

CEO Inside Debt Holdings and Corporate Social Responsibility

Chia-Ling Lee¹ Fu-Hsuan Hsu²

¹ Department of Accounting, National Chengchi University

² Department of Accounting, National Taiwan University

Corresponding author: Fu-Hsuan Hsu

Address: No. 1, Sec. 4, Roosevelt Rd., Da'an Dist., Taipei City 106319, Taiwan (R.O.C.)

E-mail: d02722004@ntu.edu.tw

Received: April 12, 2021; After 2 rounds of review, Accepted: September 13, 2021

Abstract

This paper examines the relationship between chief executive officers (CEOs) inside debt holdings and corporate social responsibility (CSR) activities. Using a sample of U.S. public firms for the period 2007-2014, we find that CEOs with higher levels of inside debt engage in more CSR, and such engagement is due mainly to the increase of socially responsible activities rather than to the decrease in socially irresponsible activities. We also observe that greater positive effects of CEOs inside debt holdings are stronger for CSR targeting primary stakeholders than targeting secondary stakeholders. We find that inside debt provides long-term incentives for CEOs to undertake CSR for continuously curbing the agency costs of debt. Finally, we note that the effect of inside debt on CSR is more pronounced when default risk is high. Our results show that CSR engagement are essential channels for inside debt holders to reduce agency costs of debt.

Keywords: inside debt, corporate social responsibility, agency costs of debt

The authors acknowledge the helpful comments of two anonymous reviewers, and take sole responsibility for their views. Author Chia-ling Lee is grateful to Ministry of Science and Technology for financial supports (MOST107-2410-H-004-036).

Data availability: Data used in this study are available from public sources identified in the study.



 東華書局
Tung Hua Book Co., Ltd.

1. Introduction

Agency theory (Jensen and Meckling 1976) has been used extensively to understand the relationship between executive compensation schemes and corporate policies. According to this theory, when chief executive officers (CEOs) are compensated with only equity-based compensation (e.g., stock and stock options), they are incentivized to act in the shareholders' interests and adopt risky policies because the value of equity rises as the volatility of stock returns increases. The risk shifting from shareholders to debt holders is a well-known type of agency costs of debt. To curb risk-shifting problem, studies suggest that debt-like compensation (called *inside debt*), in the form of defined benefit pensions and deferred compensation, could incentivize managers to take debt holders' interests into account (Cassell, Huang, Sanchez, and Stuart 2012; Sundaram and Yermack 2007). This compensation obliges firms to pay corporate insiders a fixed sum upon their retirement. In addition, CEOs with inside debt receive equal priority with other unsecured creditors, which encourages CEOs to stand in line with debt holders and engage in less risky policies. Research has documented that firms with greater inside debt holdings exhibit lower default risk (Sundaram and Yermack 2007), lower costs of debt (Anantharaman, Fang, and Gong 2014; Wei and Yermack 2011), less risky investment and financial policies (Cassell et al. 2012), higher cash holdings (Liu, Mauer, and Zhang 2014), better financial reporting quality (He 2015), lower earnings management (Dhole, Manchiraju, and Suk 2016), and fewer aggressive tax transactions (Chi, Huang, and Sanchez 2017).

However, relevant research has concentrated mainly on the effect of CEO inside debt on financial policies. Remarkably little research has examined the relationship between CEO inside debt holdings and non-financial policies. Because non-financial policies describe a broad range of intangible assets and constitute a major source of a firm's long-term value creation, these forward-looking policies are crucial in determining a firm's future cash flow. Given that inside debt holders who are alike debt holders rely on a firm's strong cash flow to repay their unsecured debt-based compensation in the future, non-financial policies should constitute a crucial mechanism for inside debt holders to address the agency costs of debt.

We address this central topic by examining the effect of CEO inside debt holdings on corporate social responsibility (CSR). We focus on CSR because it is largely subject to CEOs' discretion and can reduce default risk (Sun and Cui 2014). It therefore represents discretionary risks taken by CEOs. This provides a unique setting in which to study whether debt-like compensation helps to align the interests of CEOs with those of debt holders by encouraging the adoption of less risky non-financial policies. Our study is also motivated by the fact that CSR has emerged as a business priority for CEOs worldwide. According to the UN Global Compact-Accenture CEO study (2010), 93% of the 766 participating CEOs from around the globe declared CSR to be an *important* or *very important* factor for their organizations' future success.

Our analysis begins with an examination of the relationship between CEOs inside debt

holdings and CSR engagement. We hypothesize that CEOs with more inside debt tend to engage more CSR because CSR plays a positive role for debt holders (Attig, El Ghouli, Guedhami, and Suh 2013; Drago, Carnevale, and Gallo 2019; Ge and Liu 2015; Kim, Surroca, and Tribó 2014; Shi and Sun 2015). The underlying logic is that socially responsible firms are generally recognized as economically successful and less risky, making them less likely to experience cash flow shortfalls. Because debt holders have an interest in ensuring that debt is serviced and repaid, they tend to prefer lower levels of cash flow risk.¹ Similarly, CEOs with increased levels of inside debt are concerned with cash flow risk because the poor liquidity places their unsecured debt-like wealth at risk.

By contrast, equity risk compensation (vega) holders are less interested in reducing cash flow uncertainty because an increase in the volatility of a firm's cash flows boosts the value of equity vega holdings. In line with this argument, Bouslah, Liñares-Zegarra, M'Zali, and Scholtens (2018) note that CEOs' equity risk incentive (vega) is positively associated with socially irresponsible activities. In addition, CSR engagements represent actions that benefit a wide variety of stakeholders' welfare rather than shareholder's welfare exclusively. Thus, equity compensation may not encourage CEO engage in CSR because CSR reallocates resources from shareholders to other stakeholders.

We next address different types of CSR that are assumed by inside debt holders. First, we decompose the construct of CSR into its positive and negative facets (i.e., CSR strengths and CSR concerns). As indicated by Attig et al. (2013), increasing CSR strengths satisfies debt holders more than decreasing CSR concerns does. This asymmetric effect is due to the fact that CSR strengths often involving the discovery of new resources and development of abilities that can strengthen a firm's long-term competitive position and future cash flows. By contrast, reducing CSR concerns merely represents compliance with regulatory requirements or ethical standards. Accordingly, we posit that CEOs with greater inside debt holdings tend to have more CSR strengths than fewer CSR concerns. Second, we concur with the distinction made in prior studies (Clarkson, 1995; Freeman, Harrison, and, Wicks 2008; Mitchell, Agle, and Wood 1997; Servaes and Tamayo 2013) between CSR targeting primary stakeholders and that targeting secondary stakeholders. Primary stakeholders, such as employees and suppliers, have contractual obligations and increased power to enforce firms' immediate responses to their claims or requests. By contrast, secondary stakeholders, such as community and environmental groups, are generally under no contractual obligations to companies and are involved in less frequent interactions. In comparison with secondary stakeholders, primary stakeholders directly influence a firm's future cash flows and bankruptcy risk (Lin and Dong, 2018), and thus debt holders are more concerned

¹ According to a recent report released by Moody's Investors Service (2019), it assigns B2 to CenturyLink's proposed senior unsecured notes. One of its credit rating rationales is that "CenturyLink's Ba3 CFR reflects its predictable and further enhanced cash flow from its 2019 dividend reduction." It reflects that the cash flow risk is priced in the credit market.

about a firm's relationship with its primary stakeholders than secondary stakeholders. Given that inside debts encourage CEOs to prioritize debt holders' interests, we examine whether CEOs with larger inside debt more engage in primary stakeholder CSR than in secondary stakeholder CSR.

This study uses a large US sample for the period 2007-2014. We use multiple measures of CEO inside debt holdings from prior studies (Anantharaman et al. 2014; Cassell et al. 2012; Chi et al. 2017). After controlling for the equity risk incentive (i.e., vega/delta), we observe a positive association between CEO inside debt holdings and CSR engagement, and such high engagement in CSR comes from increasing socially responsible activities rather than decreasing socially irresponsible activities. Our findings support the notion that inside debt motivates CEOs to adopt less risky nonfinancial policies, which helps to alleviate agency conflicts with debt holders. We also note that inside debt motivates CEOs to engage more in primary stakeholder CSR than in secondary stakeholder CSR. The aforementioned results are robust to the use of two-stage least squares (2SLS) and propensity score matching (PSM) to address potential endogeneity problems between executive compensation and CSR action. In additional tests, we observe that CEO inside debt holdings affect CSR engagement in the long term, which suggests that inside debt can provide a long-term incentive for CEOs to address agency costs of debt through CSR engagement. We also demonstrate that the relationship between CEO inside debt holdings and CSR is more pronounced in firms with higher default risk. This evidence implies that when a firm incurs agency costs of debt, CEOs with greater inside debt engage in more CSR to reduce the firm's conflicts with its debt holders. This result echoes our reasoning that CSR is undertaken by inside debt holders to reduce the agency costs of debt.

Our study makes three contributions to the literature. First, we extend agency theory by showing that CSR is a vehicle for inside debt holders to alleviate agency costs of debt. We contribute to several studies (e.g., Cassell et al. 2012; He 2015; Chi et al. 2017) demonstrating that inside debt reduces agency costs of debt by discouraging CEOs from pursue risky financial policies. We observe that debt holder alignment incentives stemming from inside debt can be extended to nonfinancial policies, which provides a more complete understanding of the effect of inside debt. Recognizing the various implications of debt-like compensation can help the board of directors to effectively design compensation contracts.

Second, we complement the literature on the relationship between executive compensation and CSR. This line of research mainly addresses equity-based compensation (Bousslah, Liñares-Zegarra, et al. 2018; Mahoney and Thorne 2005; Mahoney and Thorn 2006; McGuire, Dow, and Argheyd 2003). However, in practice, many firms use pension benefits and deferred compensation to reward their executives (Wei and Yermack 2011).² Because debt-like compensation differs

² Wei and Yermack (2011) notice that 84% of CEOs in their research have inside debt with an average holding of more than US \$10 million.

from equity compensation, our study fills this gap by examining the association between CEOs' inside debt holdings and their engagement in CSR after controlling for CEOs' equity-based compensation effects. We find that inside debt prompts CEOs to constantly commit themselves to CSR for long-term periods.

Third, we investigate multiple dimensions of CSR to contribute to the literature on the determinants of CSR (Strike, Gao, and Bansal 2006; Waldman, Siegel, and Javidan 2006; Tang, Mack, and Chen 2018). We first distinguish between increasing socially responsible activities and decreasing socially irresponsible activities. Based on stakeholder theory, most accounting studies define CSR as the notion that companies have responsibilities to satisfy the needs of all stakeholders rather than just the shareholders (Huang and Watson 2015). From a moral viewpoint, CEOs would increase CSR strengths and reduce CSR concerns simultaneously to satisfy the needs of all stakeholders. Our results find that CEOs with higher levels of inside debt give greater attention to increase CSR strengths rather than decrease CSR concerns. This asymmetric behavior is inconsistent with the moral argument. The reasons are because CSR concern actions are not the opposite of CSR strength actions (Kim, Kim, and Qian 2018). For example, "violence against employees is irresponsible, but the absence of violence is not necessarily responsible; it should be the status quo" (Strike et al. 2006: 851). Instead, this evidence implies that companies' commitments to CSR could be strategic decisions. Porter and Kramer (2006) argue that when managers allocate resources to CSR, they should consider the strategic nature of the CSR to develop competitive advantages. More specifically, given that CSR strengths often involving the discovery of new resources and development of abilities that can strengthen a firm's long-term competitive position and then create future cash flows. CSR strengths may generate positive outcomes and to safeguard CEOs' debt-like compensations, motivating CEOs to strategically take actions of CSR strengths to increase the company's competitive advantages. In addition, through examining the effect of CEO inside debt holdings on primary and secondary stakeholder CSR, we supplement the agency theory by showing that inside debt holders align incentives with debt holders to engage more primary stakeholder CSR than secondary stakeholder CSR. Specifically, we find that CEOs with greater inside debt holdings are likely to engage in more primary stakeholder CSR than secondary stakeholder CSR. This result is consistent with our argument that CEOs with larger inside debt holdings, who stand in debt holders' interests, tend to conduct more primary stakeholder CSR than secondary stakeholder CSR in an effort to reduce agency costs of debt. Overall, we find that debt-like compensation can be used by policymakers to improve CSR, especially CSR strengths and primary stakeholder CSR. These findings echo the call by Wang et al. (2016) for research that shows some tradeoffs in various types of CSR and the allocation of resources to these activities.

Three recent papers (Wu and Lin 2019; Kim, Kim, and Park 2020; Boubaker, Chebbi, and Grira 2020) show that CSR engagements increase with CEO inside debt holdings, which are most relevant to our study. We differ from these papers in three aspects. First, besides focusing

on the level of CSR engagement, we decompose CSR into short-term CSR and long-term CSR. This allow us to examine whether debt-like compensations provide short-term or long-term motivations for CEOs to implement CSR activities. Second, we separate CSR into CSR targeting primary stakeholders and CSR targeting secondary stakeholders, letting us to investigate whether debt-like compensations offer different degrees of incentives for CEOs toward a broad range of stakeholders. Third, we provide evidence that the relationship between CEO inside debt holdings and CSR is more pronounced in firms with higher default risk. We complement prior studies by further showing that CSR is undertaken by inside debt holders to reduce the agency costs of debt. To the best of our knowledge, our study is the first to examine how CEO inside debt holdings affect the aggregate CSR and different types of CSR engagement in terms of the time horizon and multi-stakeholders.

The rest of this paper is organized as follows: Section 2 presents a literature review and the research hypothesis. Section 3 introduces the methodology of this study, including empirical measures, data, and samples. Section 4 presents the empirical results. Section 5 states robustness tests and additional analyses. Section 6 provides the conclusion.

2. Relevant Literature and Hypothesis Development

2.1. CEO Compensation and CSR

CSR refers to voluntary actions on the part of the firm that appear to serve some social good beyond the immediate interests of the firm and its shareholders and that exceed legal requirements (McWilliams and Siegel 2001; Waldman et al. 2006). Executives exercise considerable discretion when allocating organizational resources to satisfy stakeholders' (e.g., employees, customers, suppliers, and local communities) demands because CSR involves a wide variety of programs and is difficult to evaluate (Margolis and Walsh 2003, Waldman and Siegel 2008). CEOs are the most influential executives of a firm and significantly influence discretionary decisions. A firm's propensity to engage in CSR may therefore be influenced by its CEO's compensation.

Several works have explored the relationships between executive compensation design and firms' CSR. For example, McGuire et al. (2003) suggest that stock options and other forms of equity-based compensation provide CEOs with greater incentive to undertake socially irresponsible activities. Fabrizi, Mallin and Michelin (2014) analyze the effect of CEOs' monetary and non-monetary incentives on CSR and find that monetary incentives (bonus and equity) have a negative effect on CSR. Bouslah, Liñares-Zegarra, et al. (2018) show that CEOs' equity risk incentive (vega) stimulates socially irresponsible activities. Using FAS 123R as an exogenous shock to stock options, Mayberry (2020) documents that equity-based risk-taking incentive is negatively associated with CSR. These studies imply that equity-based compensation

discourages CEOs from undertaking CSR.³ However, they do not consider the effects of debt-like compensation on CSR. Inside debt is emphasized in the literature. For example, Wei and Yermack (2011) reveal that 84% of the CEOs in their study possess inside debt with an average holding of more than US \$10 million. In addition, Reid (2018) indicates that inside debt balances grew 24% and supplemental executive retirement plans grew 55% from 2007 to 2016 for companies in the S&P 1500. The effects of debt-like compensation on the policy choices of firms merit exploration. We examine CEOs' inside debt holdings after controlling for CEOs' equity-based compensation effects (i.e., CEO vega and CEO delta) on CSR.

