 around here)

Lawsuits damage corporate reputation and are difficult to predict, and they are costly to shareholders when they happen (Haslem, Hutton, and Smith, 2017). To measure a firm's ex-ante litigation risk, we follow Dai et al. (2016) and run a regression in which the dependent variable is a dummy variable that equals one if a security lawsuit is filed against a firm by the SEC in a given year and zero otherwise. The independent variables include firm size, beta, daily turnover, cumulative annual returns, the standard deviation of daily returns, the minimum of daily returns, the skewness of daily returns, and indicators for high-risk industries. One advantage of this variable is that it measures ex-ante litigation risk that reflects the nature of a given business. We use a Probit model for this regression and obtain the predicted value to measure the ex-ante litigation risk that is related to company fundamentals. We report these results in columns (1) and (2), and they show that when a firm faces higher litigation risk due to the nature of its business, the effects of CEO pay duration on CSR tend to be more salient.

In addition, Bozanic et al. (2017) find that IRS attention is related to risk associated with exogeneous regulatory enforcement. Therefore, we obtain IRS attention data and report the results in columns (3) and (4). The interaction terms for this measure and CEO pay duration are positive and significant in both models, suggesting that the probability of encountering future negative events amplifies the effects of CEO pay duration on CSR scores. Akey, Lewellen, and Liskovich (2018) also show that data breaches are negative events that damage shareholder value as well as

firm reputations. Therefore, we use the incidence of forward-year data breaches as indicated by the Privacy Rights Clearinghouse as a proxy for data-breach risks. We include the test results for data breaches in columns (5) and (6). The interaction terms for data-breach risks and CEO pay duration have positive effects on CSR scores, as seen in both columns. This indicates that, if a company is more likely to suffer a data breach, CEOs with stronger long-term incentives support CSR engagement to an even greater extent. This supports the notion that these CEOs encourage their firms to pursue CSR to mitigate potential reputation damage from random negative events: the negative consequences of data breaches matter more for CEOs with longer pay duration, so they engage in CSR to pre-emptively protect their firms' reputations. Taken together, the results presented in this subsection suggest that obtaining insurance protection against future problems is an important motive for CEOs with long-term incentives to support CSR activities.

Collectively, the test results reported in this subsection suggest that CEOs with long-term compensation schemes value reputation insurance and thus increase their CSR scores when they foresee a higher probability of reputation loss in the future or after a reputation-damaging shock.

4.2. Stakeholder Support

The instrumental theory of CSR suggests that CEOs have a stronger incentive to invest in CSR when they sense greater demand for stakeholder support. To examine whether CEOs with longer pay duration engage in CSR activities to obtain and maintain stakeholder support, we use three measures of the need for stakeholder support: *Product Market Fluidity*, *Product Concentration*, and *Unemployment Insurance*.

Flammer (2015) finds that product market competition induces CSR investments because such investments generate valuable resources that improve firms' competitiveness and enable them to differentiate themselves from rivals. In other words, when competition is more intense on the

product market, firms need more support from their employees, suppliers, and customers to remain competitive. *Product Market Fluidity* measures how intensely a firm's product market changes (Hoberg, Phillips, and Prabhala, 2014), which could be viewed as a measure of market threats. In addition, we follow Hoberg and Philips (2010) and use *Product Concentration* as an inverse measure of product market competition. Following Flammer and Luo (2017), we use *Unemployment Insurance* as a proxy for the need to achieve employee satisfaction because higher unemployment benefits reduce the cost of being unemployed and thus increase disgruntled employees' incentives to engage in adverse behavior. We use the following model to test the joint effects of stakeholder support and CEO pay duration on corporate CSR engagement:

$$CSR_{i,t+1} = \alpha_{st} + \theta_i + bX_{i,t} + \gamma \text{ CEO Pay Duration}_{i,t} + \delta \text{ Stakeholder Measure}_{i,t} + \eta \text{ CEO Pay Duration}_{i,t} * \text{Stakeholder Measure}_{i,t} + \varepsilon_{i,t+1}, \quad (4)$$

where the stakeholder measure alternates between *Product Market Fluidity*, *Product Concentration*, and *Unemployment Insurance*.

(Insert Table 6 around here)

We report the regression results in Table 6. In columns (1) and (2), the positive and significant coefficients of *CEO Pay Duration * Product Market Fluidity* indicate that, when the product market's landscape becomes more competitive over time, the effects of CEO pay duration on CSR engagement are stronger. The coefficients of *CEO Pay Duration* lose significance, suggesting that CEOs have a weaker incentive to invest in CSR when the product market is not competitive. Further, the results reported in columns (3) and (4) show that the coefficients of *CEO Pay Duration * Product Concentration* are negative and significant, which suggests that the effects of *CEO Pay Duration* on CSR attenuate when industry concentration is high and the need for stakeholder support is low. As shown in columns (5) and (6), if firms locate in states with higher

unemployment insurance, CEOs with longer pay duration are more likely to engage in CSR to invest in employees. Overall, the evidence reported in this subsection suggests that stakeholder support is an important channel that facilitates the relationship between CEO pay duration and CSR scores.[6]

4.3. Outcome Tests

The test results that we have reported thus far show that CEOs with longer pay duration are associated with more CSR engagement to gain stakeholder support and reputation protection, both of which yield outcomes that are supposed to improve long-run performance. We next examine whether these CSR scores improve stakeholder satisfaction using *Best Employer*, an indicator that takes the value of one if a firm is selected by Fortune Magazine as one of the best 100 firms in the United States to work for and zero otherwise. Furthermore, the need for shareholder support and reputation insurance implies that CEOs with longer pay duration leverage better CSR scores to reduce the uncertainty of their deferred equity-based compensation. Hence, we examine whether CSR conducted by CEOs with long pay duration can reduce crash risk, as a stock-price crash could significantly shrink CEOs' future compensation. We expect that, if long-term incentivized CEOs invest in CSR practices to hedge against future reputation loss or other negative events, the interaction term for *CEO Pay Duration* and CSR should have a negative effect on future crash risk.

We also study whether interaction between *CEO Pay Duration* and CSR scores is associated with future accounting performance, which is measured as return on assets (ROA) in

[6] Due to the endogenous nature of duration, we acknowledge that the interaction coefficients may have alternative interpretations. In the case of the variables measuring a firm's need for stakeholder support and reputation insurance, longer duration could causally increase the degree to which firms that need it tend to invest more robustly in CSR. On the other hand, duration could be correlated with unobserved variables related to the potential benefit of CSR, and all these unobservable variables have interactive effects with the observable variables the authors use.

two years. Lastly, the question naturally arises whether these CSR scores, which contribute to stakeholder welfare and satisfaction, can bring value to shareholders. To study this question, we use two years of abnormal stock returns as a measure of future performance to study whether these CSR activities that obtain stakeholder support and provide reputation insurance can improve firm performance.

In short, we test these outcomes and report the results in Table 7 using the following model, where the outcome variable alternates between the best employer dummy, crash risk, accounting performance, and abnormal stock returns.

$$Outcome\ Variable_{i,t+2} = \alpha_{st} + \theta_i + bX_{i,t} + \gamma\ CEO\ Pay\ Duration_{i,t} + \delta\ CSR_{i,t} + \eta\ CEO\ Pay\ Duration_{i,t} * CSR_{i,t} + \varepsilon_{i,t+2}, \quad (5)$$

(Insert Table 7 around here)

To obtain the results reported in columns (1) and (2) of Table 7 we use *Best Employer* as the outcome variable for stakeholder welfare and satisfaction. Using a Probit model, we find that the interaction terms for CSR measures and CEO pay duration are positive and significant, indicating that when longer-term incentivized CEOs invest in CSR, these CSR activities improve stakeholder welfare and satisfaction. We report the joint effects of CEO pay duration and CSR engagement on crash risk in columns (3) and (4). Following prior literature (Chen, Hong, and Stein; 2001; Kim, Li, and Zhang, 2011), we construct stock-price crash risk as the negative conditional return skewness measure (*NCSKEW*), which is calculated at the firm-year level by taking the negative of the third moment of firm-specific weekly returns in each sample year and dividing it by the standard deviation of firm-specific weekly returns raised to the third power. The interaction terms for CSR scores and CEO pay duration shown in columns (3) and (4) are negatively

associated with future crash risk, which is consistent with our conjecture that long-term incentivized CEOs' investments in CSR are beneficial to future firm performance.

We then use ROA in two years as the measure of a firm's accounting performance and report the results in column (5) and (6). The coefficients of the integration terms for CEO pay duration and CSR scores are positive and significant. These results suggest that long-term incentivized CEOs' social responsible effort can help their firms achieve superior operating performance, as the CSR investments made by firms with longer incentive horizons are positively related to better future profitability.

For columns (7) and (8), we follow Cremers, Litov, and Sepe (2017) and use stock returns, a direct measure of shareholder wealth, as a measure of firm value. In so doing, we examine whether these higher CSR scores ultimately provide superior returns to shareholders. We use buy-and-hold abnormal returns two years after the end of the current fiscal year. Buy-and-hold abnormal returns are calculated as raw buy-and hold returns, obtained from CRSP monthly returns, net of matched Fama-French 100 size and book-to-market portfolio returns (buy-and-hold value-weighted returns). In our regressions, we control for firm size, prior stock performance, and several other factors, following Harford, Kecskés, and Mansi (2018). The interaction terms for CEO pay duration and CSR measures significantly increase abnormal returns over the two-year period. This indicates that the beneficial influence of long-term incentivized CEOs' CSR performance on firm value is further justified by higher future stock returns. In sum, our overall evidence is consistent with the proposition that long pay duration encourages CEOs to engage in value-enhancing CSR activities.

5. Alternative Explanation

The evidence we obtain so far suggests that the positive relation between CSR engagement and CEO pay duration is primarily motivated by the long-term instrumental benefits from CSR. However, it is possible that agency issues might also play a role in driving this relation. For instance, CEOs may engage in CSR activities for their own personal interests, such as enhancing their personal images or pursuing their own social and environmental values, which may be conflicted with the best interests of the company and its shareholders. Masulis and Reza (2015) find a negative market reaction to the disclosure of corporate philanthropy. In such a case, the agency issue theory of CSR would suggest that a CEO whose compensation is tightly tied to the near-term stock price is less likely to disclose CSR activities, which would be reflected by lower CSR scores and hence a positive association between pay duration and CSR.

We employ media coverage to examine the validity of this alternative explanation. Because media coverage exposes CEO's self-interested activities, it would moderate the association between CEO pay duration and overall CSR scores if agency issues are the driver of the baseline results. Following Dai, Shen, and Zhang (2021), we measure a firm's overall media attention as the number of news articles in a calendar year identified by RavenPack and scale it by 100 in the regression analysis. RavenPack classifies news articles into various types by using proprietary text and part-of-speech tagging or labeling. We exclude news articles categorized as "press release" because these articles are generated by the firms themselves. The interaction terms of CEO pay duration and the number of news articles in Table 8 do not have any significant impacts on CSR scores. This finding indicates that the effects of CEO pay duration on CSR do not lessen significantly when the firm receives more media coverage, which does not support the agency issue hypothesis.

(Insert Table 8 around here)

We also examine whether the amount of vesting incentive has any impact on the corporate donation disclosure. If agency issues are the driving force of the main findings in this paper, CEOs with more immediate vesting should try to avoid disclosure of corporate donation to minimize the negative stock price impact from these donations on the value of their incentives that are vesting soon. However, we do not find any negative effect of the incentive value with immediate vesting on the propensity of donation disclosure. These results are contradictory to the predictions of agency theory and are reported in Table IA1 of Online Appendix. Take together, our findings provide compelling evidence that rules out agency issues as an alternative explanation for the positive association between CEO pay duration and CSR.

6. Endogeneity Tests

While our baseline results establish the hypothesized links between CSR scores and CEO pay duration, we are aware of empirical challenges to our baseline results that can result from endogeneity issues, such as omitted variables, noisy proxies, and simultaneity. We employ several methods, including an alternative measurement of managerial myopia, an instrumental variable approach, and CEO fixed effects as controls to further address endogeneity concerns.

6.1. Scheduled Vesting

We allay endogeneity concerns first by employing an alternative proxy for CEO myopia. Edmans, Fang, and Lewellen (2017) use the dollar amount of restricted stocks and options scheduled to vest or become exercisable to measure short-term CEO incentives: the more shares or options that are scheduled to vest in a given period, more myopic are executives in decision-making. Although this is not strictly a duration measure, as managers can simultaneously have long-term incentives and upcoming vesting grants, an advantage of this method is that equity

grants are often determined by boards of directors several years prior to vesting. Thus, they are unlikely to be related to current shocks to investment opportunities, including CSR investments and scores.

Following Edmans, Fang, and Lewellen (2017), we construct two measures. First, we estimate the value of option and stock grants that are vesting in a given year (*Total Vesting Value*) based on their vesting schedules that are published on grant dates from previous years. We use the current fiscal year end financial information to calculate the value of these vesting grants. For example, if we find in Incentive Lab an option grant awarded in 2010 with a three-year vesting schedule, we assume that this grant is vested in 2013.[7] We use stock prices, volatility, dividend ratio, and the risk-free rate at the end of fiscal year 2013 to calculate the grant's value and then obtain the sum of all values of grants with estimated vesting dates in 2013 to obtain *Total Vesting Value*. We use the natural logarithm term in regressions. Second, we divide *Total Vesting Value* with the sum of *Total Vesting Value*, salary, and bonus in the current year to obtain *Vesting Ratio.* These variables are constructed beginning in 2002, providing us with sufficient previous years' grant history.[8]

(Insert Table 9 around here)

We present the results in Table 9. Columns (1) and (2) include results with *Total Vesting Value*, and columns (3) and (4) show regression results with *Vesting Ratio*. It is also worth noting that we match CSR in year *t* with vesting values in year *t* to capture the timely nature of these vesting grants and their effects on CSR. The effects of scheduled vesting on CSR are negative and

[7] For the grants to be vested in equal installments over the vesting period (graded vesting), we allocate these grants to separate years accordingly. However, it is possible that there are other situations for which we are not able to control in calculating vesting value, such as early vesting or grant reloads. We acknowledge these limitations.
[8] The median (75% percentile) of vesting length is 36 (48) months, so four years (1998 through 2001) of grant data should give us a reasonably good picture of the vesting situation in 2002.

significant at the 1% level, as seen in all columns. These findings are consistent with the argument that CEO short-termism is a causal factor in CSR decisions, as current short-termism triggered by board decisions made several years in the past, which largely avoids endogeneity, reduces firms' CSR endeavors.

