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Two Essays on CEO Inside Debt Holding in Relation to Firm Payout Policy and Financial Reporting

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TWO ESSAYS ON CEO INSIDE DEBT HOLDING IN RELATION TO FIRM PAYOUT POLICY AND FINANCIAL REPORTING

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ABSTRACT

TWO ESSAYS ON CEO INSIDE DEBT HOLDING IN RELATION TO FIRM PAYOUT POLICY AND FINANCIAL REPORTING

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This dissertation is a thorough examination of CEO inside debt holding, and consists of two essays. The first essay focuses on the relationship between CEO inside debt and firm payout policy. Previous studies document that higher CEO inside debt is associated with lower firm payout which is explained by CEO's motivation to preserve cash either in order not to default on debt obligations or in order to keep cash available for his future pension benefits. This study investigates how do excess cash, overinvestment risk, and firm-specific information asymmetry affect this negative relationship, and examines net payout to shareholders as well as cash payout to both shareholders and bondholders. The results provide several valuable insights. First, CEO inside debt is positively associated with net payout, and negatively associated with cash payout in general. Second, while excess cash has only a weak effect, the impact of overinvestment risk is not significant. Third, CEO with inside debt increases payout in the presence of firm-specific information asymmetry. This implies that CEO conveys information to less informed shareholders although his interests are aligned with those of bondholders'. Overall results support the notion that CEO inside debt can be misaligned over time.

Abundant research notwithstanding suggest that higher CEO inside debt is associated with more conservative corporate policies, including lower likelihood of earnings management. The second essay of this dissertation focuses on the relationship between CEO inside debt and

firm financial reporting. First, it examines the relationship between CEO inside debt and absolute value of abnormal accruals, earnings smoothing, earnings predictability, and earnings quality. Second, it contributes to CEO compensation and earnings management literatures by investigating the moderating effects of various CEO attributes such as overconfidence, narcissism, power, tenure, quality, ability, education, and gender on the above mentioned relationships. The main tenet of the second essay is that CEO may have strong attributes which may enable him to adopt corporate policies that are different than what his compensation enforces. The empirical evidence show that only CEO tenure, quality, and education have significant moderating effects on the relationship between CEO inside debt and earnings predictability, and earnings quality. These results imply that CEO attributes are not strong enough to enable CEO to make corporate decisions that are contradicting with what is mandated by his compensation package.

DEDICATION

This dissertation is dedicated to my grandparents, Cevik and Turkan Turan, to my mom, to my aunt, and to my lovely cousin, Kerem Sukan, for without their love and support, I never would have become who I am and where I am today.

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CHAPTER 1

ESSAY 1: REVISITING THE IMPACT OF CEO INSIDE DEBT ON FIRM PAYOUT POLICY UNDER EXCESS CASH, OVERINVESTMENT RISK, AND FIRM-SPECIFIC INFORMATION ASYMMTERY CONSIDERATIONS

1.1 INTRODUCTION

In this dissertation, we address two highly debated, but still controversial topics in corporate finance. The first topic of interest is CEO compensation. Academic research has considered compensation as a contractual agreement by which CEO is bonded to corporation, and has investigated its impact on several corporate policies. Agency theory recognizes CEO compensation as a mechanism by which CEO's interests are aligned with those of shareholders' and bondholders', and agency cost of equity and agency cost of debt are reduced (Jensen and Meckling, 1976). Stocks and stock options (hereafter, inside equity) align CEO's interests with those of shareholders', and induce performance (Edmans and Liu, 2011). Pension benefits and deferred compensation (hereafter, inside debt) align CEO's interests with those of bondholders', and induce investment choice (Edmans and Liu, 2011).

Although the extant academic literature has used compensation package as a bundle that is formulated to alter CEO's behavior, there has been a growing skepticism about its effectiveness in changing the ways that CEO act. Some argue that compensation is designed by the management itself so it isn't related to firm performance (Bebchuk and Fried, 2004). Some suggest that CEO's inside equity holding has to be actively managed because it can become misaligned over time (Core and Guay, 1999). Galle and Alces (2012) argue compensating CEO with inside debt is inefficient because inside debt does not adjust as the firm changes. Lorsch and

Khurana (2010) identify two main concerns regarding CEO compensation: (1) its amount; and (2) its connectedness to firm performance. They argue that the amount by which CEO is being compensated is primarily driven by the market for executive talent. If the amount of compensation is determined in the market, based on the supply of, and the demand for executives, then compensation may not have a significant role in altering CEO's behavior anymore. Hence, the skepticism towards CEO compensation renders its impact on firm policies still an interesting topic which requires further academic research.

The second topic of interest is firm payout policy. Wealth expropriation hypothesis suggests that firms may transfer wealth from bondholders to shareholders by paying out dividends that are financed by issuing debt or forgoing investments. Jensen and Meckling (1976) offer restriction of dividends as a solution to this conflict of interest between shareholders and bondholders. Supporting this view, Kalay (1982b) finds firms hold more cash than they need due to the dividend limiting debt covenants. The subsequent increase in the market value of debt can be viewed as reverse wealth transfer (Allen and Michaely, 2003). Since inside debt aligns the interests of CEO and bondholders, then the negative association between inside debt and firm payout is in line with reverse wealth transfer, and implies that cash is preserved in order to avoid defaulting on debt obligations, or in order to make funds available to bondholders in case of bankruptcy. In fact, Srivastav, Armitage, and Hagendorff (2014) find higher proportion of inside debt in compensation package is associated with lower net bank payouts which account for dividends and share repurchases in net of new equity issues. White (2012), on the other hand, argues that CEO with inside debt has incentive to lower firm payout in order to increase the cash available for future pension payouts.