2.2. CEO Insider Debt Holdings and the Agency Costs of Debt

Two types of agency problems exist within firms: that between shareholders and CEOs and that between debt holders and shareholders. The shareholder–CEO conflict is associated with CEOs who do not act in accordance with shareholders' best interests and may incur extra agency costs of equity. To mitigate the agency costs of equity, equity-based compensation, in the form of stocks and stock options, is generally acknowledged to align the interests of managers with those of shareholders (Coles, Daniel, and Naveen 2006; Core and Guay 1999; Jensen and Meckling 1976; Low 2009; Smith and Stulz 1985). However, these equity incentives may encourage CEOs to engage in activities that maximize equity value at the expense of debt holders' interests. These conflicts of interest are caused by conflicting claims on a firm's net assets by both shareholders and debt holders. Shareholders have residual claims on firm net assets, and the upside potential of their equity investments is therefore unlimited, which motivates them to favor risky projects with high expected returns. By contrast, debt holders receive only fixed payment if these projects succeed but are subject to the possibility of default if they fail. Such asymmetric payoffs with respect to firms' net assets lead debt holders to avoid the adoption of risky firm policies. Therefore, if CEOs make overly risky investment decisions, namely, substitute safe assets with risky assets, such risk-shifting effects transfer wealth from debt holders to shareholders (Jensen and Meckling 1976). Debt holders, anticipating these agency problems, require higher rents, resulting in increased costs of debt.

Regarding the agency costs of debt, Jensen and Meckling (1976) suggest that debt-like compensation should be included in CEO compensation packages because it encourages CEOs to consider debt holders' interests and thereby reduces agency conflicts with debt holders. Specifically, debt-like compensation, such as defined benefit pensions and deferred compensation, forgoes current salaries for future benefits, and the present value of these future benefits is

³ Mahoney and Thorne (2005) find that stock options are associated with fewer socially irresponsible activities. Mahoney and Thorn (2006) document a positive relationship between CEO stock options and socially responsible activities. Although these two studies show that equity incentive has positive effect on CSR, they only examine 100 largest Canadian firms and find that CSR is positively related to options-based compensation.

unsecured, exposing the CEOs to default risk similar to those faced by debt holders (Edmans and Liu 2011; Sundaram and Yermack 2007; Wei and Yermack 2011). In a bankruptcy, inside debt holders have claims equal to those of other unsecured creditors. Therefore, CEOs are incentivized to align their interests with debt holders and to curb risk-shifting behavior (Edmans and Liu 2011; Jensen and Meckling 1976).

Empirical studies have delivered some evidence supporting the argument that CEO inside debt holdings can reduce the agency conflicts of debt (Anantharaman et al. 2014; Cassell et al. 2012; Chi et al. 2017; He 2015; Sundaram and Yermack 2007; Wei and Yermack 2011; Liu et al. 2014; Dhole et al. 2016). For example, Sundaram and Yermack (2007) find that firms offering their CEOs higher debt-like compensation have lower default risk. This is because CEOs with more inside debt holdings are incentivized to adopt actions that reduce the probability of default to reduce risks to their own pension values. Cassell et al. (2012) also find that financial leverage, R&D expenditure, and future stock return volatility are lower in firms with CEO inside debt holdings. They suggest that CEOs with inside debt holdings may be inspired to adopt more conservative investment and financial policies. In addition, Wei and Yermack (2011) find that bond prices increase and equity prices decrease at the time of disclosures by firms whose top managers have greater debt-like compensation packages. Anantharaman et al. (2014) provide evidence that CEO inside debt is associated with lower yield spreads and fewer bond covenant restrictions for firms. Liu et al. (2014) find that firms with higher CEO inside debt tend to hold excessive amounts of cash, which is in line the view that CEOs have incentives to reduce risk and work in debt holders' interests. He (2015) finds that firms with larger CEO inside debt holdings offer better financial reporting quality because debt-like compensation can prompt CEOs to adopt a long view of future prospects and restrain their excessive risk-seeking behaviors. Similarly, Dhole et al. (2016) find a negative relation between CEO inside debt holdings and earnings management. Chi et al. (2017) document that inside debt can discourage CEOs from aggressive tax transactions. In summary, research suggests that inside debt induces CEOs to adopt less risky financial policies, aligning the interests of CEOs with those of debt holders and consequently reducing agency costs of debt.

2.3. The Effect of CEO Inside Debt Holdings on CSR

Recall that inside debt encourages CEOs to adopt a debtholder-centric view of the firm, we argue that CEOs with larger inside debt holdings tend to engage in more CSR because CSR can decrease default risk by (1) increasing the value of future cash flows and (2) reducing the probability of future cash flow shock (Sun and Cui 2014). For example, to achieve carbon emissions goals, JetBlue introduced the fuel-saving aircraft A321neo in 2019. This environmentally friendly practice not only reduces gas costs, thus enhancing cash flows in the long term, but also diminishes its vulnerability to the threat of future payments for carbon-emission-related fines, compliance costs, and government sanctions. Moreover, JetBlue is

protected from the volatility of fuel prices. This reduces firm-specific risks and uncertainty regarding future cash flows, alleviating the concerns of debt holders.

First, CSR boosts future cash flow levels by reducing agency and transaction costs. CSR engagement results in alignment with stakeholders' interests and thus reduces agency conflicts with stakeholders. The reputation accumulated through CSR can also help a firm to curtail transaction costs by reducing the demand for formal contracts because stakeholders tend to believe that high-CSR firms are less likely to violate implicit contracts (Lins et al. 2017). Further, frequent stakeholder interactions directly reduce opportunistic behaviors of executives (Bénabou and Tirole 2010) and thus again lowers agency costs. Taken together, the reduced transaction and agency costs can be transformed into a higher level of future cash flows.⁴

Second, CSR can reduce the volatility of future cash flows. CSR provides insurance-like protection that can alleviate cash flow shock from negative events (Godfrey 2005; Godfrey, Merrill, and Hansen 2009). Engaging in CSR also exposes a firm to a lower price elasticity of demand and results in more stable cash flow (Greening and Turban 2000; Turban and Greening 1997). Furthermore, Kim, Li, and Li (2014) claim that CSR reduces stock price crash risk and that this is because socially responsible firms have a high standard of transparency and are less likely to withhold bad news. In this regard, CSR reduces future cash flow uncertainty by reducing information asymmetry.

Moreover, CSR is regarded as a powerful tool for generating competitive advantages for a firm (Dupire and M'Zali 2018; Fernández-Kranz and Santaló 2010; Flammer 2015) and can therefore protect firms from cash flow shocks arising from increasing threats of competition. First, CSR is a differentiation strategy to prevent stakeholders from switching to competitors. Second, good stakeholder relationships provide competitive advantages because a firm might develop firm-specific stakeholder management practices that are based on its unique culture and resources, which create barriers against imitation by rivals. Third, CSR prompts a company to consider market opportunities and threats embedded in social issues. For example, the Coca-Cola Company introduced the Replenish Africa Initiative, which aimed to provide people in Africa with access to safe water by the end of 2020. These CSR activities not only prevent millions of Africans from dying of preventable waterborne illnesses but also ensure that the Coca-Cola Company has stable clean water with which to produce its beverage. Overall, CSR as a source of competitive advantage can reduce a firm's future cash flow risk. Debt holders are interested in CSR engagement to minimize the cash flow risk exposure of their wealth because a firm's default

⁴ Similar argument is that CSR can build better relationships with stakeholders, which can help a firm has higher employee quality and motivation (Turban and Greening 1997), more knowledge sharing from suppliers (Dyer and Singh 1998), higher customer satisfaction and product premium (Luo and Bhattacharya 2006; Brown and Dacin 1997). Such relationship-based intangible assets can help a firm more efficiently use the resource and result in higher levels of future cash flow.

risk depends on whether it has sufficient and predictable cash flows to make required payments on its debt obligations.

Extant research has documented that CSR exerts a positive effect on the debt market. Attig et al. (2013) find that firms with high CSR have more favorable credit ratings. Ge and Liu (2015) further demonstrate that when credit rating is controlled for, CSR provides lower bond yield spreads. Kim, Surroca, et al. (2014) find that ethical behavior is positively associated with better syndicated loan spreads and that the similarity in ethical domain between the borrower and bank enhances loan conditions. Shi and Sun (2015) investigate the number of loan covenants and reveal that firms with a superior CSR performance tend to enjoy fewer bond covenants, more financial flexibility, and fewer restrictions in general. Finally, Drago et al. (2019) suggest that CSR rating upgrades can immediately reduce credit default swaps. These studies demonstrate that debt holders reward high-CSR firms. We thus expect that CEOs with higher levels of inside debt who work in debt holders' interests tend to increase CSR activities to reduce firms' cash flow risk.

Although the benefits of CSR may also appeal to equity compensation holders, two points justify our belief that the demand for CSR should be stronger for inside debt holders than for equity compensation holders. First, equity compensation vega holders are less interested in reducing cash flow risk because the value of equity compensation vega increases with the volatility of a firm's cash flows (Guay 1999; Haugen and Senbet 1981; Smith and Stulz 1985). More specifically, equity risk incentive compensation can separate into two components – delta and vega. Coles et al. (2006) find that higher delta provides risk-adverse incentives for CEO to undertake actions that reduce risk. On the other hands, higher vega encourages CEOs to invest in riskier assets and adopt more aggressive debt policies. Armstrong, Larcker, Ormazabal, and Taylor (2013) provide evidence that when executives have higher vega, they exhibit a greater propensity to misreport, including higher discretionary accruals, higher restatements, and more enforcement actions. Accordingly, compared with CEOs with greater inside debt, CEOs with larger equity risk-taking compensation (i.e., vega/delta) are more willing to embrace cash flow risk, because higher cash flow risk can increase stock return volatility and result in higher-value CEO equity holdings. Second, CSR engagement represents actions that prioritize the welfare of a wide variety of stakeholders over that of shareholders alone. This could be in opposition to the interests of some shareholders because a firm might reallocate resources from shareholders to other stakeholders. Consequently, compared with equity compensation, debt compensation should provide CEOs with greater incentive to undertake CSR.

In summary, because CSR fulfills debt holders' interests by reducing cash flow risk, we expect CEOs with greater inside debt who safeguard debt holders' requirements are more willing to implement CSR. Our first hypothesis is as follows:

Hypothesis 1a: *CEOs with greater inside debt holdings tend to engage in more CSR.*

2.3.1 Distinguishing CSR Strengths from CSR Concerns

CSR is calculated by subtracting CSR concerns from CSR strengths. CSR strengths, such as supporting housing initiatives for economically disadvantaged populations, are defined as socially responsible activities that positively affect stakeholders (Strike et al. 2006). CSR concerns, such as the violation of employee health and safety standards, describe socially irresponsible activities that negatively affect stakeholders (Strike et al. 2006). High levels of CSR can be attributed to a firm having a relatively high number of CSR strengths or a low number of CSR concerns. Notably, studies (Attig et al. 2013; Bouslah, Kryzanowski, et al. 2018; Ge and Liu 2015; Shi and Sun 2015; Strike et al. 2006) argue that increasing CSR strengths is a distinctly different task from reducing CSR concerns and that, accordingly, these two CSR dimensions should be examined separately. For example, Strike et al. (2006) recognize that firms can be simultaneously socially responsible and socially irresponsible toward their stakeholders. Bouslah, Kryzanowski, et al. (2018) document that the effect of CSR on a firm's risk is stronger for CSR strengths than for CSR concerns during financial crises. Their findings suggest that the risk reduction effect of CSR is mainly attributable to CSR strengths in adverse economic environments. In terms of the debt market, Ge and Liu (2015) observe that exhibiting both more CSR strengths and fewer CSR concerns contributes to lower yield spreads. Nevertheless, they observe that the positive relationship between CSR and credit rating comes from increased CSR strengths instead of decreased CSR concerns, which is in line with the findings of Attig et al. (2013). Shi and Sun (2015) report that CSR is associated with fewer bond covenants, and this result is more robust for CSR strengths than for CSR concerns. These studies generally imply that debt holders more consistently reward increases in CSR strengths than reductions in CSR concerns.

This asymmetric effect may be caused by the nature differences of CSR dimensions. First, CSR strengths are proactive in nature, often involving the discovery of new resources and development of abilities that can strengthen a firm's long-term competitive position and future cash flows. By contrast, avoiding CSR concerns address compliance with regulatory requirements or ethical standards, which are less linked to a firm's competitive advantages. Dupire et al. (2018) advocate this argument by showing that competitive pressure leads firms to increase their CSR strengths but not to reduce their CSR concerns. Second, increasing CSR strengths requires greater managerial ability than does reducing CSR concerns (Attig 2011). This is understandable because operating within the law (i.e., reducing CSR concerns) is basic and clear to follow. Accordingly, compared with fewer CSR concerns, more CSR strengths serve as a stronger signal of a firm's managerial quality for debt holders.

Finally, because CSR strengths constitute an active commitment to various types of social groups, increased CSR strengths are likely to improve a firm's external monitoring mechanism and reduce debt holders' concerns regarding moral hazard problems. Because higher CSR strengths offer debt holders greater satisfaction than do fewer CSR concerns by providing more

information and potentialities related to a firm's prospects and future cash flow, we argue that CEOs with more inside debt are tempted to focus on increasing CSR strengths than reducing CSR concerns. We thus propose the following hypothesis:

Hypothesis 1b: *CEOs with greater inside debt holdings tend to increase CSR strengths rather than reduce CSR concerns.*

2.4. Extending Theory: Primary and Secondary Stakeholders

Because CSR contains social issues related to a wide variety of stakeholders, prior studies (Clarkson 1995; Freeman et al. 2008; Mitchell et al. 1997; Servaes and Tamayo 2013) have emphasized the necessity of identifying different stakeholders and actively responding to their interests. In particular, researchers distinguish stakeholders as primary or secondary (or third-party) according to the types of relationships they have with the firm. As suggested by Mitchell et al. (1997), these primary stakeholders have contractual obligations and more power to enforce firms' immediate responses to their claims or requests. Secondary stakeholders, such as community and environmental groups, are generally under no contractual obligations to companies and are involved in less frequent interactions.

According to stakeholder salience theory (Mitchell et al. 1997), primary stakeholders such as employees or suppliers have contractual obligations and more direct power than secondary stakeholders (e.g., community and environmental groups) to affect a firm's operation and prospect. That is, primary stakeholders directly influence a firm's future cash flows and bankruptcy risk, and thus a firm's relationship with primary stakeholders is a major consideration for debt holders. Lin and Dong (2018) find that engaging in primary stakeholder CSR is more useful than secondary stakeholder CSR to mitigate a firm's likelihood of bankruptcy. Accordingly, concerning firm's likelihood of bankruptcy, debt holders would be in favor of primary stakeholder CSR more than secondary stakeholder CSR because the former one is more likely to make companies stay alive and fulfill its debt obligation. CEOs with inside debts receive equal priority with other unsecured creditors, which encourages CEOs to stand in line with debt holders (Cassell et al. 2012; Sundaram and Yermack 2007). Therefore, in order to reduce agency costs of debt, CEO with inside debts are more likely to engage in more primary stakeholder CSR than secondary stakeholder CSR. Following this line of argument, we develop the following hypothesis:

Hypothesis 2: *CEOs with greater inside debt holdings tend to engage in more primary stakeholder CSR than secondary stakeholder CSR.*

3. Methodology

3.1. Sample Selection

We begin by gathering all firm-year observations during the period from 2007 to 2014 on Standard & Poor's ExecuComp database, which provides CEO compensation information. Executive pension benefits and deferred compensation after December 15, 2006, were made available due to an SEC disclosure requirement. We eliminate firm-year observations without sufficient information in the databases of the Compustat and Center for Research on Security Prices for calculating firms' financial data and data for other control variables. Furthermore, we match the data calculations from aforementioned procedures with CSR data from the MSCI ESG STATS database (formerly the KLD database), which is the most popular source of CSR measures in academic research (Davis, Guenther, Krull, and Williams 2016; Hoi, Wu, and Zhang 2013; Kim, Park, and Wier 2012). We carefully winsorize extreme values at the 1% and 99% levels and yield a final sample of 3,925 firm-year observations from the years 2007 to 2014.

3.2. Measurement of Variables

3.2.1 Dependent Variables

CSR. We use indicators in the six areas of the MSCI data to generate variables for CSR by weighing each item equally. Specifically, the MSCI database contains CSR activities in the seven dimensions of corporate governance, community relations, diversity, human rights, employee relations, environment, and product. Within each dimension are individual items related to CSR strengths and concerns. We derive a net score for each dimension by taking the difference between the total number of strengths and concerns. We then follow Kim et al. (2012) to treat corporate governance as a separate construct of CSR and sum the net score along six dimensions (i.e., community relations, diversity, human rights, employee relations, environment, and product) to measure a firm's total CSR (*CSR*). In the robustness checks, we use an alternative CSR by including corporate governance.