In addition to this reduced form methodology, we also use *Total Vesting Value* and *Vesting Ratio* as instrumental variables for CEO insider selling in the year and find that the predicted values of shares sold by CEOs have a negative effect on CSR. These results are consistent with the notion that short-termism is associated with lower CSR scores and they are reported in Table IA2 of Online Appendix.

6.2. Adoption of FAS 123-R

We follow Jochem, Ladika, and Sautner (2018) and Ladika and Sautner (2020) and use the adoption of accounting standard FAS 123-R as a plausibly exogenous shock to pay duration. FAS 123-R, adopted by the Financial Accounting Standards Board (FASB), requires all publicly traded U.S. firms to adopt the fair-value method to record both newly granted stock options and unvested existing stock options as accounting expenses. In addition, the FASB allows firms to avoid charges for unvested existing options by vesting them before their compliance dates, resulting in accelerated option vesting in many firms to reduce the accounting expenses imposed by FAS 123-R (Balsam, Reitenga, and Yin, 2008; Choudhary, Rajgopal, and Venkatachalam, 2009). A compliance date under this regulation is the start of each firm's first full fiscal year after June 15, 2005, creating a staggered time frame within which firms had to comply with the new regulation. Specifically, Jochem, Ladika, and Sautner (2018) and Ladika and Sautner (2020) focus on samples over calendar years 2005 and 2006 and show that firms with fiscal years ending between June and

December ("late fiscal-year-end firms")[9] accelerated option vesting in calendar year 2005, whereas firms with fiscal years ending between January and May ("early fiscal-year-end firms") waited until calendar year 2006 to accelerate their unvested options. This staggered timing enables Jochem, Ladika, and Sautner (2018) and Ladika and Sautner (2020) to use the ends of firms' fiscal years as an instrument for the decision to accelerate option vesting in a specific calendar year.

(Insert Figure 1 around here)

Although Jochem, Ladika, and Sautner (2018) and Ladika and Sautner (2020) use a dataset with option-acceleration information and Incentive Lab only provides pay-duration information on new grants, it is still reasonable to use the adoption of FAS 123-R as the identification strategy in our study. In particular, if a firm accelerates its unvested executive options before the compliance deadline, it is also likely to grant executives options without vesting requirements or with very short vesting at the same time. We hence posit that the almost-random variation in FAS 123-R's compliance dates has a significant effect on firms' pay duration during the calendar years 2005 and 2006. Late fiscal-year-end firms would implement shorter pay duration in the calendar year 2005 than in 2006, because the acceleration deadline for these firms with fiscal years ending between June and December fell in calendar year 2005; on the other hand, this pattern was reversed, or at least reduced, for early fiscal-year-end firms as most firms accelerate options in the last month of the fiscal year (Jochem, Ladika, and Sautner, 2018). Because early fiscal-year-end firms' acceleration deadline fell between January and May 2006, they would have implemented shorter pay duration in calendar year 2006 than in 2005.[10] We illustrate this staggered pattern in Figure 1. To exploit this largely unanticipated exogenous shock, we focus on a subsample of firms whose

[9] These two calendar years cover fiscal years 2004 through 2006.
[10] We predict that the magnitude of the difference will not be as significant as the late fiscal-year-end observations because these firms have sufficient time to anticipate and prepare for the compliance.

fiscal years end between calendar years 2005 and 2006.[11] Specifically, we obtain a subsample of 974 observations after we include 487 firms with no missing variables over these two years. We define the instrumental variable, *FAS 123-R Takes Effect*, as an indicator that takes the value of one if a firm's fiscal year ends between June 16, 2005 and June 15, 2006 and zero otherwise.[12] After we control for the calendar-year effect, *FAS 123-R Takes Effect* shows the staggering difference between the compliance year, which is calendar year 2005 (2006), and the non-compliance year, which is calendar year 2006 (2005), for late fiscal-year-end firms (early fiscal-year-end firms).

(Insert Table 10 around here)

We use 2SLS methodology for the 2005–2006 subsample and report the results in Table 10. Column (1) shows the first-stage estimations when we regress pay duration on a dummy variable indicating whether FAS 123-R takes effect in the specific calendar year, other control variables, industry fixed effects, and state fixed effects. We also include calendar-year fixed effects so that the *FAS 123-R Takes Effects* dummy identifies the difference between FAS 123-R compliance in calendar year 2005 and already-established FAS 123-R compliance in calendar year 2006 for late fiscal-year-end firms. Additionally, the *FAS 123-R Takes Effects* dummy helps identify the difference between FAS 123-R non-compliance in calendar year 2005 and compliance in calendar year 2006 for early fiscal-year-end firms.

The results reported in column (1) of Table 10 support our prediction and verify the relevance condition: in the calendar year in which FAS 123-R takes effect, pay duration is

[11] Essentially, we keep the fiscal years 2005 and 2006 for late fiscal-year-end observations because the fiscal year and calendar year match for these firms; we keep the fiscal years 2004 and 2005 for early fiscal-year-end observations because they actually ended in calendar years 2005 and 2006, respectively.

[12] For example, for a firm with a fiscal year end of June 30, 2005, or after, the dummy takes the value of one for calendar year 2005 and zero for calendar year 2006. For a firm with a fiscal year end on or before May 31, 2005, the dummy takes the value of one for calendar year 2006 and zero for calendar year 2005.

significantly shorter by more than a quarter. The *F*-statistic for the IV variable *FAS 123-R Takes Effect* is 20.35 and the *p*-value associated with the *F*-statistic is zero, rejecting the null hypothesis that the coefficient on IV is zero. Further, the *F*-statistic is above the commonly used threshold of ten, suggesting that *FAS 123-R Takes Effect* is not a weak instrument. In addition, the exclusion restriction is likely to be satisfied because firms are unable to fully anticipate the timing and impact of FAS 123-R: the acceleration of option vesting was allowed after a narrow 4-3 vote by the FASB, and the final compliance schedule in FAS 123-R was decided on April 14, 2005, two months before the regulation became effective (McConnell et al., 2005; Choudhary, Rajgopal, and Venkatachalam, 2009; Ladika and Sautner, 2020). Using the predicted value of pay duration reported in column (1) for second-stage regressions whose results we report in columns (2) and (3), we show that CEO pay duration increases corporate social engagement. The coefficient of *CEO Pay Duration (Predicted) is* positive and significant, consistent with the existence of a causal relationship between pay duration and CSR measures.

One potential concern of using FAS 123-R as an exogenous shock to CEO pay duration is that FAS 123-R could encourage firms to reduce their CSR investments at the same time. One might argue that, because FAS 123-R increases expenses and reduces corporate earnings, firms have incentives to cut CSR investments to counteract the negative earnings effect of FAS 123-R. We argue that the simultaneous effects are unlikely to occur in our setting. Before complying with FAS 123-R, firms accelerate option vesting, leading to shorter pay duration of their CEOs, but they do not necessarily have incentive to reduce CSR investments because FAS 123-R has not yet been adopted.[13] Following compliance, firms may have an incentive to cut CSR investments to

[13] According to FAS 123, the standard before FAS 123-R, firms can recognize expenses for options using the difference between the stock price and the option exercise price. Therefore, there can be no expenses for options at the money or out of the money. In addition, if the acceleration of option vesting does not affect stock prices significantly, the expenses are largely unaffected.

counter the negative earnings impact of the adoption of FAS 123-R. However, pay duration will now likely be longer than before because many old options have been vested before compliance is achieved and the current option portfolio largely contains newly granted options. As a result, the incentive to cut CSR investments and change in pay duration run in opposite directions and should work against our findings. Taking together, the potential impact of FAS 123-R on CSR scores is unlikely to affect inferences based on our identification strategy.

6.3. Executive-level Fixed Effects

Davidson, Dey, and Smith (2019) find that CEO characteristics are important determinants of CSR scores. Hence, another way to allay endogeneity concerns is to control for executive-level time-invariant heterogeneity in CSR, so we include executive fixed effects to replicate the baseline regressions. These results are discussed in detail in Table IA3 of Online Appendix, and they are generally consistent with the baseline findings.

7. Robustness Tests

7.1. Alternative CEO Pay Duration Measure

Incentive Lab provides information regarding newly granted options and stocks, so our primary CEO pay duration measure uses the value-weighted average time length of vesting periods of new option and restricted stock grants along with current salary and bonus that have vesting periods of zero. This measure relies on the assumption that newly granted options and stocks represent CEOs' entire portfolios of firms and implies that the timing of new grant exercisability or sale restriction removal influences CEO incentives for adopting a short-run or long-run focus. Gopalan, Milbourn, Song, and Thakor (2014) develop an alternative measure of duration that uses entire executive compensation portfolios, including all prior-year grants. This alternative measure

is constructed based on additional assumption requirements, such as equal installments over the vesting period for graded vesting and no early vesting or grant reloads, which make it noisier than our primary measure. Therefore, following Gopalan, Milbourn, Song, and Thakor (2014), we do not use the alternative measure as the main independent variable throughout the paper but provide robustness to our findings. Specifically, we construct alternative CEO pay duration as follows: to estimate the weighted-average duration of components of a CEO's entire compensation package, we include current-year restricted stock grants and stock option grants as well as unvested grants and vested but unexcised grants from all prior years. We obtain information on unvested grants from previous years' grant information from Incentive Lab, and we assign a vesting period of zero to vested but unexercised equity incentives identified from Execucomp. We use pay-for-performance sensitivities of these components as weights, where the pay-for-performance sensitivities are calculated based on financial data at the end of the current fiscal year.[14] We average the pay durations of all unvested and unexercised vested grants, the mean (median) of this alternative duration measure is 0.591 (0.434) year, in line with Gopalan et al. (2014). Further, like the scheduled vesting measures presented in Section 4.2, this variable begins in 2002, so we can have sufficient information on grant histories in previous years. Although this measure is limited insofar as we are not able to control some situations, it allows us to study pay duration in a CEO's entire portfolio of equity holdings and measure its influence on CSR. Test results reported in Table 11 show that the alternative pay duration measure has a positive effect on CSR, and it is significant at the 1% level in all columns. This association between the pay duration of a CEO's entire equity package and CSR provides robustness to our main findings that CEOs that adopt a long-term perspective increase their firms' CSR activities.

[14] See Section I.E of Gopalan, Milbourn, Song, and Thakor (2014) for details on the construction methodology for this alternative measure.

(Insert Table 11 around here)

7.2. Other Robustness Checks

In this subsection we discuss several other tests that we use to further confirm the robustness of our findings. First, in addition to our focus on CEO pay duration, we also include shareholder investment horizons (Cadman and Sunder, 2014; Fu, Tang, and Yan, 2019) and CEO career horizons (Stefanescu et al., 2018) as control variables to isolate the impact of CEO pay duration. Second, while both primary CSR measures are summations of categorical CSR scores, we study the scores for each category separately. Third, we decompose net CSR scores into strengths and concerns and study the effects of CEO pay duration on them separately. Fourth, we use the natural logarithm of CEO pay duration. Lastly, due to the possible divergence in ESG ratings across different databases (Berg, Kolbel, Rigobon, 2022), we use different databases – Refinitiv for ESG data and Trucost for carbon emission data – to study the effects of CEO pay duration on corporate social decisions from different perspectives. We report these results in the Online Appendix and they show that our results remain robust after we consider these factors.

8. Conclusion

This study provides an empirical analysis of the relationship between CEO pay duration and CSR scores to explore the nature of CSR investments. We find that CEOs with longer pay duration have higher CSR scores. We further investigate the mechanisms through which this positive relationship takes place. We find that the relationship is more pronounced when firms face reputation loss, measured by higher ex-ante litigation risk, increased IRS attention, data-breach incidences, and operating in an industry that experienced a recent reputation crisis. The positive association between CEO pay duration and corporate CSR performance is also stronger when firms

need more stakeholder support, such as when they face more intense competition, or are located in states with higher unemployment benefits. These findings provide evidence of both stakeholder-support and reputation-insurance channels, which is consistent with the instrumental perspective on CSR. Further investigation of firms' long-term performance provides additional support to the instrumental perspective on CSR.

We rule out the alternative explanation that agency issue could drive our results. To alleviate endogeneity concerns, we use vesting grant values as short-termism measures with much less endogeneity concerns and the implementation of FAS 123-R as exogenous variations in 2SLS tests and confirm that our results remain robust. In addition to using firm-level fixed effects to control for firm-specific characteristics in the baseline regressions, we also include CEO-level fixed effects to control for CEO-specific characteristics and find consistent results. Taken together, our findings support the instrumental view of CSR and suggest that shareholder and stakeholder interests can be aligned with proper long-term incentives.

References:

Akey, P., Lewellen, S., and Liskovich, I., 2018. Hacking corporate reputations. Working Paper.

Balsam, S., Reitenga, A., and Yin, J., 2008. Option acceleration in response to FAS 123(R). *Accounting Horizons* 22, 23–45.

Bebchuk, L.A., and Fried, J.M., 2010. How to tie equity compensation to long-term results. *Journal of Applied Corporate Finance* 22, 99-106.

Berg, F., Kolbel, J., and Rigobon, R., 2022. Aggregate confusion: The divergence of ESG ratings. *Review of Finance*, 1315-1344.

Bettis, J.C., Bizjak, J., Coles, J.L., and Kalpathy, S., 2018. Performance-vesting provisions in executive compensation. *Journal of Accounting and Economics* 66, 194-221.

