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Chapter: Transforming Organizational Systems Through Innovation Management and Digital Capability Building

COMPENSATION STRUCTURE AND REAL CSR REPORTING ACTIVITY: CEO DOLLARS AND SUSTAINABLE SENSE

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Annotation. We utilize the voluntary Corporate Social Responsibility (CSR) environment in the Unted States (U.S.) to examine executive compensation and impact on real firm activities. Specifically, we consider both debt-like incentives of pension compensation and complex agency frictions arising from mixed executive compensation structures. We explore how the frictions between the short-term incentives of equity compensation and the long-term incentives of debt-type compensation influence real firm activities. Focusing on CEO pension compensation, we examine voluntary U.S. CSR reporting from 2006 to 2020. We find that firms offering higher pension compensation are less likely to initiate CSR reporting, but more likely to engage in ongoing voluntary CSR disclosure post-initiation. Additionally, ongoing CSR reporting is more prevalent when the CEO's pension compensation is higher relative to other forms of compensation, such as cash-based (salary and bonus) and equity-based compensation (stock options). This indicates that CEOs with substantial pension compensation are incentivized to make decisions that preserve long-term firm value, ensuring their pensions are secured. Furthermore, we observe that CEOs are more likely to engage in ongoing CSR reporting in environments where the alignment of compensation structures with firm capital structures minimizes agency risk. This suggests that the alignment of incentive structures with real firm activities is more achievable in contexts where agency friction is minimized. These insights offer valuable implications for understanding agency theory, optimizing compensation incentives, and enhancing CSR reporting and voluntary disclosure practices.

Keywords: executive compensation; corporate social responsibility reporting; performance-based pay, inside debt, voluntary disclosure.

JEL classification: G32, M12, M14.

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Introduction

In 2011, only 20% of firms on the S&P 500 index issued Corporate Social Responsibility Reports (CSR). By the end of the decade, this figure had surged to 90%.[1] Research on the growth of voluntary CSR reports has risen dramatically, with groundbreaking work on disclosure quality (Michelon *et al*., 2015), the diversity of disclosures communicated (Ellerup Nielsen & Thomsen, 2007), and its subsequent evolution (Tschopp & Huefner, 2015) highlighting the increasing importance of CSR reporting in corporate strategy and stakeholder engagement. Further work delved into both the principled and practical motivations of CSR initiation, ranging from responding to external scrutiny (Thorne *et al*., 2014) to seeing pragmatic benefits in lower costs of equity capital (Dhaliwal *et al*., 2011). However, an important question remains: what role does the structure of CEO compensation play in the voluntary disclosure of CSR reports? While aggregate CEO pay has been shown to impact CSR reporting (Jian & Lee, 2015), and detailed analyses have been conducted on cash and equity components (Karim *et al*., 2018), a comprehensive view that includes executive pensions (supplemental executive retirement plans, or SERPs) and their proportion of overall compensation has yet to be extensively studied. Our research aims to bridge this gap by examining not only the amount and type of CEO compensation in initiating CSR reports, but also its influence on the sustained disclosure of CSR reports over time.

Our study capitalizes on the 2006 changes in U.S. disclosure requirements for executive pensions and postretirement plans, examining their impact within the rapidly expanding voluntary CSR reporting environment from 2006 to 2020. We examine the relationship between executive compensation and real firm activities, specifically voluntary CSR disclosures. Our focus is on both the debt-like incentives of pension compensation and the complex agency frictions arising from mixed executive compensation structures. We explore the impact of these agency frictions, particularly the tension between the short-term incentives of equity compensation and the long-term incentives of debt-type compensation, on CSR disclosures. By considering these factors, we seek to understand the role a comprehensive view of CEO compensation plays in the voluntary disclosure of CSR activities.

Since Jensen and Meckling (1976), agency theory and the optimal contracting and incentivizing of CEOs through compensation contracts has been researched as a critical component of firm dynamics. Executive compensation affects short-term behavior, risk-taking, policies, firm profitability, and retention (Edmans *et al*., 2017). Prior to 2006, most research focused on cash and equity-based CEO compensation, as finite disclosure information was available regarding pension and other postretirement plan compensation. In 2006, the Financial Accounting Standards Board's issuance of *SFAS 158* and the Securities and Exchange Commission's (SEC's) rule changes surrounding disclosure of pension and other postretirement plans shed new light on the type and structure of executive compensation utilized by publicly traded firms.

We consider three perspectives on executive compensation focusing on debt-like components. First, we examine the influence of compensation type on the likelihood of firm engagement in real voluntary disclosure (CSR reporting) activities. Sundaram and Yermack (2007) describe pension-based compensation as a form of incentivizing CEOs to pursue strategies that reduce firm risk and preserve long-term pension value. As pension compensation incentivizes executives to be aligned with other long-term stakeholders (such as bondholders), this type of compensation is considered debt-like and referred to as *inside debt* (Sundaram, Yermack, 2007; Edmans, Liu, 2011). As voluntary CSR reports are real firm

[1] https://online.hbs.edu/blog/post/what-is-a-csr-report

activities that embody a sustainable, long-term framework for the firm, we expect a positive association between the presence of executive pension compensation and the likelihood of voluntary CSR reporting.

Second, we examine the influence of compensation structure on the likelihood of firm engagement in CSR reporting. CEOs with compensation structure that includes inside debt face greater agency friction between the short-term incentives of their equity compensation and the long-term incentives of their debt-type compensation (Sundaram, Yermack, 2007). Similar to examining debt in the capital structure of the firm (leverage), we can also examine the amount of inside debt in the compensation structure for executives, referred to as *compensation leverage*. As CSR reporting inherently embodies a long-term decision horizon and contains stakeholder-oriented content (Richardson, Welker, 2001; Goss, Roberts, 2011; Dhaliwal *et al*., 2012), we expect a positive association between executive compensation leverage and the likelihood of a firm to engage in voluntary CSR reporting.

Finally, we examine the influence of alignment/misalignment of CEO compensation structure to firm capital structure on the likelihood of firm engagement in CSR reporting. CEOs function in symbiosis with the firm. When a significant portion of executive compensation is derived from pensions (high compensation leverage), CEOs are incentivized to adopt strategies that minimize firm risk to preserve the long-term value of their pensions, rather than pursuing short-term strategies to increase shareholder equity value. However, if a CEO's compensation structure is highly leveraged while the firm's capital structure leverage is low, this discrepancy creates agency frictions. Following Edmans *et al*. (2017), we observe that executive compensation influences behavior and risk-taking preferences in ways that may conflict with the firm's interests as indicated by its capital structure.

Eisdorfer *et al*. (2013) study the 2006 change in reporting requirements to examine the difference between firms' capital structure and executive compensation structure, described as the *leverage gap*. A large difference between the absolute value of firms' capital structure and the structure of executive pay is more likely to generate agency effects than when these structures are aligned and leverage gap is smaller (Eisdorfer *et al*., 2013; White, 2018). In our third examination of the influence of compensation on real firm activities, we consider this environment of alignment/misalignment of compensation and capital structure. As agency frictions often benefit by decreases in information asymmetry, we consider the influence of compensation-related agency behaviors on voluntary disclosure by examining the relationship between leverage gap and voluntary CSR reporting.

We begin our empirical analysis by utilizing CorporateRegister.com to identify U.S. publicly traded companies engaging in voluntary, stand-alone CSR reporting between the years 2006 and 2020. We use Compustat and Execucomp to identify firm and executive compensation data, and utilizing logistic estimation models, we examine the influence of executive compensation on the likelihood of firms to engage in CSR reporting.

We find that firms offering higher executive pension-based compensation are less likely to initiate CSR reporting, but more likely to engage in ongoing voluntary CSR disclosure. With respect to CSR initiation, our findings suggest costs and risks associated with the initiation of voluntary disclosure remain high, consistent with Thorne *et al*. (2014), and these costs and risks are not yet offset in our sample period by the perceived long-term benefits of voluntary CSR reporting. With respect to ongoing CSR reporting, we find that CSR reporting is more likely in the presence of higher executive pension-based compensation, supporting our hypothesis that ongoing CSR reporting aligns with the presence of inside debt and the related CEO desire to decrease firm risk and preserve long-term value. We also find CSR reporting is more likely when pensions form a greater proportion of CEO compensation structure. We suggest that the

positive association between compensation leverage and CSR reporting is driven in part by the presence of debt-like incentives and in part by potential agency frictions between the short-term incentives of CEO's equity compensation and the long-term incentives of their debt-type compensation. To further examine the influence of agency theory on firm behavior, we examine firm leverage gap – a measure of the environment of alignment/misalignment of compensation structure to firm capital structure. We find that CEOs in environments where alignment of compensation structure to firm capital structure minimizes agency risk are more likely to engage in ongoing CSR reporting. As setting compensation leverage close to firm leverage can reduce agency costs (Eisdorfer *et al*., 2013), this finding suggests CSR report issuances are more likely in environments where agency costs in the prior year are already minimized.