CSR Strengths and Concerns. We add the ratings separately in the six dimensions (i.e., community relations, diversity, human rights, employee relations, environment, and product) to obtain values of CSR strengths (*CSR_STR*) and CSR concerns (*CSR_CON*). A firm with higher CSR strengths (CSR concerns) is more likely to engage in greater social responsibility (irresponsibility) activities.

Primary and Secondary Stakeholder CSR. Following Servaes and Tamayo (2013), we disaggregated CSR across the types of stakeholders affected, such that we distinguished actions affecting primary stakeholders (employees) from those affecting secondary stakeholders (environment and society). Specifically, primary stakeholder CSR (*PCSR*) contains employee relations and diversity and secondary stakeholder CSR (*SCSR*), including environment, human

rights, and community relations.⁵ We also construct an indicator variable, $PCSR > SCSR$, which is coded 1 if the firm's $PCSR$ is greater than $SCSR$ and 0 otherwise, to examine whether inside debt holdings would lead CEOs to adopting higher primary stakeholder CSR than secondary stakeholder CSR.

3.2.2 Independent Variables

CEO Inside Debt Holdings. Following previous research (Cassell et al. 2012; Anantharaman et al. 2014; Chi et al. 2017), our first measure of CEO inside debt holdings is the relative CEO debt-to-equity ratio ($DE_{CEO/Firm}$), which is measured as the ratio of a CEO's debt-to-equity scaled by the firm's debt-to-equity ratio. Specifically, the CEO's debt-to-equity ratio is computed as the sum of the present value of accumulated pension benefits and deferred compensation divided by the value of the CEO's equity holdings. The firm's debt-to-equity ratio is the ratio of total debt to market value of equity. We then adopt the natural logarithm of one plus $DE_{CEO/Firm}$, $\ln(1 + DE_{CEO/Firm})$, to reduce the effect of extreme values (Cassell et al. 2012; Anantharaman et al. 2014; Chi et al. 2017). Anderson and Core (2018) document that the relative CEO debt-to-equity ratio captures CEO's risk-taking incentive arising from CEO ownership of debt and equity in the firm. In particular, when the relative CEO's debt-to-equity ratio is equal to one, the CEO's has no incentives to reallocate wealth between equity and debtholders because a reallocation would not affect the equity and debt values that are held by the CEO (Jensen and Meckling 1976; Edmans and Liu 2011). However, when the CEO's debt-to-equity ratio is greater (less) than the ratio of the firm, the CEO's interests will be more consistent with debtholders' interests and inclined to reduce risk-seeking behaviors.

We construct our second measure of CEO inside debt holdings as the relative CEO debt-to-equity ratio indicator ($DE_{CEO/Firm} > 1$), which takes a value of 1 if the relative CEO debt-to-equity ratio is greater than 1 and 0 otherwise. This indicator variable not only captures any nonlinearity in the relationship between relative CEO debt-to-equity ratio and CSR but also reduces a potential outlier concern. Furthermore, to ensure the robustness of our results, we also follow previous studies (Wei and Yermack 2011; Cassell et al. 2012; He 2015) by using two alternative proxies for CEO inside debt holdings, including the CEO relative incentive ratio [$\ln(1 + \Delta DE_{CEO/Firm})$] and the CEO relative incentive ratio adjusted for the present value of expected future cash compensation [$\ln(1 + \Delta DECA_{CEO/Firm})$]. In the robustness checks, we deliver more detailed calculation of the construction of these two variables.

⁵ Servaes and Tamayo (2013) name primary stakeholder CSR as stakeholder CSR and secondary stakeholder CSR as third-party CSR. Regarding the product indicator, because customers generally don't contract with a firm and thus it should not be included in the primary stakeholder CSR. However, customers do have higher power than the secondary stakeholders such as the society to influence a firm's operation. We thus exclude product indicator when we examine H2 to reduce noise of the research, but we adopt an alternative primary stakeholder CSR by including it in the robustness checks. In addition, we only use employee-related CSR to proxy for primary stakeholder CSR due to the MSCI data constraint.

3.2.3 Control Variables

Following extant research (Cassell et al. 2012; McGuire et al. 2003; Tang et al. 2018), we apply a number of control variables to isolate the impact of CEO inside debt holdings on CSR. We first follow Cassell et al. (2012) to control the effect of CEO's equity incentives by including both the CEO's delta (*Delta*) and vega (*Vega*). To accommodate both types of equity incentives in a parsimonious measure, we follow prior studies (Cassell et al. 2012; Grant, Markarian, and Parbonetti 2009) and construct the ratio of the vega to delta (*Vega/Delta*) to control for the effects of equity-based incentives on CEO risk-taking preferences. Since CEO's vega/delta ratio does not reflect the relative importance of the CEO's accumulated equity holdings; that is, the effect of CEO's vega/delta ratio tend to be large when overall CEO equity holdings are large. Therefore, we follow Cassell et al. (2012) to adjust the CEO's vega/delta ratio by multiplying it by the ratio of total CEO equity holdings to CEO inside debt holdings. In addition, McGuire et al. (2003) conclude that CSR is associated with firm size, profitability, and financial slack. Accordingly, we use the natural logarithm of total assets (*SIZE*) to control for firm size, the firm's return on assets in the prior year (*PRE_ROA*) to control for the profitability, and leverage (*LEV*) and the times interest earned ratio (*INEARN*) to control for the availability of financial slack and free cash flow. *LEV* is measured as total debts divided by total asset and *INEARN* is defined as earnings before interest and taxes divided by nominal interest expense.

Moreover, we include the firm's CSR level in the previous year, advertising intensity, R&D intensity, and firm age (Tang et al. 2018). The firm's CSR level in the previous year contains prior CSR (*PRE_CSR*), prior CSR strengths (*PRE_CSRSTR*), prior CSR concerns (*PRE_CSRCON*), prior primary stakeholder CSR (*PRE_PCSR*), and prior secondary stakeholder CSR (*PRE_SCSR*). Advertising intensity (*ADV*) is computed as the advertising expense divided by total sales. R&D intensity (*R&D*) is computed as the R&D expenses divided by total sales. Firm age (*AGE*) is measured as the count of years since the focal firm was first recorded in the CRSP database. Finally, we include industry indicators (*INDUSTRY*), defined by using Fama and French (1997) 48 industry classifications, and year indicators (*YEAR*) to control for variation across industries or over time.

4. Empirical Results

4.1. Descriptive Statistics

Table 1 reports descriptive statistics for the variables in our analysis. The average CSR (*CSR*) of the full sample is 0.758, indicating that on average companies have more CSR strengths than CSR concerns. Both *PCSR* and *SCSR* are positive, suggesting companies generally engage in not only primary stakeholder CSR but also secondary stakeholder CSR. Approximately 33.9% of firm-year observations have primary CSR more than secondary CSR. Consistent to prior

Table 1 Descriptive Statistics

Variables	Mean	S.D.	P25	Median	P75
<i>CSR</i>	0.758	3.100	−1.000	0.000	2.000
<i>CSR_STR</i>	2.638	3.255	0.000	1.000	4.000
<i>CSR_CON</i>	1.879	1.957	0.000	1.000	3.000
<i>PCSR</i>	0.531	2.076	−1.000	0.000	1.000
<i>SCSR</i>	0.493	1.550	0.000	0.000	1.000
<i>PCSR > SCSR</i>	0.339	0.473	0.000	0.000	1.000
$\ln(1 + DE_{CEO/Firm})$	0.618	0.533	0.168	0.472	0.949
$DE_{CEO/Firm} > 1$	0.375	0.484	0.000	0.000	1.000
<i>Vega/Delta</i>	0.438	0.383	0.168	0.337	0.627
<i>PRE_CSR</i>	0.580	3.125	−1.000	0.000	2.000
<i>PRE_CSR_STR</i>	2.618	3.263	0.000	1.000	4.000
<i>PRE_CSR_CON</i>	2.038	1.994	1.000	2.000	3.000
<i>PRE_PCSR</i>	0.509	2.112	−1.000	0.000	1.000
<i>PRE_SCSR</i>	0.378	1.537	0.000	0.000	1.000
<i>PRE(PCSR > SCSR)</i>	0.363	0.481	0.000	0.000	1.000
<i>LEV</i>	0.351	0.240	0.146	0.389	0.500
<i>PRE_ROA</i>	0.045	0.059	0.014	0.040	0.076
<i>INEARN</i>	14.878	13.548	3.560	8.602	34.246
<i>SIZE</i>	8.863	1.539	7.814	8.682	9.775
<i>AGE</i>	36.737	22.118	25.000	30.000	40.000
<i>ADV</i>	0.043	0.071	0.006	0.016	0.044
<i>R&D</i>	0.032	0.049	0.002	0.013	0.038

Notes: The sample consists of 3,925 observations from 2007 to 2014. All variables are defined in Appendix A.

studies (Cassell et al. 2012; Anantharaman et al. 2014; Chi et al. 2017), the relative CEO debt-to-equity ratio [$\ln(1 + DE_{CEO/Firm})$] is right-skewed with a mean (median) of 0.618 (0.472). For about 37.5% of our sample, the relative CEO debt-to-equity ratio ($DE_{CEO/Firm}$) is above one.

Table 2 presents Pearson correlations between our variables of interest and our primary dependent variables. We find that both measures of CEO inside debt holdings [$\ln(1 + DE_{CEO/Firm})$ and $DE_{CEO/Firm} > 1$] are positively and significantly correlated with our interests of CSR measures (i.e., *CSR*, *CSR_STR*, *CSR_CON*, *PCSR*, *SCSR* and *PCSR > SCSR*). Because univariate tests do not control for factors that may affect CEO inside debt holdings and a firm's CSR activities, it is difficult to draw conclusions based solely on the univariate analysis and we need to proceed to a multivariate regression. In addition, none of the reported correlations appear to raise any concerns for the subsequent analysis. Furthermore, we examine the variance inflation factors (VIFs) and

Table 2 Pearson Correlation

Panel A: Variables 1-11											
Variables	1	2	3	4	5	6	7	8	9	10	11
1. CSR	1										
2. CSR_STR	0.811 ^{***}	1									
3. CSR_CON	-0.235 ^{***}	0.378 ^{***}	1								
4. PCSR	0.839 ^{***}	0.774 ^{***}	-0.043 ^{**}	1							
5. SCSR	0.774 ^{***}	0.655 ^{***}	-0.136 ^{***}	0.400 ^{***}	1						
6. PCSR>SCSR	0.276 ^{***}	0.333 ^{***}	0.117 ^{***}	0.607 ^{***}	-0.184 ^{***}	1					
7. Ln(1 + DE _{CEO Firm})	0.106 ^{***}	0.133 ^{***}	0.052 ^{**}	0.107 ^{***}	0.067 ^{***}	0.069 ^{***}	1				
8. DE _{CEO Firm} > 1	0.092 ^{***}	0.126 ^{***}	0.063 ^{***}	0.094 ^{***}	0.053 ^{**}	0.068 ^{***}	0.855 ^{***}	1			
9. Vega/Delta	0.013	0.099 ^{***}	0.145 ^{***}	0.073 ^{***}	-0.043 ^{**}	0.107 ^{***}	0.384 ^{***}	0.324 ^{***}	1		
10. PRE_CSR	0.798 ^{***}	0.632 ^{***}	-0.213 ^{***}	0.678 ^{***}	0.612 ^{***}	0.227 ^{***}	0.088 ^{***}	0.072 ^{***}	0.007	1	
11. PRE_CSRSTR	0.702 ^{***}	0.857 ^{***}	0.313 ^{***}	0.676 ^{***}	0.566 ^{***}	0.287 ^{***}	0.119 ^{***}	0.109 ^{***}	0.092 ^{***}	0.806 ^{***}	1
12. PRE_CSRCON	-0.102 ^{***}	0.412 ^{***}	0.847 ^{***}	0.044 [*]	-0.032 [*]	0.115 ^{***}	0.058 ^{***}	0.066 ^{***}	0.140 ^{***}	-0.248 ^{***}	0.373 ^{***}
13. PRE_PCSR	0.672 ^{***}	0.646 ^{***}	0.010	0.771 ^{***}	0.374 ^{***}	0.445 ^{***}	0.097 ^{***}	0.081 ^{***}	0.064 ^{***}	0.840 ^{***}	0.778 ^{***}
14. PRE_SCSR	0.649 ^{***}	0.505 ^{***}	-0.189 ^{***}	0.390 ^{***}	0.753 ^{***}	-0.081 ^{***}	0.038 [*]	0.022 ^{***}	-0.052 ^{**}	0.771 ^{***}	0.643 ^{***}
15. PRE_(PCSR>SCSR)	0.235 ^{***}	0.315 ^{***}	0.150 ^{***}	0.451 ^{***}	-0.061 ^{***}	0.594 ^{***}	0.065 ^{***}	0.060 ^{***}	0.085 ^{***}	0.293 ^{***}	0.346 ^{***}
16. LEV	0.003	0.066 ^{***}	0.105 ^{***}	-0.006	0.008	0.020	0.030	0.024	0.135 ^{***}	-0.010	0.061 ^{***}
17. PRE_ROA	0.100 ^{***}	0.108 ^{***}	0.021	0.070 ^{***}	0.081 ^{***}	0.018	0.231 ^{***}	0.188 ^{***}	-0.009	0.085 ^{***}	0.095 ^{***}
18. INEARN	0.103 ^{***}	-0.014	-0.188 ^{***}	0.086 ^{***}	0.074 ^{***}	0.026	0.040 [*]	0.011	-0.137 ^{***}	0.112 ^{***}	-0.011
19. SIZE	0.365 ^{***}	0.553 ^{***}	0.341 ^{***}	0.467 ^{***}	0.274 ^{***}	0.289 ^{***}	-0.044 ^{**}	-0.020	0.029	0.354 ^{***}	0.562 ^{***}
20. AGE	-0.065 ^{***}	-0.048 ^{**}	0.024	-0.059 ^{***}	-0.025	-0.018	0.047 ^{**}	0.036 [*]	0.065 ^{***}	-0.066 ^{***}	-0.056 ^{***}
21. ADV	-0.080 ^{***}	-0.122 ^{***}	-0.077 ^{***}	-0.107 ^{***}	-0.059 ^{***}	-0.059 ^{***}	0.111 ^{***}	0.096 ^{***}	0.021	-0.076 ^{***}	-0.119 ^{***}
22. R&D	0.003	-0.020	-0.038 [*]	-0.041 ^{**}	0.036 [*]	-0.078 ^{***}	0.126 ^{***}	0.098 ^{***}	0.017	0.008	-0.011

Table 2 Pearson Correlation (Continued)

Variables	12	13	14	15	16	17	18	19	20	21
12. <i>PRE_CSRCON</i>	1									
13. <i>PRE_PCSR</i>	-0.043**	1								
14. <i>PRE_SCSR</i>	-0.157***	0.402***	1							
15. <i>PRE_(PCSR>SCSR)</i>	0.106***	0.621***	-0.178***	1						
16. <i>LEV</i>	0.115***	-0.011	-0.014	0.016	1					
17. <i>PRE_ROA</i>	0.023	0.049**	0.075***	-0.009	0.238***	1				
18. <i>INEARN</i>	-0.193***	0.088***	0.093***	0.031	-0.575***	0.111***	1			
19. <i>SIZE</i>	0.364***	0.471***	0.261***	0.300***	-0.284***	-0.091***	0.212***	1		
20. <i>AGE</i>	0.013	-0.044**	-0.045**	-0.001	0.141***	0.054***	-0.052**	-0.107***	1	
21. <i>ADV</i>	-0.075***	-0.106***	-0.051**	-0.065***	0.068***	0.016	-0.155***	-0.319***	0.102***	1
22. <i>R&D</i>	-0.031*	-0.032*	0.039*	-0.062***	0.145***	0.091***	-0.190***	-0.236***	-0.061***	0.245***

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. All variables are defined in Appendix A.

all are below 2.58. Therefore, multi-collinearity should not be an issue. For all regressions, we cluster by firm while calculating the robust standard errors (Petersen 2009).