Bozanic, Z., Hoopes, J., Thornock, J., and Williams, B., 2017. IRS attention. *Journal of Accounting Research* 55, 79-114.

Cadman, B., and Sunder, J., 2014. Investor horizon and CEO horizon incentives. *The Accounting Review* 89, 1299-1328.

Cai, Y., Jo, H., and Pan, C., 2011. Vice or virtue? The impact of corporate social responsibility on executive compensation. *Journal of Business Ethics* 104, 159-173.

Cao, J., Liang, H., and Zhan, X., 2019. Peer effects of corporate social responsibility. *Management Science* 65, 5449-5956.

Cao, J., Titman, S., Zhan, X., and Zhang, W.E., 2019. ESG preference, institutional trading, and stock return patterns. Working paper.

Chen, J., Hong, H., and Stein, J.C., 2001. Forecasting crashes: Trading volume, past returns, and conditional skewness in stock prices. *Journal of Financial Economics* 61, 345-381.

Choudhary, P., Rajgopal, S., and Venkatachalam, M., 2009. Accelerated vesting of employee stock options in anticipation of FAS 123-R. *Journal of Accounting Research* 47, 105–146.

Cremers, M., Litov, L., and Sepe, S., 2017. Staggered boards and long-term firm value, revisited. *Journal of Financial Economics* 126, 422-444.

Dai, L., Fu, R., Kang, J., and Lee, I., 2016. Corporate governance and the profitability of insider trading. *Journal of Corporate Finance* 40, 235–253.

Dai, L., Shen, R., and Zhang, B., 2021. Does the media spotlight burn or spur innovation? *Review of Accounting Studies* 26, 343-390.

Davidson, R., Dey, A., and Smith, A., 2019. CEO materialism and corporate social responsibility. *The Accounting Review* 94, 101-126.

Deckop, J.R., Merriman, K.K., and Gupta, S., 2006. The effects of CEO pay structure on corporate social performance. *Journal of Management* 32, 329-342.

Deng, X., Kang, J.K., and Low, B.S., 2013. Corporate social responsibility and stakeholder value maximization: evidence from mergers. *Journal of Financial Economics* 110, 87-109.

Dyck, A., Lins, K.V., Roth, L., and Wagner, H.F., 2019. Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics* 131, 693-714.

Edmans, A., Fang, V.W., and Huang, A., 2020. The long-term consequences of short-term incentives. Working Paper.

Edmans, A., Fang, V.W., and Lewellen, K.A., 2017. Equity vesting and investment. *Review of Financial Studies* 30, 2229-2271.

Fabrizi, A., Mallin, C., and Michelon, G., 2014. The role of CEO's personal incentives in driving corporate social responsibility. *Journal of Business Ethics* 124, 311-326.

Ferrell, A., Liang, H., and Renneboog, L., 2016. Socially responsible firms. *Journal of Financial Economics* 122, 585-606.

Flammer, C., 2015. Does product market competition foster corporate social responsibility? Evidence from trade liberalization. *Strategic Management Journal* 36, 1469-1485.

Flammer, C., and Kacperczyk, A.J., 2019. Corporate social responsibility as a defense against knowledge spillovers: evidence from the inevitable disclosure doctrine. *Strategic Management Journal* 40, 1243-1267.

Flammer, C., and Luo, J., 2017. Corporate social responsibility as an employee governance tool: evidence from a quasi-experiment. *Strategic Management Journal* 38, 163-183.

Fombrun, C.J., Gardberg, N.A., and Barnett, M.L., 2000. Opportunity platforms and safety nets: corporate citizenship and reputational risk. *Business and Society Review* 105, 85–106.

Freeman, R., 1984. Strategic management: a stakeholder perspective. Englewood Cliffs, NJ: Prentice-Hall.

Freeman, R.E., Harrison, J.S., Wicks, A.C., Parmar, B.L., and De Colle, S., 2010. Stakeholder theory: the state of the art. Cambridge University Press.

Fu, X., Tang, T., and Yan, X., 2019. Why do institutions like corporate social responsibility investments? Evidence from horizon heterogeneity. *Journal of Empirical Finance* 51, 44-63.

Gillan, S. L., Koch, A., and Starks, L. T., 2021. Firms and social responsibility: A review of ESG and CSR research in corporate finance. Journal of Corporate Finance 66, 101889.

Godfrey, P.C., Merrill, C.B., and Hansen, J.M., 2009. The relationship between corporate social responsibility and shareholder value: an empirical test of the risk management hypothesis. *Strategic Management Journal* 30, 425–445.

Gopalan, R., Milbourn, T., Song, F., and Thakor, A.V., 2014. Duration of executive compensation. *Journal of Finance* 69, 2777-2817.

Graves, S.B. and Waddock, S.A., 1994. Institutional owners and corporate social performance. *Academy of Management journal*, *37*(4),1034-1046.

Harford, J., Kecskés, A., and Mansi, S., 2018. Do long-term investors improve corporate decision making? *Journal of Corporate Finance* 50, 424-452.

Haslem, B., Hutton, I., and Smith, A.H., 2017. How much do corporate defendants really lose? A new verdict on the reputation loss induced by corporate litigation. *Financial Management* 46, 323-358.

Hoberg, G., and Phillips, G., 2010. Real and financial industry booms and busts. *Journal of Finance* 65, 45-86.

Hoberg, G., Phillips, G., and Prabhala, N., 2014. Product market threats, payouts, and financial flexibility. *Journal of Finance* 69, 293-324.

Ioannou, I., and Serafeim, G., 2015. The impact of corporate social responsibility on investment recommendations: analysts' perceptions and shifting institutional logics. *Strategic Management Journal* 36, 1053-1081.

Jochem, T., Ladika, T., and Sautner, Z., 2018. The retention effects of unvested equity: evidence from accelerated option vesting. *Review of Financial Studies* 31, 4142-4186.

Kim, J.B., Li, Y., and Zhang, L., 2011. CFOs versus CEOs: equity incentives and crashes. *Journal of Financial Economics* 101, 713-730.

Krueger, P., 2015. Corporate goodness and shareholder wealth. *Journal of Financial Economics* 115, 304–329.

Krueger, A. B., and Mas, A., 2004. Strikes, scabs, and tread separations: labor strife and the production of defective Bridgestone/Firestone tires. *Journal of Political Economy* 112, 253-289.

Ladika, T., and Sautner, Z., 2020. Managerial short-termism and investment: evidence from accelerated option vesting. *Review of Finance* 24, 305-344.

Lins, K.V., Servaes, H., and Tamayo, A., 2017. Social capital, trust, and firm performance: the value of corporate social responsibility during the financial crisis. *Journal of Finance* 72, 1785–1824.

Maas, K., 2018. Do corporate social performance targets in executive compensation contribute to corporate social performance? *Journal of Business Ethics* 148, 573-585.

Mahapatra, S., 1984. Investor reaction to a corporate social accounting. *Journal of Business Finance & Accounting*, *11*(1), 29-40.

Mahoney, L.S., and Thorn, L., 2006. An examination of the structure of executive compensation and corporate social responsibility: a Canadian investigation. *Journal of Business Ethics* 69, 149-162.

Masulis, R., and Reza, S., 2015. Agency problems of corporate philanthropy. *Review Financial Studies* 28, 592–636.

Masulis, R.W., and Reza, S.W., 2019. Private benefits and corporate investment and financing decisions: the case of corporate philanthropy. Working Paper.

McConnell, P., Pegg, J., Senyek, C., and Mott, D., 2005. SEC does it: delays effective date for employee stock option expensing. *Bear Stearns Equity Research Note*.

McGuire, J.B., Sundgren, A., and Schneeweis, T., 1988. Corporate social responsibility and firm financial performance. *Academy of Management Journal* 31, 854-872.

McWilliams, A., and Siegel, D., 2000. Corporate social responsibility and financial performance: correlation or misspecification? *Strategic Management Journal* 21, 603-609.

Minor, D., and Morgan, J., 2011. CSR as reputation insurance: primum non nocere. *California Management Review* 53, 40-59.

Petrovits, C.M., 2006. Corporate-sponsored foundations and earnings management. *Journal of Accounting and Economics* 41, 335-362.

Stein, J.C., 1988. Takeover threats and managerial myopia. *Journal of political economy*, *96*(1), 61-80.

Stein, J.C., 1989. Efficient capital markets, inefficient firms: A model of myopic corporate behavior. *The quarterly journal of economics*, *104*(4), 655-669.

Servaes, H., and Tamayo, A., 2013. The impact of corporate social responsibility on firm value: The role of customer awareness. *Management Science* 59, 1045-1061.

Sharfman, M.P. and Fernando, C.S., 2008. Environmental risk management and the cost of capital. *Strategic Management Journal*, *29*(6), 569-592.

Stefanescu, I., Wang, Y., Xie, K., and Yang, J., 2018. Pay me now (and later): pension benefit manipulation before plan freezes and executive retirement. *Journal of Financial Economics* 127, 152-173.

Waddock, S.A., and Graves S.B., 1997. The corporate social performance-financial performance link. *Strategic Management Journal* 18, 303–319.

Wang, H., and Qian, C., 2011. Corporate philanthropy and financial performance of Chinese firms: The roles of social expectations and political access. *Academy of Management Journal* 54, 1159–1181.

Weisbach, M.S., 1988. Outside directors and CEO turnover. *Journal of Financial Economics* 20, 431-460.

Appendix – Variable Definitions

Variable Name	Definition
CSR Measures	
Raw CSR	The sum of the differences between strengths and concerns along six dimensions: environment, community, diversity, employee relations, human rights, and product quality and safety.
Raw Strengths	The sum of strengths along six dimensions: environment, community, diversity, employee relations, human rights, and product quality and safety.
Raw Concerns	The sum of concerns along six dimensions: environment, community, diversity, employee relations, human rights, and product quality and safety.
Scaled CSR	The sum of the scaled differences between strengths and concerns along six dimensions: environment, community, diversity, employee relations, human rights, and product quality and safety. The category strength (concern) ratio is the number of strengths (concerns) for each firm year within each CSR category divided by the maximum possible number of strengths (concerns) in that category year.
Scaled Strengths	The sum of scaled strengths along six dimensions: environment, community, diversity, employee relations, human rights, and product quality and safety.
Scaled Concerns	The sum of scaled concerns six dimensions: environment, community, diversity, employee relations, human rights, and product quality and safety.
Incentive Measures	
CEO Pay Duration (in years)	The weighted average duration of the components of a CEO's annual compensation, including salary, bonus, restricted stock, and stock options.
CEO Delta	The change in the dollar value of a CEO's stock and options portfolio with respect to a 1% change in the stock price. We use the natural logarithm term in regressions.
CEO Vega	The change in the dollar value of a CEO's stock and options portfolio with respect to a 1% change in the annualized standard deviation of stock returns. We use its natural logarithm term in regressions.
Control Measures	
Size (in billions)	Total assets in 2016 dollars. We use the natural logarithm term in regressions.
Q	The market value of equity plus the book value of liabilities scaled by the book value of total assets.
Profitability	Income before extraordinary items divided by total assets.
Cash Holding	Cash and short-term investments divided by total assets.
Free Cash Flow	Operating cash flow minus capital expenditures minus change in net working capital divided by total assets.
Leverage	The book value of total liabilities divided by total assets.
Capital Expenditures	Capital expenditures divided by total assets.
Independent Directors	Percentage of independent directors on a board.
Product Concentration	10-K-text–based network industry concentration data from the Hoberg and Phillips Data Library at Dartmouth College.
Other Measures	
Product Market Fluidity	10-K–based product market fluidity data from the Hoberg and Phillips Data Library at Dartmouth College.
Unemployment Insurance	State-level unemployment insurance data provided by the U.S. Department of Labor.
Ex Ante Lawsuit Probability	Following Dai et al. (2016), we run a Probit regression in which the dependent variable is a dummy variable that equals one if a security lawsuit is filed against

	a firm in a given year and zero otherwise. We then use the predicted value to measure ex-ante legal risk.
IRS Attention	We obtain IRS attention data from Dr. Zahn Bozanic's web page at Florida State University. It measures the number of times during a year that a computer with an IRS IP address downloaded a 10-K form from EDGAR for a firm.
Data Breach	We hand-collected these instances. The variable equals one if a company has data breach(es) in the forward year and zero otherwise.
No. of News	It is the number of news articles in a calendar year that are not "press release" identified by RavenPack and scale it by 100 in the regression analysis.
Best Employer	An indicator that takes the value of one if a company is selected as one of the best 100 employers to work for in the United States by Fortune Magazine and zero otherwise.
Crash Risk	A negative conditional return skewness measure (NCSKEW), which is calculated at the firm-year level by taking the negative of the third moment of firm-specific weekly returns for each sample year and dividing it by the standard deviation of firm-specific weekly returns raised to the third power.
Stock Return	Two year buy-and-hold abnormal returns, measured as raw buy-and hold returns (compounded monthly returns) net of matched Fama-French 100 size and book-to-market portfolio returns (buy and hold value-weighted returns).
FAS 123-R Takes Effect	An indicator that takes the value of one if firm fiscal year observations end between June 2005 and May 2006 and 0 otherwise.
CEO Age 64+	An indicator that takes the value of one if a CEO is 64 or older and zero otherwise.
Total Vesting Value	The estimated value of grants offered in previous years that are vesting in the current year. This variable begins in 2002 to ensure that we have sufficient histories of previous years' grants.
Vesting Ratio	Total Vesting Value / (Total Vesting Value + Current Year Salary and Bonus). This variable begins in 2002 to ensure that we have sufficient histories of previous years' grants.
Alternative CEO Pay Duration (in years)	The weighted average duration of components of a CEO's overall compensation, including current-year restricted stock grants, stock option grants as well as unvested grants and vested but unexercised grants from previous years. We use fiscal-year-end pay-for-performance sensitivities as weights. This variable begins in 2002 to ensure that we have sufficient histories of previous years' grants.