Although recent empirical evidence documents a negative relationship between CEO inside debt and firm payout, expecting a positive association is still plausible due to a few reasons. According to Jensen's (1986) free cash flow hypothesis when firms have excess cash, they are more likely to experience severe agency problems. In those firms, CEO would have motivation to spend the excess cash on risky or negative NPV projects for empire building purposes. In this case, dividend payout can be used to reduce excess cash under management's control in order to eliminate the agency conflict (Easterbrook, 1984). The negative association between inside debt and firm payout is explained by the desire to increase firm's liquidity so that available funds can be transferred to bondholders (Srivastav et al., 2014). However, reducing firm payout will not serve its purpose when excess cash is overinvested. As a result, bondholders may also prefer reducing excess cash under managerial control, especially when overinvestment is likely. After all, investing in risky or negative NPV projects will harm not only shareholders but also bondholders.

In less than perfect capital markets, management has more information about the firm than shareholders do. For instance, dividend, as a form of payout, can be used as signal which conveys information regarding firm's current and future earnings (Miller and Rock, 1985), management quality (Allen, Bernando, and Welch, 2000), and systematic risk (Grullon, Michaely, and Swaminathan, 2002; Grullon and Michaely, 2004). As a result, paying out dividends may increase the market values of both stock and bond. Handjinicolaou and Kalay (1984) provide partial support for this view by finding that decrease in dividend is associated with a decrease in bond prices. Dividends and share repurchases are not perfect substitutes (John and Williams, 1985) but share repurchases also convey good news. Although information asymmetry applies to the market as a whole, some firms can experience it to a greater extent. In

fact, Elton, Gruber, and Gultekin (1984) show that estimating some firms' growth rates are more difficult than it is for others'. Li and Zhao (2008) focus on the quality of information environment. Authors conclude that firms pay less dividends and distribute smaller amounts when the degree of firm-specific information asymmetry is high because payout can be interpreted as wealth is being transferred from bondholders to shareholders. Although firm payout is considered as good news according to signaling hypothesis, one may still argue that CEO with inside debt would reduce payout if the degree of firm-specific information asymmetry is high in order to avoid signaling wealth transfer from bondholders to shareholders. Thus, the relationship between CEO inside debt and firm payout in the presence of firm-specific information asymmetry requires further attention.

In this study, we address the theoretical contradictions regarding the relation between CEO inside debt and firm payout. Two existing studies (White, 2012; and Srivastav et al., 2014) document a negative association. We, on the other hand, argue that current evidence suffers from measurement error and sample selection biases. First, White (2012) employs pension benefits as the only measure of CEO inside debt holding, whereas most studies in this topic include deferred compensation into inside debt calculation. Thus, we suspect that considering only pension benefits may understate the portion of inside debt in CEO's total compensation. Second, Srivastav et al. (2014) conclusions are based on a sample of banks. However, employing a sample from a highly regulated industry may also lead to biased results. Bank CEO's behavior may be more influenced by the requirements imposed by regulatory agencies, or by social pressure created by the news media rather than their compensation. Furthermore, both studies ignored the impact of excess cash, overinvestment risk, and the degree of firm-specific information asymmetry on the relation between CEO inside debt holding and firm payout.

Consequently, the first purpose of this study is to address the following research question: *What is the impact of CEO inside debt on firm's net payout in the presence of excess cash, overinvestment risk, and firm-specific information asymmetry?* We make an attempt to overcome the measurement error by employing a common inside debt variable[1]. Furthermore, our sample excludes highly regulated finance and utilities sectors, and also ADRs, in order to eliminate sample selection bias. Finally, we incorporate excess cash, overinvestment risk, and the degree of firm-specific information asymmetry to our analyses. Thus, we aim to contribute to executive compensation literature by providing more robust empirical evidence.

The second purpose of this study is to identify and employ alternative firm payout measures. It is true that investors may value net payout more than they value any form of payout alone (Boudoukh, Michaely, Richardson, and Roberts, 2007). However, even if net payout is used in analyses, one may still be ignoring the role debt as source of cash, and the role of debt obligation as use of cash. Ghosh (1993) documents that CEOs raise external funds to be able continue to pay cash dividends if internal funds are not sufficient. Besides, issuing new debt can also be considered as a credible signal (Ross, 1977), and a monitoring mechanism (Jensen, 1986). Thus, incorporating new debt issue and debt obligations into net payout measure may lead to important insights regarding firm payout policy. Therefore, we suggest using an alternative payout measure, namely *cash payout*, as the sum of net cash payout to shareholders and net cash payout to bondholders. Net cash payout to bondholders consists of repurchase of debt and interest payment in net of new debt issues. As a result, the second research question we seek to

[1] CEO leverage is a common measure of inside debt (Sundaram and Yermack, 2007; Edmans and Liu, 2011; Cassell et al., 2012). In this study, we will employ CEO relative leverage in our main analyses. There are three alternative inside debt measures that are suggested by previous research: an indicator variable which is equal to one if CEO relative leverage is greater one, CEO relative incentive ratio, and an indicator variable which is equal to one if CEO relative incentive ratio is greater one (Cassell et al.,2012).

answer in this study is: *What is the impact of CEO inside debt holding on firm's cash payout in the presence of excess cash, overinvestment risk, and firm-specific information asymmetry?* The rest of the paper is as follows. Section 1.2 reviews the related compensation and payout literature. Section 1.3 motivates and formally states the hypotheses. Section 1.4 presents the sample, and defines the variables. Section 1.5 explains the analytical approach. Section 1.6 reports the results of analyses. Section 1.7 discusses limitations. Finally, section 1.8 provides concluding remarks.