4.2. The Association between CEO Inside Debt Holdings and CSR

Table 3 shows the OLS regression results for the test of the impact of CEO inside debt holdings on CSR. We use CSR (*CSR*) as dependent variable in columns (1) and (2), CSR strengths (*CSR_STR*) as dependent variable in columns (3) and (4), and CSR concerns (*CSR_CON*) as dependent variable in columns (5) and (6). Consistent with H1a, in columns (1) and (2), we observe a positive and significant coefficient on both CEO inside debt holdings variables [$0.213, p < 0.01$ for $\ln(1 + DE_{CEO/Firm})$; and $0.186, p < 0.01$ for $DE_{CEO/Firm} > 1$] for CSR, suggesting that CEO inside debt is positively associated with CSR. This finding is in line with our argument of H1a that CEO with high debt-like compensation is motivated to satisfy debtholder's interests through CSR. In addition, as reported in the columns (3) to (6), after separating CSR strengths from CSR concerns, we find that the coefficients of CEO inside debt holdings variables are all positive and significant for CSR strengths (*CSR_STR*) [$0.201, p < 0.01$ for $\ln(1 + DE_{CEO/Firm})$; and $0.193, p < 0.01$ for $DE_{CEO/Firm} > 1$], whereas they are all insignificant for CSR concerns (*CSR_CON*). These results support H1b and indicate that debt-like compensation motivate CEOs to adopt more socially responsible actions rather than fewer socially irresponsible actions. This is because the former satisfies debtholders more than the latter by providing information content and potentialities related to a firm's prospects and future cash flow. In terms of economic significance, a one standard deviation increase in $\ln(1 + DE_{CEO/Firm})$ is associated with a 11.35% higher CSR and 10.71% higher *CSR_STR*.⁶ A one standard deviation increase in $DE_{CEO/Firm} > 1$ increases CSR by 9.00% and *CSR_STR* by 9.34%. With regard to the equity risk incentive (*Vega/Delta*), we find that the coefficients of CEO inside debt holdings variables are all insignificant for both CSR (*CSR*) and CSR strengths (*CSR_STR*) but they are all positive and significant for CSR concerns (*CSR_CON*) [$0.039, p < 0.10$ for $\ln(1 + DE_{CEO/Firm})$; and $0.036, p < 0.10$ for $DE_{CEO/Firm} > 1$]. This result is consistent with our inference that equity compensation holders are less interested in CSR engagement than inside debt holders because they have higher tolerance of cash flow risk. The positive effect of CEO inside debt holdings on CSR concerns also in line with Bouslah, Liñares-Zegarra, et al.'s (2018) finding that equity risk incentive induces CEOs to engage in socially irresponsible activities. In addition, we find that the coefficients of CEO inside debt holdings variables are all positive and significant for CSR and CSR strengths but insignificant for CSR concerns where the dependent variable is leverage (*LEV*). These findings show that when a firm has higher CEO inside debt, its CSR policies similar to a firm has higher leverage. This supports the view that inside debt is an effective mechanism to align the interests of CEOs with those of debtholders.

⁶ For example, 11.35% is calculated as the coefficient on $\ln(1 + DE_{CEO/Firm})$ (0.213) multiplied by the standard deviation of $\ln(1 + DE_{CEO/Firm})$ (0.533). We use the same method to compute the economic significance throughout the paper.

Table 3 The Effect of CEO Inside Debt on CSR

	CSR		CSR_STR		CSR_CON	
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln(1 + DE_{CEO/Firm})$	0.213*** (3.53)		0.201*** (4.01)		0.0004 (0.01)	
$DE_{CEO/Firm} > 1$		0.186*** (2.96)		0.193*** (3.79)		0.017 (0.55)
<i>Vega/Delta</i>	-0.035 (-0.81)	-0.017 (-0.41)	0.007 (0.22)	0.020 (0.62)	0.039* (1.78)	0.036* (1.66)
<i>PRE_CSR</i>	0.715*** (59.18)	0.716*** (59.16)				
<i>PRE_CSRSTR</i>			0.742*** (61.59)	0.743*** (61.90)		
<i>PRE_CSRCON</i>					0.742*** (57.07)	0.742*** (57.17)
<i>LEV</i>	0.384** (2.28)	0.353** (2.10)	0.294* (1.96)	0.273* (1.84)	-0.063 (-0.70)	-0.055 (-0.61)
<i>PRE_ROA</i>	1.464*** (2.95)	1.565*** (3.16)	1.377*** (3.20)	1.451*** (3.38)	-0.013 (-0.05)	-0.033 (-0.12)
<i>INEARN</i>	0.004 (1.31)	0.004 (1.60)	0.003 (1.19)	0.003 (1.46)	-0.001 (-0.39)	-0.001 (-0.46)
<i>SIZE</i>	0.278*** (12.32)	0.275*** (12.25)	0.398*** (15.84)	0.395*** (15.84)	0.142*** (9.94)	0.142*** (9.94)
<i>AGE</i>	-0.050 (-1.23)	-0.053 (-1.30)	-0.048 (-1.33)	-0.050 (-1.40)	-0.005 (-0.27)	-0.005 (-0.26)
<i>ADV</i>	0.561 (1.28)	0.583 (1.33)	0.400 (1.19)	0.417 (1.25)	-0.096 (-0.36)	-0.099 (-0.38)
<i>R&D</i>	-0.310 (-0.50)	-0.247 (-0.40)	-0.234 (-0.45)	-0.177 (-0.34)	0.144 (0.49)	0.142 (0.48)
<i>Intercept</i>	-1.985*** (-5.32)	-1.890*** (-5.06)	-2.216*** (-6.46)	-2.131*** (-6.20)	-0.369** (-2.28)	-0.377** (-2.35)
<i>YEAR</i>	YES	YES	YES	YES	YES	YES
<i>INDUSTRY</i>	YES	YES	YES	YES	YES	YES
Observations	3,925	3,925	3,925	3,925	3,925	3,925
Adj R^2	0.680	0.680	0.787	0.787	0.770	0.770

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are *t*-statistics. All variables are defined in Appendix A.

4.3. The Effect of CEO Inside Debt Holdings on Primary and Secondary Stakeholder CSR

Table 4 presents the OLS and probit regression results for testing H2. We use primary stakeholder CSR (*PCSR*) as dependent variable in columns (1) and (2), secondary stakeholder CSR (*SCSR*) as dependent variable in columns (3) and (4), and indicator variable $PCSR > SCSR$ as dependent variable in columns (5) and (6). We find that our measures of CEO inside debt holdings are all significant and positive associated with *PCSR* (0.137, $p < 0.01$ for $\ln(1 + DE_{CEO/Firm})$; and 0.131, $p < 0.01$ for $DE_{CEO/Firm} > 1$) and *SCSR* (0.095, $p < 0.01$ for $\ln(1 + DE_{CEO/Firm})$; and 0.066, $p < 0.05$ for $DE_{CEO/Firm} > 1$). When $PCSR > SCSR$ is the dependent variable, the coefficient on CEO inside debt holdings is significantly positive (0.164, $p < 0.01$ for $\ln(1 + DE_{CEO/Firm})$; and 0.175, $p < 0.01$ for $DE_{CEO/Firm} > 1$). When we calculate the economic significance of the relationship between CEO inside debt holdings and the likelihood of $PCSR > SCSR$, we find that the likelihood of $PCSR > SCSR$ increases by 8.74% when a one standard deviation increase in $\ln(1 + DE_{CEO/Firm})$ and also by 8.47% when a one standard deviation increase in $DE_{CEO/Firm} > 1$. Collectively, the results in Table 4 show that CEOs with higher levels of inside debt holdings tend to engage in both CSR targeting primary stakeholders and that targeting secondary stakeholders, and such engagement is stronger for the former one, which provides evidence to support H2. These findings embrace the notion that debt holders pay relatively more attention toward primary stakeholder CSR than secondary stakeholder CSR due to its important role in reducing a firm's bankruptcy risk. Thus, CEOs with larger inside debt engage in more primary stakeholder CSR than secondary stakeholder CSR in an attempt to reduce agency costs of debt.

Turning our attention to equity-based incentive, equity risk incentive (*Vega/Delta*) is insignificant for primary stakeholder CSR, but significantly negative for secondary stakeholder CSR. These findings suggest that CEO with higher risk appetite generally are not interested in engaging in CSR. Even though, they care primary stakeholder more than secondary stakeholder. They adopt less socially irresponsible actions toward primary stakeholder but implement more socially irresponsible actions toward secondary stakeholder.

5. Robustness Tests and Additional Analyses

5.1. Controlling for the Endogeneity Problem: 2SLS/IV Probit

As is common in executive compensation research, it is difficult to rule out the possibility of endogeneity. In terms of discussing executive compensation and CSR, some studies (e.g., Mayberry 2020; Bouslah, Liñares-Zegarra, et al. 2018; Fabrizi et al. 2014; McGuire et al. 2003) provide evidences that executive compensation affects CSR policies, whereas other studies (e.g., Duh, Chen, and Huang 2019; Karim, Lee, and Suh 2018; Jian and Lee 2015; Rekker, Benson, and Faff 2014) claim CSR performance affects executive compensation. These two relations between

Table 4 The Effect of CEO Inside Debt on Primary and Secondary Stakeholder CSR

	<i>PCSR</i>		<i>SCSR</i>		<i>PCSR > SCSR</i>	
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln(1 + DE_{CEO/Firm})$	0.137*** (3.30)		0.095*** (3.19)		0.164*** (2.84)	
$DE_{CEO/Firm} > 1$		0.131*** (2.96)		0.066** (2.02)		0.175*** (2.97)
<i>Vega/Delta</i>	0.013 (0.45)	0.021 (0.75)	-0.040** (-2.40)	-0.029* (-1.77)	0.065** (2.26)	0.072** (2.55)
<i>PRE_PCSR</i>	0.670*** (49.41)	0.671*** (49.44)				
<i>PRE_SCSR</i>			0.710*** (50.05)	0.710*** (50.05)		
<i>PRE_(PCSR>SCSR)</i>					1.687*** (27.18)	1.689*** (27.14)
<i>LEV</i>	0.293** (2.44)	0.278** (2.32)	0.109 (1.34)	0.087 (1.08)	0.720*** (4.41)	0.711*** (4.38)
<i>PRE_ROA</i>	0.925*** (2.70)	0.976*** (2.85)	0.478* (1.86)	0.543** (2.12)	0.654 (1.24)	0.701 (1.33)
<i>INEARN</i>	0.004* (1.78)	0.004** (2.02)	-0.000 (-0.03)	0.000 (0.27)	0.003 (1.05)	0.003 (1.21)
<i>SIZE</i>	0.224*** (12.78)	0.222*** (12.70)	0.135*** (10.89)	0.134*** (10.84)	0.190*** (9.24)	0.189*** (9.17)
<i>AGE</i>	-0.072** (-2.06)	-0.074** (-2.11)	0.008 (0.36)	0.006 (0.29)	-0.052 (-1.37)	-0.054 (-1.43)
<i>ADV</i>	0.045 (0.16)	0.059 (0.20)	0.394* (1.71)	0.406* (1.75)	0.297 (0.56)	0.318 (0.60)
<i>R&D</i>	-0.173 (-0.40)	-0.134 (-0.32)	0.138 (0.41)	0.167 (0.50)	-1.076 (-1.45)	-1.022 (-1.38)
<i>Intercept</i>	-1.519*** (-6.06)	-1.462*** (-5.85)	-1.042*** (-5.81)	-0.992*** (-5.53)	-3.051*** (-10.13)	-2.987*** (-10.06)
<i>YEAR</i>	YES	YES	YES	YES	YES	YES
<i>INDUSTRY</i>	YES	YES	YES	YES	YES	YES
Observations	3,925	3,925	3,925	3,925	3917	3917
Adj R^2 / Pseudo R^2	0.659	0.659	0.648	0.647	0.379	0.379

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are *t*-statistics for Models 1-4 and *z*-statistics for Models 5 and 6. All variables are defined in Appendix A.

executive compensation and CSR are both supported in prior studies. This paper aims to examine the relation between CEO inside debt and firm CSR engagement. Although we cannot exclude the possibility of endogeneity for inside debt, we predict that the endogeneity issue caused by reverse causality is less severe under the condition of inside debt for the following two reasons.

First, some researchers (e.g., Duh et al. 2019; Karim et al. 2018; Jian and Lee 2015; Rekker et al. 2014) assert that high levels of CSR may result in compensation remuneration. Nevertheless, it seems less common that companies use inside debt such as pension benefits to reward executives for CSR engagement. In fact, according to the CEO and Executive Compensation Practices (2019) published by the Conference Board⁷, in 2018 CSR-related performance goals were found in the compensation disclosures of 71 companies in the Russell 3000, which implies that merely 2% of the 3,000 largest U.S. public companies design CEO compensation package with CSR. In particular, the report suggests that for those companies that link CEO compensation to CSR issues, they barely adopt long-term compensation including inside debt as a reward. In other words, CEOs are less likely to deserve high levels of inside debt in return because of better CSR performance, which reduce the high possibility that the causal relationship runs from CSR to CEO inside debt. In addition, it has long been documented that CEO pension benefits are not closely tied to company performance. For example, the *Star Tribune* reported that the board of HealthPartners guaranteed secretly with its CEO that a defined-benefit pension arrangement for the CEO is not linked to firm performance (*Star Tribune*, January 17, 2003). In this regard, CEO inside debt is less sensitive to CSR performance.

Second, it is well recognized that the causality runs in the direction from debt-like compensation incentives to corporate policies. From a theoretical standpoint, agency theory (Jensen and Meckling 1976) is the first one to provide hypothetical foundation of incentive effect of inside debt. Sundaram and Yermack (2007) and Edmans and Liu (2011) then develop formal theoretical models to show that inside debt offers an efficient incentive to align the interests of CEOs with those of debt holders by encouraging the adoption of less risky policies. That is, inside debt is generally unsecured and unfunded, and if the firms go bankrupt, CEOs have claims equal to those of other unsecured debt holders, making CEOs have motivations to reduce firm risk in order to safeguard their debt-like compensations. Following this theoretical argument, several empirical studies find that greater CEO inside debt holdings can lead to less risky investment and financial policies (Cassell et al. 2012), higher cash holdings (Liu et al. 2014), better financial reporting quality (He 2015), lower earnings management (Dhole et al. 2016), and fewer aggressive tax transactions (Chi et al. 2017).⁸ These theoretical and empirical evidences

⁷ The Conference Board. 2019. CEO and executive compensation practices. Available at <https://www.conference-board.org/us/>.

⁸ This line of literature is also consistent with prior literature that document executive compensation is a determinant of corporate policies including tax aggressiveness policy (Rego and Wilson 2012), income smoothing (Grant, Markarian, and Parbonetti 2009), make or buy new technology (Xue 2007), purchase price allocation (Shalev, Zhang, and Zhang 2013), corporate tax avoidance (Gaertner 2014), timely loss recognition (Brockman, Ma, and Ye 2015), and the remediation of material weaknesses in internal control (Liu and Liu 2017).

support that CEO inside debt has an impact on corporate policies. Standing with the perspective of these studies, we would like to examine how debt-like compensation incentives drive CEOs to pursue CSR policies.

In spite of the above views, we also acknowledge that many scholars (e.g., Cassell et al. 2012; Liu et al. 2014; He 2015) who examine the effect of executive compensation on corporate policies indicate the potential for endogeneity problem triggered by reverse causality. Thus, they (e.g., Cassell et al. 2012; Liu et al. 2014; He 2015) generally perform empirical tests such as 2SLS to justify such endogenous concern has no severe influences on their results. Accordingly, we further employ 2SLS and IV Probit approaches to examine whether our findings appear to be robust to the alternative research design for mitigating endogeneity concerns.

The first stage of the procedure entails regressing our endogenous test variables [i.e., $\ln(1 + DE_{CEO/Firm})$] on chosen instruments and exogenous variables. Following the prior literature (Cassell et al. 2012; Sundaram and Yermack 2007), we select the following instrumental variables: liquidity constraints (*LIQUIDITY*), defined as an indicator variable equal to 1 if the firm generates negative operating cash flow and 0 otherwise; CEO age (*CEO_AGE*), defined as the age of the CEO as reported in the ExecuComp database; inside CEO (*INSIDE_CEO*), defined as an indicator variable equal to 1 if the current CEO ascended to his or her position from within the firm and equal to 0 otherwise; geography-median CEO inside debt holdings ($GEO_DE_{CEO/Firm}$), defined as the median value of CEO inside debt holdings for firms that have corporate headquarter locations in the same state; and industry-median CEO inside debt holdings ($IND_DE_{CEO/Firm}$), defined as the median value of CEO inside debt holdings for firms in the same industry.