Table 1: Summary Statistics

In this table we present summary statistics for the samples used in our study. The main sample contains 10,814 firm-year observations for the period running from 1998 through 2018. See Appendix for detailed variable explanations.

Variable Name	Mean	Std. Dev.	Q1	Median	Q3
Raw CSR	0.905	2.990	-1	0	2
Raw Strengths	2.525	2.875	0	2	4
Raw Concerns	1.620	1.986	0	1	2
Scaled CSR	0.049	0.644	-0.333	0	0.332
Scaled Strengths	0.444	0.559	0	0.250	0.617
Scaled Concerns	0.395	0.483	0	0.250	0.583
CEO Pay Duration (in years)	1.761	1.022	1.215	1.868	2.316
CEO Delta (in thousands)	1,644.198	13,429.287	139.224	331.305	823.329
CEO Vega (in thousands)	232.944	544.247	0.000	44.588	248.975
Size (in billions)	19.486	40.687	2.922	6.535	18.574
Q	1.897	1.712	0.962	1.427	2.245
Profitability	0.057	0.100	0.027	0.057	0.096
Cash Holding	0.143	0.156	0.029	0.084	0.204
Free Cash Flow	0.064	0.081	0.022	0.062	0.105
Leverage	0.253	0.208	0.120	0.237	0.353
Capital Expenditures	0.052	0.049	0.021	0.038	0.065
Product Concentration	0.267	0.247	0.095	0.176	0.355
Independent Directors	0.783	0.147	0.700	0.818	0.889

Table 2: Variable Correlations

In this table we report the pairwise correlation coefficients of the key variables. P-values are reported in parentheses. See Appendix for detailed variable explanations.

	Raw CSR	Scaled CSR	CEO Pay Duration	CEO Delta	CEO Vega	Size	Q	Profitability	Cash Holding	Free Cash Flow	Leverage	Capital Expend-itures	Product Con-centration
Scaled CSR	0.891												
	(0.000)												
CEO Pay Duration	0.139	0.110											
	(0.000)	(0.000)											
CEO Delta	0.028	-0.012	0.109										
	(0.003)	(0.224)	(0.000)										
CEO Vega	-0.204	-0.187	-0.044	0.357									
	(0.000)	(0.000)	(0.000)	(0.000)									
Size	0.229	0.127	0.168	0.155	-0.163								
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)								
Q	0.091	0.085	0.081	0.256	0.102	-0.257							
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)							
Profitability	0.087	0.066	0.015	0.158	-0.060	-0.045	0.326						
	(0.000)	(0.000)	(0.126)	(0.000)	(0.000)	(0.000)	(0.000)						
Cash Holding	0.092	0.072	0.061	0.082	0.127	-0.347	0.369	0.054					
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
Free Cash Flow	0.144	0.104	0.030	0.112	-0.024	-0.170	0.399	0.514	0.268				
	(0.000)	(0.000)	(0.002)	(0.000)	(0.012)	(0.000)	(0.000)	(0.000)	(0.000)				
Leverage	-0.024	-0.006	-0.026	-0.114	-0.066	0.163	-0.073	-0.146	-0.257	-0.143			
	(0.012)	(0.545)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
Capital Expenditures	-0.075	-0.041	-0.008	0.050	0.013	0.026	0.017	0.024	-0.209	-0.353	0.015		
	(0.000)	(0.000)	(0.436)	(0.000)	(0.192)	(0.007)	(0.079)	(0.012)	(0.000)	(0.000)	(0.113)		
Product Concentration	0.017	0.008	-0.043	-0.046	-0.085	-0.072	0.011	0.082	-0.108	0.105	0.002	-0.139	
	(0.085)	(0.406)	(0.000)	(0.000)	(0.000)	(0.000)	(0.262)	(0.000)	(0.000)	(0.000)	(0.811)	(0.000)	
Independent Directors	0.086	0.070	0.051	-0.203	-0.236	0.085	-0.127	-0.048	0.008	-0.023	0.107	-0.088	0.027
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.410)	(0.015)	(0.000)	(0.000)	(0.005)

Table 3: Baseline Test Results

In this table we report our baseline regression results. For column (1), the dependent variable is the raw CSR score. For column (2), the dependent variable is the scaled CSR score. We use OLS estimation methods while controlling for firm and state×year fixed effects in all models. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1) Raw CSR	(2) Scaled CSR
CEO Pay Duration	0.127***	0.026***
	(0.023)	(0.006)
CEO Delta	-0.010	-0.008
	(0.025)	(0.005)
CEO Vega	-0.118***	-0.023***
	(0.023)	(0.007)
Size	0.549***	0.135***
	(0.121)	(0.036)
Q	0.027	0.011
	(0.037)	(0.012)
Profitability	0.588	0.142*
	(0.344)	(0.080)
Cash Holding	-0.304	-0.099
	(0.460)	(0.109)
Free Cash Flow	1.203**	0.032
	(0.492)	(0.137)
Leverage	0.651*	0.222*
	(0.359)	(0.113)
Capital Expenditures	-1.160	-0.624
	(2.091)	(0.585)
Product Concentration	-0.145	-0.030
	(0.183)	(0.044)
Independent Directors	0.643**	0.079
	(0.293)	(0.068)
State×Year Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Observations	10,814	10,814
Adj. R-squared	0.572	0.439

Table 4: Reputation Insurance Tests – Deepwater Horizon Disaster

In this table we provide evidence for the reputation-protection hypothesis. We report regression estimates of the effects of CEO pay duration on CSR and control variables for the years 2009 through 2012, which correspond to the four years around the Deepwater Horizon oil spill that occurred on May 24, 2010. Post Event is an indicator that equals one for the years 2011 and 2012 and zero otherwise. In Columns (1) and (2), we report within-industry results for firms in extractive industries. The coefficient estimates of CEO Pay Duration × Post Event show the differential effects of pay duration on CSR scores after the event. In Columns (3) and (4), we report difference-in-difference-in-differences regression results. The coefficients of CEO Pay Duration × Post Event × Treated Firm show the differential effects of pay duration on CSR scores for firms that operate in extractive industries (treated firms) compared with firms comprising the rest of the sample. We use OLS estimation methods controlling for firm and state×year fixed effects. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significances at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)	(3)	(4)
	Within-industry regressions		Difference-in-differences regressions	
	Raw CSR	Scaled CSR	Raw CSR	Scaled CSR
CEO Pay Duration	-0.762*	-0.002	-0.110	-0.011
	(0.423)	(0.096)	(0.078)	(0.016)
Post Event	N/A	N/A	N/A	N/A
CEO Pay Duration * Post Event	1.696***	0.360***	0.317***	0.047*
	(0.334)	(0.054)	(0.118)	(0.024)
Treated Firm			N/A	N/A
CEO Pay Duration * Treated Firm			-0.601*	-0.031
			(0.362)	(0.063)
Post Event * Treated Firm			-2.202**	-0.557***
			(0.948)	(0.205)
CEO Pay Duration * Post Event * Treated Firm			1.043***	0.209***
			(0.526)	(0.119)
CEO Delta	0.084	-0.026	-0.058	-0.013
	(0.241)	(0.064)	(0.043)	(0.010)
CEO Vega	-0.070	0.008	0.030	0.005
	(0.096)	(0.018)	(0.024)	(0.005)
Size	1.894	0.603	-0.192	-0.087
	(1.937)	(0.519)	(0.326)	(0.076)
Q	-0.640	-0.414	-0.176*	-0.040*
	(1.137)	(0.454)	(0.096)	(0.021)
Profitability	7.859	0.818	-0.886	-0.163
	(6.442)	(1.157)	(0.569)	(0.124)
Cash Holding	-4.877	-1.483	0.149	-0.017
	(7.220)	(2.169)	(0.820)	(0.182)
Free Cash Flow	-2.708	0.457	1.916	0.273
	(5.527)	(1.767)	(1.207)	(0.260)
Leverage	-7.470	-1.864	0.059	0.022

	(5.481)	(1.783)	(0.687)	(0.154)
Capital Expenditures	-9.741	-1.157	1.868	0.034
	(7.539)	(2.358)	(2.480)	(0.550)
Product Concentration	4.435	0.377	-0.442	-0.055
	(3.005)	(1.131)	(0.468)	(0.107)
Independent Directors	6.219	1.218	1.267	0.338**
	(4.107)	(1.048)	(0.782)	(0.169)
State×Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	137	137	2,614	2,614
Adj. R-squared	0.316	0.336	0.671	0.631

Table 5: Reputation Insurance Tests – Future Negative Events

In this table we present results pertaining to whether demand for reputation insurance affects the association between CEO pay duration and CSR. Specifically, we use ex-ante lawsuit probability for columns (1) and (2), IRS attention for columns (3) and (4), and forward-year data breaches for columns (5) and (6) as measures of future negative events. We hand-collect forward-year data-breach information. We obtain IRS attention data from Dr. Zahn Bozanic's web page at Florida State University. We use OLS estimation methods controlling for firm and state×year fixed effects. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)	(3)	(4)	(5)	(6)
	Raw CSR	Scaled CSR	Raw CSR	Scaled CSR	Raw CSR	Scaled CSR
CEO Pay Duration	0.037	0.004	0.128***	0.021**	0.078*	0.011
	(0.042)	(0.010)	(0.038)	(0.009)	(0.041)	(0.009)
Ex Ante Lawsuit Probability	-3.849**	-0.651				
	(1.687)	(0.479)				
CEO Pay Duration * Ex Ante Lawsuit Probability	1.866***	0.286**				
	(0.599)	(0.128)				
IRS Attention			0.007*	0.001		
			(0.003)	(0.001)		
CEO Pay Duration * IRS Attention			0.004**	0.001**		
			(0.002)	(0.000)		
Data Breach					0.453	0.061
					(0.434)	(0.094)
CEO Pay Duration * Data Breach					0.388**	0.099***
					(0.182)	(0.037)
CEO Delta	-0.030	-0.008	0.025	-0.001	-0.001	-0.009
	(0.029)	(0.006)	(0.028)	(0.006)	(0.031)	(0.007)
CEO Vega	-0.087**	-0.014	-0.102***	-0.020**	-0.103***	-0.020**
	(0.037)	(0.009)	(0.030)	(0.008)	(0.026)	(0.007)
Size	0.265	0.043	0.549**	0.110**	0.801***	0.171***
	(0.218)	(0.063)	(0.211)	(0.047)	(0.210)	(0.046)
Q	-0.041	-0.010	-0.034	-0.007	0.066	0.011
	(0.027)	(0.006)	(0.063)	(0.015)	(0.086)	(0.019)
Profitability	1.012**	0.264**	0.400	0.185**	0.182	0.142
	(0.431)	(0.109)	(0.269)	(0.083)	(0.299)	(0.090)

Cash Holding	-0.017	-0.057	0.212	0.023	0.074	-0.009
	(0.505)	(0.123)	(0.509)	(0.122)	(0.550)	(0.131)
Free Cash Flow	1.328**	0.118	1.131*	-0.015	0.621	-0.096
	(0.551)	(0.121)	(0.614)	(0.150)	(0.510)	(0.132)
Leverage	-0.011	0.025	-0.286	0.019	0.096	0.095
	(0.369)	(0.078)	(0.391)	(0.088)	(0.437)	(0.104)
Capital Expenditures	-0.997	-0.250	-0.011	-0.144	-0.336	-0.123
	(2.182)	(0.383)	(2.632)	(0.546)	(2.321)	(0.560)
Product Concentration	-0.223	-0.032	-0.305	-0.046	-0.201	-0.021
	(0.225)	(0.045)	(0.226)	(0.062)	(0.230)	(0.064)
Independent Directors	0.269	0.008	0.456	0.056	0.692	0.106
	(0.275)	(0.059)	(0.393)	(0.093)	(0.432)	(0.109)
State×Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	7,141	7,141	6,771	6,771	7,024	7,024
Adj. R-squared	0.627	0.546	0.601	0.467	0.606	0.463

Table 6: Stakeholder Support Tests

In this table we report results pertaining to whether demand for stakeholder support affects the association between CEO pay duration and CSR by reporting estimations of the joint effects of factors related to stakeholder importance and CEO pay duration. Specifically, we use product fluidity for columns (1) and (2), product concentration for columns (3) and (4), and unemployment insurance for columns (5) and (6) as factors that proxy for the importance of stakeholder welfare for firms. We use OLS estimation methods controlling for firm and state×year fixed effects in all models. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)	(3)	(4)	(5)	(6)
	Raw CSR	Scaled CSR	Raw CSR	Scaled CSR	Raw CSR	Scaled CSR
CEO Pay Duration	0.073	-0.004	0.144**	0.035**	-1.488*	-0.237
	(0.057)	(0.014)	(0.063)	(0.015)	(0.770)	(0.196)
Product Market Fluidity	0.000	-0.014				
	(0.218)	(0.050)				
CEO Pay Duration * Product Market Fluidity	0.118***	0.036***				
	(0.044)	(0.010)				
Product Concentration			-0.035	0.029		
			(0.272)	(0.059)		
CEO Pay Duration * Product Concentration			-0.327***	-0.085***		
			(0.094)	(0.022)		
Unemployment Insurance					0.785***	0.224***
					(0.238)	(0.060)
CEO Pay Duration * Unemployment Insurance					0.176**	0.040**
					(0.070)	(0.018)
CEO Delta	-0.010	-0.008	-0.010	-0.008	-0.001	-0.005
	(0.025)	(0.005)	(0.025)	(0.005)	(0.027)	(0.006)
CEO Vega	-0.118***	-0.024***	-0.118***	-0.023***	-0.114***	-0.023***
	(0.023)	(0.007)	(0.023)	(0.007)	(0.022)	(0.006)
Size	0.544***	0.133***	0.548***	0.134***	0.568***	0.138***
	(0.121)	(0.036)	(0.121)	(0.036)	(0.130)	(0.039)
Q	0.025	0.010	0.027	0.011	0.020	0.009
	(0.037)	(0.012)	(0.037)	(0.012)	(0.039)	(0.013)
Profitability	0.602*	0.148*	0.589	0.143*	0.696*	0.170*
	(0.346)	(0.081)	(0.344)	(0.080)	(0.365)	(0.082)