Agency theory examines the issues that arise when 'agents' – company executives – are hired to represent shareholder interests. The effects of compensation in aligning CEOs to shareholders have been well-studied. Extant literature (notably: Sundaram, Yermack, 2007; Edmans, Liu, 2011) has focused on the role of pension-based compensation as an important incentive, suggesting that when firms pay executives more pension-based compensation, this compensation structure aligns executives with the long-term interests of bondholders over shareholders. More specifically, CEOs with pension-based compensation may avoid engaging in projects with substantial downside risk that could jeopardize long-term firm value (Edmans *et al*., 2017). In our research, we examine how voluntary disclosure (CSR reporting) is affected by executive compensation and agency theory. Broadly speaking, our findings align well with agency theory: in our sample window, voluntary CSR reporting is a risky endeavor and higher pension-based compensation discourages CSR report initiation. However, once firms issue CSR reports, higher pension-based compensation encourages CEOs to engage on ongoing reporting as the compensation structure of these CEOs encourages executives to think about preserving the firm's long-term value – precisely what the commitment to CSR attempts to signal to investors.

This study informs our understanding of the influence of executive compensation and compensation structure on management's decision making as well as the influence of agency frictions generated by CEO compensation structure and firm capital structure on voluntary disclosure. Our findings align well with literature regarding agency theory (Sundaram, Yermack, 2007; Edmans, Liu, 2011) and executive compensation (Eisdorfer *et al*., 2013). Furthermore, to the best of our knowledge, we are the first paper to systematically examine the affect of pension-based compensation on real voluntary disclosure activities of U.S. CSR reporting. Our findings suggest CSR reports serve both firm and CEO interests around preserving long-term value and decreasing risk, factors more pronounced for highly levered firms. Our results are fundamentally important to the understanding of why U.S. firms engage in voluntary CSR reporting and form an important link between agency theory and the growing literature around CSR reports. With potential mandatory disclosures related to California's 2023 climate disclosure laws, the SEC's 2024 climate-related disclosure rule, and the European Commission's 2023 Corporate Sustainability Reporting Directive on the horizon, this study considers what role a comprehensive view of CEO compensation plays in the voluntary disclosure of CSR content and sets the stage for future examination of voluntary disclosures that persist in an increasingly regulated environment. Our study suggests opportunities for future research in the areas of executive compensation, debt structure, voluntary disclosure, CEO performance and decision making, as well as gender and CSR reporting.

The remainder of this paper is organized as follows: background and hypotheses development, a description of the research design, a description of the data, empirical results, additional analyses, and a conclusion.

1. Background on Stand-Alone CSR Reports as Voluntary Disclosures

Stand-alone CSR reporting in the United States remains, to date, non-compulsory and unregulated. The content and consistency of CSR reporting is voluntary. The timing and distribution of CSR reporting is voluntary. And the voluntary nature of these reports makes them a rich environment to examine CSR's usefulness to firm stakeholders (Richardson, Welker, 2001; Dhaliwal *et al*., 2012), agency cost mitigation (Goss, Roberts, 2011), and information asymmetry management (El Ghoul *et al*., 2011; El Ghoul *et al*., 2018; T. Kim *et al*., 2020).

Whereas other studies leverage CSR reports to examine firm CSR performance – utilizing a performance score generated from CSR report content by third-party organizations such as MSCI (formerly KLD) or Bloomberg – we utilize CSR reports to examine *real* firm activity in the form of voluntary disclosure. With an emphasis on equity shareholder-value impact, the extant accounting literature finds real CSR reporting activity in the U.S. is associated with better analyst coverage (Dhaliwal *et al*., 2012), an increase in institutional investors (Dhaliwal *et al*., 2011), a reduction in firms' cost of equity capital (Dhaliwal *et al*., 2011), higher earnings quality (Kim *et al*., 2012), tax avoidance (Watson, 2015), and positive reputational effects (Simnett *et al*., 2009; Pflugrath *et al*., 2011; Dhaliwal *et al*., 2011). However, the content, timing, and stand-alone disbursement method of U.S. CSR reports suggest these voluntary disclosures are unlikely to be solely intended for equity market consumption. We posit that the non-compulsory nature, as well as the long-term and stakeholder-oriented content (Richardson, Welker, 2001; Goss & Roberts, 2011; Dhaliwal *et al*., 2012) of U.S. CSR reporting provides a unique setting to examine the relationship between executive compensation and real firm activities in the form of voluntary disclosure.

2. Hypotheses Development

2.1 Executive Compensation and Firm Effects

Executive compensation contracts arise optimally in response to particular agency frictions. Traditionally, extant literature examines optimal compensation structure from the perspective of the shareholder-principal and manager-agent models. Jensen and Meckling (1976) document how the separation between ownership and control creates different incentives for managers and shareholders. This separation leads to agency conflicts, a theme further explored by Bebchuk and Fried (2004), who delve into the design of executive compensation packages and their impact on firm behavior.

Firm boards have historically been aware of this dynamic and attempted to align compensation incentives with those of their firms to reduce agency costs, as identified by Coughlan and Schmidt (1985). This alignment is not only crucial for minimizing agency conflicts but also for ensuring that executive decisions reflect shareholder interests, a connection emphasized by Core *et al*. (1999) in their investigation of the relationship between corporate governance, CEO compensation, and firm performance. The early research in executive compensation primarily focused on cash-based compensation (salary and bonus) and equity-based compensation. As the field evolved, it became evident that the type of compensation provided to executives created more specific firm effects. Mehran (1995) documented how the form of compensation has important implications for firm performance, associating greater manager equity compensation with better firm performance. This finding aligns with research by Gomez-Mejia and Wiseman (1997), who consider the risk-taking implications of different compensation structures.

Further developments in this area show that stock options can increase managerial incentives for taking on riskier projects, as found by Guay (1999), Core and Guay (1999), and Coles *et al*. (2006). These findings are crucial in understanding the broader implications of compensation leverage, as highlighted by

Sundaram and Yermack (2007) and Edmans and Liu (2011). The concept of compensation leverage—how a CEO's pay is linked to the company's stock performance—emerges as a pivotal factor in influencing executive behavior, especially in terms of risk-taking and decision-making. Edmans *et al*. (2017) further illustrates how executive compensation influences short-term behavior, policies, profitability, and retention, providing a comprehensive understanding of its impact on firm performance. Graham *et al*. (2012) corroborates this by finding a strong positive correlation between CEO compensation and stock return volatility, directly linking executive pay structures to financial outcomes.

In 2006, the issuance of SFAS 158 and the SEC rule changes surrounding disclosure of pension and other postretirement plans shed new light on the type and structure of executive compensation utilized by publicly traded firms. In one of the first studies to examine the new disclosure content, pension-based compensation was described in detail by Sundaram and Yermack (2007), who find that managers compensated with higher levels of pension-based compensation are incentivized to pursue strategies that reduce firm risk and preserve their long-term pension value. If executive compensation, including pension-based compensation, is likely to affect a diverse array of firm outcomes, compensation may also affect the firm's decision to engage in the voluntary disclosure activity of CSR report issuance.

Several studies have explored the relationship between CSR performance and executive compensation. Jian and Lee (2015) found a negative relationship between total CEO compensation and CSR performance (KLD/MSCI score). Karim *et al*. (2018) showed that while cash-based compensation negatively affects CSR performance, equity-based compensation has a positive impact. Kim *et al*. (2020) found that CEO inside debt holdings are positively related to adjusted CSR scores (MSCI), especially in 'controversial industries' (as defined by Jo & Na, 2012) where CSR is crucial for risk mitigation. Firms also negotiate compensation contracts for executives that offer CSR-related incentives (Ikram *et al*., 2019). Radu and Smaili (2021) study the impact of CSR committee and CSR-linked executive compensation on CSR performance (Bloomberg's social and environmental score) as governance mechanisms. The authors examine a sample of Canadian firms from 2012 to 2018 and find that CSR-linked compensation has a significant impact on CSR performance. Of note, Ikram *et al*.'s 2019 research, which finds that CSR-contingent compensation practice varies significantly across industries for a sample of U.S. S&P 500 companies.