To ensure the appropriateness of our selected instruments, we require them to satisfy both relevance (correlation with CEO inside debt holdings) and validity (exogeneity with CSR) criteria. Regarding the relevance of instruments, we see in models (1), (3), (5), (7), (9), and (11) of Table 5 (i.e., results of the first-stage regression) that all of the coefficients of instrumental variables are highly significant ($p < 0.01$) when the dependent variable is CEO inside debt holdings [$\ln(1 + DE_{CEO/Firm})$], indicating the instruments are not affected by the weak-instrument problem. In addition, all of the Cragg-Donald *F*-statistics (reported at the bottom of Table 8) well exceed the 5% critical values suggested by Stock and Yogo (2005) (e.g., *F*-statistic of 18.37), showing that the first stage is not weakly identified. The relevance of instruments is further confirmed. Focusing on the validity of instruments, none of the Hansen *J*-statistics or Amemiya-Lee-Newey Chi-square (reported at the bottom of Table 8) could reject the null hypothesis that the instruments are uncorrelated with the error term of the second stage, suggesting that the instruments are valid (Baum 2006).

In the second stage, we run the regression in our main test by replacing the endogenous variables [i.e., $\ln(1 + DE_{CEO/Firm})$] with their fitted values from the first-stage regressions. Models

Table 5 Controlling for the Endogeneity Problem: 2SLS / IV Probit

	CSR			CSR_STR	CSR_CON			PCSR			SCSR			PCSR > SCSR		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)				
IND_DE _{CEO/Firm}	1.520*** (2.77)		1.560*** (2.81)		1.524*** (2.70)		1.497*** (2.76)		1.528*** (2.72)		1.557*** (2.69)					
GEO_DE _{CEO/Firm}	0.783*** (33.57)		0.782*** (33.38)		0.790*** (33.64)		0.783*** (33.39)		0.787*** (33.69)		0.786*** (32.83)					
LIQUIDITY	-0.100*** (-2.94)		-0.101*** (-2.95)		-0.097*** (-2.84)		-0.105*** (-3.06)		-0.097*** (-2.83)		-0.100*** (-2.90)					
CEO_AGE	0.004*** (3.95)		0.004*** (3.83)		0.004*** (3.86)		0.004*** (3.91)		0.004*** (3.90)		0.004*** (3.92)					
INSIDE_CEO	0.064*** (3.09)		0.061*** (2.98)		0.063*** (3.07)		0.062*** (2.99)		0.063*** (3.09)		0.062*** (2.89)					
Ln(1 + DE _{CEO/Firm})		0.236* (1.83)		0.288** (2.49)		0.073 (1.08)		0.182** (2.01)		0.075 (1.13)		0.230* (1.89)				
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES				
YEAR and INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES				
Observations	3723	3,723	3723	3,723	3723	3,723	3723	3,723	3723	3,723	3723	3,723				
Adj R ²	0.494	0.678	0.494	0.789	0.493	0.771	0.494	0.658	0.493	0.647	0.493					
Wald Chi-square												1320.27				
Relevance and Validity of Instruments																
Cragg-Donald F-statistic	229.54		227.06		232.92		229.22		231.56		230.43					
Stock-Yogo critical value	18.37		18.37		18.37		18.37		18.37		18.37					
Hansen J-statistic		6.64		6.26		7.69		4.56		5.73						
Amemiya-Lee-Newey Chi-square												0.834				

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Models 1, 3, 5, 7, 9 and 11 report first-stage results, other models report second-stage results. Numbers in parentheses are *t*-statistics for Models 1, 3, 5, 7, 9 and 11. Numbers in parentheses are *z*-statistics for Models 2, 4, 6, 8, 10 and 12. All variables are defined in Appendix A.

(2), (4), (6), (8), (10), and (12) of Table 5 report the second-stage regression results of H1 and H2, respectively. As expected, we continue to find that CEO inside debt holdings increase a firm's CSR engagement, and such effect is stronger for CSR strengths than CSR concerns. We also find that the positive effect of CEO inside debt holdings is greater for primary stakeholder CSR than for secondary stakeholder CSR. Overall, we demonstrate that the results remain the same after potential problems of endogeneity from reverse causation are addressed.

5.2. Controlling for the Endogeneity Problem: PSM

Firms with and without high levels of CEO inside debt holdings in our sample are nonrandomly assigned; this self-selection problem may result in significant differences in characteristics between firms with and without high levels of CEO inside debt holdings. To address the self-selection concern, we follow prior research (Armstrong et al. 2010) by employing the PSM method for matching firms with high levels of CEO inside debt holdings to firms without high levels of CEO inside debt holdings based on relevant observable firm characteristics.

First, we estimate propensity scores using a logistic regression in which the dependent variable is CEO inside debt holdings (i.e., $DE_{CEO/Firm} > 1$). We identify liquidity constraints (*LIQUIDITY*), CEO age (*CEO_AGE*), inside CEO (*INSIDE_CEO*), geography-median CEO inside debt holdings ($GEO_DE_{CEO/Firm}$), and industry-median CEO inside debt holdings ($IND_DE_{CEO/Firm}$) that are significantly associated with CEO inside debt holdings, as documented in Section 5.1, and then use these variables as the input of the logistic model. Second, after calculating the propensity score for each firm with high levels of CEO inside debt holdings, we select the firm without high levels of CEO inside debt holdings that has the closest propensity score to that of the control firm (i.e., nearest-neighbor matching).

To assess matching quality, our results in Panel A of Table 6 demonstrate that these firm characteristics non-significantly differ between firms with and without high levels of CEO inside debt holdings, suggesting that these firms are matched appropriately. Untabulated analysis result reveals that the pseudo- R^2 (0.001) is fairly low, indicating no systematic differences in the distribution of covariates between firms with high levels of CEO inside debt holdings and those without. As shown in Panel B of Table 6, our findings are robust after potential self-selection bias is controlled for.

5.3. The Effect of CEO Inside Debt Holdings on Long-Term CSR

To understand whether the effect of CEO inside debt holdings on CSR is maintained in subsequent years, we rerun our main models using one-year leading CSR (CSR_{t+1}) and average long-term CSR (*LTC*SR) as our dependent variables. For average long-term CSR (*LTC*SR), we

Table 6 Controlling for the Endogeneity Problem: PSM

Panel A: Verifying covariate balance: Test the difference						
	Treatment (Mean)	Control (Mean)		T-test (<i>p</i> -value)		
<i>IND_DE_{CEO/Firm}</i>	0.517	0.516		0.15 (0.877)		
<i>GEO_DE_{CEO/Firm}</i>	0.643	0.654		−1.03 (0.302)		
<i>LIQUIDITY</i>	0.027	0.032		−0.57 (0.566)		
<i>CEO_AGE</i>	57.118	57.019		0.35 (0.727)		
<i>INSIDE_CEO</i>	0.922	0.918		0.36 (0.719)		
<i>LEV</i>	0.355	0.347		0.79 (0.431)		
<i>SIZE</i>	8.794	8.778		0.21 (0.834)		
Panel B: Re-estimating the propensity model on the matched sample						
	<i>CSR</i>	<i>CSR_STR</i>	<i>CSR_CON</i>	<i>PCSR</i>	<i>SCSR</i>	<i>PCSR > SCSR</i>
	(1)	(2)	(3)	(4)	(5)	(6)
<i>DE_{CEO/Firm} > 1</i>	0.195** (2.43)	0.154** (2.35)	−0.019 (−0.44)	0.118** (2.15)	0.073* (1.78)	0.128* (1.71)
<i>Intercept</i>	−2.614*** (−4.97)	−2.426*** (−4.76)	−0.272 (−0.98)	−2.011*** (−5.58)	−0.944*** (−3.72)	−3.154*** (−6.90)
<i>Control Variables</i>	YES	YES	YES	YES	YES	YES
<i>YEAR</i>	YES	YES	YES	YES	YES	YES
<i>INDUSTRY</i>	YES	YES	YES	YES	YES	YES
Observations	1,682	1,682	1,682	1,682	1,682	1,682
Adj <i>R</i> ² / Pseudo <i>R</i> ²	0.671	0.792	0.780	0.663	0.641	0.385

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are *t*-statistics for Models 1-5 of Panel B. Numbers in parentheses are *z*-statistics for Model 6 of Panel B. All variables are defined in Appendix A.

use the following definition:⁹

$$LTCSR_{i,t} = 2/18 CSR_{i,t} + 5/18 CSR_{i,t+1} + 11/18 CSR_{i,t+2} \quad (1)$$

where $LTCSR_{i,t}$ is the average long-term CSR of firm *i* in year *t*. We employ the same equation for *CSR_STR*, *CSR_CON*, *PCSR*, and *SCSR* and generate variables *LTCSR_STR*, *LTCSR_CON*, *LTPCSR*, and *LTSCSR*.

⁹ The weight of 11/18 is computed as $1/3 \times (1 + 1/2 + 1/3)$; 5/18 is computed as $1/3 \times (1/2 + 1/3)$; and 2/18 is computed as $1/3 \times (1/3)$.

The regression results of H1 are summarized in Table 7. The dependent variables are one-year leading CSR from columns (1) to (6) and average long-term CSR from columns (7) to (12). For both one-year leading and average long-term CSR models, the coefficients on CEO inside debt holdings [i.e., $\ln(1 + DE_{CEO/Firm})$ and $DE_{CEO/Firm} > 1$] are all positive and significant for CSR and CSR strengths but nonsignificant for CSR concerns. These results support H1a and H1b.

Table 8 reports the regression results for H2. Under both one-year leading and average long-term CSR models, the coefficients on CEO inside debt holdings [i.e., $\ln(1 + DE_{CEO/Firm})$ and $DE_{CEO/Firm} > 1$] are all positive and significant for primary stakeholder CSR and secondary stakeholder CSR, and such effects are stronger for primary stakeholder CSR. Taken together, these results robustly support our main findings and further demonstrate that inside debt serves as a long-term incentive for CEOs to consistently reduce the agency costs of debt through CSR.

5.4. CEO Inside Debt Holdings and CSR: The Effect of Default Risk

We infer that CSR is a prominent channel for inside debt holders to reduce the agency costs of debt. If this is the case, the effect of CEO inside debt holdings on CSR should be greater when a firm exhibits higher default risk because higher default risk intensifies agency conflicts with debt holders. To test our conjecture, we measure the default risk by using two proxies. First, we construct an indicator variable Altman's Z score (*Zscore*) equal to 1 if a firm's Altman's Z score < 1.8 and equal to 0 otherwise (Chi et al. 2017). Second, we follow Chi et al. (2017) to adopt an indicator variable credit rating (*CR*) equal to 1 if a firm's Standard & Poor's domestic long-term issuer credit rating is below AA- and Standard & Poor's domestic short-term issuer credit rating is below A-2 and 0 otherwise. We obtain Altman's Z score and credit rating data from Compustat.

We next re-estimate our models in the main test by including default risk (*Zscore* or *CR*) and its interaction with CEO inside debt holdings. As shown in Panel A of Table 9, the interactions between CEO inside debt holdings and *Zscore* are significantly positive for CSR, CSR strengths, and primary stakeholder CSR but insignificant for CSR concerns and secondary stakeholder CSR. Similarly, panel B of Table 9 indicates the interactions between CEO inside debt holdings and *CR* are significantly positive for CSR, CSR strengths, and primary stakeholder CSR but significantly negative for CSR concerns and insignificant for secondary stakeholder CSR. These findings suggest that CEO inside debt holders tend to adopt more CSR and focus on CSR strengths and primary stakeholder CSR to alleviate debt holders' concerns when the agency costs of debt arise. Our results remain robust to alternative measures for default risk.

Table 7 The Effect of CEO Inside Debt on Long-term CSR

	CSR _{t+1}		CSR_STR _{t+1}		CSR_CON _{t+1}		LTCSR		LTCSR_STR		LTCSR_CON	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Ln(1 + DE_{CEO/Firm})$	0.367*** (4.18)		0.339*** (4.39)		-0.011 (-0.26)		0.388*** (4.31)		0.361*** (4.43)		-0.001 (-0.03)	
$DE_{CEO/Firm} > 1$		0.326*** (3.54)		0.307*** (3.92)		-0.005 (-0.11)		0.307*** (3.30)		0.301*** (3.74)		0.016 (0.34)
Intercept	-4.164*** (-6.83)	-4.003*** (-6.56)	-4.033*** (-6.89)	-3.877*** (-6.62)	-0.120 (-0.45)	-0.126 (-0.48)	-4.937*** (-7.85)	-4.753*** (-7.53)	-4.403*** (-7.06)	-4.228*** (-6.77)	0.095 (0.33)	0.086 (0.30)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	3,827	3,827	3,827	3,827	3,827	3,827	3,689	3,689	3,689	3,689	3,689	3,689
Adj R ²	0.541	0.540	0.689	0.689	0.644	0.644	0.584	0.583	0.728	0.727	0.664	0.664

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are *t*-statistics. All variables are defined in Appendix A.

Table 8 The Effect of CEO Inside Debt on Long-term Primary and Secondary Stakeholder CSR

	$PCSR_{t+1}$		$SCSR_{t+1}$		$PCSR_{t+1} > SCSR_{t+1}$		$LTPCSR$		$LTCSR$		$LT(PCSR > SCSR)$	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
$Ln(1 + DE_{CEO/Firm})$	0.219*** (3.76)		0.179*** (3.61)		0.191*** (3.18)		0.213*** (3.67)		0.189*** (3.65)		0.175*** (2.72)	
$DE_{CEO/Firm} > 1$		0.212*** (3.46)		0.119** (2.19)		0.253*** (3.93)		0.200*** (3.41)		0.110* (1.94)		0.212*** (3.20)
Intercept	-2.768*** (-6.89)	-2.678*** (-6.70)	-2.222*** (-6.90)	-2.124*** (-6.58)	-2.849*** (-7.64)	-2.811*** (-7.65)	-3.071*** (-7.92)	-2.982*** (-7.74)	-2.454*** (-7.00)	-2.347*** (-6.66)	-3.100*** (-7.76)	-3.054*** (-7.78)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	3,827	3,827	3,827	3,827	3,827	3,827	3,689	3,689	3,689	3,689	3,689	3,689
Adj R^2 /Pseudo R^2	0.519	0.519	0.464	0.463	0.222	0.224	0.574	0.573	0.504	0.502	0.227	0.227

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are t -statistics for Models 1-4 and Models 7-10. Numbers in parentheses are z -statistics for Models 5-6 and Models 11-12. All variables are defined in Appendix A.

Table 9 CEO Inside Debt and CSR: The Effect of Default Risk

Panel A: Altman's Z score											
	CSR			CSR_STR		CSR_CON		PCSR		SCSR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
$Ln(1 + DE_{CEO/Firm})$	0.135** (2.10)		0.148*** (2.67)		0.019 (0.56)		0.103** (2.31)		0.051 (1.48)		
$DE_{CEO/Firm} > 1$		0.125* (1.78)		0.164*** (2.85)		0.042 (1.13)		0.099* (1.96)		0.033 (0.93)	
$Zscore$	0.086 (0.90)	0.076 (0.81)	0.024 (0.28)	0.020 (0.23)	-0.053 (-1.03)	-0.049 (-0.96)	0.056 (0.84)	0.045 (0.68)	-0.016 (-0.30)	-0.015 (-0.28)	
$Ln(1 + DE_{CEO/Firm}) \times Zscore$	0.074** (2.43)		0.053* (1.75)		-0.019 (-1.03)		0.051** (2.20)		0.013 (0.73)		
$DE_{CEO/Firm} > 1 \times Zscore$		0.079** (2.30)		0.059** (2.04)		-0.018 (-0.98)		0.043* (1.71)		0.025 (1.31)	
<i>Intercept</i>	-2.094*** (-5.56)	-2.070*** (-5.57)	-2.533*** (-6.63)	-2.512*** (-6.66)	-0.385*** (-2.06)	-0.386** (-2.07)	-1.643*** (-6.86)	-1.620*** (-6.82)	-0.991*** (-4.64)	-0.974*** (-4.58)	
<i>Control Variables</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
<i>YEAR</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
<i>INDUSTRY</i>	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
Observations	2,986	2,986	2,986	2,986	2,986	2,986	2,986	2,986	2,986	2,986	
Adj R^2	0.653	0.653	0.772	0.772	0.782	0.782	0.648	0.648	0.614	0.614	

Table 9 CEO Inside Debt and CSR: The Effect of Default Risk (Continued)

Panel B: Credit Rating											
	CSR			CSR_STR		CSR_CON		PCSR		SCSR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	
$Ln(1 + DE_{CEO/Firm})$	0.315** (1.99)		0.345*** (2.77)		0.033 (0.48)		0.092 (0.87)		0.311*** (3.98)		
$DE_{CEO/Firm} > 1$		0.130 (0.84)		0.233* (1.91)		0.103 (1.42)		-0.024 (-0.24)		0.227*** (2.67)	
CR	0.286 (1.17)	0.189 (0.77)	0.336 (1.56)	0.254 (1.20)	0.035 (0.27)	0.051 (0.41)	0.272 (1.52)	0.184 (1.08)	-0.050 (-0.36)	-0.066 (-0.49)	
$Ln(1 + DE_{CEO/Firm}) \times CR$	0.206*** (3.00)		0.140** (2.29)		-0.065* (-1.68)		0.155*** (3.36)		0.037 (0.90)		
$DE_{CEO/Firm} > 1 \times CR$		0.192*** (2.81)		0.111* (1.70)		-0.079** (-2.40)		0.108** (2.20)		0.059 (1.49)	
Intercept	-0.303 (-0.33)	0.001 (0.00)	-2.346*** (-3.13)	-2.008*** (-2.76)	-1.735*** (-3.41)	-1.732*** (-3.45)	-1.636** (-2.40)	-1.542** (-2.34)	-0.441 (-0.85)	-0.135 (-0.27)	
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	
Observations	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085	1,085	
Adj R ²	0.699	0.697	0.769	0.768	0.798	0.798	0.645	0.643	0.685	0.684	

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are *t*-statistics for Models 1-10. All variables are defined in Appendix A.