1.2 THEORETICAL BACKGROUND

CEO inside debt

In a seminal piece, Jensen and Meckling (1976) (hereafter, JM) discuss ownership structure and managerial behavior in the corporate form of business organization, and introduce the agency concept to finance literature. Corporation is defined as a separate legal entity where manager is an agent who is expected to act in the best interest of shareholders who are the owners of the firm. Authors argue that manager does not bear the full cost of his decisions, so he is likely to deviate from serving to shareholders in order to maximize his personal gains. This possible conflict of interest between manager and shareholders is called the agency problem. JM offer compensation package as a remedy for this problem. They suggest that adding stock and stock options (inside equity) to compensation package would align manager's and shareholders' interests. Although manager with a fraction of ownership in the firm would be motivated adopt corporate policies that would favor shareholders, these policies may hurt other stakeholders such as bondholders. As a result, JM suggest that adding debt-like instruments to the compensation package may align manager's and bondholders' interests. This is the first time that debt-like compensation appeared in corporate finance literature. John and John (1993) argue compensation

package should be designed to eliminate both conflicts, between manager and shareholders, and between shareholders and bondholders. Edmans and Liu (2011) state equity incentives induce effort whereas debt compensation induces investment choice. Authors suggest that this tradeoff between effort and investment choice requires designing a compensation package with optimal ratio of inside debt to inside equity. They argue inside debt is an efficient tool for eliminating the expropriation of creditors, and it can also improve effort when bankruptcy is likely.

After JM introduced agency problem and the idea of designing the compensation package to mitigate it, researchers had extensively examined inside equity and its implications. However, using debt-like instruments in an empirical setting has started almost three decades after JM's propositions. Sundaram and Yermack (2007) show that pension benefits are a significant portion of CEO's total compensation, and its importance is increasing with CEO's age. Authors argue that inside debt component of compensation package has important implications but has been overlooked. Empirical evidence reports that pension benefits are associated with lower probability of debt default, lower leverage, and fewer risky investments. Sundaram and Yermack (2007) employ CEO pension benefits as inside debt measure due to lack of deferred compensation data, and define CEO leverage as ratio of inside debt to inside equity. Results show that CEOs are more conservative when CEO leverage exceeds firm leverage. Similarly, Cheng and Warfield (2005) argue inside equity imposes firm risk on CEO, whereas inside debt creates personally risk-averse CEO. Gerakos (2007) finds inside debt is positively related with firm credit rating, and negatively related with default risk.

Overall, CEOs with high inside debt are found to be associated with conservative corporate policies. Focusing on banking industry, Bolton, Mehran, and Shapiro (2010) show banks with CEOs holding large inside debt have narrower credit default swap spreads. Tung and

Wang (2011) find inside debt is associated with lower bank idiosyncratic risk, and fewer risky investments such as mortgage-backed securities. Similarly, Bennett, Guntay, and Unal (2012) document inside debt is negatively related with default risk during the crisis. Belkhir and Boubaker (2013) find banks hedge more using interest rate derivatives when their CEOs hold inside debt. CEO's larger inside debt is also associated with lower bank loan spreads, less collateral requirement (Wang, Xie, and Xin, 2010), lower incidence of bond covenants (Chava, Kumar, and Warga, 2010), fewer restrictive covenants, and lower cost of debt financing (Anantharaman, Fang, and Gong, 2013).

Eisdorfer, Giaccotto, and White (2013) have a different approach when examining inside debt. They focus on the gap between CEO leverage and firm leverage, and find that larger gap is associated with more investment distortion. They argue more debt compensation causes underinvestment, more equity compensation causes overinvestment, and smaller gap is better. Liu, Mauer, and Zhang (2014) show CEOs with higher inside debt holding are risk-averse, and they hold more cash which can be a sign of underinvestment. Cassell, Huang, Manuel, and Stuart (2012) document a negative association between inside debt and volatility of future stock returns, R&D expenditures, and financial leverage, and a positive association with inside debt and diversifying acquisitions and asset liquidity. Furthermore, White (2012) argues CEOs with inside debt would prefer paying less dividends in order create funds for their pension payouts. Study documents a negative association between pension holdings and dividend yields, and also dividend payout ratios.

Wei and Yermack (2011) find higher inside debt reduces risk, transfers value from equity to debt, and destroys overall enterprise value. They document positive bond price and negative stock price reaction to inside debt, and a volatility decrease for both bonds and stocks. Phan

(2014) focuses on inside debt in relation to M&A activities, and provides consistent results. This study shows that relative CEO leverage, which calculated as CEO leverage divided by firm leverage, is negatively related with M&A propensity, cash spent on M&A, financial leverage, increase in post-M&A firm risk, and abnormal stock returns around M&A announcement. On the other hand, relative CEO leverage is positively related with abnormal bond returns around M&A announcement, and long-term operating performance. Finally, He (2015) documents inside debt is associated with lower abnormal accruals, higher accruals quality, lower likelihood of an earnings misstatement, and lower incident of beating an earnings benchmark. Author concludes that CEO with inside debt holding adopts more conservative accounting practices in order to prevent risky and value-destroying investments. As it is discussed above in details, empirical evidence consistently concludes that CEO, whose compensation relies more on inside debt, is associated with conservative corporate financial policies which favor bondholders. Thus, inside debt is found to be an effective incentive alignment tool.

Firm payout policy

Firm payout policy has been examined extensively throughout the years. The review of entire payout literature is beyond the scope of this current study. Thus, we will focus only on its relation to the shareholder-bondholder conflict. As it is discussed in more details earlier, compensation package consists of inside equity and inside debt components. CEO, who has equity incentives, is expected to adopt firm policies that will favor shareholders, payout policy being one of them.

Firms distribute substantial portion of their earnings (Allen and Michaely, 2003) mostly in form of dividends and share repurchases. Dividend payout is a voluntary strategic decision (Kato, Loewenstein, Tsai, 1997) and a long term commitment (Lintner, 1956) when it is not

required by law. In less than perfect capital markets with information asymmetries, dividend payout can be used as a signal which shows the firm has good future prospects (Miller and Rock, 1985). Sure enough, market reacts positively to dividend increase announcements (Bhattacharya, 1979), and negatively to dividend decrease announcements (Michaely, Thaler, and Womack, 1995). Brav, Graham, Harvey, and Michaely (2005) point out that managers are reluctant to reduce dividends due to a large perceived penalty. In fact, some executives may distribute dividends even if this decision does not reflect the true financial condition of their firms (Daniel, Denis, and Naveen, 2008). In addition to being an information signal, dividends can also be considered as means by which wealth is transferred from bondholders to shareholders. While dividend payments provide shareholders with liquidity, they would require firm to use external financing in order to undertake investment projects. Similarly, Ghosh (1993) argues that regret-averse manager would be willing to raise external financing in order to continue paying dividends instead of reducing or omitting dividends. Since equity financing would dilute existing shareholders' ownership in the firm, firm would prefer debt financing which would transfer risk from shareholder to bondholder.