Since pensions incentivize the CEO to reduce firm risk and consider the long-term value of the company, we expect CEOs to consider sustainability as part of this framework. As CSR reporting embodies a sustainable, long-term outlook for the firm, we expect that CEOs compensated with higher debt-based compensation (such as pensions) are more likely to engage in CSR reporting. We also acknowledge that the decision to initiate and continue voluntary disclosure can be complex. Thorne *et al*. (2014) note the costs of issuing CSR reports are non-trivial, so it would be reasonable to consider that CEOs are likely to reflect on these year-over-year CSR costs with respect to long-term profitability and firm value when considering compiling and engaging in voluntary CSR disclosure. Furthermore, CSR reporting in the United States remains voluntary and adoption of CSR reporting in the U.S. is not prolific. Descriptive statistics from our sample (see Table 2) suggest, on average, only 6.6 percent of firms per year across three-digit NAICS industry codes issue voluntary CSR reports (PCT_CSR). The relatively low industry-specific adoption-level of CSR reporting in the United States drops to 4.5 percent when determined from the full 2006 to 2020 Compustat sample, suggesting CSR initiation first-mover advantages may have been realized while early adoption risks still remain. To address endogeneity and self-selection concerns related to U.S. voluntary CSR reporting and executive debt compensation, we employ a lead-lag approach and consider both the likelihood of a U.S. firm to *initiate* voluntary CSR reporting and to engage in *ongoing* voluntary CSR reporting. Our hypotheses follow:

Hypothesis 1a: The likelihood a firm will initiate in voluntary, stand-alone corporate social responsibility reporting is associated with executive debt compensation.

Hypothesis 1b: The likelihood a firm will engage in ongoing voluntary, stand-alone corporate social responsibility reporting is positively associated with executive debt compensation.

2.2 Compensation Structure

Sundaram and Yermack (2007) and Edmans and Liu (2011) define pensions as a form of *inside debt*. Inside debt is debt-like compensation that incentivizes the executive to be aligned with other long-term stakeholders (such as bondholders). High levels of equity-based compensation can incentivize managers to take on additional risks, while pension-based compensation incentivizes mangers to be more cautious to preserve firm value.

Similar to examining debt in the capital structure of the firm (leverage), we can also examine a compensation structure for executives, or *compensation leverage*. Compensation leverage of a CEO is defined by the actuarial present value of the CEO's accumulated pension benefit divided by the sum of pension and equity-based compensation. Following Sundaram and Yermack (2007), Eisdorfer *et al*. (2013), and Eisdorfer *et al*. (2015), we define compensation leverage in a given year as pension-based compensation divided by the sum of pension-based compensation, stock awards, and option awards. The higher the pension-based compensation, the higher the compensation leverage. The higher the compensation leverage, the more likely executives are to face greater agency friction (Sundaram & Yermack, 2007). Although most executive compensation continues to be equity based, Cadman and Vincent (2015) find that the mean (median) overall pension value from 2006 to 2012 is 23 percent (15 percent) of the CEO's total wealth held in the firm. As such, Edmans *et al*. (2017) suggest that ignoring pensions can result in a significant under estimation of total CEO pay.

We posit that executives with greater compensation leverage are both more likely to consider long-term decision horizons due to their inside debt and also face greater agency friction between the short-term incentives of their equity compensation and the long-term incentives of their debt-type compensation. As CSR reporting inherently embodies a long-term decision horizon and contains stakeholder-oriented content (Richardson & Welker, 2001; Goss & Roberts, 2010; Dhaliwal *et al*., 2012), we expect that CEOs that receive a high ratio of pensions relative to other of forms of compensation (measured by compensation leverage) will be more likely to issue CSR reports.

Hypothesis 2: The likelihood a firm will engage in voluntary, stand-alone corporate social responsibility disclosures is positively associated with executive compensation leverage.

2.3 Capital Structure and Compensation Structure

In developing our final hypothesis, we consider the relationship between firm capital structure and executive compensation structure in the context of CSR reporting. Sundaram and Yermack (2007) and Edmans and Liu (2011) illuminate the concept of compensation leverage as being homologous with firm leverage. While firm leverage pertains to the ratio of debt within a firm's capital structure, compensation leverage focuses on the proportion of inside debt in executive compensation. Understanding this relationship is crucial as it reveals how executive behavior and decision-making are influenced by compensation incentives. Bebchuk and Fried (2004) and Core *et al*. (1999) emphasize that the alignment—or misalignment—of executive compensation with shareholder interests can significantly impact firm risk and performance.

Expanding this discussion, Eisdorfer *et al*. (2013) and White (2018) delve into the *leverage gap,* which examines the disparity between a firm's capital structure and its executive compensation structure. This leverage gap serves as a lens to scrutinize the effects of executive compensation incentives on firm behavior. Healy and Palepu (2001) argue that the need for financial reporting and disclosure arises from information asymmetry and agency conflicts. In the context of CSR performance, Cho *et al*. (2013) found that KLD scores—whether positive or negative—can reduce information asymmetry, a relationship further supported by Kim *et al*. (2020), who demonstrated that adjusted CSR performance scores (MSCI) can mitigate firm risk by decreasing information asymmetry.

Sundaram and Yermack (2007) also note that CEOs with higher compensation leverage face greater agency friction. Since reducing information asymmetry can alleviate agency frictions, it is essential to investigate how compensation-related agency behaviors influence voluntary CSR disclosure. Eisdorfer *et al*. (2013) and White (2018) define the leverage gap as the difference between firm leverage (total debt divided by total assets) and compensation leverage, suggesting that a significant divergence between these two structures is likely to generate agency effects, whereas a minimal leverage gap aligns firm and CEO incentives.

We posit that the leverage gap can be a critical tool for exploring the impact of executive compensation structure and agency-driven behavior on voluntary disclosure, specifically in the realm of CSR reporting. Given that CSR reporting represents a substantial investment for the firm and a key indicator of its commitment to broader social and environmental concerns, the relationship between this reporting and the leverage gap becomes particularly salient.

> **Hypothesis 3:** The likelihood a firm will engage in voluntary, stand-alone corporate social responsibility disclosures is associated with the absolute value of leverage gap.

This hypothesis suggests that the size of the leverage gap – the absolute difference between the firm's capital structure and the structure of executive compensation – may play a significant role in determining a firm's propensity to engage in CSR disclosures. A smaller leverage gap, indicating alignment between the firm's and executives' financial incentives, could foster an environment where transparent and comprehensive CSR reporting is valued and pursued over the long term. In contrast, a larger leverage gap might signal misaligned incentives, potentially leading to less emphasis on voluntary CSR disclosures as executives might prioritize other aspects that are more closely aligned with their compensation structure. Hypothesis 3 seeks to empirically test the theoretical linkage between financial structures and CSR practices, offering insights into how internal corporate mechanisms, such as compensation strategies, can influence external reporting and stakeholder engagement.