5.5. Alternative Measures of CEO Inside Debt Holdings

In our main analysis, we adopt two relative CEO debt-to-equity ratio measures [i.e., $\ln(1 + DE_{CEO/Firm})$ and $DE_{CEO/Firm} > 1$] that are based on levels rather than changes in the value of debt and equity. Following previous studies (Cassell et al. 2012; He 2015; Wei and Yermack 2011), we adopt the CEO relative incentive ratio ($\Delta DE_{CEO/Firm}$) constructed by Wei and Yermack (2011). Specifically, this measure captures the marginal increase in CEO inside debt over the marginal increase in CEO inside equity, scaled by the marginal increase in firm debt over the marginal increase in firm equity. To minimize the effects of outliers, we take the natural logarithm of $1 + \Delta DE_{CEO/Firm}$, $\ln(1 + \Delta DE_{CEO/Firm})$.

Considering that CEO cash compensation (e.g., salary and bonuses) exhibits similar traits to debt-based compensation (Brander and Poitevin 1992; Hirshleifer and Thakor 1992; Jensen and Meckling 1976; John and John 1993), we follow Cassell et al. (2012) in using the CEO relative incentive ratio adjusted for the present value of expected future cash compensation [$\ln(1 + \Delta DECA_{CEO/Firm})$] as our second alternative measure. In particular, Cassell et al. (2012) calculate the present value of expected future cash compensation by first estimating the CEO's "expected decision horizon" with the firm by employing the approach of Antia et al. (2010). The CEO expected decision horizon is equal to industry-median tenure plus industry-median age minus CEO tenure and CEO age. The CEO expected decision horizon can be a positive or negative value. When the values are negative, Cassell et al. (2012) view the present value of CEO future cash compensation as the salary and bonus obtained in the most recent year. When the expected decision horizon is positive, they multiply the value of cash compensation obtained in the most recent year by the expected decision horizon.

The alternative CEO inside debt holdings measurements are reported in Table 10. Models (1)-(6) reveal that a positive relationship exists between alternative CEO inside debt holdings and CSR, and this relationship is highly significant for *CSR* and *CSR_STR* but insignificant for *CSR_CON*, supporting H1a and H1b. In support of H2, models (7)-(12) demonstrate that CEOs with greater inside debt holdings are likely to commit to more primary stakeholder CSR than secondary stakeholder CSR. Overall, we provide reliable and robust evidence to support our main findings.

5.6. Alternative Measures of CSR and Primary Stakeholder CSR

To ensure that our results are robust to alternative measures of CSR, we construct *CSR_CGOV* (also *CSR_CGOV_STR* and *CSR_CGOV_CON*), which includes corporate governance in our measure of CSR (also CSR strengths and CSR concerns). After replacing *CSR* (*CSR_STR* and *CSR_CON*) with *CSR_CGOV* (*CSR_CGOV_STR* and *CSR_CGOV_CON*), the regressions of H1a and H1b are rerun; the results are qualitatively robust in support of H1a and H1b. We report our results in Panel A of Table 11.

Table 10 Alternative Measures of CEO Inside Debt

	CSR	(1)	(2)	(3)	CSR_STR	(4)	(5)	CSR_CON	(6)	PCSR	(7)	(8)	SCSR	(9)	(10)	PCSR > SCSR	(11)	(12)
$Ln(1 + \Delta DE_{CEO/Firm})$		0.062 [*] (1.70)		0.067 ^{**} (2.27)			0.009 (0.49)			0.052 ^{**} (2.01)			0.027 (1.42)			0.088 ^{**} (2.31)		
$Ln(1 + \Delta DECA_{CEO/Firm})$			0.083 ^{***} (2.80)			0.065 ^{***} (2.73)		-0.014 (-0.89)				0.068 ^{***} (3.26)			0.029 [*] (1.92)			0.076 ^{**} (2.53)
Intercept		-1.921 ^{***} (-5.01)	-2.052 ^{***} (-5.35)	-2.158 ^{***} (-6.21)	-2.228 ^{***} (-6.36)	-2.228 ^{***} (-6.36)	-0.387 ^{**} (-2.33)	-0.327 [*] (-1.96)		-1.500 ^{***} (-5.88)		-1.608 ^{***} (-6.35)	-1.014 ^{***} (-5.45)		-1.049 ^{***} (-5.57)	-3.074 ^{***} (-9.98)		-3.133 ^{***} (-10.09)
Control Variables		YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR		YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
INDUSTRY		YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations		3,827	3,827	3,827	3,827	3,827	3,827	3,827	3,827	3,689	3,689	3,689	3,689	3,689	3,689	3,689	3,689	3,689
Adj R ² /Pseudo R ²		0.679	0.680	0.786	0.786	0.786	0.770	0.770	0.770	0.659	0.659	0.659	0.647	0.647	0.647	0.378	0.378	0.322

Notes: ^{*} ^{**} ^{***} denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are *t*-statistics for Models 1-10. Numbers in parentheses are *z*-statistics for Models 11-12. All variables are defined in Appendix A.

Table 11 Alternative Measures of CSR and Primary Stakeholder CSR

Panel A: Alternative measures of CSR						
	CSR_CGOV		CSR_CGOV_STR		CSR_CGOV_CON	
	(1)	(2)	(3)	(4)	(5)	(6)
$\ln(1 + DE_{CEO/Firm})$	0.229*** (3.43)		0.212*** (3.93)		0.004 (0.11)	
$DE_{CEO/Firm} > 1$		0.189*** (2.72)		0.194*** (3.57)		0.021 (0.58)
Intercept	-2.069*** (-4.97)	-1.963*** (-4.70)	-2.438*** (-6.97)	-2.342*** (-6.68)	-0.661*** (-3.42)	-0.668*** (-3.47)
YEAR	YES	YES	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES	YES	YES
Observations	3,925	3,925	3,925	3,925	3,925	3,925
Adj R^2	0.659	0.659	0.786	0.786	0.769	0.769
Panel B: Alternative measures of primary stakeholder CSR						
	PCSR_PRO		PCSR_PRO > SCSR			
	(1)	(2)	(3)	(4)		
$\ln(1 + DE_{CEO/Firm})$	0.134*** (2.88)		0.093* (1.68)			
$DE_{CEO/Firm} > 1$		0.133*** (2.70)		0.141*** (2.45)		
Intercept	-1.076*** (-3.61)	-1.027*** (-3.44)	-2.207*** (-7.26)	-2.196*** (-7.32)		
YEAR	YES	YES	YES	YES		
INDUSTRY	YES	YES	YES	YES		
Observations	3,925	3,925	3,925	3,925		
Adj R^2 / Pseudo R^2	0.615	0.615	0.321	0.322		

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are t -statistics for Models 1-6 of Panel A and 1-2 of Panel B. Numbers in parentheses are z -statistics for Models 3 and 4. All variables are defined in Appendix A.

Because Hasan et al. (2018) include product in their primary stakeholder CSR, we construct $PCSR_PRO$ and $PCSR_PRO > SCSR$, which both contain product in our measure of primary CSR. The regressions of H2 are rerun after replacing $PCSR$ and $PCSR > SCSR$ with $PCSR_PRO$ and $PCSR_PRO > SCSR$; the results are presented in Panel B of Table 11 and are qualitatively stable in support of our main findings.

5.7. Standardized CSR

Given that MSCI ESG STATS adds or drops new items to construct their CSR scores over time, we standardize CSR scores (i.e., *STD_CSR*, *STD_CSRSTR*, *STD_CSRCON*, *STD_PCSR*, and *STD_SCSR*) by year to facilitate comparison of CSR scores across years. Table 12 reports that using these standardized CSR scores yields statistically and quantitatively similar results.

5.8. CEO Inside Debt Holdings, CSR, and Bond Yield Spreads

Finally, we perform an additional test to see whether the incentive alignment effect of inside debt is stronger for firms with higher CSR engagement. More specifically, we examine the impact of CEO inside debt holdings on bond yield spreads for firms invest in CSR. We compute the yield spreads as the difference in yield between corporate bond yields and Treasury bond yields of the same maturity (Lu, Chen and Liao 2010). We obtain corporate bond yields data from TRACE (Trade Reporting and Compliance Engine) and benchmark Treasury yields from the Federal Reserve Bank of St. Louis. Following Dick-Nielsen, Feldhütter, and Lando (2012), we eliminate yield spreads for bonds with maturities more than 30 years, because of high pricing errors. As shown in Table 13, the interaction effect of CEO inside debt holdings and CSR is negatively and significantly affect yield spreads when CSR activities are measured by CSR, CSR strength, and primary stakeholder CSR. These results indicate that the effect of inside debt on yield spreads is stronger when firms engage more in CSR activities. This is direct evidence on the benefit CSR and explain high-inside debt firms' incentives in engaging in CSR activities.

6. Conclusion

An increasing amount of research attention is being paid to the use of debt-like compensation to incentivize CEOs in undertaking less risky policies to reduce firms' agency conflicts with debt holders (Cassell et al. 2012; He 2015; Chi et al. 2017). However, these studies focus on how CEO inside debt holdings affect financial policies. Because non-financial policies exert a crucial influence on firms' sustainability and cash flow risk in the long term, whether CEO inside debt holding alleviates debt holders' concerns merits examination. To fill this research gap, we view CSR actions as non-financial policies and investigate the effect of CEO inside debt holdings on CSR actions. Because CSR represents discretionary risk-taking by CEOs, this provides a unique setting for studying whether debt-like compensation can align the interests of CEOs with those of debt holders by undertaking less risky non-financial policies.

Using a large US sample for the period 2007-2014, we observe that inside debt holdings encourage CEOs to increase CSR engagement after the equity risk incentive has been controlled for (i.e., vega/delta). We also find that the positive effect of inside debt on CSR is attributable to increases in socially responsible actions rather than reductions in socially irresponsible

Table 12 CEO Inside Debt and CSR: Using Standardized CSR

	STD_CSR		STD_CSRSTR		STD_CSRCON		STD_PCSCR		STD_SCSR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
$\ln(1 + DE_{CEO/Firm})$	0.062 ^{***} (2.89)		0.059 ^{***} (3.58)		0.018 (0.93)		0.078 ^{***} (2.98)		0.060 ^{***} (3.01)	
$DE_{CEO/Firm} > 1$		0.059 ^{***} (2.82)		0.058 ^{***} (3.56)		0.030 (1.44)		0.064 ^{**} (2.45)		0.042 [*] (1.94)
Intercept	-0.474 ^{***} (-7.35)	-0.449 ^{***} (-7.09)	-1.356 ^{***} (-14.15)	-1.332 ^{***} (-13.87)	-1.276 ^{***} (-13.91)	-1.276 ^{***} (-14.06)	-1.761 ^{***} (-11.19)	-1.725 ^{***} (-11.02)	-0.524 ^{***} (-4.37)	-0.493 ^{***} (-4.12)
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES
Observations	3,925	3,925	3,925	3,925	3,925	3,925	3,925	3,925	3,925	3,925
Adj R^2	0.668	0.668	0.799	0.799	0.715	0.715	0.617	0.617	0.624	0.623

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are *t*-statistics for Models 1-10. All variables are defined in Appendix A.

Table13 CEO Inside Debt, CSR, and Bond Yield Spreads

Dependent Variable: Bond Yield Spreads													
Various CSR	CSR			CSR_STR			CSR_CON			PCSR		SCSR	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)			
$Ln(1 + DE_{CEO/Firm})$	-0.134 (-1.33)		-0.137 (-1.35)		-0.148 (-1.51)		-0.143 (-1.42)		-0.138 (-1.37)				
$DE_{CEO/Firm} > 1$		-0.068 (-0.64)		-0.068 (-0.64)		-0.062 (-0.58)		-0.074 (-0.69)		-0.063 (-0.59)			
Various CSR	0.006 (0.37)	0.004 (0.27)	0.004 (0.21)	0.002 (0.12)	-0.005 (-0.16)	-0.005 (-0.15)	0.022 (0.93)	0.020 (0.86)	0.002 (0.07)	-0.001 (-0.02)			
$Ln(1 + DE_{CEO/Firm}) \times$ Various CSR	-0.071* (-1.95)		-0.081** (-2.00)		-0.029 (-0.56)		-0.084** (-2.33)		-0.038 (-0.98)				
$DE_{CEO/Firm} > 1 \times$ Various CSR		-0.074** (-2.16)		-0.089** (-2.12)		-0.024 (-0.49)		-0.082** (-2.24)		-0.030 (-0.90)			
Intercept	5.811*** (7.19)	5.656*** (7.13)	5.847*** (7.21)	5.670*** (7.11)	5.862*** (7.45)	5.716*** (7.35)	5.892*** (7.26)	5.747*** (7.22)	5.842*** (7.28)	5.700*** (7.21)			
Control Variables	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES			
YEAR	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES			
INDUSTRY	YES	YES	YES	YES	YES	YES	YES	YES	YES	YES			
Observations	1,962	1,962	1,962	1,962	1,962	1,962	1,962	1,962	1,962	1,962			
Adj R ²	0.505	0.504	0.505	0.504	0.504	0.503	0.505	0.504	0.504	0.503			

Notes: *, **, *** denotes significance at the 10%, 5%, and 1% levels, respectively, based on a two-tailed test. Numbers in parentheses are *t*-statistics for Models 1-10. All variables are defined in Appendix A.

actions. Furthermore, CEO inside debt holders exhibit a greater tendency to commit to primary stakeholder CSR than to secondary stakeholder CSR. Our empirical findings are robust to controls for endogeneity concerns. The results of additional analysis reveal that inside debt holdings prompt CEOs to perform better in CSR for both current and long-term periods. Moreover, the effect of inside debt on CSR is more pronounced in the presence of high default risk.

In conclusion, these findings reveal that the agency costs of debt can be reduced by inside debt holders through engagement in various types of CSR. We highlight the value of linking debt-like compensation to non-financial policies; that is, debt-like compensation can motivate CEOs to adopt more sustainable and less risky non-financial policies and therefore alleviate agency costs of debt. Channels that can limit agency costs of debt should be identified because debt holders play a prominent role in determining a firm's financing. Our results are consistent with those of research indicating that inside debt reduces the agency costs of debt by adopting less risky financial policies, such as conservative investment and financing policies (Cassell et al. 2012), high financial reporting quality (He 2015), and reduced tax sheltering (Chi et al. 2017). By revealing the effect of inside debt holdings on non-financial policies, we help to identify the boundary conditions of CEO inside debt holdings.