Share repurchases, unlike dividends, are not long term commitments. Although dividends and share repurchases are not perfect substitutes (John and Williams, 1985), market reacts to both in a similar fashion. There is a positive market reaction to increase in share repurchases (Bhattacharya, 1979), and a negative market reaction to decrease in share repurchases (Ikenberry, Lakonishok, Vermaelen, 1995). Share repurchases are especially important because overvalued firms with poor management cannot repurchase shares to mimic undervalued firms with good management (Vermaelen, 1984). In fact, there is decline in the number of dividend paying firms (Fama and French, 2001; DeAngelo, DeAngelo, and Stulz, 2006), and an increasing

trend for substituting repurchases for dividends (Grullon and Michaely, 2002; Skinner, 2008). Overall, shareholders enjoy payout both in form of dividends and share repurchases.

Bondholders, on the other hand, are skeptical about firm payouts. For instance, they prefer monitoring dividends in order to maintain cash reserves so that firm could meet its debt obligations in the future. In fact, bondholders sometimes restrict dividend payments through bond covenants (Kalay, 1982b). CEO's inside debt holding aligns his interest with those of bondholders. Since CEO is expected to adopt firm policies that will favor bondholders, inside debt is expected to be associated with lower payouts. In fact, Srivastav et al. (2014) find higher inside debt is associated with lower bank net payouts. Furthermore, CEO, whose personal wealth is tied to firm's future cash flows due to having inside debt in compensation package, may lower payouts in order to preserve funds to redeem his pension benefits in the future (White, 2012).

Nevertheless, reducing payout does not necessarily mean that cash will be preserved in the firm. Free cash flow hypothesis suggests that cash may as well be used to finance negative NPV projects for empire building purposes (Jensen, 1986). Similarly, Francis, Hasan, John, and Song (2011) show that there is a significant decrease in dividend payout and propensity to pay dividends following antitakeover laws, which are considered as setbacks to corporate governance. They argue that excess cash is not used for investments, but it is used to increase compensation (Bertrand and Mullainathan, 1999b) and reduce firm leverage (Garvey and Hanka, 1999). Easterbrook (1984) suggests that dividends can be considered as a governance mechanism. When excess cash is reduced by paying out dividends, executives would have to raise cash through external financing which would eventually increase the monitoring of capital markets (Allen, Bernardo, and Welch, 2000). Furthermore, lower payout is associated with higher systematic risk (Fama and French, 2002; Grullon and Michaely, 2004). Therefore,

although bondholders are expected to prefer less payout in order to maintain excess cash to reduce default risk, they can still benefit from increasing payout since excess cash exacerbates agency problem which may put the firm in greater default risk in the future. Hence, establishing the relationship between CEO inside debt and firm payout requires further examination of problems associated with excess cash.

1.3 HYPOTHESES DEVELOPMENT

Impact of excess cash

To our knowledge, there are two studies investigating the relation between CEO inside debt and firm payout. White (2012) argues that CEO would be less willing be pay dividends in order to make funds available for their pension payouts. Srivastav et al. (2014) document that CEO inside debt is negatively associated with payout variables. Authors conclude that inside debt prevents bank CEOs to payout cash to shareholders and to leave bondholders with less liquid, risky assets. Their result is more profound for TARP banks which were exposed to higher government regulations and public attention. Srivastav et al. (2014) also find that banks with higher (same period) cash holdings (calculated as the ratio of total cash to total assets) do not decrease payouts as much.

Empirical evidence that we discussed above points out that the main reason for reducing payout is to preserve cash in order to secure pension payouts, or to maintain liquid assets for future debt obligations. Thus, cash holding is an important determinant of firm's payout policy. Although Srivastav et al. (2014) study controls for same period cash holdings, it does not incorporate the impact of excess cash on firm payout decision. We suggest that if CEO with inside debt reduces payout in order to preserve cash in the firm, they should be reluctant to do so

when firm already has excess cash in the prior year. Following Harford, Mansi, and Maxwell (2008), and Asem and Alam (2015), we employ the modified version of the Opler, Pinkowitz, Stulz, and Williamson (1999) model to calculate excess cash. Specifically, we argue that CEO with inside debt is less willing to reduce payout at time *t* if his firm has larger excess cash at time *t-1*. In fact, he may even increase payouts in order to reduce excess cash. Thus, we formulate the following hypothesis to be empirically tested:

Hypothesis 1a: The negative relationship between CEO inside debt and firm net payout is weaker for increasing levels of prior excess cash.

Impact of overinvestment risk

Researcher should also recognize the agency problem associated with excess cash. As Jensen (1986) suggests, excess cash under managerial control can be used for empire building purposes, or even for increasing compensation (Bertrand and Mullainathan, 1999b). For instance, Harford, Mansi, and Maxwell (2008) find that firms with weak corporate governance hold less excess cash because they use those funds to increase capital expenditures and finance acquisitions. Thus, having excess cash doesn't mean that it will be preserved in the firm as bondholders would prefer. It may as well be overinvested. In this case, we expect bondholders to prefer reducing excess cash by paying out when there is overinvestment risk. We use the Richardson (2006) model to measure overinvestment, which defined as the difference between actual and expected capital investment at time *t*-1. The formal hypothesis to be tested is as follows:

Hypothesis 2a: There is a positive relationship between CEO inside debt and firm net payout if firm with excess cash is under overinvestment risk.