3. Research Design

3.1 Empirical Models and Variables

In this study, we examine the determinants of CSR reporting. As CSR reporting is voluntary in the United States, each issuance of a stand-alone CSR report represents a decision to engage in voluntary disclosure. Although the timing of CSR reports is discretionary, an examination of monthly CSR Report Alerts from CorporateRegister.com suggests that most CSR reports are issued between May and July, indicating a lag between report year and year of disclosure. As such, the following tests are designed to examine the influence of executive compensation type in the prior year on the likelihood of management to engage in voluntary CSR reporting. The logistic regression model to examine voluntary CSR report initiation is specified as follows:

$$\log[\text{prob}(CSR\_YR1_{i,t})/(1 - \text{prob}(CSR\_YR1_{i,t}) = \beta_0 + \beta_1 SIZEMVE_{i,t-1} + \beta_2 SALARYBONUS_{i,t-1} + \quad (1)$$

$$+ \beta_3 STOCKOPTIONS_{i,t-1} + \beta_4 PENSION_{i,t-1} + \beta_5 EXECUTIVEAGE_{i,t-1} + \beta_6 GENDER_{i,t-1} + \beta_7 LEV_{i,t-1}$$

$$+ \beta_8 LP_{i,t-1} + \beta_9 ADV\_INT_{i,t-1} + \beta_{10} REG_{i,t-1} + \beta_{11} LITRISK_{i,t-1} + \beta_{12} ROA_{i,t-1} + \beta_{13} TOBINQ_{i,t-1} + \beta_{14} GLOBAL_{i,t-1}$$

$$+ \beta_{15} COMPETITION_{i,t-1} + \beta_{16} PCT\_CSR_{i,t-1} + \Sigma IND_{i,t} + \Sigma YEAR_{i,t} + \varepsilon_{i,t}$$

The logistic regression model to examine voluntary CSR reporting is specified as follows:

$$\log[\text{prob}(CSR\_PUBYR_{i,t})/(1 - \text{prob}(CSR\_PUBYR_{i,t}) = \quad (2)$$

$$\beta_0 + \beta_1 SIZEMVE_{i,t-1} + \beta_2 SALARYBONUS_{i,t-1} + \beta_3 STOCKOPTIONS_{i,t-1} + \beta_4 PENSION_{i,t-1} + \beta_5 EXECUTIVEAGE_{i,t-1}$$

$$+ \beta_6 GENDER_{i,t-1} + \beta_7 LEV_{i,t-1} + \beta_8 LP_{i,t-1} + \beta_9 ADV\_INT_{i,t-1} + \beta_{10} REG_{i,t-1} + \beta_6 GENDER_{i,t-1} + \beta_7 LEV_{i,t-1} + \beta_8 +$$

$$\beta_9 ADV\_INT_{i,t-1} + \beta_{10} REG_{i,t-1} + \beta_{11} LITRISK_{i,t-1} + \beta_{12} ROA_{i,t-1} + \beta_{13} TOBINQ_{i,t-1} + \beta_{14} GLOBAL_{i,t-1} +$$

$$\beta_{15} COMPETITION_{i,t-1} + \beta_{16} PCT\_CSR_{i,t-1} + \Sigma IND_{i,t} + \Sigma YEAR_{i,t} + \varepsilon_{i,t}$$

In model (1) above, CSR_YR1 is an indicator variable equal to 1 for the year in which a public U.S. firm issues their first CSR report per CorporateRegister.com, and 0 otherwise. In model (2) above, CSR_PUBYR is an indicator variable equal to 1 for years in which a publicly traded U.S. firm *i* issues a stand-alone CSR report per CorporateRegister.com; zero otherwise. Observations where CSR_PUBYR are equal to zero include firms that never issue a CSR report in the sample period as well as firms who simply do not issue a CSR report in year *t*. The control group for tests of our hypotheses are all non-CSR initiating or non-CSR reporting firm-year observations.

In both CSR initiation (1) and CSR reporting (2) models, we control for firm size (SIZEMVE) as size has been found to influence the firm's contractual relationships, visibility, disclosure, and political pressure (Lang, Lundholm, 1993; Healy, Palepu, 2001; Dhaliwal *et al.*, 2011). Size is the market value of equity at the beginning of each year. As the initial investment in voluntary CSR reporting is relatively lower for large firms, we expect the propensity to disclose voluntary non-financial CSR reports is positively associated with size.

The primary variables of interest in the first tests of our hypotheses examine three types of executive compensation. SALARYBONUS is defined as the combined executive cash salary and bonus compensation, and was computed as the computed as sum of *SALARY* and *BONUS* variables for each CEO executive during the year. STOCKOPTIONS measures the fair value of all stock and option awards given as compensation to the CEO, and is calculated by adding both *STOCK_AWARDS* (the total value of restricted stock granted) and *OPTION_AWARDS* (the total value of options granted) under FAS 123R. And PENSION is calculated as the actuarial present value of accumulated pension benefits from all CEO pension plans, or *PENSION-VALUE-TOT* in Execucomp. To control for CEO characteristics, we also include a measure of the CEO's age (EXECUTIVEAGE), in years, and an indicator variable equal to 1 if the CEO is non-male; 0 otherwise.

Pension data limited the age of the sample, since actuarial present values for pensions are not available prior to 2006. Effective for firms with fiscal years ending on or after December 15, 2006, Securities and Exchange Commission Title 17 CFR Section 229.402, (Item 402) *Executive compensation,* required firms to report the actuarial value of their pension benefit. Prior to this date, pension information was included in a table that required manual computation to determine the actuarial present value of the executive's

pension benefit. Sundaram and Yermack (2007) document the required calculations to determine actuarial pension size.

We also consider the influence of other major stakeholders on management's decision to engage in voluntary CSR reporting. We consider the influence of debtholders by assessing the capital structure of the firm and including leverage (LEV). Leverage is a proxy for the influence of debt (debtholders) on management (the firm). LEV is defined as the ratio of a firm's total debt divided by total assets for each observation year. Although debtholders are considered quasi-insiders, prior literature suggests social responsibility disclosures may be viewed by management as a way to meet certain debtholder expectations (Roberts, 1992).

Next, labor pressure (LP) captures the economic influence of employees on the firm by measuring collective bargaining power, or employees' ability to make demands of the firm from a strong bargaining position. King *et al*. (2023) note a positive association between unionization intensity with measures of debt-like compensation. Labor pressure is calculated as the industry-level unionization rate times firm-level labor intensity (Hilary, 2006; T. Chen *et al*., 2011 and S. Chen *et al*., 2015). Industry-level unionization rates are provided by the Union Membership and Coverage Database, which is maintained annually by Barry Hirsch and David Macpherson. Union data comes from the Bureau of Labor Statistics' monthly Current Population Survey. A description of the Union Membership Coverage Database can be found in Hirsch and Macpherson (2003).

The CSR reports examined in this study are professional, stand-alone documents released by firms to the public and easily interpreted as marketing tools. Marketing literature finds that CSR reports have a positive impact on global brand equity, awareness, image, credibility, and engagement (Hoeffler, Keller, 2002; Torres *et al*., 2012). To control for the influence of customers on CSR reporting, we include advertising intensity (ADV_INT) as a proxy for customer stakeholders, calculated as the ratio of reported annual advertising expense divided by average total assets per three-digit NAICS industry classification (Luo, Bhattacharya, 2006; Casey, Grenier, 2014; Servaes, Tamayo, 2013).

We also control for firm fundamentals in our determinants models. We control for regulated industries (REG), Management literature suggests that regulation is an institutional-level predictor of CSR actions and policies (Buehler, Shetty, 1974; Fineman, Clarke, 1996). As such, we control for industries classified as regulated following Hogan and Jeter (1999) and Ozbas and Scharfstein (2010). Prior literature (Skinner, 1979; Healy, Palepu, 2001) documents that litigation risk is related to voluntary disclosure decision and that litigation potentially reduces incentives to provide disclosure. Following Dhaliwal *et al*. (2012), litigation risk (LITRISK) is an indicator variable equal to 1 if a firm operates in a high litigation industry and 0 otherwise.

We include two control variables for the financial state of the firm – return on assets (ROA) and Tobin's Q (TOBINQ). Lang and Lundholm (1993) find disclosure ratings are increasing in firm performance, and both marketing (Luo, Bhattacharya, 2006) and accounting (Dhaliwal *et al*., 2011) literature suggest that firms with better financial performance are more likely to engage in CSR activities. ROA is calculated as income before extraordinary items scaled by total assets at the beginning of each year. TOBINQ is the control variable for firm growth. Dhaliwal *et al*. (2011) find a negative and significant relationship between growth and CSR initiation in their 2002 to 2007 international CSR report sample. The authors suggest that firms in an expansionary period are more financially constrained and have fewer resources for CSR activities and disclosure.

We control for competitive market pressures to issue CSR reports at the international and industry levels. As issuance of CSR reports increases in international markets, firms operating globally face greater pressure to issue CSR reports – at a minimum exploiting the opportunity for a lower cost of equity capital (Dhaliwal *et al*., 2011). As such, we include an indicator variable (GLOBAL) equal to 1 if a firm reports non-zero foreign income, and 0 otherwise.