In terms of the determinants of CSR policies, our results show that CEO inside debt can affect CSR in quite different ways. We therefore suggest that researchers carefully interpret the implications of inside debt holding on CSR. For policy makers wishing to design executive compensation contracts providing improvements for specific types of CSR, we suggest that debt-like compensation can be used to promote socially responsible activities but not to limit socially irresponsible activities. In addition, the incentive effect is stronger for primary stakeholder CSR than for secondary stakeholder CSR. Moreover, inside debt provides a long-term incentive to encourage CEOs keep devoting themselves toward CSR. Finally, the increasing effects of CSR resulting from inside debt are particularly applicable for firms with high default risk. Overall, we provide insights into executive compensation that explain variations in CSR. Because in some countries such as India, firms must now spend at least 2% of their average net profits of 3 years on CSR activities, an understanding of how executives may be incentivized to appropriately assign CSR resources on target social issues is crucial.

Our results pertain mainly to US firms. Therefore, our findings may not be applicable to other countries. We encourage future research to examine the effects of CEO inside debt incentive mechanisms on CSR in Taiwan when the relevant data become available. With the evolution of CSR in corporations, we anticipate that future studies will examine the associations between CEOs' inside debt holdings and CSR disclosure. We suggest that researchers should focus more attention on how CEO inside debt holdings shape CSR priorities and content revealed in CSR reports.

References

- Anantharaman, D., V. W. Fang, and G. Gong. 2014. "Inside debt and the design of corporate debt contracts." *Management Science* 60 (5): 1260-1280.
- Anderson, J. D., and J. E. Core. 2018. "Managerial incentives to increase risk provided by debt, stock, and options." *Management Science* 64 (9): 4408-4432.
- Antia, M., C. Pantzalis, and J. C. Park. 2010. "CEO decision horizon and firm performance: An empirical investigation." *Journal of Corporate Finance* 16 (3): 288-301.
- Armstrong, C. S., W. R. Guay, and J. P. Weber. 2010. "The role of information and financial reporting in corporate governance and debt contracting." *Journal of Accounting and Economics* 50 (2-3): 179-234.
- Armstrong, C. S., D. F. Larcker, G. Ormazabal, and D. J. Taylor. 2013. "The relation between equity incentives and misreporting: The role of risk-taking incentives." *Journal of Financial Economics* 109 (2): 327-350.
- Attig, N. 2011. "A good horse never lacks a saddle: Management quality practices and corporate social responsibility." Working Paper. Saint Mary's University.
- Attig, N., S. El Ghouli, O. Guedhami, and J. Suh. 2013. "Corporate social responsibility and credit ratings." *Journal of Business Ethics* 117 (4): 679-694.
- Baum, C. F. 2006. *An Introduction to Modern Econometrics Using Stata*. College Station, TX: Stata Press.
- Bénabou, R., and J. Tirole. 2010. "Individual and corporate social responsibility." *Economica* 77 (305): 1-19.
- Boubaker, S., K. Chebbi, and J. Grira. 2020. "Top management inside debt and corporate social responsibility? Evidence from the US." *The Quarterly Review of Economics and Finance* 78: 98-115.
- Bouslah, K., L. Kryzanowski, and B. M'Zali. 2018. "Social performance and firm risk: Impact of the financial crisis." *Journal of Business Ethics* 149 (3): 643-669.
- Bouslah, K., J. Liñares-Zegarra, B. M'li, and B. Scholtens. 2018. "CEO risk-taking incentives and socially irresponsible activities." *The British Accounting Review* 50 (1): 76-92.
- Brander, J. A., and M. Poitevin. 1992. "Managerial compensation and the agency costs of debt finance." *Managerial and Decision Economics* 13 (1): 55-64.
- Brockman, P., T. Ma, and J. Ye. 2015. "CEO compensation risk and timely loss recognition." *Journal of Business Finance & Accounting* 42 (1-2): 204-236.
- Brown, T. J., and P. A. Dacin. 1997. "The company and the product: Corporate associations and consumer product responses." *Journal of Marketing* 61 (1): 68-84.

- Cassell, C. A., S. X. Huang, J. M. Sanchez, and M. D. Stuart. 2012. "Seeking safety: The relation between CEO inside debt holdings and the riskiness of firm investment and financial policies." *Journal of Financial Economics* 103 (3): 588-610.
- Chi, S., S. X. Huang, and J. M. Sanchez. 2017. "CEO inside debt incentives and corporate tax sheltering." *Journal of Accounting Research* 55 (4): 837-876.
- Clarkson, M. E. 1995. "A stakeholder framework for analyzing and evaluating corporate social performance." *Academy of Management Review* 20 (1): 92-117.
- Coles, J. L., N. D. Daniel, and L. Naveen. 2006. "Managerial incentives and risk-taking." *Journal of Financial Economics* 79 (2): 431-468.
- Core, J., and W. Guay. 1999. "The use of equity grants to manage optimal equity incentive levels." *Journal of Accounting and Economics* 28 (2): 151-184.
- Davis, A. K., D. A. Guenther, L. K. Krull, and B. M. Williams. 2016. "Do socially responsible firms pay more taxes?" *The Accounting Review* 91 (1): 47-68.
- Dhole, S., H. Manchiraju, and I. Suk. 2016. "CEO inside debt and earnings management." *Journal of Accounting, Auditing & Finance* 31 (4): 515-550.
- Dick-Nielsen, J., P. Feldhütter, and D. Lando. 2012. "Corporate bond liquidity before and after the onset of the subprime crisis." *Journal of Financial Economics* 103 (3): 471-492.
- Drago, D., C. Carnevale, and R. Gallo. 2019. "Do corporate social responsibility ratings affect credit default swap spreads?" *Corporate Social Responsibility and Environmental Management* 26 (3): 644-652.
- Duh, R. R., Y. Y. Chen, and H. Y. Huang. 2019. "Corporate social responsibility performance and CEO compensation." *Journal of Contemporary Accounting* 20 (1): 1-28.
- Dupire, M., and B. M'Zali. 2018. "CSR strategies in response to competitive pressures." *Journal of Business Ethics* 148 (3): 603-623.
- Dyer, J. H., and H. Singh. 1998. "The relational view: Cooperative strategy and sources of interorganizational competitive advantage." *Academy of Management Review* 23 (4): 660-679.
- Edmans, A., and Q. Liu. 2011. "Inside debt." *Review of finance* 15 (1): 75-102.
- Fabrizi, M., C. Mallin, and G. Michelon. 2014. "The role of CEO's personal incentives in driving corporate social responsibility." *Journal of Business Ethics* 124 (2): 311-326.
- Fernández-Kranz, D., and J. Santaló. 2010. "When necessity becomes a virtue: The effect of product market competition on corporate social responsibility." *Journal of Economics & Management Strategy* 19 (2): 453-487.
- Flammer, C. 2015. "Does product market competition foster corporate social responsibility? Evidence from trade liberalization." *Strategic Management Journal* 36 (10): 1469-1485.

- Freeman R. E, J. S. Harrison, and A. Wicks. 2008. *Managing for Stakeholders: Survival, Reputation, and Success*. New Haven, CT: Yale University Press.
- Gaertner, F. B. 2014. "CEO After-Tax compensation incentives and corporate tax avoidance." *Contemporary Accounting Research* 31 (4): 1077-1102.
- Ge, W., and M. Liu. 2015. "Corporate social responsibility and the cost of corporate bonds." *Journal of Accounting and Public Policy* 34 (6): 597-624.
- Godfrey, P. C. 2005. "The relationship between corporate philanthropy and shareholder wealth: A risk management perspective." *Academy of Management Review* 30 (4): 777-798.
- Godfrey, P. C., C. B. Merrill, and J. M. Hansen. 2009. "The relationship between corporate social responsibility and shareholder value: An empirical test of the risk management hypothesis." *Strategic Management Journal* 30 (4): 425-445.
- Grant, J., G. Markarian, and A. Parbonetti. 2009. "CEO risk-related incentives and income smoothing." *Contemporary Accounting Research* 26 (4): 1029-1065.
- Greening, D. W., and D. B. Turban. 2000. "Corporate social performance as a competitive advantage in attracting a quality workforce." *Business & Society* 39 (3): 254-280.
- Guay, W. R. 1999. "The sensitivity of CEO wealth to equity risk: An analysis of the magnitude and determinants." *Journal of Financial Economics* 53 (1): 43-71.
- Hasan, I., N. Kobeissi, L. Liu, and H. Wang. 2018. "Corporate social responsibility and firm financial performance: The mediating role of productivity." *Journal of Business Ethics* 149 (3): 671-688.
- Haugen, R. A., and L. W. Senbet. 1981. "Resolving the agency problems of external capital through options." *The Journal of Finance* 36 (3): 629-647.
- He, G. 2015. "The effect of CEO inside debt holdings on financial reporting quality." *Review of Accounting Studies* 20 (1): 501-536.
- Hirshleifer, D., and A. V. Thakor. 1992. "Managerial conservatism, project choice, and debt." *The Review of Financial Studies* 5 (3): 437-470.
- Hoi, C. K., Q. Wu, and H. Zhang. 2013. "Is corporate social responsibility (CSR) associated with tax avoidance? Evidence from irresponsible CSR activities." *The Accounting Review* 88 (6): 2025-2059.
- Huang, X. B., and L. Watson. 2015. "Corporate social responsibility research in accounting." *Journal of Accounting Literature* 34: 1-16.
- Jensen, M. C., and W. H. Meckling. 1976. "Theory of the firm: Managerial behavior, agency costs and ownership structure." *Journal of Financial Economics* 3 (4): 305-360.
- Jian, M., and K. W. Lee. 2015. "CEO compensation and corporate social responsibility." *Journal of Multinational Financial Management* 29: 46-65.

- John, T. A., and K. John. 1993. "Top-management compensation and capital structure." *The Journal of Finance* 48 (3): 949-974.
- Karim, K., E. Lee, and S. Suh. 2018. "Corporate social responsibility and CEO compensation structure." *Advances in Accounting* 40: 27-41.
- Kim, K. H., M. C. Kim, and C. Qian. 2018. "Effects of corporate social responsibility on corporate financial performance: A competitive-action perspective." *Journal of Management* 44 (3): 1097-1118.
- Kim, M., J. Surroca, and J. A. Tribó. 2014. "Impact of ethical behavior on syndicated loan rates." *Journal of Banking & Finance* 38: 122-144.
- Kim, T., H. D. Kim, and K. Park. 2020. "CEO inside debt holdings and CSR activities." *International Review of Economics & Finance* 70: 508-529.
- Kim, Y., H. Li, and S. Li. 2014. "Corporate social responsibility and stock price crash risk." *Journal of Banking & Finance* 43: 1-13.
- Kim, Y., M. S. Park, and B. Wier. 2012. "Is earnings quality associated with corporate social responsibility?" *The Accounting Review* 87 (3): 761-796.
- Lin, K. C., and X. Dong. 2018. "Corporate social responsibility engagement of financially distressed firms and their bankruptcy likelihood." *Advances in Accounting* 43: 32-45.
- Lins, K. V., H. Servaes, and A. Tamayo. 2017. "Social capital, trust, and firm performance: The value of corporate social responsibility during the financial crisis." *The Journal of Finance* 72 (4): 1785-1824.
- Liu, X., and X. Liu. 2017. "CEO equity incentives and the remediation of material weaknesses in internal control." *Journal of Business Finance & Accounting* 44 (9-10): 1338-1369.
- Liu, Y., D. C. Mauer, and Y. Zhang. 2014. "Firm cash holdings and CEO inside debt." *Journal of Banking & Finance* 42: 83-100.
- Low, A. 2009. "Managerial risk-taking behavior and equity-based compensation." *Journal of Financial Economics* 92 (3): 470-490.
- Lu, C. W., T. K. Chen, and H. H. Liao. 2010. "Information uncertainty, information asymmetry and corporate bond yield spreads." *Journal of Banking & Finance* 34 (9): 2265-2279.
- Luo, X., and C. B. Bhattacharya. 2006. "Corporate social responsibility, customer satisfaction, and market value." *Journal of Marketing* 70 (4): 1-18.
- Mahoney, L. S., and L. Thorn. 2006. "An examination of the structure of executive compensation and corporate social responsibility: A Canadian investigation." *Journal of Business Ethics* 69 (2): 149-162.
- Mahoney, L. S., and L. Thorne. 2005. "Corporate social responsibility and long-term compensation: Evidence from Canada." *Journal of Business Ethics* 57 (3): 241-253.

- Margolis, J. D., and J. P. Walsh. 2003. "Misery loves companies: Rethinking social initiatives by business." *Administrative Science Quarterly* 48 (2): 268-305.
- Mayberry, M. 2020. "Good for managers, bad for society? Causal evidence on the association between risk-taking incentives and corporate social responsibility." *Journal of Business Finance & Accounting* 47 (9-10): 1182-1214.
- McGuire, J., S. Dow, and K. Argheyd. 2003. "CEO incentives and corporate social performance." *Journal of Business Ethics* 45 (4): 341-359.
- McWilliams, A., and D. Siegel. 2001. "Corporate social responsibility: A theory of the firm perspective." *Academy of Management Review* 26 (1): 117-127.
- Mitchell, R. K., B. R. Agle, and D. J. Wood. 1997. "Toward a theory of stakeholder identification and salience: Defining the principle of who and what really counts." *Academy of Management Review* 22 (4): 853-886.
- Moody's Investors Service. 2019. *Moody's assigns B2 to CenturyLink's proposed senior unsecured notes*. <https://www.moody's.com/>. Accessed February 22, 2020.
- Petersen, M. A. 2009. "Estimating standard errors in finance panel data sets: Comparing approaches." *The Review of Financial Studies* 22 (1): 435-480.
- Porter, M. E. and M. R. Kramer. 2006. "Strategy and society: The link between competitive advantage and corporate social responsibility" *Harvard Business Review* 84 (12): 78-92.
- Rego, S. O., and R. Wilson. 2012. "Equity risk incentives and corporate tax aggressiveness." *Journal of Accounting Research* 50 (3): 775-810.
- Reid, C. D. 2018. "CEO retirement compensation: Is inside debt excess compensation or a risk management tool?" *Business Horizons* 61 (5): 721-731.
- Rekker, S. A., K. L. Benson, and R. W. Faff. 2014. "Corporate social responsibility and CEO compensation revisited: Do disaggregation, market stress, gender matter?" *Journal of Economics and Business* 72: 84-103.
- Servaes, H., and A. Tamayo. 2013. "The impact of corporate social responsibility on firm value: The role of customer awareness." *Management Science* 59 (5): 1045-1061.
- Shalev, R. O. N., I. X. Zhang, and Y. Zhang. 2013. "CEO compensation and fair value accounting: Evidence from purchase price allocation." *Journal of Accounting Research* 51 (4): 819-854.
- Shi, G., and J. Sun. 2015. "Corporate bond covenants and social responsibility investment." *Journal of Business Ethics* 131 (2): 285-303.
- Smith Jr, C. W., and R. L. Watts. 1992. "The investment opportunity set and corporate financing, dividend, and compensation policies." *Journal of Financial Economics* 32 (3): 263-292.
- Smith, C. W., and R. M. Stulz. 1985. "The determinants of firms' hedging policies." *Journal of Financial and Quantitative Analysis*: 391-405.

- Stock, J. H., and M. Yogo. 2005. Testing for Weak Instruments in Linear IV Regression. D.W.K. Andrews, J. H. Stock (Eds.). "Identification and inference for econometric models: Essays in honor of Thomas Rothenberg." Cambridge University Press.
- Strike, V. M., J. Gao, and P. Bansal. 2006. "Being good while being bad: Social responsibility and the international diversification of US firms." *Journal of International Business Studies* 37 (6): 850-862.
- Sun, W., and K. Cui. 2014. "Linking corporate social responsibility to firm default risk." *European Management Journal* 32 (2): 275-287.
- Sundaram, R. K., and D. L. Yermack. 2007. "Pay me later: Inside debt and its role in managerial compensation." *The Journal of Finance* 62 (4): 1551-1588.
- Tang, Y., D. Z. Mack, and G. Chen. 2018. "The differential effects of CEO narcissism and hubris on corporate social responsibility." *Strategic Management Journal* 39 (5): 1370-1387.
- Turban, D. B., and D. W. Greening. 1997. "Corporate social performance and organizational attractiveness to prospective employees." *Academy of Management Journal* 40 (3): 658-672.
- UN Global Compact-Accenture. 2010. *A new era of sustainability*. <https://www.unglobalcompact.org/library/230>. Accessed February 7, 2020.
- Waddock, S. A., and S. B. Graves. 1997. "The corporate social performance–financial performance link." *Strategic Management Journal* 18 (4): 303-319.
- Waldman, D. A., and D. Siegel. 2008. "Defining the socially responsible leader." *The Leadership Quarterly* 19 (1): 117-131.
- Waldman, D. A., D. S. Siegel, and M. Javidan. 2006. "Components of CEO transformational leadership and corporate social responsibility." *Journal of Management Studies* 43 (8): 1703-1725.
- Wang, H., L. Tong, R. Takeuchi, and G. George. 2016. "Corporate Social Responsibility: An Overview and New Research Directions: Thematic Issue on Corporate Social Responsibility." *Academy of Management* 59 (2): 534-544.
- Wei, C., and D. Yermack. 2011. "Investor reactions to CEOs' inside debt incentives." *The Review of Financial Studies* 24 (11): 3813-3840.
- Wu, T. H., and M. C. Lin. 2019. "Relationship of CEO inside debt and corporate social performance: A data envelopment analysis approach." *Finance Research Letters* 29: 308-314.
- Xue, Y. 2007. "Make or buy new technology: The role of CEO compensation contract in a firm's route to innovation." *Review of Accounting Studies* 12 (4): 659-690.