Cash Holding	-0.308	-0.099	-0.305	-0.099	-0.531	-0.130
	(0.459)	(0.109)	(0.459)	(0.109)	(0.478)	(0.114)
Free Cash Flow	1.213**	0.036	1.199**	0.031	1.260**	0.012
	(0.490)	(0.136)	(0.491)	(0.136)	(0.581)	(0.161)
Leverage	0.671*	0.231*	0.654*	0.223*	0.742*	0.245*
	(0.356)	(0.113)	(0.359)	(0.113)	(0.394)	(0.121)
Capital Expenditures	-1.192	-0.638	-1.165	-0.627	-0.907	-0.601
	(2.080)	(0.576)	(2.088)	(0.584)	(2.204)	(0.612)
Product Concentration	-0.105	-0.013			-0.100	-0.020
	(0.186)	(0.044)			(0.203)	(0.049)
Independent Directors	0.651**	0.082	0.645**	0.079	0.548	0.055
	(0.292)	(0.067)	(0.292)	(0.068)	(0.345)	(0.083)
State×Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,814	10,814	10,814	10,814	9,139	9,139
Adj. R-squared	0.572	0.439	0.572	0.439	0.565	0.425

Table 7: Impacts on Future Outcomes

In this table we report results of estimations of the joint effects of CSR scores and CEO pay duration on future outcomes. We use whether a firm is regarded as one of the best employers over two years as the dependent variable for columns (1) and (2), crash risk over two years as another robustness measure for columns (3) and (4), ROA in two years as a measure of future operating performance for columns (5) and (6), and two-year stock returns as a measure of future stock performance for columns (7) and (8). We use OLS estimation methods with firm and state×year fixed effects for columns (3) through (8). Probit estimation methods are used in columns (1) and (2). Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Future Best Employer	Future Best Employer	Future Crash Risk	Future Crash Risk	Future ROA	Future ROA	Future Stock Return	Future Stock Return
CEO Pay Duration	-0.040	-0.030	-0.002	-0.007	-0.215*	-0.158	-0.041**	-0.036**
	(0.069)	(0.065)	(0.014)	(0.014)	(0.119)	(0.109)	(0.017)	(0.016)
Raw CSR	0.136***		0.012		0.182***		-0.004	
	(0.033)		(0.010)		(0.060)		(0.018)	
CEO Pay Duration * Raw CSR	0.003***		-0.007**		0.063**		0.012***	
	(0.001)		(0.003)		(0.030)		(0.003)	
Scaled CSR		0.539***		0.071		0.650**		-0.004
		(0.151)		(0.051)		(0.292)		(0.072)
CEO Pay Duration * Scaled CSR		0.010***		-0.027*		0.257*		0.045***
		(0.003)		(0.015)		(0.142)		(0.015)
CEO Delta	0.142**	0.136*	0.019	0.019	0.034	0.031	-0.083**	-0.083**
	(0.071)	(0.070)	(0.012)	(0.012)	(0.065)	(0.064)	(0.035)	(0.035)
CEO Vega	0.024	0.024	-0.003	-0.003	0.047	0.037	0.001	0.000
	(0.016)	(0.016)	(0.003)	(0.003)	(0.030)	(0.029)	(0.005)	(0.005)
Size	0.041	0.117	0.110***	0.109***	-2.883***	-2.831***	-0.492***	-0.492***
	(0.080)	(0.076)	(0.029)	(0.029)	(0.534)	(0.527)	(0.077)	(0.078)
Q	0.027	0.029	0.028	0.028	0.427	0.431	-0.081*	-0.081*
	(0.023)	(0.023)	(0.017)	(0.017)	(0.295)	(0.297)	(0.040)	(0.040)
Profitability	1.173**	1.149**	0.283**	0.279**	-3.608	-3.548	-1.154*	-1.153*
	(0.564)	(0.569)	(0.115)	(0.113)	(2.434)	(2.445)	(0.565)	(0.566)
Cash Holding	-1.400**	-1.370**	0.273*	0.276*	1.569	1.520	-0.586**	-0.588**
	(0.550)	(0.555)	(0.138)	(0.138)	(2.078)	(2.091)	(0.275)	(0.277)

Free Cash Flow	1.472*	1.806**	0.059	0.060	20.843***	20.911***	-0.138	-0.130
	(0.826)	(0.849)	(0.182)	(0.182)	(3.557)	(3.555)	(0.256)	(0.258)
Leverage	-1.233**	-1.198**	-0.088	-0.090	3.622**	3.692**	0.345**	0.346**
	(0.581)	(0.579)	(0.117)	(0.118)	(1.648)	(1.659)	(0.123)	(0.123)
Capital Expenditures	4.754***	5.519***	0.639	0.648	16.242**	16.034**	-1.051	-1.049
	(1.232)	(1.265)	(0.480)	(0.478)	(6.492)	(6.337)	(0.908)	(0.904)
Product Concentration	-0.307	-0.375	-0.082	-0.082	0.813	0.798	0.081	0.080
	(0.295)	(0.302)	(0.075)	(0.075)	(0.626)	(0.624)	(0.078)	(0.077)
Independent Directors	-0.614	-0.653*	-0.301***	-0.301***	1.091	1.144	0.079	0.083
	(0.379)	(0.373)	(0.091)	(0.091)	(1.298)	(1.296)	(0.174)	(0.172)
Past Stock Return							-0.059	-0.059
							(0.041)	(0.041)
State×Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,190	10,190	9,801	9,801	10,465	10,465	9,167	9,167
Pseudo/Adj. R-squared	0.360	0.349	0.032	0.032	0.371	0.371	0.120	0.120

Table 8: Alternative Explanation – Agency Issue

In this table we report results for agency issue hypothesis. We show estimations of the joint effects of agency concern proxy and CEO pay duration. Specifically, we use the number of news items for the firm as a measure of reputation improvement due to the possible agency nature of CSR. OLS estimation methods are control for firm and state×year effects. ***, **, * correspond to statistical significances at the 1, 5, and 10 percent levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)
	Raw CSR	Scaled CSR
CEO Pay Duration	0.090**	0.016*
	(0.045)	(0.009)
No. of News	0.030	0.006
	(0.023)	(0.006)
CEO Pay Duration * No. of News	0.013	0.004
	(0.012)	(0.003)
CEO Delta	-0.006	-0.008
	(0.025)	(0.006)
CEO Vega	-0.102***	-0.019***
	(0.023)	(0.006)
Size	0.404***	0.104**
	(0.121)	(0.036)
Q	0.057	0.021
	(0.052)	(0.016)
Profitability	0.582	0.124
	(0.349)	(0.082)
Cash Holding	-0.187	-0.068
	(0.466)	(0.113)
Free Cash Flow	0.901	-0.061
	(0.521)	(0.149)
Leverage	0.441	0.177
	(0.365)	(0.116)
Capital Expenditures	-1.586	-0.770
	(2.084)	(0.619)
Product Concentration	-0.230	-0.048
	(0.191)	(0.045)
Independent Directors	0.534*	0.058
	(0.305)	(0.072)
State-Year Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Observations	10,102	10,102
Adj. R-squared	0.578	0.446

Table 9: Endogeneity Tests - Estimated Vesting

In this table we present results indicating the effects of immediate vesting value on current-year CSR. We drop observations before 2002 to ensure that we have sufficiently many years to estimate the dollar amounts of previous grants that are vesting. We use the natural logarithm of total vesting value for columns (1) and (2) and the vesting ratio, which is the ratio of total vesting value to the sum of total vesting value and current-year salaries and bonuses, for columns (3) and (4). We use OLS estimation methods controlling for firm and state×year fixed effects in all models. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significances at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1) Raw CSR	(2) Scaled CSR	(3) Raw CSR	(4) Scaled CSR
Total Vesting Value	-0.994***	-0.226***		
	(0.105)	(0.026)		
Vesting Ratio			-0.051***	-0.011***
			(0.007)	(0.002)
CEO Delta	-0.026	-0.010	-0.005	-0.005
	(0.031)	(0.007)	(0.030)	(0.007)
CEO Vega	-0.100***	-0.019***	-0.106***	-0.020***
	(0.024)	(0.006)	(0.024)	(0.006)
Size	0.518***	0.089**	0.548***	0.096**
	(0.136)	(0.033)	(0.138)	(0.034)
Q	0.054	0.014	0.073	0.018
	(0.055)	(0.013)	(0.057)	(0.014)
Profitability	0.058	-0.016	0.067	-0.014
	(0.364)	(0.112)	(0.372)	(0.114)
Cash Holding	-0.199	-0.093	-0.139	-0.079
	(0.521)	(0.125)	(0.523)	(0.127)
Free Cash Flow	0.288	-0.048	0.295	-0.048
	(0.700)	(0.150)	(0.699)	(0.151)
Leverage	1.008**	0.255**	1.004**	0.254**
	(0.415)	(0.102)	(0.414)	(0.102)
Capital Expenditures	-1.456	-0.689	-1.366	-0.670
	(1.859)	(0.586)	(1.915)	(0.597)
Product Concentration	-0.100	-0.027	-0.091	-0.025
	(0.213)	(0.050)	(0.211)	(0.050)
Independent Directors	0.536	0.053	0.615	0.071
	(0.386)	(0.090)	(0.391)	(0.092)
State×Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	8075	8075	8075	8075
Adj. R-squared	0.588	0.451	0.586	0.449

Table 10: Endogeneity Tests - FAS 123-R

To obtain the results reported in this table we use staggered FAS 123-R compliance to instrument CEO pay duration. We report regressions containing all firm-level fiscal-year observations for fiscal years ending between January 2005 and December 2006. In column (1) we report the results of a first-stage regression that uses FAS 123-R Takes Effect, a dummy variable, as an instrument to find the predicted value of CEO pay duration. Columns (2) and (3) show second-stage results where we use the predicted value of CEO pay duration to study its impact on CSR scores. Standard errors are clustered at the firm level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)	(3)
	First Stage	Second Stage	
	CEO Pay Duration	Raw CSR	Scaled CSR
FAS 123-R Takes Effect	-0.194***		
	(0.043)		
CEO Pay Duration (Predicted)		0.873**	0.166**
		(0.407)	(0.082)
CEO Delta	0.001	0.047	0.005
	(0.027)	(0.084)	(0.016)
CEO Vega	0.015	0.066	0.016*
	(0.016)	(0.049)	(0.010)
Size	0.210***	0.219	-0.025
	(0.043)	(0.166)	(0.031)
Q	0.083**	-0.017	-0.008
	(0.039)	(0.112)	(0.021)
Profitability	-0.715	1.848	0.283
	(0.740)	(1.382)	(0.261)
Cash Holding	0.863***	-0.133	-0.112
	(0.304)	(0.899)	(0.170)
Free Cash Flow	0.611	2.361	0.345
	(0.809)	(1.525)	(0.279)
Leverage	0.426	-1.090	-0.211
	(0.261)	(0.808)	(0.152)
Capital Expenditures	0.841	8.903**	1.332**
	(0.995)	(3.484)	(0.633)
Product Concentration	0.046	-0.017	0.001
	(0.195)	(0.570)	(0.105)
Independent Directors	0.044	-0.511	-0.164
	(0.272)	(0.756)	(0.141)
State Fixed Effects	Yes	Yes	Yes
Industry Effects	Yes	Yes	Yes
Calendar Year	Yes	Yes	Yes
Observations	974	974	974
Adj. R-squared	0.148	0.277	0.296

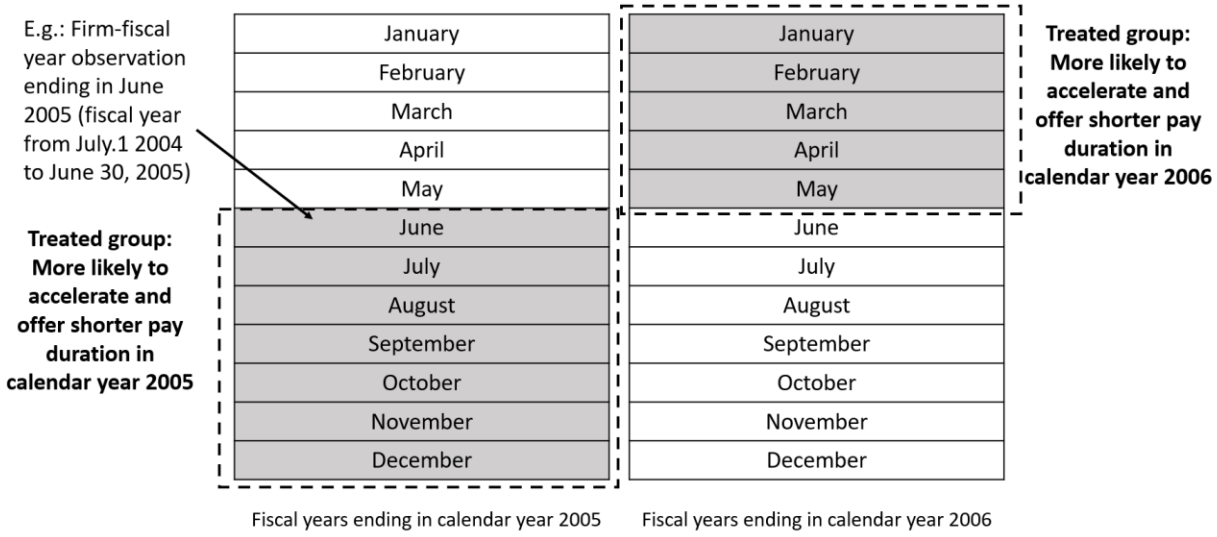
Table 11: Alternative Measure of Pay Duration

In this table we replicate our baseline regression results with the alternative pay-duration measure, which includes all the unvested and vested but unexercised grants from previous years. We drop observations before 2002 to ensure that we have sufficiently many years to estimate the dollar amounts of unvested grants from previous years. For column (1) the dependent variable is the raw CSR score. For column (2), the dependent variable is the scaled CSR score. We use OLS estimation methods controlling for firm and state×year fixed effects. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