Dhaliwal *et al*. (2011), suggest industry-specific characteristics influence CSR reporting. To control for industry peer pressure, we include PCT_CSR, a variable measuring the percentage of the top 50 firms in the three-digit NAICS industry who issue CSR reports. The higher the top 50 percentage, the more pressure a firm is under to follow the industry leaders. Under the proprietary cost hypothesis, firms' decisions to disclose information are influenced by concern that such disclosures can damage their competitive position in product markets (Verrecchia, 1983; Healy and Palepu, 2001). To control for product competition (COMPETITION), we use the Herfindahl-Hirschman Index to measure competitiveness of the firm within its industry. The Herfindahl index is calculated by taking the sum of the squared market share of the 50 largest firms in each three-digit NAICS industry. Market share is measured as each firm's percentage of total sales in its three-digit NAICS industry for the year. For industries with fewer than 50 firms, the Herfindahl index is calculated using all firms in the industry. Finally, the Herfindahl index is multiplied by -1, so that firms with a larger (less negative) index represent firms in industries with more concentration and less competition.

To control for the industry effects, we estimate the model using industry fixed effects (three-digit NAICS). Industry fixed effects control for the effect of a particular industry on the likelihood of CSR issuance. Finally, we include year fixed effects to control for macroeconomic events.

3.2 CEO Compensation Structure and CSR Reporting

Our third test continues to examine the determinants of CSR reporting. Utilizing the model (3) below, we focus on CEO compensation structure and the likelihood of CSR reporting. As such, the following test is designed examine the influence of executive compensation structure in the prior year on the likelihood of management to engage in voluntary CSR reporting. The logistic regression model is specified as follows:

$$\log[\text{prob}(\text{CSR\_PUBYR}_{i,t})/(1 - \text{prob}(\text{CSR\_PUBYR}_{i,t}) = \quad (3)$$

$$\beta_0 + \beta_1\text{SIZEMVE}_{i,t-1} + \beta_2\text{SALARYBONUS}_{i,t-1} + \beta_3\text{STOCKOPTIONS}_{i,t-1} + \beta_4\text{PENSION}_{i,t-1} + \beta_5\text{COMPLEV}_{i,t-1} + \beta_6\text{LEVGAP}_{i,t-1} + \beta_7\text{EXECUTIVEAGE}_{i,t-1} + \beta_8\text{GENDER}_{i,t-1} + \beta_6\text{LEVGAP}_{i,t-1} + \beta_7\text{EXECUTIVEAGE}_{i,t-1} + \beta_8\text{GENDER}_{i,t-1} + \beta_9\text{LEV}_{i,t-1} + \beta_{10}\text{LP}_{i,t-1} + \beta_{11}\text{ADV\_INT}_{i,t-1} + \beta_{12}\text{REG}_{i,t-1} + \beta_{13}\text{LITRISK}_{i,t-1} + \beta_{14}\text{ROA}_{i,t-1} + \beta_{15}\text{TOBINQ}_{i,t-1} + \beta_{16}\text{GLOBAL}_{i,t-1} + \beta_{17}\text{COMPETITION}_{i,t-1} + \beta_{18}\text{PCT\_CSR}_{i,t-1} + \Sigma\text{IND}_{i,t} + \Sigma\text{YEAR}_{i,t} + \varepsilon_{i,t}$$

Additional variables of interest in model (3) are COMPLEV and LEVGAP. Compensation leverage (COMPLEV) is the ratio of debt to equity compensation to the CEO. The *compensation leverage* of a CEO is defined by the actuarial present value of their accumulated pension benefit divided by the sum of pension and equity-based compensation. Following Sundaram and Yermack (2007) and Eisdorfer *et al*. (2013 and 2015), we define compensation leverage in a given year as the actuarial present value of the CEO's accumulated pension benefit divided by the sum of pension and equity-based compensation.

Compensation leverage is analogous to firm leverage, which we define as firm debt divided by total assets. The difference between firm leverage and compensation leverage (LEVGAP) allows us to study the effects of agency theory on firm behavior. A large difference between the firms' capital structure and the structure of executive pay is more likely to generate agency effects then when they are aligned (Eisdorfer *et al.*, 2013; White, 2018). The leverage gap is defined as the absolute value of the difference between firm leverage and compensation leverage.

4. Data Description

4.1 Sample Selection

Our sample period begins in 2006 with the subjection of firms to SFAS 158 and SEC regulated pension and postretirement plan disclosure and ends in 2020. As seen in *Table 1*, our initial sample includes all 168,372 unique observations in Compustat North American Fundamentals Annual from 2006 to 2020.

Table 1. Sample Selection

Panel A: Sample Determination

All Compustat Observations (*2006 - 2020*)	168,372
Firms	*21,821*
Drop observations with missing data:	
Total Assets (*AT*)	46,364
Mkt. Value Equity (*SIZEMVE*)	22,802
Growth (*TOBINQ*)	16,878
Labor Pressure (*LP*)	12,953
Profitability (*ROA*)	108
Compustat Sample Observations (*N*)	69,267
Sample Firms (n)	*9,793*
Drop missing Execucomp data:	48,351
Final Sample Observations (*N*)	20,916
Sample Firms (n)	*2,135*

Panel B: CSR Report Data for the Sample[1]

Year	Final Sample	CSR Reports (*CSR_PUBYR*)	CSR Initiation (*CSR_YR1*)
2006	1,132	112	18
2007	1,383	151	26
2008	1,596	176	37
2009	1,625	217	57
2010	1,521	261	60
2011	1,492	276	42
2012	1,475	284	25
2013	1,445	284	23
2014	1,420	297	19
2015	1,378	310	39
2016	1,354	308	19
2017	1,329	313	14
2018	1,293	338	46
2019	1,248	395	63
2020	1,225	539	126
Obs. (*N*)	20,916	4,261	614
Firms (*n*)	2,135	790	614

Note: [1] CSR report data collected from CorporateRegister.com.

Source: created by the authors.

The sample is reduced to 69,267 observations by excluding observations missing total assets (AT), market value of equity (SIZEMVE), Tobin's Q (TOBINQ), labor pressure (LP), and profitability (ROA). We utilize Execucomp to obtain CEO compensation data. Our sample is further reduced to exclude firms with missing compensation information. We are left with 20,916 firm-year observations spanning 2,135 firms.

To identify publicly traded companies engaging in real CSR reporting activities, we utilize CorporateRegister.com to collect a sample of firms issuing stand-alone CSR reports in the United States from 2006 to 2020. Each publicly traded CSR issuer is identified and hand-matched with Compustat data. Our sample includes 4,261 observations of CSR reporting by 790 firms with 614 initiations of CSR reporting in the sample period.

4.2 Descriptive Statistics

Table 2 presents the summary statistics for the independent variables used in our analysis.

Table 2. Descriptive Statistics Testing CSR Reporting Versus Non-Reporting Observations

	Full Final Sample			Non-CSR Reporting Obs CSR_PUBYR = 0			CSR Reporting Obs CSR_PUBYR = 1			Mean Diff	
	Mean	Median	SD	Mean	Median	SD	Mean	Median	SD	*t-value*	
SIZEMVE	7.5963	7.5116	1.7638	7.1481	7.1537	1.5439	9.3481	9.3391	1.4494	87.2280	***
SALARYBONUS	806.42	625.08	1,229.66	736.26	564.54	1,159.30	1,080.69	973.04	1,440.50	14.46	***
STOCKOPTIONS	2,606.82	1,125.00	4,871.92	1,948.49	827.42	4,189.24	5,180.05	3,460.40	6,293.40	31.77	***
PENSION	2,427.90	0.0000	7,298.32	1,304.69	0.0000	4,597.68	6,818.19	555.60	12,436.34	28.45	***
COMPLEV	0.2171	0.0000	0.3438	0.1774	0.0000	0.3250	0.3598	0.2700	0.3706	28.4240	***
LEVGAP	0.3024	0.2675	0.2779	0.2900	0.2456	0.2915	0.3471	0.3383	0.2164	13.6818	***
AGE	55.8416	57.0000	11.1937	55.4612	56.0000	11.6984	57.3283	58.0000	8.7968	11.4963	***
GENDER	0.0575	0.0000	0.2327	0.0567	0.0000	0.2313	0.0603	0.0000	0.2381	0.8850	
LEV	0.2659	0.2318	1.0161	0.2567	0.2106	1.1353	0.3016	0.2879	0.1728	4.8763	***
LP	0.00033	0.00014	0.0007	0.00035	0.00014	0.0007	0.00029	0.00012	0.0005	-5.6330	***
ADV_INT	0.0116	0.0067	0.0151	0.0120	0.0068	0.0153	0.0099	0.0054	0.0141	-8.4310	***
REG	0.2128	0.0000	0.4093	0.1878	0.0000	0.3905	0.3107	0.0000	0.4628	15.9514	***
LITRISK	0.5239	1.0000	0.4994	0.5400	1.0000	0.4984	0.4609	0.0000	0.4985	-9.2419	***
ROA	0.0415	0.0507	0.3026	0.0365	0.0485	0.3364	0.0612	0.0588	0.0819	8.5406	***
TOBINQ	1.9663	1.5091	1.8979	1.9811	1.5002	2.0253	1.9086	1.5421	1.2849	-2.8783	***
GLOBAL	0.6539	1.0000	0.4757	0.6241	1.0000	0.4844	0.7702	1.0000	0.4207	19.5892	***
COMPETITION	-0.0824	-0.0537	0.0901	-0.0829	-0.0537	0.0897	-0.0802	-0.0520	0.0917	1.6842	*
PCT_CSR	0.0657	0.0484	0.0600	0.0567	0.0435	0.0499	0.1012	0.0769	0.0799	34.6566	***
N			20,916			16,655			4,261		
n			2,135			2,052			790		