APPENDIX A: Variable Definitions

Variable	Definition
Dependent variables: CSR	
<i>CSR</i>	Net score of CSR ratings, measured as total CSR strengths minus total CSR concerns in six social rating categories of MSCI ratings data: community relations, diversity, human rights, employee relations, environment, and product.
<i>CSR_STR</i>	Total CSR strengths in six social rating categories of MSCI ratings data: community relations, diversity, human rights, employee relations, environment, and product.
<i>CSR_CON</i>	Total CSR concerns in six social rating categories of MSCI ratings data: community relations, diversity, human rights, employee relations, environment, and product.
<i>PCSR</i>	Primary stakeholder CSR, including employee relations and diversity.
<i>SCSR</i>	Secondary stakeholder CSR, including environment, human rights, and community relations.
<i>PCSR > SCSR</i>	An indicator variable equal to 1 if the firm's <i>PCSR</i> is greater than <i>SCSR</i> and 0 otherwise.
<i>CSR_{t+1}</i>	Next year's <i>CSR</i> .
<i>CSR_STR_{t+1}</i>	Next year's <i>CSR_STR</i> .
<i>CSR_CON_{t+1}</i>	Next year's <i>CSR_CON</i> .
<i>PCSR_{t+1}</i>	Next year's <i>PCSR</i> .
<i>SCSR_{t+1}</i>	Next year's <i>SCSR</i> .
<i>PCSR_{t+1} > SCSR_{t+1}</i>	Next year's <i>PCSR > SCSR</i> .
<i>LTCSR</i>	Long-term <i>CSR</i> .
<i>LTCSR_STR</i>	Long-term <i>CSR_STR</i> .
<i>LTCSR_CON</i>	Long-term <i>CSR_CON</i> .
<i>LTPCSR</i>	Long-term <i>PCSR</i> .
<i>LTSCSR</i>	Long-term <i>SCSR</i> .
<i>LT(PCSR > SCSR)</i>	Long-term <i>PCSR > SCSR</i> .
<i>CSR_CGOV</i>	Net score of CSR ratings, measured as total CSR strengths minus total CSR concerns in seven social rating categories of MSCI ratings data: corporate governance, community relations, diversity, human rights, employee relations, environment, and product.
<i>CSR_CGOV_STR</i>	Total CSR strengths in six social rating categories of MSCI ratings data: corporate governance, community relations, diversity, human rights, employee relations, environment, and product.
<i>CSR_CGOV_CON</i>	Total CSR concerns in six social rating categories of MSCI ratings data: corporate governance, community relations, diversity, human rights, employee relations, environment, and product.
<i>PCSR_PRO</i>	Primary stakeholder CSR, including product, employee relations, and diversity.
<i>PCSR_PRO > SCSR</i>	An indicator variable equal to 1 if the firm's <i>PCSR_PRO</i> is greater than <i>SCSR</i> and 0 otherwise.
<i>STD_CSR</i>	Standardize <i>CSR</i> by year.
<i>STD_CSRSTR</i>	Standardize <i>CSR_STR</i> by year.
<i>STD_CSRCON</i>	Standardized <i>CSR_CON</i> by year.
<i>STD_PCSR</i>	Standardized <i>PCSR</i> by year.
<i>STD_SCSR</i>	Standardized <i>SCSR</i> by year.

APPENDIX A: Variable Definitions (Continued)

Variable	Definition
Independent variables: CEO inside debt holdings	
$Ln(1 + DE_{CEO/Firm})$	Relative CEO debt-to-equity ratio, measured as the ratio of a CEO's debt to equity scaled by the firm's debt to equity ratio.
$DE_{CEO/Firm} > 1$	An indicator variable equal to 1 if $DE_{CEO/Firm}$ is greater than 1 and 0 otherwise.
$Ln(1 + \Delta DE_{CEO/Firm})$	CEO relative incentive ratio, measured as the marginal increase in CEO inside debt over the marginal increase in CEO inside equity, scaled by the marginal increase in firm debt over the marginal increase in firm equity.
$Ln(1 + \Delta DECA_{CEO/Firm})$	CEO relative incentive ratio adjusted for the present value of expected future cash compensation constructed by Cassell et al. (2012).
Independent variables: Default risk	
<i>Zscore</i>	Altman's Z score, measured as an indicator variable equal to 1 if a firm's Altman's Z score < 1.8 and 0 otherwise.
<i>CR</i>	Credit Rating, measured as an indicator variable equal to 1 if a firm's Standard & Poor's domestic long-term issuer credit rating is below AA- and Standard & Poor's domestic short-term issuer credit rating is below A-2 and 0 otherwise.
Instrumental variables	
<i>LIQUIDITY</i>	Liquidity constraints, measured as an indicator variable equal to 1 if the firm generates negative operating cash flow, and 0 otherwise
<i>CEO_AGE</i>	CEO age, measured as the age of the CEO as reported in the ExecuComp database.
<i>INSIDE_CEO</i>	Inside CEO, measured as an indicator variable equal to 1 if the current CEO ascended to his position from within the firm, and 0 otherwise.
$GEO_DE_{CEO/Firm}$	Geography-median CEO inside debt holdings, measured as median value of CEO inside debt holdings for firms that have corporate headquarter locations in the same state.
$IND_DE_{CEO/Firm}$	Industry-median CEO inside debt holdings, measured as median value of CEO inside debt holdings for firms in the same industry.
Control variables	
<i>Vega/Delta</i>	The ratio of the CEO vega to the CEO delta. CEO vega, measured as the change in the dollar value of the CEO's equity portfolio for a 1% change in the annualized standard deviation of stock returns, as described in Core and Guay (2002). CEO delta, measured as the change in the value of the CEO's equity portfolio in response to a 1% increase in the firm's stock price, as described in Core and Guay (2002).
<i>PRE_CSR</i>	Prior year's CSR.
<i>PRE_CSR_STR</i>	Prior year's CSR_STR.
<i>PRE_CSR_CON</i>	Prior year's CSR_CON.
<i>PRE_PCSR</i>	Prior year's PCSR.
<i>PRE_SCSR</i>	Prior year's SCSR.
<i>PRE_(PCSR > SCSR)</i>	Prior year's PCSR > SCSR.
<i>PRE_CSR_CGOV</i>	Prior year's CSR_CGOV.
<i>PRE_CSR_CGOV_STR</i>	Prior year's CGOV_STR.
<i>PRE_CSR_CGOV_CON</i>	Prior year's CGOV_CON.
<i>PRE_PCSR_PRO</i>	Prior year's PCSR_PRO.
<i>PRE_(PCSR_PRO > SCSR)</i>	Prior year's PCSR_PRO > SCSR.
<i>LEV</i>	Leverage, measured as total debts divided by total assets.

APPENDIX A: Variable Definitions (Continued)

Variable	Definition
Control variables	
<i>PRE_ROA</i>	Prior year's ROA. ROA is measured as the income before extraordinary items divided by average total assets.
<i>INEARN</i>	Times interest earned ratio, measured as earnings before interest and taxes divided by nominal interest expense.
<i>SIZE</i>	Firm size, measured as the natural logarithm of total assets.
<i>AGE</i>	Firm age, measured as the count of years since the focal firm was first recorded in the CRSP database.
<i>ADV</i>	Advertising intensity, measured as advertising expense divided by total sales.
<i>R&D</i>	R&D intensity, measured as the R&D expenses divided by total sales.

Note: The table reports variable definitions for all variables used in the paper. The first column reports the variable name and the second column gives the detailed variable definition.

CEO 內部負債和企業社會責任之關聯性

李佳玲¹ 許芙瑄²

¹ 國立政治大學會計學系

² 國立臺灣大學會計學系

通訊作者：許芙瑄
通訊地址：106319 臺北市羅斯福路四段 1 號
E-mail：d02722004@ntu.edu.tw
投稿日期：2021 年 4 月 12 日；2 審後接受，接受日期：2021 年 9 月 13 日

摘 要

本文探討 CEO 內部負債與企業社會責任的關聯性，本文運用 2007-2014 年間美國公開發行公司樣本，實證發現，CEO 持有較高的內部負債越傾向投入企業社會責任活動。本文發現內部負債促使 CEO 選擇正面社會責任活動（例如：提供員工優渥的福利計畫），而非抑制其不道德行為（例如：減少雇用童工）；CEO 內部負債與企業社會責任的正向關聯性在主要利害關係人的活動上較次要利害關係人的活動上顯著；CEO 內部負債會驅使企業長期持續的投入企業社會責任活動。最後，本研究發現當企業違約風險越高時，CEO 內部負債持有者越會投入企業社會責任活動。整體而言，本文實證支持企業社會責任活動是內部負債持有者減緩債務代理成本的重要管道之一。

關鍵詞：內部負債、企業社會責任、債務代理成本

本論文感謝兩位匿名評審的寶貴意見，文中言論由作者自行負責。作者李佳玲感謝科技部計畫經費贊助 (MOST107-2410-H-004-036)。

數據可用性：本文使用的數據可從公開資料來源取得。



東華書局
Tung Hua Book Co., Ltd.

1. 研究議題

本研究以美國公開發行公司為研究對象，探討 CEO 內部負債對於企業社會責任的影響。債務代理問題長期以來是企業經營需要去面對的重要議題，當企業給予高階經理人較高的權益薪酬時，將誘使經理人採取較高風險的決策，該項決策可能有利於股東，但卻損及債權人利益。因為若高風險政策執行成功，債權人獲得的收益仍為有限的固定報酬；若高風險政策執行失敗，債權人所承受的違約風險將大幅提高。

為了減緩股東將風險移轉給債權人的債務代理問題，Jensen and Meckling (1976) 建議在薪酬配置上增加債務型薪酬（退休金及遞延薪酬）佔比，幫助經理人在決策時同時考量債權人的利益。過去學者研究顯示經理人在擁有較高的債務型薪酬情況下，比較會與債權人利益一致，採取較低風險的政策 (Anantharaman et al. 2014; Cassell et al. 2012; Chi et al. 2017; He 2015; Sundaram and Yermack 2007; Wei and Yermack 2011; Liu et al. 2014; Dhole et al. 2016)。然而過去研究著重在債務型薪酬對於財務政策的影響，很少探討債務型薪酬對於非財務性政策的影響。鑒於非財務性政策常與潛在無形資產及企業未來發展息息相關，非財務性政策應該會受到高階經理人持有債務型薪酬佔比的影響，故本研究聚焦探討 CEO 內部負債對於重要的非財務政策——企業社會責任的影響。

2. 研究假說

本研究推論 CEO 持有較高的內部負債，越會傾向投入企業社會責任活動，主要原因有三個：首先，企業透過社會責任投入所建立的聲譽可以幫助企業減少代理成本與交易成本，從而提升未來現金流量。其次，企業社會責任可以減少企業與利害關係人的利益衝突，降低企業受到負面事件衝擊的影響，因此較不易造成企業現金流量震盪。再者，企業社會責任可以幫助公司增加差異化並建立與利害關係人良好的互動，這些獨特的無形資產皆有助於企業提升競爭優勢，減少市場競爭威脅所造成的現金流量風險。綜上所述，企業社會責任可以透過提升未來現金流量價值和減少現金流量風險來減緩違約風險，因此能吸引重視違約風險的債權人注意。同樣地，當 CEO 擁有較高的債務型薪酬，為了保障企業未來有充足的現金流量支付其薪酬，CEO 會更願意投入讓企業能永續發展的活動。本研究提出 H1a 如下：

H1a：CEO 持有較高的內部負債越傾向投入企業社會責任活動。

企業社會責任表現良好可能源自於企業增加正面社會責任活動或減少負面社會責任活

動，過去文獻顯示債權人較為重視增加正面社會責任活動，主要原因有三個：首先，有別於減少負面社會責任活動聚焦在法規與道德規範遵循上，增加正面社會責任活動通常涉及積極開發資源來提升企業長期競爭優勢，因此較減少負面社會責任活動更能夠為企業創造未來現金流量。其次，相較於透過遵循既有規範來減少負面社會責任活動，增加正面企業社會責任活動更能向債權人展現經理人的管理能力。再者，增加正面企業社會責任活動意味著企業積極地與各種社會團體互動，因此企業會更密切的受到各種社會團體監督檢視，減少債權人的道德風險。因此，我們推論 CEO 持有較高的內部負債，會更願意去投入正面社會責任活動，而非減少負面社會責任活動，來滿足債權人的需求。本研究提出 H1b 如下：

H1b：*CEO 持有較高的內部負債越傾向投入正面社會責任活動，而非減少負面社會責任活動。*

鑒於企業社會責任活動所涉及的利害關係人眾多，過去文獻將利害關係人區分成主要利害關係人和次要利害關係人。根據利害關係人顯著性理論 (Mitchell et al. 1997)，主要利害關係人（例如：員工和供應商）因為與企業具有合約關係，因此會比次要利害關係人（例如：社區和環保團體）更能夠影響企業未來營運與發展。換言之，主要利害關係人可以直接影響企業未來現金流量風險，故吸引債權人重視。同樣地，與債權人利益一致的 CEO 內部負債持有者會更傾向滿足主要利害關係人的需求，確保企業未來現金流量足以穩定支付其債務型薪酬。本研究提出 H2 如下：

H2：*CEO 內部負債與企業社會責任的正向關聯性在主要利害關係人的活動上較次要利害關係人的活動上顯著。*

3. 研究方法

本研究使用 2007-2014 年間美國公開公司樣本，從 ExecuComp 資料庫取得 CEO 薪酬資訊，並從 MSCI ESG STATS 取得 CSR 資料。財務資料及相關控制變數資料取自 Compustat 和 CRSP。本研究使用 OLS 和 probit 迴歸模型探討 CEO 內部負債對於企業社會責任的影響。為了減緩因果關係造成的內生性問題，我們先檢定 CEO 內部債是否具內生性，若是，則採二階段最小平方法 (two stage least square, 2SLS)，以確保係數估計式之不偏性與一致性。此外，我們也使用傾向分數配對法減緩自我選擇的內生性問題。

4. 研究結果

本研究發現 CEO 持有較高的內部負債越傾向投入企業社會責任活動。本研究進一步發現 CEO 內部負債促使 CEO 選擇正面社會責任活動（例如：提供員工優渥的福利計畫），而非抑制其不道德行為（例如：減少雇用童工）；CEO 內部負債與企業社會責任的正向關聯性在主要利害關係人的活動上較次要利害關係人的活動上顯著。上述研究在考量因果關係和自我選擇造成的內生性問題後，仍獲得相同結論。在額外測試上，本研究發現 CEO 內部負債會驅使企業長期持續的投入企業社會責任活動。最後，本研究發現當企業違約風險越高時，CEO 內部負債持有者越會投入企業社會責任活動。

5. 研究貢獻

本研究主要貢獻有兩個：首先，我們延伸了代理理論，本研究顯示債務型的薪酬會激勵 CEO 採取較低風險的非財務性政策，從而降低債務代理成本。其次，本研究亦補充薪酬機制的設計對於企業社會責任的影響，我們發現債務型薪酬可作為政策制定者激勵 CEO 從事社會責任活動的工具。具體而言，債務型薪酬可以有效激勵 CEO 從事正面社會責任活動和與主要利害關係人相關的社會責任活動。最後，債務型薪酬會使 CEO 更願意長期地投入企業社會責任活動。