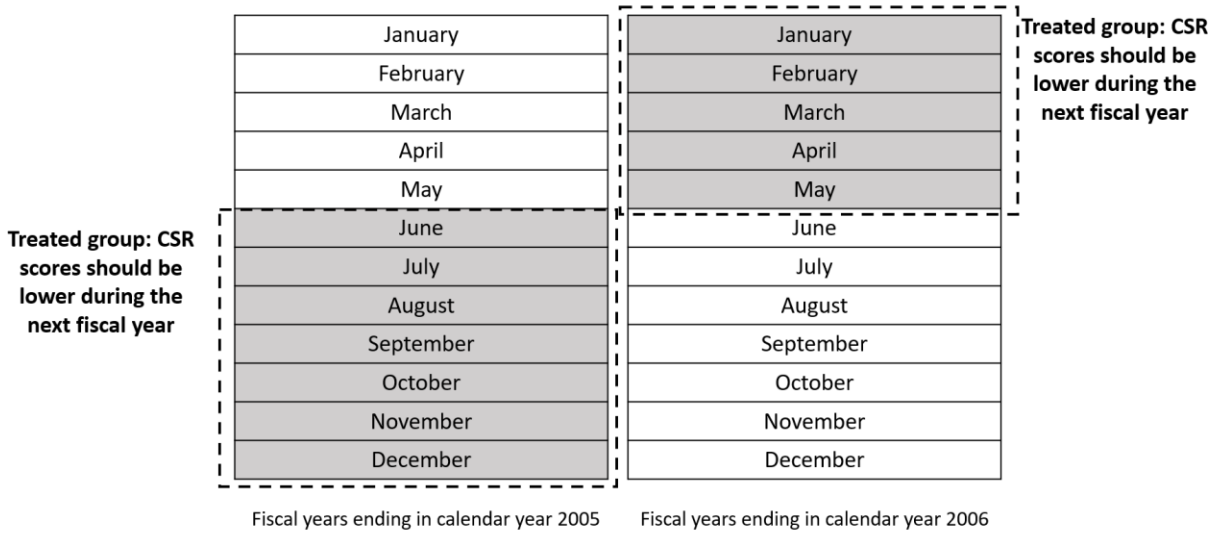
	(1)	(2)
	Raw CSR	Scaled CSR
CEO Pay Duration (Alternative)	0.153***	0.039***
	(0.047)	(0.012)
CEO Delta	-0.007	-0.011
	(0.028)	(0.006)
CEO Vega	-0.113***	-0.023***
	(0.024)	(0.007)
Size	0.767***	0.188***
	(0.143)	(0.042)
Q	0.109	0.036
	(0.072)	(0.022)
Profitability	0.074	0.058
	(0.227)	(0.069)
Cash Holding	-0.284	-0.096
	(0.518)	(0.128)
Free Cash Flow	0.636	-0.154
	(0.561)	(0.173)
Leverage	0.599	0.249*
	(0.411)	(0.127)
Capital Expenditures	-2.677	-1.089
	(2.588)	(0.763)
Product Concentration	-0.124	-0.018
	(0.193)	(0.052)
Independent Directors	0.774*	0.121
	(0.375)	(0.095)
State×Year Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Industry Fixed Effects	No	No
Observations	8,847	8,847
Adj. R-squared	0.584	0.442

Figure 1

A. First-stage predicted effects on CEO pay duration



B. Second-stage predicted effects on CSR scores



Online Appendix: Other Supporting Materials for "Horizon to Sustainability: CEO Incentive Duration and Corporate Social Responsibility"

In this appendix, we provide additional supporting materials for our paper. In part one, we present the tests using estimated vesting amount and donation disclosure. In part two, we examine the effect of the predicted values of insider selling on contemporary year CSR. In part three, we show the impacts of CEO pay duration on CSR when executive-level fixed effects are included as another way to reduce endogeneity concerns. In part four, we consider other long-termism measures that might influence our main findings. In part five, we repeat our baseline analysis for various categories of CSR. In part five, we repeat our based results using categorical CSR scores. In part six, we show our test results on CSR strengths and concerns separately. We show results with the logarithm of pay duration and alternative constructions of CSR and in parts seven and eight.

1. Vesting Incentives and Donation Disclosure

(Insert Table IA1 around here)

We study the direct effect of immediate vesting on a firm's propensity to disclose its donations. If agency issue is the primary force driving our findings in the main paper, CEOs with a large amount of restricted stocks and options scheduled to vest in near term would discourage such disclosures because of the potential negative impact on the current stock prices. To address this concern, we employ *Total Vesting Value* and *Vesting Ratio* to measure incentives with immediate vesting, similar to our endogeneity tests in Section 6.1 of the main paper. Table IA1 shows that both measures are positively correlated with donation disclosure, providing further evidence that agency issues are unlikely to be the main driver underlying the relation between CEO pay duration and corporate social responsibility.

2. 2SLS using Estimated Immediate Vesting as IVs

(Insert Table IA2 here)

In this subsection we study the effect of the predicted values of insider selling on contemporary year CSR. In Table IA2, we use immediate vesting value as IVs in the first stage to predict the natural logarithm of annual insider sales (dollar amount). Specifically, we regress dollar amount of shares sold by CEOs each year on *Total Vesting Value* (in Column 1) and *Vesting Ratio* (in Column 4) and find that insider selling is positively associated with the options and shares that are estimated to vest in the same period. In the second stage, we regress CSR on fitted values of insider sales from the first stage and show that the predicted values of insider sales reduce contemporary CSR scores. We use state×year fixed effects and firm fixed effects in both stages, so it is the random within-firm time-series variation in shares vesting that provides identification, rather than the non-random cross-sectional variation. The exclusion restriction plausibly holds because it seems unlikely that a board would set the vesting dates of stock option awards based on its foresight of CSR needs several years in the future. These 2SLS tests provide further evidence that CEO myopia is a causal influence on corporate social responsibility.

3. Executive-level Fixed Effects

(Insert Table IA3 here)

Another way to address endogeneity issues is to control for executive-level time invariant heterogeneity in CSR: Davidson, Dey, and Smith (2019) find that CEO personal characteristics are important determinants of CSR scores. In their study, they find that CEO-level fixed effects explain 63% of the CSR score variation. To show that our results are not subject to the executive fixed effects, we rerun our baseline tests in Table IA3 with executive-level fixed effects. We find that even with these executive-level effects controlled for, CEO pay duration still has a positive

and significant impact on CSR engagement. Relatedly, contradictory to the baseline tests, CEO delta has a positive effect on raw CSR score in column (1). In general, we show that our primary findings are robust to firm-level and executive-level fixed effects.

4. Other Measures of Long termism

(Insert Table IA4 around here)

Besides CEO pay duration, we also include shareholder investment horizons and CEO career horizons as alternative measures of incentive horizon for robustness purposes in this subsection. Shareholder investment horizons are another long-termism factor that could influence our results in two ways: 1) shareholder investment horizons have a positive effect on CSR (Fu, Tang, and Yan, 2019), and 2) the horizons of shareholder could be a determinant of CEO pay duration (Cadman and Sunder, 2014). Following Gaspar, Massa, and Matos (2005), we construct shareholder turnover ratio as the weighted average of institutional shareholders' churn rates to proxy for shareholder investment horizons. Because this firm-level turnover measure is inversely related to the average shareholder investment horizon, firms with higher (lower) institutional investor turnover are firms with more short-term (long-term) shareholders. In addition, CEO career horizon is another factor related to long-termism. Stefanescu, Wang, Xie, and Yang (2018) show that CEOs who are close to retirement are more likely to engage in myopic behavior. Hence, we define CEO career horizon as a dummy indicator (*CEO Age64+*) that takes the value of one if the CEO is 64 year or older (Stefanescu, Wang, Xie, and Yang, 2018), which indicates a shorter career horizon. We report the results in Table IA4. The coefficients of *Shareholder Turnover* are negative and significant, indicating that the longer shareholder investment horizons are associated with more CSR engagement, which is consistent with prior literature (Fu, Tang, and Yan, 2019). More

importantly, however, we show that our main results on the effects of CEO incentive horizons on CSR still hold even after we control these two additional long-termism proxies in the regressions.

5. Categorical Results

(Insert Table IA5 around here)

Both CSR measures we use are summations of categorical CSR scores. This procedure raises the question in terms of whether these categories that are different in nature are comparable and could be summed up into one number. Thus, it is important to study the scores for each category separately. We report the results in Table IA5. The coefficients of CEO pay duration are positive and significant across both panels for five out of six CSR categories, with the lone exception being *Diversity*. In summary, tests in this subsection provide further support to the main findings of this paper.

6. Strengths and Concerns

(Insert Table IA6 around here)

Existing studies using the KLD database suggest that it is important to decompose net CSR scores into strengths and concerns (Mattingly and Berman, 2006; Chatterji, Levine, and Toffel, 2009). For example, Ioannou and Serafein (2015) support this conclusion by documenting asymmetric effects of CSR strengths and concerns. We conduct additional analysis by decomposing CSR scores into total strengths and total concerns. We report these results in Table IA6, where columns (1) and (2) show results for strengths and columns (3) and (4) are for concerns. In short, our results show that the effect of CEO pay duration on CSR holds for both strengths and concerns. Also, the effect is more pronounced on CSR concerns than on CSR strengths.

7. Logarithm of Pay Duration

(Insert Table IA7 around here)

We also use the natural logarithm of CEO pay duration in months as another alternative measure. The test results shown in Table IA7 suggest that our main findings are robust to the different methodology of variable construction.

8. Different Databases for Social Performance

Although we choose KLD database to construct our primary CSR measures for its comprehensive coverage on corporations' environmental and social engagements in the paper, we use two alternative databases to confirm the robustness of our findings. First, we employ environment, social, and governance (ESG) scores from Refinitiv. Refinitiv offers ratings of firm-level ESG scores by capturing and calculating 450 ESG measures, with every measure going through a thorough verification process that includes multiple steps. After comparing firms to their industry peers, Refinitiv assigns the percentile scores from several pillars, including environment, social, and governance. It also calculates an overall score based on these pillar scores. Compared with our main CSR measures, Refinitive ESG scores capture firms' industry adjusted sustainability from a different perspective. We repeat the baseline tests with these scores, including the overall score, environment pillar score, governance pillar score, and social pillar score, as dependent variables in Table IA8. Consistent with the existing literature (Dai, Liang, and Ng, 2021), the average values of these four scores are 63.45, 51.78, 77.26, and 55.74, respectively.

(Insert Table IA8 around here)

Results in all eight columns of Table IA8 indicate a consistent pattern that firms with longer CEO pay duration have higher ESG scores. The coefficients of *CEO Pay Duration* are positive and significant at the 1% level in six of eight columns. In Columns (5) and (6) where governance pillar score is the dependent variable, the significance level is at the 10% and 5% levels. The economic significance is also important: when firm fixed effects are controlled for in Column (1),

a one-year increase in CEO pay duration will improve the overall ESG score by around 1.5% in terms of industrial percentile. In addition, consistent with Table 2, CEO vega is negatively associated with these ESG measures, suggesting that corporate sustainability activities is associated with lower firm risk.

Second, with the rising concerns of climate change and global warming, institutional investors are increasingly tracking the carbon emissions of firms (Bolton and Kacperczyk, 2021). To provide additional robustness to our findings, we investigate whether CEO pay duration is associated with corporate carbon emissions. Following Bolton and Kacperczyk (2021), we construct measures of corporate carbon emissions by including scope 1, scope 2, and scope 3 emissions from Trucost. According to the Greenhouse Gas (GHG) Protocol, scope 1 emissions include direct emissions from the company's owned or controlled sources, scope 2 emissions include indirect greenhouse gas emissions from purchased or acquired energy, and scope 3 emissions include all indirect emissions that occur in the value chain of a reporting company and are the most important component of their emissions for some industries. We calculate carbon intensity scope 1, carbon intensity scope 2, and carbon intensity scope 3 as the ratios of these CO_2 emissions in tons to total sales in millions. In untabulated summary statistics, we find that on average, the carbon intensity is 2.946, 0.383, and 2.050 for scope 1, scope 2, and scope 3 respectively, similar to those reported by Bolton and Kacperczyk (2021). The correlation coefficients between scope 1 and scope 2 measures (scope 1 and scope 3 measures / scope 2 and scope 3 measures) is 0.0813 (0.2386 / 0.0786). Although these three measures are highly correlated, they capture different aspects of carbon emissions.

(Insert Table IA9 around here)

We then rerun the baseline tests with these three intensity measures as dependent variables and report the results in Table IA9. The results show that CEO pay duration has a negative effect on carbon intensities scope 1 and scope 3, but it has no significant impact on carbon intensity scope 2. These associations between CEO pay duration and two scopes of corporate carbon footprint suggest that CEOs with more long-term incentives reduce CO_2 emissions directly from the firms and indirectly in their supply chains. Although these results are from the environment pollution perspective, they are generally consistent with the main tenor of this paper that CEOs with long-term vision do more in social responsibility to improve stakeholders' utility.

References for Online Appendix:

Bolton, P., and Kacperczyk, M., 2021. Do investors care about carbon risk? *Journal of Financial Economics* 142, 517-549.

Cadman, B., and J. Sunder, 2014. Investor horizon and CEO horizon incentives. *The Accounting Review* 89, 1299-1328.

Chatterji, A., D. Levine, and M. Toffel, 2009. How well do social ratings actually measure corporate social responsibility? *Journal of Economics & Management Strategy* 18, 125-169.

Dai, R., Liang, H., and Ng, L., 2021. Socially responsible corporate customers. *Journal of Financial Economics* 142, 598-626.

Davidson, R., Dey, A., and Smith, A., 2019. CEO materialism and corporate social responsibility. *The Accounting Review* 94, 101-126.