Impact of firm-specific information asymmetry

Miller and Modigliani's (1961) theory of irrelevance of dividends has been criticized excessively because markets are less than perfect. Among several imperfections, information asymmetry is an important determinant of payout policy. CEOs may use dividends to convey firm-related information regarding future earnings (Miller and Rock, 1985), disciplined management (Allen et al., 2000), and lower systematic risk (Grullon et al., 2002; Grullon and Michaely, 2004). Furthermore, CEO with inside equity is expected to payout larger amounts since it will be easier to transfer wealth from bondholders to shareholders when information environment is not transparent (Xu, 2013). Consistently, CEO with inside debt can be expected to payout smaller amounts because larger payout may signal bondholders that they are expropriated. On the contrary, firms do not have to pay dividends when information asymmetry is not severe or existent. In fact, Dewenter and Warther (1998) argue that Japanese firms face less information asymmetry, experience less severe agency problems than U.S. firms do, and are more likely to omit dividends because stock price reactions to dividend policy changes are smaller. Similarly, Hail, Tahoun, and Wang (2014) find firms are less likely to pay or increase dividends, and more likely to cut or reduce dividends following an improvement in information environment.

Nevertheless, each firm may experience information asymmetry to a different extent (Elton, Gruber, and Gultekin, 1984). Information asymmetry that is specific to a firm may have different impact on its payout than information asymmetry in overall economy or industry does (Li and Zhao, 2008). For instance, corporate outsiders may be aware of the economy- or industry-specific information asymmetry which may pressure insiders to convey information. However, when information asymmetry is specific to the firm, it may be unknown to outsiders.

As a result, insiders may not be under such pressure and may be reluctant to send signals to outsiders by paying out since dividends are voluntary. Consistent with this view and contradicting with the signaling view of dividends, Li and Zhao (2008) find that firms pay less dividends and distribute smaller amounts when the degree of firm-specific information asymmetry is high. Evidence suggests that the positive relationship between CEO inside equity and firm payout should be weaker for higher degrees of firm-specific information asymmetry.

On the other hand, the negative relationship between CEO inside debt and firm payout can be weaker or stronger for higher degrees of firm-specific information asymmetry. For example, one may argue that the negative relationship should be weaker because bondholders would also not notice the wealth expropriation. As a result, managers would be less willing to reduce or omit dividends. However, we expect the negative relationship to be stronger for higher degrees of firm-specific information asymmetry because although dividends are voluntary decisions, debt covenants provide bondholders with more control rights (Nikolaev, 2010), and limit dividend-based expropriation (Douglas, 2003). Thus, we argue that bondholders have information advantage over shareholders because debt covenants are legal obligations, and we propose the following hypothesis:

Hypothesis 3a: The negative relationship between CEO inside debt and firm payout is stronger for higher degrees of firm-specific information asymmetry.

The role of debt financing: alternative payout variable

Issuing debt is an alternative source of external financing which comes with a legal obligation, interest payment. Thus, payouts include dividend payments to shareholders and interest payments to bondholders (Leland, 1994) that both can be considered as financial

commitments (Ravid and Sarig, 1991). Although the role of debt has been overlooked in the payout literature, there are some emerging theories emphasizing its importance. For instance, Lambrecht and Myers (2012) developed a dynamic framework in where managers smooth payouts in order to smooth rents that they extract from the firm. Furthermore, they argue when income declines, managers cannot maintain their rents by cutting payouts. In this case, managers borrow and maintain both rents and payouts. Therefore, if payout measures do not control for the fact that managers may use debt financing in order to distribute cash to shareholders, they can only be noisy measures.

As Jensen (1986) argues debt can also be considered an external monitoring mechanism in order to reduce the agency cost, and it may replace dividends. Since dividends are residual income, they may not be as efficient as debt when manager's self-interest seeking overspending has to be reduced (Chang, 1993). Douglas (2002) develops an agency model of the firm where managers can extract more rents when the information environment is complex. Author considers debt and dividend payment as methods to reduce excess cash, and suggests firm benefits more from an optimal combination of debt and dividend commitments. Furthermore, DeBoeuf (2010) argues that management should not commit to paying regular dividends to common stock holders unless it expects abundant excess cash in the long-term. Author suggests repurchase of debt as an alternative use of excess cash. Larrain and Yogo (2008) point out the importance of debt and debt obligation in firm's total payout. They argue dividend payout is a good measure of cash flow for an individual investor, but net repurchases of equity and debt are cash outflows from the entire corporate sector that cannot be invested. As a result, study employs a payout measure which is calculated as the sum of dividends, stock repurchases, interest expense and reduction in debt, minus the sum of new equity and debt issues.

CEO compensation literature employs payout measures in order to examine whether risk-averse CEO would increase cash reserves or not. However, existing studies'[2] conclusions may be suffering from measurement error biases because they fail to incorporate debt and debt obligation to payout measures. We follow Larrain and Yogo (2008) in an attempt to correct this possible measurement error. We employ *cash payout* measure which is calculated as the sum of net payout to shareholders and net payout to bondholders. Net payout to shareholders is the sum of dividend payments and share repurchases minus new equity issues. Net payout to bondholders is the repurchase of debt plus interest payments, minus new debt issues. As a result, formal hypotheses to be tested is as follows:

Hypothesis 1b: The negative relationship between CEO inside debt and firm cash payout is weaker for increasing levels of prior excess cash.

Hypothesis 2b: There is a positive relationship between CEO inside debt and firm cash payout if firm with excess cash is under overinvestment risk.

Hypothesis 3b: The negative relationship between CEO inside debt and firm payout is stronger for higher degrees of firm-specific information asymmetry.