Note: For detailed variable descriptions, see Appendix A. Descriptive statistics are calculated on raw data. ***, **, and * indicate the difference between means is statistically significant at the 1%, 5% and 10% levels, respectively. See the additional analysis section for more information on outliers in the sample. Robustness tests indicate outliers do not impact the direction or statistically significant differeneces between means.

Source: Created by the authors.

Unlike the models used to test our hypotheses, the descriptive statistics do not consider industry or year partitions. As seen in *Table 2*, CSR reporters on the whole are significantly larger than non-reporting firms (mean SIZEMVE: 9.3481 for reporters and 7.1481 for non-reporters). In our sample, CEOs of CSR reporters receive statistically greater compensation regardless of type. The mean value of cash compensation (SALARYBONUS) for the full sample was approximately $806,000. Mean cash compensation rose to approximately $1,080,000 for CSR reporters but declines to approximately $736,000 for non-reporters. The larger size of the reporting firms also resulted in a similar presentation for other compensation variables. Equity awards (STOCKOPTIONS) averaged approximately $2.60 million for all executives, $5.18 million for CSR reporters and $1.95 million for non-reporters. Whereas the median firm offered no pension in our sample, the mean actuarial PENSION size was approximately $2.4 million. The majority of the larger CSR reporting firms offered pensions, averaging approximately $6.8 million with a substantial standard deviation of approximately $12.4 million. Non-reporters averaged much less pension compensation: approximately $1.3 million.

In considering the underlying structure of compensation, compensation leverage COMPLEV averaged 0.220 for the entire sample, rising to 0.359 for CSR-reporters and falling to 0.1774 for non-CSR reporters. In general, CSR-reporting firms had both higher amounts of inside debt (pension compensation) and offer CEOs a larger proportion of debt-like compensation than other firms (compensation leverage). LEVGAP, the absolute value of the difference between the compensation leverage of the executive (COMPLEV) and

the leverage of the firm (LEV) averaged 0.3024 for all sample firms. For CSR-reporters, the mean value was 0.3471 and 0.2900 for non-CSR reporters. The average AGE of a CEO in the sample was 55 years and 10 months. While non-CSR reporting CEOs were also about 55 years-old on average, CSR-reporters' CEOs averaged 57 years and 4 months old. GENDER, defined as 1 if the CEO is identified as non-male, was not statistically different across the sample, with approximately 6 percent of the sample and sub-samples identified as non-male.

Descriptive statistics indicate significantly more leverage (LEV) in the firm's capital structure of CSR reporting observations than non-reporting observations. This suggests that with respect to all firms in the sample period, debtholders of CSR reporting firms have more leverage, or influence, on management. Descriptive statistics in Table 2 also report mean labor pressure is significantly lower for CSR reporters. This is likely driven by the small number of overall CSR reporters in the sample period (790 firms). Mean advertising intensity is significantly different for CSR reporters and non-reporters, suggesting a greater customer emphasis by non-CSR reporters.

Statistics from *Table 2* also suggest CSR reporters are significantly more likely to be found in a regulated industry, and less likely to be found in litigiously risky industries. Financially, CSR reporters are significantly more profitable (ROA) than non-reporters and significantly less likely to be experiencing high growth (TOBINQ). Furthermore, firms voluntarily engaging in CSR reporting have a significantly higher level of global operations (GLOBAL), and competition within the firm's industry (COMPETITION) is statistically different between the reporting and non-reporting samples. Finally, descriptive statistics from our sample (see Table 2) suggest, on average, only 6.6 percent of firms per year across three-digit NAICS industry codes issue voluntary CSR reports (PCT_CSR), suggesting CSR initiation first-mover advantages may have been realized while early adoption risks still remain.

4.3 Correlation Examination

Spearman correlations were examined for each of our variables. Aligning with existing literature (Eisdorfer *et al*., 2013), compensation variables reported positive and significant correlation with one another. However, LEVGAP was not correlated to any individual form of executive compensation, including COMPLEV. Many of the remaining 17 variables in the correlation table reflect results that are generally consistent with expectations regarding firm financial condition and measures of firm value. The correlation coefficients did not give rise to concerns regarding multicollinearity.

5. Empirical Results

5.1 CSR Report Initiation

The first test of our hypotheses utilizes model (1), where we examine how lagged financial and compensation variables affect firms' decisions to initiate CSR reporting. The results of our logistic regression model are presented in *Table 3*.

Table 3. Executive Compensation and Determinants of CSR Report Initiation, 2006-2020

	CSR Initiation (I)			Executive Comp (II)			Inside Debt (III)		
	Dep. Variable: CSR_YR1			*Dep. Variable: CSR_YR1*			*Dep. Variable: CSR_YR1*		
Variables	**Coef.**	**SE**	**P-value**	**Coef.**	**SE**	**P-value**	**Coef.**	**SE**	**P-value**
$SIZEMVE_{t-1}$	0.248 ***	0.025	0.000	0.305 ***	0.030	0.000	0.287 ***	0.034	0.000
$SALARYBONUS_{t-1}$				0.00001	0.00003	0.831	-0.00005	0.00007	0.438
$STOCKOPTIONS_{t-1}$				-0.00002	0.00001	0.105	-0.00001	0.00001	0.194
$PENSION_{t-1}$				-0.00002 ***	0.00001	0.004	-0.00002 **	0.00001	0.016
$COMPLEV_{t-1}$							0.125	0.192	0.514
$LEVGAP_{t-1}$							-0.083	0.242	0.730
AGE_{t-1}				-0.002	0.004	0.590	-0.003	0.005	0.599
$GENDER_{t-1}$				0.014	0.183	0.938	0.031	0.186	0.867
LEV_{t-1}	0.068	0.045	0.132	0.081 *	0.047	0.084	0.271	0.260	0.299
LP_{t-1}	66.343	53.766	0.217	66.993	53.764	0.213	77.560	63.900	0.225
$ADV\ INT_{t-1}$	29.120 **	11.700	0.013	29.494 **	11.763	0.012	18.929	13.080	0.148
REG_{t-1}	-0.279	0.662	0.673	-0.349	0.650	0.591	-0.708	0.849	0.404
$LITRISK_{t-1}$	-0.126	0.234	0.590	-0.138	0.236	0.558	-0.086	0.250	0.731
ROA_{t-1}	0.738 **	0.313	0.018	0.698 **	0.323	0.030	0.669 **	0.338	0.047
$TOBINQ_{t-1}$	-0.008	0.035	0.812	-0.018	0.037	0.619	-0.012	0.042	0.774
$GLOBAL_{t-1}$	0.341 ***	0.120	0.004	0.348 ***	0.120	0.004	0.301 **	0.127	0.017
$COMPETITION_{t-1}$	-2.592	1.703	0.128	-2.985 *	1.696	0.078	-3.010	1.880	0.109
$PCT\ CSR_{t-1}$	-9.546 ***	1.743	0.000	-9.471 ***	1.743	0.000	-9.921 ***	1.758	0.000
Year Indicators			Yes			Yes			Yes
Industry Indicators			Yes			Yes			Yes
Pseudo R2			0.0928			0.0959			0.0921
Pseudo likelihood			-2,509			-2,500			-2,221
N: number of obs.			20,728			20,712			17,131
n: *(dep. var. CSR_YR1 = 1)*			614			614			572

Note: For detailed variable descriptions, see Appendix A. This table presents logistic regression results. ***, **, * Indicate the estimated coefficient is statistically significant at the 1%, 5% and 10% levels, respectively. Robust estimated standard errors used in all models. All t-statistics are corrected using the Huber-White Procedure.