Dyck, A., Lins, K.V., Roth, L. and Wagner, H.F., 2019. Do institutional investors drive corporate social responsibility? International evidence. *Journal of Financial Economics* 131, 693-714.

Fu, X., Tang, T. and Yan, X., 2019. Why do institutions like corporate social responsibility investments? Evidence from horizon heterogeneity. *Journal of Empirical Finance, 51*, 44-63.

Gaspar, J., Massa, M., and Matos, P., 2005. Shareholder investment horizons and the market for corporate control. *Journal of Financial Economics* 76, 135–165.

Ioannou, I., and Serafeim, G., 2015. The impact of corporate social responsibility on investment recommendations: Analysts' perceptions and shifting institutional logics. *Strategic Management Journal* 36, 1053-1081.

Mattingly, J.E., and Berman, S., 2006. Measurement of corporate social action: discovering taxonomy in the Kinder Lydenburg Domini Ratings Data. *Business and Society* 45, 1-27.

Stefanescu, I., Wang, Y., Xie, K. and Yang, J., 2018. Pay me now (and later): Pension benefit manipulation before plan freezes and executive retirement. *Journal of Financial Economics* 127, 152-173.

Table IA1 - Estimated Vesting and Donation Disclosure

In this table we report the effect of immediate vesting value on the propensity of contemporary year donation disclosure. The dependent variable is a dummy variable to indicate whether the firm discloses its donation amount. We use the natural logarithm of total vesting value in Columns (1) and (3), and the ratio of total vesting value to contemporary year salary and bonus in Columns (2) and (4). OLS estimation methods are control for firm and state×year effects in Columns (1) and (2). Probit estimation methods are control for firm and state-year effects in Columns (3) and (4). ***, **, * correspond to statistical significances at the 1, 5, and 10 percent levels, respectively. See Appendix for detailed variable explanations.

	(1) Donation Disclosure	(2) Donation Disclosure	(3) Donation Disclosure	(4) Donation Disclosure
Methodology	OLS	OLS	Probit	Probit
Vesting Ratio	0.092***		0.546***	
	(0.027)		(0.170)	
Total Vesting Value		0.003**		0.019*
		(0.001)		(0.010)
CEO Delta	-0.011*	-0.009	-0.056	-0.046
	(0.006)	(0.006)	(0.043)	(0.042)
CEO Vega	-0.014***	-0.014***	-0.077***	-0.079***
	(0.003)	(0.003)	(0.012)	(0.012)
Size	0.123***	0.127***	0.919***	0.949***
	(0.026)	(0.025)	(0.173)	(0.173)
Q	-0.001	0.002	-0.047	-0.027
	(0.009)	(0.009)	(0.064)	(0.064)
Profitability	0.025	0.030	0.511	0.503
	(0.088)	(0.090)	(0.741)	(0.743)
Cash Holding	0.097	0.105	1.049	1.124
	(0.096)	(0.095)	(0.762)	(0.760)
Free Cash Flow	0.098	0.087	0.506	0.466
	(0.085)	(0.086)	(0.855)	(0.858)
Leverage	-0.077	-0.078	-0.888	-0.901*
	(0.073)	(0.073)	(0.544)	(0.546)
Capital Expenditures	-0.038	-0.046	-0.549	-0.584
	(0.252)	(0.257)	(1.808)	(1.821)
Product Concentration	0.011	0.012	0.049	0.052
	(0.029)	(0.029)	(0.276)	(0.274)
Independent Directors	0.148*	0.156**	1.507***	1.525***
	(0.073)	(0.073)	(0.537)	(0.536)
State-Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	6,481	6,481	6,481	6,481
Adj. R-squared / Pseudo R-squared	0.557	0.555	0.351	0.348

Table IA2 – Endogeneity Tests (Predicted Insider Sales using Estimated Vesting as IVs)

In this table we study the effect of predicted insider sales on contemporary year CSR. We use immediate vesting value as IVs in the first stage to predict the natural logarithm of annual insider sales in terms of dollar amount. We drop the observations before 2002 so that we have sufficient number of years to estimate the dollar amount of previous grants that are vesting. We use the natural logarithm of total vesting value as IV in Column (1), and the ratio of total vesting value to contemporary year salary and bonus as IV in Column (4). We use OLS estimation methods with firm and state-year fixed effects. Standard errors are clustered at the firm level and reported in parentheses. ***, **, * correspond to statistical significances at the 1, 5, and 10 percent levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)	(3)	(4)	(5)	(6)
	Insider Sales	Raw CSR	Scaled CSR	Insider Sales	Raw CSR	Scaled CSR
	First Stage	Second Stage	Second Stage	First Stage	Second Stage	Second Stage
Total Vesting Value	2.013***					
	(0.351)					
Vesting Ratio				0.063**		
				(0.022)		
Predicted Insider Sales Dollar Amount		-0.420***	-0.100***		-0.612**	-0.141**
		(0.116)	(0.030)		(0.224)	(0.056)
CEO Delta	0.422***	-0.217***	-0.060***	0.481***	-0.314**	-0.081**
	(0.095)	(0.066)	(0.017)	(0.093)	(0.118)	(0.030)
CEO Vega	-0.061**	-0.086***	-0.016**	-0.068**	-0.074**	-0.014*
	(0.027)	(0.026)	(0.006)	(0.028)	(0.029)	(0.007)
Size	-0.271	0.818***	0.197***	-0.167	0.837***	0.201***
	(0.345)	(0.151)	(0.046)	(0.347)	(0.154)	(0.046)
Q	0.692***	-0.222*	-0.043	0.747***	-0.371*	-0.074
	(0.187)	(0.112)	(0.029)	(0.192)	(0.193)	(0.047)
Profitability	2.519***	-0.678	-0.109	2.558***	-1.171	-0.214
	(0.823)	(0.470)	(0.137)	(0.839)	(0.709)	(0.188)
Cash Holding	0.727	-0.567	-0.151	0.844	-0.722	-0.184
	(1.228)	(0.494)	(0.116)	(1.213)	(0.482)	(0.113)
Free Cash Flow	1.947	-0.275	-0.370*	1.888	-0.617	-0.442*
	(1.868)	(0.627)	(0.195)	(1.863)	(0.698)	(0.214)
Leverage	-1.227	1.165**	0.400**	-1.226	1.398**	0.449**
	(0.978)	(0.461)	(0.144)	(0.991)	(0.541)	(0.156)
Capital Expenditures	4.383	-4.690	-1.529*	4.402	-5.500*	-1.701*
	(4.766)	(2.733)	(0.827)	(4.690)	(2.867)	(0.864)
Product Concentration	-0.192	-0.053	-0.008	-0.169	-0.025	-0.002
	(0.469)	(0.192)	(0.053)	(0.484)	(0.197)	(0.054)
Independent Directors	1.180	0.360	0.020	1.365	0.091	-0.037
	(0.897)	(0.472)	(0.113)	(0.875)	(0.620)	(0.147)
State-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	8296	8296	8296	8296	8296	8296
Adj. R-squared	0.233	0.586	0.442	0.229	0.584	0.440

Table IA3 - Endogeneity Tests (Executive Level Fixed Effects)

We show the results of another endogeneity test in this table. We use OLS estimation methods with executive and state×year fixed effects in all models. Standard errors are clustered at both the executive level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)
	Raw CSR	Scaled CSR
CEO Pay Duration	0.092***	0.017***
	(0.025)	(0.006)
CEO Delta	0.066*	0.008
	(0.033)	(0.008)
CEO Vega	-0.074***	-0.014**
	(0.022)	(0.005)
Size	0.571***	0.148***
	(0.146)	(0.042)
Q	-0.003	0.006
	(0.034)	(0.010)
Profitability	0.409	0.155*
	(0.252)	(0.079)
Cash Holding	-0.389	-0.124
	(0.479)	(0.107)
Free Cash Flow	0.891**	0.007
	(0.403)	(0.104)
Leverage	0.531	0.184*
	(0.355)	(0.103)
Capital Expenditures	-0.004	-0.065
	(1.465)	(0.340)
Product Concentration	-0.192	-0.026
	(0.186)	(0.052)
Independent Directors	0.609*	0.087
	(0.310)	(0.072)
State×Year Fixed Effects	Yes	Yes
CEO fixed effects	Yes	Yes
Observations	10,814	10,814
Adj. R-squared	0.647	0.655

Table IA4 - Tests with other Long-termism Measures

In this table we add other long-termism measures: Shareholder Turnover and CEO Age 64+, to our baseline regressions. Shareholder Turnover is the firm-level shareholder turnover rate, calculated based on institutional investors' churn rates. CEO Age64+ is a dummy variable that equals one if a CEO is 64 or older and zero otherwise. For columns (1) through (3), the dependent variable is the raw CSR score. For columns (4) through (6), the dependent variable is the scaled CSR score. We use OLS estimation methods with firm and state×year fixed effects in all models. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1) Raw CSR	(2) Raw CSR	(3) Raw CSR	(4) Scaled CSR	(5) Scaled CSR	(6) Scaled CSR
CEO Pay Duration	0.115***	0.127***	0.114***	0.023***	0.027***	0.023***
	(0.023)	(0.024)	(0.024)	(0.006)	(0.006)	(0.006)
Shareholder Turnover	-10.697***		-10.799***	-3.304***		-3.332***
	(0.697)		(0.703)	(0.170)		(0.172)
CEO Age64+		-0.020	-0.043		0.009	0.001
		(0.078)	(0.078)		(0.019)	(0.019)
CEO Delta	-0.010	-0.010	-0.010	-0.008	-0.008	-0.008
	(0.024)	(0.025)	(0.024)	(0.006)	(0.005)	(0.006)
CEO Vega	-0.109***	-0.116***	-0.108***	-0.021***	-0.023***	-0.020***
	(0.023)	(0.023)	(0.023)	(0.006)	(0.006)	(0.006)
Size	0.340***	0.559***	0.346***	0.069***	0.136***	0.069***
	(0.092)	(0.122)	(0.093)	(0.022)	(0.036)	(0.022)
Q	0.023	0.031	0.026	0.010	0.012	0.011
	(0.030)	(0.038)	(0.031)	(0.010)	(0.012)	(0.010)
Profitability	0.638	0.505	0.600*	0.145	0.128	0.142*
	(0.371)	(0.294)	(0.330)	(0.085)	(0.074)	(0.079)
Cash Holding	-0.216	-0.299	-0.207	-0.077	-0.098	-0.074
	(0.451)	(0.460)	(0.449)	(0.104)	(0.110)	(0.103)
Free Cash Flow	1.308**	1.252**	1.351**	0.068	0.038	0.073
	(0.484)	(0.497)	(0.474)	(0.114)	(0.140)	(0.114)
Leverage	0.412	0.662*	0.400	0.142	0.229*	0.144
	(0.327)	(0.361)	(0.325)	(0.094)	(0.115)	(0.095)
Capital Expenditures	-1.200	-1.159	-1.273	-0.657	-0.638	-0.688
	(1.946)	(2.121)	(1.965)	(0.519)	(0.593)	(0.525)
Product Concentration	-0.157	-0.136	-0.149	-0.040	-0.029	-0.039
	(0.185)	(0.183)	(0.184)	(0.044)	(0.045)	(0.044)
Independent Directors	0.734**	0.622**	0.703**	0.112	0.076	0.107
	(0.291)	(0.295)	(0.289)	(0.068)	(0.071)	(0.070)
State×Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10540	10609	10340	10540	10609	10340
Adj. R-squared	0.581	0.571	0.580	0.461	0.436	0.460

Table IA5 - Different Categories of CSR

In this table we present the results pertaining to the relationships between CEO pay duration and six categories of CSR scores. For Panel A (B) we include the regressions of the raw (scaled) categorical CSR scores on CEO pay duration along with all other control variables. We use OLS estimation methods with firm and state×year fixed effects in all models. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

Panel A: Raw Scores

	(1) Environment	(2) Community	(3) Human	(4) Employment	(5) Diversity	(6) Product
CEO Pay Duration	0.063***	0.015**	0.019***	0.057***	-0.013	0.024***
	(0.017)	(0.006)	(0.005)	(0.019)	(0.012)	(0.009)
CEO Delta	0.004	-0.009	-0.010**	-0.015	0.008	0.012
	(0.012)	(0.007)	(0.005)	(0.013)	(0.012)	(0.007)
CEO Vega	-0.061***	0.000	-0.009***	-0.049***	0.018**	-0.017***
	(0.011)	(0.004)	(0.002)	(0.012)	(0.009)	(0.005)
Size	0.082	0.002	0.037*	0.330***	0.081	0.017
	(0.053)	(0.020)	(0.021)	(0.069)	(0.069)	(0.028)
Q	-0.001	-0.009	0.003	0.012	0.007	0.015*
	(0.013)	(0.007)	(0.003)	(0.023)	(0.016)	(0.009)
Profitability	-0.014	-0.066	-0.033	0.605***	-0.008	0.104
	(0.140)	(0.072)	(0.068)	(0.189)	(0.225)	(0.064)
Cash Holding	0.315*	-0.002	0.008	-0.121	-0.532**	0.029
	(0.179)	(0.084)	(0.059)	(0.284)	(0.191)	(0.121)
Free Cash Flow	0.374	0.093	-0.182**	0.827**	0.125	-0.034
	(0.230)	(0.087)	(0.081)	(0.298)	(0.267)	(0.148)
Leverage	0.416**	-0.079	0.008	0.313	-0.155	0.148*
	(0.165)	(0.082)	(0.045)	(0.227)	(0.154)	(0.082)
Capital Expenditures	-1.262*	-0.194	-0.108	0.739	-0.226	-0.109
	(0.710)	(0.350)	(0.497)	(0.861)	(0.692)	(0.429)
Product Concentration	0.004	-0.056	0.001	0.013	-0.118	0.010
	(0.082)	(0.055)	(0.034)	(0.102)	(0.089)	(0.043)
Independent Directors	0.443***	0.035	0.112*	0.083	0.083	-0.114
	(0.150)	(0.071)	(0.055)	(0.190)	(0.147)	(0.072)
State×Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,814	10,814	10,814	10,814	10,814	10,814
Adj. R-squared	0.489	0.405	0.283	0.376	0.551	0.471