1.4 SAMPLE AND VARIABLE DEFINITIONS

Sample

In this study, we employ a sample of U.S. public firms to test the formal hypotheses that are stated in the previous section. In order to isolate the impact of CEO inside debt holding on CEO's payout choice, we exclude ADRs, firms operating in utilities sector (SIC 4900-4999) and

[2] White (2012) and Srivastav et al. (2014).

financial sector (SIC 6000-6999). U.S. Securities and Exchange Commission (SEC) increased disclosure requirements for all U.S. public firms in 2006. As a result, U.S. public firms started to disclose detailed information about executive compensation only after 2006. Therefore, our sample covers nine-year period from 2007 to 2015. CEO compensation data is readily available at ExecuComp database. The initial sample with complete CEO compensation data consists of 10,111 CEO-year observations[3]. We, later, match this data with accounting information retrieved from Compustat.[4]

Variable definitions

CEO inside debt

The main purpose of this study is to examine the impact of CEO inside debt on firm payout policy. In order to test our hypotheses, we employ the most common CEO inside debt measure following the existing literature. Sundaram and Yermack (2007) defines CEO leverage as the ratio of CEO inside debt to CEO inside equity. We follow Edmans and Liu (2011), Cassell et al. (2012), and Phan (2014), and calculate *CEO relative leverage* as the ratio of CEO leverage to firm leverage. CEO leverage is calculated by dividing CEO inside debt, the sum of the present value of accumulated pension benefits and deferred compensation as reported in ExecuComp database, by CEO inside equity which is the sum of the value of CEO stock and option holdings. The value of stock is calculated as the number of common stock and restricted stock held by the

[3] The final sample for each hypothesis testing requires complete data for payout variables, excess cash, overinvestment risk, and firm-specific information asymmetry. Thus, the number of observations in each final sample for each hypothesis testing is different, and less than 10,111 CEO-year observations.

[4] As it is explained in more details in variable definitions section, measuring excess cash, overinvestment risk, and firm-specific information asymmetry require accounting data from earlier than 2007. For instance, excess cash measure includes industry sigma components that requires a 20-year rolling window. Firm-specific information asymmetry measure requires a 5-year rolling window. Finally, we employ lagged variables that require data at least starting from 2006.

CEO multiplied by fiscal year-end stock price. In order to calculate option value, we follow the methodologies developed by Black and Scholes (1973), Merton (1973), and Core and Guay (2002). Option value calculation is explained in details in Appendix 1.1.

Firm payout

Since our main purpose is to reexamine the impact of CEO inside debt holding on firm payout policy, we first employ *net payout* measure to test our main hypotheses in order to check the validity of Srivastav et al. (2014) conclusion outside the bank context. Thus, our first payout measure is calculated the sum of common stock and preferred stock dividends, and repurchase of common stock and preferred stock in net of new equity issues. We, then, incorporate the role of debt financing in firm payout policy. Following Larrain and Yogo (2008), we introduce *cash payout* measure which is calculated as the sum of net payout to shareholders and net payout to bondholders. Net payout to shareholders is the net payout measure defined above. Net cash payout to bondholders is the sum of debt repurchase and interest payment in net of new debt issues. Finally, we use these two payout measures to calculate our dependent variables: (1) *payout-to-EBITDA ratio*; (2) *payout-to-total assets ratio*, and (3) *Δ payout*. We do not employ payout yield, nor do we scale payout by the market capitalization, since stock price fluctuates due to many reasons (Grinstein and Michaely, 2005).

Excess cash

The finance literature offers several measures of cash holding such as the natural log of cash and cash equivalents to total sales (Harford et al., 2008), and the ratio of cash and marketable securities to total assets net of cash and marketable securities (Opler, Pinkowitz, Stulz,, and Williamson, 1999; Harford et al., 2008). Following Asem and Alam (2015) and

Harford et al. (2008), we will employ a modified version of Opler et al. (1999). *EXCESS* is defined as the residuals from the following regression as the excess cash:

$$CASH_{i,t} = \alpha_0 + \alpha_i + \alpha_t + \beta_1 CF_{i,t} + \beta_2 Leverage_{i,t} + \beta_3 M/B_{i,t} + \beta_4 Size_{i,t} + \beta_5 NWC_{i,t} + \beta_6 CAPEX_{i,t} + \beta_7 R\&D_{i,t} + \beta_8 INDSIG_{i,t} + \varepsilon_{i,t}$$

CASH is the natural logarithm of cash and marketable securities that are scaled by net assets. *CF* is the cash flow ratio that is calculated as the operating income net of dividends scaled by net assets. *Leverage* is the firm leverage that is calculated as total debt scaled by net assets. *M/B* is the market-to-book ratio that is calculated as the market value of the firm's equity divided by the book value of the firm's equity. *Size* is the natural logarithm of the total assets. *NWC* is the current assets net of current liabilities and cash scaled by net assets. *CAPEX* is the capital expenditures scaled by net assets. *R&D* is the research and development expenditures scaled by sales. Finally, INDSIG is the industry sigma which is the mean of standard deviation of cash flow scaled by assets over 20 years for firms in the same 2-digit SIC code. The regression is estimated using industry and year fixed effects.

Overinvestment risk

Finance literature mostly relies on Tobin's Q ratio as a measure of overinvestment (Land and Litzenberger, 1989). Although this ratio can be used to measure managerial quality, it is a noisy proxy because it also measures growth opportunities (Denis, Denis, and Sarin, 1994). However, we employ an alternative variable to measure overinvestment that is developed by Richardson (2006). Similar to Lei, Mingchao, Wang, and Yu (2014), we employ Richardson (2006) model, and estimate the following model in order to calculate the expected level of investment:

$$INV_{i,t} = \alpha_0 + \beta_1 Growth_{i,t-1} + \beta_2 Leverage_{i,t-1} + \beta_3 Cash_{i,t-1} + \beta_4 Age_{i,t-1} + \beta_5 Size_{i,t-1} + \beta_6 Return_{i,t-1} + \beta_7 INV_{i,t-1} + \beta_8 YearDummy_{i,t} + \beta_9 IndustryDummy_{i,t} + \varepsilon_{i,t}$$

INV is defined as the sum of new investment and investment maintenance, where new investment is defined as the sum of capital expenditures, research and development expense, and acquisitions minus the sale of plant, property, and equipment. Investment maintenance is the depreciation and amortization expense. *Growth* is the ratio of the market value of firm to the book value of firm. *Leverage* is defined as the total debt scaled by total assets. *Cash* is the cash holding that is calculated as the sum of cash and short term investment scaled by total assets. *Age* is the number of years that the firm has been listed on CAMPUSTAT. *Return* is measured as the change in the market value of the firm over the year prior to the investment. The error term is the portion of the investment remained unexplained. Thereby, when $\varepsilon_{i,t}$ is positive (negative), it is accepted as a sign of overinvestment (underinvestment). We define an indicator variable, *OVER*, that takes value of 1 if the residuals of the regression, $\varepsilon_{i,t}$, are positive.