Source: created by the authors.

Panel I of *Table 3* omits executive compensation variables to focus on firm-level characteristics. The results indicate that larger firms (SIZEMVE) are more likely to initiate CSR reporting, with positive and significant association at the one percent level. .Advertising intensity (ADV_INT) is also reported to positively influence the likelihood of CSR report initiation. We find financially strong firms (ROA) are more inclined to engage in CSR reporting, aligning with Thorne *et al*. (2014), who noted the substantial costs associated with issuing these reports. Internationally exposed firms (GLOBAL) are significantly more likely to initiate CSR reporting, consistent with prior literature. Interestingly, firms in industries with a high percentage of existing CSR reporters (PCT_CSR) are less likely to initiate CSR reporting, possibly indicating that first-mover advantages have already been realized and that CSR initiators may be less risk-averse than their counterparts.

Table 3, Panel II considers CSR report initiation with the inclusion of executive compensation variables. In Panel II, we find higher pension compensation is negatively correlated with firm likelihood of CSR report initiation. We know from extant literature (Sundaram & Yermack, 2007; Edmans & Liu, 2011) that higher

pension-based compensation aligns the CEO with the long-term interests of the company and is positively associated with greater risk aversion. In initiating a CSR report, the company is undertaking a voluntary disclosure with uncertain consequences for its stakeholders. This risk, coupled with a yet-unproven payoff strategy for initiating standalone reports, affirms that high pension compensation is inversely correlated with CSR report initiation. In Panel III, the addition of LEVGAP, COMPLEV, and GENDER offer no significant statistical insights with regards to report initiation. However, pension compensation remains a strong negative predictor of CSR report initiation.

5.2 Ongoing CSR Reporting

In our next model, we study how lagged compensation and financial variables affect the firm's decision to issue ongoing CSR reports. The results of our logistic regression model (2) are presented in *Table 4*, where Panel I again omits the executive and executive compensation variables to focus on firm characteristics.

Table 4. Executive Compensation and Determinants of CSR Reporting: 2006 to 2020

	(I) CSR Reporting *Dep. Variable: CSR_PUBIR*			(II) Compensation Type *Dep. Variable: CSR_PUBIR*			(III) Compensation Structure *Dep. Variable: CSR_PUBIR*		
Variables	**Coef.**	**SE**	**P-value**	**Coef.**	**SE**	**P-value**	**Coef.**	**SE**	**P-value**
$SIZEMVE_{t-1}$	1.144 ***	0.022	0.000	1.115 ***	0.025	0.000	1.107 ***	0.027	0.000
$SALARYBONUS_{t-1}$				-0.00006 **	0.00003	0.049	-0.00010 **	0.00004	0.022
$STOCKOPTIONS_{t-1}$				-0.00001	0.00001	0.388	0.00000	0.00001	0.854
$PENSION_{t-1}$				0.00003 ***	0.00000	0.000	0.00001 ***	0.00000	0.002
$COMPLEV_{t-1}$							0.843 ***	0.125	0.000
$LEVGAP_{t-1}$							-0.577 ***	0.169	0.001
AGE_{t-1}				-0.006 ***	0.002	0.008	-0.007 **	0.003	0.011
$GENDER_{t-1}$				-0.134	0.106	0.205	-0.216 *	0.114	0.058
LEV_{t-1}	0.402 ***	0.035	0.000	0.380 ***	0.036	0.000	0.747 ***	0.163	0.000
LP_{t-1}	174.166 ***	30.945	0.000	178.850 ***	31.001	0.000	211.580 ***	35.465	0.000
$ADV\ INT_{t-1}$	12.999 *	7.334	0.076	12.344 *	7.315	0.092	4.324	7.997	0.589
REG_{t-1}	0.517 *	0.297	0.081	0.662 **	0.312	0.034	0.907 ***	0.325	0.005
$LITRISK_{t-1}$	0.161	0.156	0.302	0.163	0.154	0.291	0.143	0.164	0.383
ROA_{t-1}	0.061	0.269	0.821	0.140	0.271	0.606	-0.112	0.287	0.696
$TOBINQ_{t-1}$	-0.268 ***	0.025	0.000	-0.252 ***	0.025	0.000	-0.231 ***	0.028	0.000
$GLOBAL_{t-1}$	0.453 ***	0.067	0.000	0.459 ***	0.068	0.000	0.385 ***	0.072	0.000
$COMPETITION_{t-1}$	-1.007	0.962	0.295	-1.194	0.966	0.217	-0.712	1.106	0.52
$PCT\ CSR_{t-1}$	4.176 ***	0.822	0.000	4.246 ***	0.829	0.000	3.749 ***	0.894	0.000
Year Indicators			Yes			Yes			Yes
Industry Indicators			Yes			Yes			Yes
Pseudo R2			0.3927			0.3970			0.3915
Pseudo likelihood			-6,403			-6,354			-5,620
N: number of obs.			20,784			20,768			17,266
n: *(dep. var. CSR_PUBIR = 1)*			4,261			4,261			4,046

Note: For detailed variable descriptions, see Appendix A. This table presents logistic regression results. ***, **, * Indicate the estimated coefficient is statistically significant at the 1%, 5% and 10% levels, respectively. Robust estimated standard errors used in all models. All t-statistics are corrected using the Huber-White Procedure.

Source: Created by the authors.

The strong statistical significance of SIZEMVE is indicative that larger firms are more likely to issue CSR reports. More highly levered firms (LEV) are likewise more likely to issue CSR reports. In the context of agency theory, firms with higher levels of debt are more likely to be aligned with bondholders who seek long-term security for their holdings. In this context, firms thinking long-term would be incentivized to issue

CSR reports. Consistent extant studies, labor pressure (LP) is also positive predictor of the issuance of CSR reports. Tobin's Q (TOBINQ) was negative and significant, implying that firms with less expensive stock relative to their replacement cost (an 'undervalued' firm) are more likely to issue CSR reports. GLOBAL firms are also more likely to issue reports.

Adding compensation data into Panel II, we focus on how primary executive compensation variables incentivize a firm to issue a CSR report. Higher salaries and bonuses in the prior year (SALARYBONUS) were negatively correlated with a firm's likelihood to engage in CSR reporting. This is consistent with these forms of compensation as being short-term and relatively determinate, particularly around salaries. When the compensation is tied to the long-term viability of the company (such as pensions), we find a positive relationship between PENSION and CSR reporting.

Many pensions are set up as Supplemental Executive Retirement Plans (SERPs) and remain protected in Rabbi Trusts. While many pensions offer lump-sum options at retirement (see: Eisdorfer *et al.*, 2015), the median age of sampled executives (55) suggests pensions are effectively 'long-term' compensation. Higher levels of long-term, debt-like compensation encourage executives to think about the firm's long-term viability. These affects increase the attractiveness of CSR reports and provide a signal about the firm's prospects. No significance was found in Panel II surrounding equity compensation, which often carries a vesting period of several years. The control variables reported similar significance in Panel II as in Panel I.

The initial results confirm Kim *et al*. (2020)'s findings that firms with high levels of CEO pensions are more likely to offer CSR reports, and confirm our first hypothesis. We extend this stream of literature by examining two additional measures that provide greater context around inside debt: COMPLEV, the compensation leverage of the executive that measures the size of pension compensation relative to other forms of compensation; and LEVGAP, the difference between the structure of CEO compensation and the capital structure of the firm. Results of testing these variables are found in Table 4, Panel III.

Panel III reports that while the coefficient for pension is reduced, the statistical significance of PENSION, relative to the likelihood of CSR reporting, remains at the one percent level. Higher amounts of debt relative to equity in the compensation structure of a CEO (COMPLEV) also statistically increases the likelihood of CSR reporting, confirming our second hypothesis (H2). When a greater portion of compensation is derived from pensions, the executives have an incentive to think about the long-term viability of the firm. This encourages the CEO to mitigate risks in a way that preserves long-term value. When we compare the leverage of the firm to the composition of executive pay in LEVGAP, we're effectively examining the agency relationship between CEO and firm in greater detail. If the firm is highly levered but the executive is not, would this 'incentive noise' create less incentive to issue CSR reports? To this end, we find that LEVGAP maintains a statistically-significant negative relationship to the likelihood of a firm engaging in CSR reporting. The smaller the gap between executive and firm compensation structure, the more likely the firm will issue a CSR report. Inversely, differences between firm and executive compensation structure reduce the likelihood of a firm issuing a CSR report.