Panel B: Scaled Scores

	(1) Environment	(2) Community	(3) Human	(4) Employment	(5) Diversity	(6) Product
CEO Pay Duration	0.006***	0.007***	0.007***	0.008***	0.004	0.006***
	(0.002)	(0.002)	(0.002)	(0.003)	(0.006)	(0.002)
CEO Delta	0.000	-0.007**	-0.004*	-0.002	0.002	0.003
	(0.001)	(0.003)	(0.002)	(0.002)	(0.002)	(0.002)
CEO Vega	-0.005***	-0.002	-0.003***	-0.005***	-0.004*	-0.004***
	(0.001)	(0.003)	(0.001)	(0.002)	(0.002)	(0.001)
Size	-0.007	0.017*	0.022**	0.036***	0.070**	-0.004
	(0.006)	(0.009)	(0.010)	(0.009)	(0.030)	(0.006)
Q	-0.003	-0.001	0.001	0.003	0.009	0.002
	(0.002)	(0.003)	(0.001)	(0.003)	(0.008)	(0.002)
Profitability	-0.011	0.005	-0.021	0.096***	0.047	0.026
	(0.024)	(0.027)	(0.028)	(0.031)	(0.061)	(0.016)
Cash Holding	0.033	0.010	0.010	-0.018	-0.157**	0.024
	(0.019)	(0.029)	(0.021)	(0.041)	(0.058)	(0.028)
Free Cash Flow	0.071*	-0.029	-0.073**	0.117**	-0.034	-0.020
	(0.041)	(0.031)	(0.032)	(0.049)	(0.098)	(0.034)
Leverage	0.010	0.027	-0.003	0.046	0.117*	0.025
	(0.026)	(0.037)	(0.018)	(0.032)	(0.065)	(0.019)
Capital Expenditures	-0.175*	-0.283*	-0.004	0.156	-0.253	-0.064
	(0.092)	(0.160)	(0.217)	(0.128)	(0.211)	(0.110)
Product Concentration	-0.001	-0.006	-0.004	-0.006	-0.018	0.005
	(0.010)	(0.026)	(0.012)	(0.017)	(0.022)	(0.011)
Independent Directors	0.046**	0.013	0.030	-0.010	0.022	-0.022
	(0.017)	(0.024)	(0.019)	(0.029)	(0.033)	(0.018)
State×Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Observations	10,814	10,814	10,814	10,814	10,814	10,814
Adj. R-squared	0.447	0.232	0.232	0.385	0.422	0.465

Table IA6 - Strengths and Concerns of CSR

In this table, we report results obtained by decomposing CSR scores into strengths and concerns to analyze the relationships between shareholder investment horizons and CSR strengths and concerns. In columns (1) and (2) we report results for CSR strengths, and in columns (3) and (4) we report results for CSR concerns. We use OLS estimation methods with firm and state×year fixed effects in all models. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)	(3)	(4)
	Raw CSR Strengths	Scaled CSR Strengths	Raw CSR Concerns	Scaled CSR Concerns
CEO Pay Duration	0.041**	0.012***	-0.087***	-0.014***
	(0.019)	(0.004)	(0.015)	(0.004)
CEO Delta	-0.046**	-0.017***	-0.036*	-0.009**
	(0.018)	(0.005)	(0.018)	(0.004)
CEO Vega	-0.063***	-0.015***	0.054**	0.008*
	(0.017)	(0.005)	(0.019)	(0.004)
Size	0.580***	0.136***	0.031	0.001
	(0.097)	(0.025)	(0.091)	(0.024)
Q	-0.024	-0.001	-0.050	-0.011
	(0.027)	(0.008)	(0.033)	(0.008)
Profitability	0.181	-0.011	-0.407	-0.153*
	(0.259)	(0.046)	(0.302)	(0.079)
Cash Holding	-0.184	-0.015	0.120	0.084
	(0.323)	(0.072)	(0.350)	(0.086)
Free Cash Flow	1.679***	0.173*	0.476	0.141
	(0.394)	(0.084)	(0.430)	(0.135)
Leverage	-0.213	-0.010	-0.865***	-0.232***
	(0.273)	(0.086)	(0.289)	(0.079)
Capital Expenditures	0.590	-0.195	1.750	0.429
	(1.409)	(0.458)	(1.540)	(0.295)
Product Concentration	-0.198	-0.044	-0.053	-0.014
	(0.160)	(0.036)	(0.113)	(0.028)
Independent Directors	0.723**	0.106*	0.079	0.027
	(0.258)	(0.055)	(0.238)	(0.055)
State×Year Fixed Effects	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	Yes	Yes	Yes
Observations	10,814	10,814	10,814	10,814
Adj. R-squared	0.696	0.558	0.613	0.566

Table IA7 - Logarithm Term of Duration

In this table we report results obtained after repeating our baseline regressions with the logarithm term of CEO pay duration. For columns (1) and (2) the dependent variables are the raw CSR score and the scaled CSR score that we use in the main manuscript, but we use the natural logarithm of CEO pay duration. We use OLS estimation methods with firm and state×year fixed effects in all models. Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significance at the 1%, 5%, and 10% levels, respectively. See Appendix for detailed variable explanations.

	(1)	(2)
	Raw CSR	Scaled CSR
Log(CEO Pay Duration)	0.145***	0.029***
	(0.022)	(0.005)
CEO Delta	-0.010	-0.008
	(0.025)	(0.005)
CEO Vega	-0.118***	-0.024***
	(0.023)	(0.007)
Size	0.545***	0.134***
	(0.122)	(0.036)
Q	0.028	0.011
	(0.038)	(0.012)
Profitability	0.588	0.142*
	(0.342)	(0.079)
Cash Holding	-0.338	-0.105
	(0.460)	(0.109)
Free Cash Flow	1.207**	0.033
	(0.491)	(0.136)
Leverage	0.638*	0.219*
	(0.360)	(0.113)
Capital Expenditures	-1.163	-0.624
	(2.100)	(0.587)
Product Concentration	-0.145	-0.030
	(0.183)	(0.044)
Independent Directors	0.635**	0.077
	(0.291)	(0.067)
State×Year Fixed Effects	Yes	Yes
Firm Fixed Effects	Yes	Yes
Observations	10,814	10,814
Adj. R-squared	0.573	0.439

Table IA8 - Alternative Measures of CSR - Refinitiv ESG

In this table we replicate our baseline regression results with alternative dependent measures, which are ESG scores from Refinitiv. In Columns (1) and (2), the dependent variable is overall ESG score. In Columns (3) and (4), the dependent variable is the score of the environment pilar. In Columns (5) and (6), the dependent variable is the score of governance pilar. In Columns (7) and (8), the dependent variable is the score of social pilar. We use OLS estimation methods with firm and year-state fixed effects in Columns (1), (3), (5), and (7), industry and year-state fixed effects in Columns (2), (4), (6), and (8). Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significances at the 1, 5, and 10 percent levels, respectively. See Appendix for detailed variable explanations.

	(1) Overall Score	(2) Overall Score	(3) Environment Pillar	(4) Environment Pillar	(5) Governance Pillar	(6) Governance Pillar	(7) Social Pillar	(8) Social Pillar
CEO Pay Duration	1.503***	1.925***	1.716***	1.845***	0.430*	0.641**	1.690***	2.182***
	(0.339)	(0.432)	(0.385)	(0.481)	(0.221)	(0.296)	(0.350)	(0.417)
CEO Delta	0.143	-0.654**	-0.176	-0.499	0.035	-0.678***	0.139	-0.672*
	(0.330)	(0.330)	(0.346)	(0.365)	(0.182)	(0.225)	(0.300)	(0.367)
CEO Vega	-0.916***	-0.730***	-1.225***	-0.927***	-0.323***	-0.171***	-1.013***	-0.751***
	(0.096)	(0.088)	(0.108)	(0.104)	(0.056)	(0.057)	(0.100)	(0.092)
Size	11.027***	12.039***	13.036***	13.529***	3.006***	3.915***	11.509***	12.377***
	(1.207)	(0.498)	(1.380)	(0.554)	(0.690)	(0.361)	(1.274)	(0.533)
Q	2.248***	0.986**	1.322***	0.545	0.430*	-0.372	2.065***	1.132***
	(0.443)	(0.397)	(0.473)	(0.460)	(0.253)	(0.282)	(0.473)	(0.419)
Profitability	8.809***	15.174***	4.736	5.319	1.232	3.025	7.390**	10.447***
	(3.241)	(3.717)	(3.396)	(4.577)	(1.947)	(2.722)	(3.720)	(3.817)
Cash Holding	1.102	-2.978	1.065	2.068	2.772	0.755	3.057	4.148
	(4.807)	(4.590)	(4.963)	(5.353)	(3.037)	(2.769)	(5.586)	(4.533)
Free Cash Flow	10.527*	17.633***	13.719**	16.824**	4.385	8.620*	5.393	16.983**
	(5.792)	(6.662)	(6.700)	(7.752)	(3.533)	(4.630)	(6.166)	(6.749)
Leverage	8.991**	-7.127**	14.947***	-0.256	2.623	-3.808	12.331***	-6.302**
	(3.854)	(2.845)	(3.684)	(3.190)	(2.407)	(2.815)	(3.867)	(2.812)
Capital Expenditures	-20.400	7.951	-10.485	12.299	0.517	13.930	-28.406*	0.447
	(13.952)	(12.431)	(14.125)	(14.318)	(8.728)	(10.054)	(14.948)	(12.892)
Product Concentration	-0.072	2.532	-0.103	3.977	-0.980	1.440	1.245	1.617
	(2.021)	(2.257)	(2.162)	(2.486)	(1.359)	(1.437)	(2.289)	(2.503)
Independent Directors	14.921***	21.224***	13.630***	21.257***	8.022***	11.946***	12.381***	20.879***
	(4.237)	(3.986)	(4.840)	(4.399)	(2.544)	(2.889)	(4.097)	(3.985)
State-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	No	Yes	No	Yes	No	Yes	No

Industry Fixed Effects	No	Yes	No	Yes	No	Yes	No	Yes
Observations	6,856	6,856	6,856	6,856	6,856	6,856	6,856	6,856
Adj. R-squared	0.679	0.452	0.723	0.491	0.516	0.187	0.671	0.436

Table IA9 - Alternative Measures of CSR - Carbon Risk

In this table we replicate our baseline regression results with alternative dependent measures, which measure firms' carbon emissions. In Columns (1) and (2), the dependent variable is carbon intensity scope 1. In Columns (3) and (4), the dependent variable is carbon intensity scope 2. In Columns (5) and (6), the dependent variable is carbon intensity scope 3. Carbon intensity measures are calculated as carbon emissions per unit of sales ((tons CO_2/USD in m.) / 100). We use OLS estimation methods with firm and year-state fixed effects in Columns (1), (3) and (5), industry and year-state fixed effects in Columns (2), (4), and (6). Standard errors are clustered at both the firm level and the year level and reported in parentheses. ***, **, * correspond to statistical significances at the 1, 5, and 10 percent levels, respectively. See Appendix for detailed variable explanations.

	(1) SCOPE 1 INT	(2) SCOPE 1 INT	(3) SCOPE 2 INT	(4) SCOPE 2 INT	(5) SCOPE 3 INT	(6) SCOPE 3 INT
CEO Pay Duration	-0.134**	-0.294*	0.006	0.016	-0.059***	-0.099***
	(0.064)	(0.174)	(0.005)	(0.015)	(0.018)	(0.027)
CEO Delta	0.035	-0.703***	0.004	-0.015	-0.013	-0.052*
	(0.068)	(0.188)	(0.009)	(0.015)	(0.018)	(0.027)
CEO Vega	0.041**	0.089**	-0.006*	-0.005*	0.047***	0.034**
	(0.017)	(0.037)	(0.003)	(0.003)	(0.011)	(0.013)
Size	-0.287*	0.393	-0.028	0.009	-0.182**	-0.017
	(0.159)	(0.288)	(0.036)	(0.025)	(0.070)	(0.040)
Q	-0.070*	0.039	-0.011	-0.038***	-0.042**	-0.077**
	(0.037)	(0.138)	(0.006)	(0.012)	(0.019)	(0.029)
Profitability	0.878**	2.613*	-0.005	-0.013	0.023	0.720**
	(0.392)	(1.471)	(0.080)	(0.105)	(0.110)	(0.260)
Cash Holding	0.031	-1.414	-0.036	-0.289	-0.192	-0.806**
	(0.508)	(1.640)	(0.165)	(0.205)	(0.198)	(0.313)
Free Cash Flow	-1.391	-13.398***	-0.233	0.120	0.201	0.003
	(0.900)	(2.889)	(0.257)	(0.319)	(0.290)	(0.485)
Leverage	1.398***	1.989*	0.075	0.047	0.435**	-0.200
	(0.536)	(1.159)	(0.059)	(0.078)	(0.191)	(0.270)
Capital Expenditures	-4.743*	-10.108	0.681	3.085**	-1.821**	-3.013**
	(2.737)	(8.181)	(1.477)	(1.327)	(0.748)	(1.161)
Product Concentration	-0.184	-4.512***	0.065	-0.184	0.129	0.420
	(0.279)	(0.893)	(0.080)	(0.158)	(0.103)	(0.278)
Independent Directors	-1.270*	4.410***	-0.208	0.259*	-0.742***	-0.692*
	(0.744)	(1.670)	(0.153)	(0.140)	(0.243)	(0.335)
State-Year Fixed Effects	Yes	Yes	Yes	Yes	Yes	Yes
Firm Fixed Effects	Yes	No	Yes	No	Yes	No
Industry Fixed Effects	No	Yes	No	Yes	No	Yes
Observations	7,742	7,742	7,742	7,742	7,742	7,742
Adj. R-squared	0.911	0.303	0.293	0.055	0.909	0.610