Firm-specific information asymmetry

Extant literature on information asymmetry primarily relies on two proxies; *analyst earnings forecast error* and *dispersion in analyst earnings forecast*. Nevertheless, in spite of being heavily used, these two proxies fail to clearly measure the firm-specific information asymmetry between corporate insiders and outside investors. For instance, Lee and Masulis (2009) argue that analyst earnings forecasts can be affected by several factors such as analyst herding, number and quality of analysts following a stock. Instead, authors suggest that accounting information quality is a cleaner measure of information asymmetry because it is

directly related to the firm-specific information available to outside investors (Lee and Masulis, 2009 pg. 444). In this, we employ Dechow and Dichev (2002) model that is modified by Lee and Masulis (2009) (hereafter FDD) in order to examine the influence of firm-specific information asymmetry.

Dechow and Dichev (2002) estimate the accruals quality with the following model:

$$TACC_{i,t} = \alpha_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \varepsilon_{i,t}$$

TACC, total current accrual, is calculated as the change in current assets minus the change in current liabilities minus the change in cash plus the change in debt in current liabilities. Changes all items are from year *t-1* to year *t*, CFO is the cash flow from operations that is calculated as earnings before extraordinary items minus total accruals. Total accrual is total current accrual net of depreciation and amortization. All variables are scaled by the average of total assets of year *t-1* and *t*. Later, McNichols (2002) adds the changes in sales as well as plant, property, and equipment to this model arguing that these two variables are important in forming expectations about current accruals. Resulting model (hereafter MDD) is estimated by the following equation:

$$TACC_{i,t} = \alpha_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \beta_4 \Delta Sales_{i,t} + \beta_5 PPE_{i,t} + \varepsilon_{i,t}$$

Changes, again, are from year *t-1* to year *t*, and both sales and plant, property, and equipment scaled by the average of total assets of year *t-1* and *t*. Estimation of MDD requires two steps. First, model is estimated for each of the Fama and French (1997) industry groups having at least 20 firms with data available for each of the five years from *t-4* to *t*. Later, the standard deviation residuals of firm *i*'s cross-sectional regressions across the five years. Larger standard deviation of residuals implies greater portion of current accruals left unexplained, thus

lower accruals quality and higher firm-specific information asymmetry. Lee and Masulis (2009), later, further modify DD and MDD models in order to control for the time invariant effects of some unobservable firm characteristics, as well as to mitigate the possible omitted variable bias. Resulting FDD model is the estimation of MDD model with a single panel regression for the entire sample, where the standard deviation of the residuals over a five-year rolling window is the accruals quality, and our firm-specific information asymmetry measure, namely *INFO*. Table 1.1 presents the descriptive statistics of all of the variables employed in our analyses.

[Insert Table 1.1 about here]

1.5 ANALYTICAL APPROACH

The main CEO inside debt variable in our analyses is *CEO relative leverage*. In order to control for non-linear effects, we normalize the variable by using the natural logarithm. Therefore, CEO relative leverage is defined as the natural logarithm of one plus CEO relative leverage ratio. Additionally, we also use the lagged version in order to control for possible endogeneity. We, then, follow Srivastav et al. (2014) and control for several factors that are found to be associated with firm payout policy. We use *firm size* that is calculated as the natural logarithm of total assets, *firm age* that is the natural log of the number of years that firm has been included in Compustat plus one, *firm growth* that is the firm market to book ratio, *firm leverage* is defined as the total debt scaled by total assets, *CEO age* that is the natural logarithm of the age of CEO at year *t* plus 1. Finally, we add the sensitivity of CEO wealth to stock price for *CEO delta,* and sensitivity of CEO wealth to stock volatility for *CEO vega*[5]. Similarly, *CEO delta* and *CEO vega* variables are also lagged. Table 1.2 presents the correlation matrix.

[5] See Appendix 1.2 for CEO delta and CEO vega calculations.

[Insert Table 1.2 about here]

Employing pooled OLS regression with industry and year fixed effects, we estimate the following regression to test our first hypothesis:

$$Firm\ Payout_{i,t} = \beta_0 + \beta_1\ CEO\ Relative\ Leverage_{i,t-1} + \beta_2 EXCESS_{i,t-1} + \beta_3 CEO\ Relative\ Leverage_{i,t-1} x\ EXCESS_{i,t-1} + \beta_4 Firm\ Size_{i,t} + \beta_5 Firm\ Age_{i,t} + \beta_6 Firm\ Growth_{i,t} + \beta_7 Firm\ Leverage_{i,t} + \beta_8 CEO\ Age_{i,t} + \beta_9 CEO\ Delta_{i,t-1} + \beta_{10} CEO\ Vega_{i,t-1} + \varepsilon_t \quad \text{(Eq. 2.1)}$$

Later, we add the overinvestment risk to our model in order to test our second hypothesis. Specifically, we investigate whether the negative relationship between CEO inside debt and firm payout holds when firm with excess cash is under overinvestment risk. In order to test this prediction, we estimate the following regression:

$$Firm\ Payout_{i,t} = \beta_0 + \beta_1\ CEO\ Relative\ Leverage_{i,t-1} + \beta_2 EXCESS_{i,t-1} + \beta_3 OVER_{i,t-1} + \beta_4 CEO\ Relative\ Leverage_{i,t-1} x\ EXCESS_{i,t-1} + \beta_5 CEO\ Relative\ Leverage_{i,t-1} x\ OVER_{i,t-1} + \beta_6 CEO\ Relative\ Leverage_{i,t-1} x\ EXCESS_{i,t-1} x\ OVER_{i,t-1} + \beta_7 Firm\ Size_{i,t} + \beta_8 Firm\ Age_{i,t} + \beta_9 Firm\ Growth_{i,t} + \beta_{10} Firm\ Leverage_{i,t} + \beta_{11} CEO\ Age_{i,t} + \beta_{12} CEO\ Delta_{i,t-1} + \beta_{13} CEO\ Vega_{i,t-1} + \varepsilon_t \quad \text{(Eq. 2.2)}$$