In this scenario, we are observing two important factors occurring simultaneously. In the first, high-levered firms are eager to signal to bondholders that the firm is engaging in activities which reduce risk and promote long-term viability. At the CEO-level, high pension-based compensation incentives executives to promote CSR reports while preserving the likelihood of their pension payouts. When both leverage measures are aligned, this increases the likelihood of a firm issuing a CSR report for highly-levered firms.

6. Additional Analyses

A wide range of additional analysis suggests our results are durable.

6.1 Outliers

All of the results in our study are reported from tests of our original sample data (20,916 observations). To determine if our sample was robust to the influence of outliers, we engaged in visual diagnostics for outliers; examined each outlier; and identified all outliers in our sample as non-erroneous data points. We conducted additional analysis by winsorizing data at the .01 percent to reduce the influence of outliers on our results. Winsorization replaces extreme values with their nearest value. For example, Alliance Pharmaceutical's 74.7635 leverage ratio in 2008 was replaced with 11.5519 when winsorizing the data at the .01 percent level. The .01 percent winsorization reduces the standard deviation for LEV from 1.0161 to .28459 across the full sample. Winsorizing continuous variables at the .01 percent level, our primary results hold, in both directional association and significance. Winsorizing continuous variables at the 1 percent level, our primary results hold, in both direction association and significance. We do note a significant influence of two outliers on LEV. Financial leverage does not change in directional association but does become statistically significant with respect to CSR report initiation (Table 3, Column I) when winsorized.

6.2 Timing of CEO Compensation and CSR Report Issuance

CSR reporting is voluntary in the U.S. and there is no standardized reporting deadline for firms who issue stand-alone reports. An examination of CSR Report Alerts from CorporateRegister.com for the period of 2011 to 2012 suggests that 78 percent of CSR reports are issued between May and July. Given the gap between a standard December 31 fiscal year end and the potential issuance month of the CSR report, CEO compensation in the year of the CSR report issuance, rather than the prior year, could influence CSR disclosure. As timing could be a source of potential endogeneity effects, we re-examine CSR disclosure with non-lagged variables of interest and controls. The primary results of examining the likelihood of CSR initiation and reporting with respect to executive compensation hold, in both directional association and significance.

Standard Errors

We utilize robust sandwich estimators to specify how the variance-covariance matrix of estimators is calculated and correct for heteroskedasticity. We conducted additional analysis by utilizing outer product of the gradient and observed information matrix techniques. The primary results of examining the likelihood of CSR initiation and reporting with respect to executive compensation hold, in both directional association and significance.

Conclusions

In this study, we examined the influence of CEO compensation on firms' decisions to issue voluntary Corporate Social Responsibility (CSR) reports. We found that higher pension-based compensation increases the likelihood that firms will issue CSR reports and that CSR reporting is more likely when pensions form a greater proportion of CEO compensation structure. These findings are consistent with research that executives who are incentivized to pursue long-term risk mitigating strategies are more likely to engage in voluntary disclosures that embody long-term horizons and contain stakeholder-oriented content. Executive compensation structure and its role in risk shifting was similarly observed in Srivastav *et al*. (2014) and Krapl and White (2016).

Examining firm leverage gap, we also find that CEOs in environments where alignment of compensation structure to firm capital structure minimizes agency risk are more likely to engage in CSR reporting. Agency risks and incentives, documented by Jensen and Meckling (1976) and later research examining pension-based compensation in Sundaram and Yermack (2007) and Eisdorfer *et al*. (2015), are important components in the broader narrative of why firms engage in CSR reporting. The alignment and composition of CEO compensation incentives and firm capital structure can be a powerful influence on the decision to engage in any voluntary disclosure. Further, these findings have important implications for future research regarding compensation incentives, CSR reporting, and voluntary disclosure.

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ATLYGIO STRUKTŪRA IR TIKROJI CSR ATSKAITOMYBĖ: VADOVŲ ATLYGIS IR TVARUMO LOGIKA

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Santrauka. Tyrime pasitelkiama savanoriška įmonių socialinės atsakomybės (CSR) atskaitomybės sistema Jungtinėse Amerikos Valstijose siekiant ištirti vadovų atlygio struktūros poveikį įmonių veiklai. Konkrečiai analizuojami pensijų kompensacijos teikiami „skolos tipo“ paskatinimai ir agentūrų trintis, kylanti dėl mišrių vadovų atlygio mechanizmų. Tiriama, kaip trintis tarp trumpalaikių akcijomis grįstų paskatų ir ilgalaikių skolos tipo paskatų veikia realius įmonių sprendimus. Dėmesys telkiamas į generalinių direktorių (CEO) pensijų kompensaciją, analizuojama savanoriška CSR atskaitomybė JAV 2006–2020 m. laikotarpiu. Nustatyta, kad įmonės, siūlančios didesnę pensijų kompensaciją, rečiau pradeda CSR atskaitomybę, tačiau dažniau savanoriškai atskleidžia CSR informaciją po jos inicijavimo. Be to, tęstinė CSR atskaitomybė yra labiau tikėtina tais atvejais, kai CEO pensijų kompensacija yra didesnė, palyginti su kitomis atlygio formomis, tokiomis kaip piniginis atlygis (atlyginimas ir premijos) ar akcijomis grįstas atlygis (akcijų opcionai). Rezultatai rodo, kad vadovai, gaunantys dideles pensijų kompensacijas, yra skatinami priimti sprendimus, kurie didina ilgalaikę įmonės vertę ir užtikrina jų pačių pensijų saugumą. Be to, nustatyta, kad generaliniai direktoriai labiau linkę tęsti CSR atskaitomybę tais atvejais, kai atlygio struktūrų ir įmonės kapitalo suderinamumas sumažina agentūros riziką. Tai leidžia daryti išvadą, kad paskatų struktūrų suderinamumas su realia įmonių veikla yra labiau tikėtinas kontekstuose, kuriuose agentūrų trintis yra minimali. Šios įžvalgos yra svarbios agentūros teorijai, atlygio paskatų optimizavimui ir CSR atskaitomybės bei savanoriško informacijos atskleidimo praktikų tobulinimui.

Reikšminiai žodžiai: vadovų atlygis; įmonių socialinės atsakomybės (CSR) atskaitomybė; rezultatais grįstas atlygis; vidinė skola; savanoriškas informacijos atskleidimas.

Appendix 1

Variable Descriptions

Dependent Variables

CSR_YR1	=	1 for years in which a firm first issues a CSR report per CorporateRegister.com; 0 otherwise.
CSR_PUBYR	=	1 for years in which a firm issues a CSR report per CorporateRegister.com; 0 otherwise.

Independent Variables

SIZEMVE	=	Market value of equity at the beginning of each year.
SALARYBONUS	=	Combined cash, salary, and bonus compensation.
STOCKOPTIONS	=	Fair value of all stock and option awards given as compensation to CEO.
PENSION	=	Actuarial present value of accumulated pension benefits from all CEO pension plans.
COMPLEV	=	The ratio of debt to equity compensation to the CEO, defined as (PENSION/(STOCKOPTIONS + PENSION)).
LEVGAP	=	Absolute value of the difference between firm leverage (LEV) and compensation leverage to the CEO.
AGE	=	Age of the CEO in years.
GENDER	=	1 if the CEO identifies as non-male; 0 otherwise.
LEV	=	Leverage ratio, defined as the ratio of total debt (DLTT + DLC) divided by total assets.
LP	=	Labor pressure, calculated as firm-level labor intensity interacted with the industry unionization rate.
ADV_INT	=	Advertising intensity for the three-digit NAICS industry for the year; defined as the ratio of annual advertising expense divided by average total assets.
REG	=	Indicator variable that equals 1 if the industry is considered regulated; 0 otherwise.
LITRISK	=	Indicator variable that equals 1 if the industry is considered high litigation-risk; 0 otherwise.
ROA	=	Total return on assets per firm year.
TOBINQ	=	Tobin's Q.
GLOBAL	=	Indicator variable that equals 1 if the firm reports non-zero foreign income; 0 otherwise.
COMPETITION	=	Herfindahl-Hirschman Index multiplied by -1.
PCT_CSR	=	Percentage of firms issuing CSR reports in year t per three-digit NAICS industry codes.

Source: created by the authors.