Finally, we investigate whether firm specific information asymmetry has an influence on the negative relationship between CEO inside debt and firm payout. We estimate the following regression in order to test our third hypothesis:

$$
\begin{aligned}
&Firm\ Payout_{i,t} \\
&\quad = \beta_0 + \beta_1\ CEO\ Relative\ Leverage_{i,t-1} + \beta_2 INFO_{i,t-1} \\
&\quad + \beta_3 CEO\ Relative\ Leverage_{i,t-1} x\ INFO_{i,t-1} + \beta_4 Firm\ Size_{i,t} \\
&\quad + \beta_5 Firm\ Age_{i,t} + \beta_6 Firm\ Growth_{i,t} + \beta_7 Firm\ Leverage_{i,t} \\
&\quad + \beta_8 CEO\ Age_{i,t} + \beta_9 CEO\ Delta_{i,t-1} + \beta_{10} CEO\ Vega_{i,t-1} + \varepsilon_t
\end{aligned}
$$

(Eq. 2.3)

1.6 RESULTS

In our study, we argue that the negative relationship between CEO inside debt and firm payout (Srivastav et al., 2014) can be influenced by firm excess cash, overinvestment risk, and firm specific information asymmetry. The first hypothesis predicts that CEO with inside debt is reluctant to reduce firm payout when firm has increasing levels of excess cash in the last period. The estimation results of the first regression equation are presented in table 1.3 for six firm payout variables.

[Insert Table 1.3 about here]

The results show that CEO inside debt is positively related with net payout scaled by total assets and with the change in net payout, and negatively related to cash payout scaled by total assets and with the change in cash payout. These results support the negative relationship between CEO inside debt and firm payout documented by the previous literature. Firm's prior

year excess cash does not have significant influence on the relationship between CEO inside debt and firm payout. The interaction of CEO relative leverage and firm excess cash is significant only at ten percent and only for two payout variables, cash payout scaled by total assets and the change in cash payout. Thus, we find weak evidence for CEO with inside debt increases cash payout when firm has prior excess cash. Next, we investigate whether excess cash has an impact when firm is under overinvestment risk. The results of the second regression equation, presented in table 1.4, show that overinvestment risk also does not have significant impact on firm payout policy in spite of having excess cash. Specifically, CEO with inside debt continues to reduce payout in order to align with bondholders' interest even if the firm has excess cash in the last period, and there is a possibility that the excess cash be overinvested.

[Insert Table 1.4 about here]

Finally, we examine the impact of firm-specific information asymmetry on the negative relationship between CEO inside debt and firm payout policy. The third hypothesis predicts that the negative relationship between CEO inside debt and firm payout should be stronger when the firm specific information asymmetry is high. The results from the estimation of the third regression equation are presented in table 1.5. CEO with inside debt distribute larger payouts when the firm specific information asymmetry is high. This finding support the signaling hypothesis. Although bondholders have more monitoring power and information advantage over shareholders due to debt covenants, CEO with inside debt increases payout in the presence of firm-specific information asymmetry in order to convey information.

[Insert Table 1.5 about here]

1.7 LIMITATIONS

In this study, we employ a common measure of CEO inside debt holding. Nevertheless, existing research offers three more proxies. *CEO relative incentive* which is developed by Wei and Yermack (2011) is calculated as the ratio of the marginal change in the value of CEO inside debt to the marginal change in the value of CEO inside equity divided by the ratio of the marginal change in firm debt to the marginal change in firm equity. There are also two indicator variables that take value of 1 if CEO relative leverage and CEO relative incentive exceeds 1. Thus, robustness of our results can be improved by employing these alternative measures. In our analyses, we employ our control variables in order to match Srivastav et al. (2014) study. However, future researchers should also control for the insider ownership and institutional ownership. Since our sample period covers the U.S. Great Recession, firm financial distress can be another important consideration while examining firm payout policy. Finally, our results point out inconsistencies among the payout variables employed. The reasons behind these inconsistencies should be investigated in order to employ the most explanatory payout variable.

1.8 CONCLUSIONS

This study makes an attempt to shed more light on a highly debated topic, the firm payout policy in relation to CEO inside debt holding. In spite of finding results that are contradicting with our hypotheses, we still arrive at important conclusions. Predicting a negative relationship between CEO inside debt and firm payout relies on the fact that CEO's interests would be aligned with those of bondholders', thus, he would increase firm's cash holding in order to reduce the risk of defaulting on debt obligations. Large cash holding under managerial control, on the other hand, increases the agency cost of free cash flow (Jensen, 1986). Thus, we expect CEOs, regardless of whose interests' they are aligned with, to increase firm payout if firm has excess cash in the last period. Our findings show that CEO continues to payout even if the firm

already has excess cash, and is under overinvestment risk. These findings suggest that the main motivation to reduce payout is not due to incentive alignment with bondholders, and to preserve cash in the firm. Instead, these findings support the argument that CEO with inside debt is expected to increase cash holding in order to be able to collect his pension benefits when retiring. Our findings for the third hypothesis provide supporting evidence for this view. Specifically, CEO still conveys information to shareholders by increasing payout when the firm specific information asymmetry is high, even if his interests are aligned with those of bondholders'.

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Table 1.1. Descriptive Statistics for full sample. The sample period is 2007-2015

Variable	N	Mean	STD	25th percentile	Median	75th percentile
Net payout / Total assets	12,083	-0.0118	0.1716	-0.0086	-0.0002	0.0122
Cash payout / Total assets	10,559	-0.0264	0.2252	-0.0293	0.0076	0.0401
Net payout / EBIT	12,081	-0.2733	17.9803	-0.0742	0.0000	0.1396
Cash payout / EBIT	10,558	-0.5315	33.6862	-0.3101	0.0840	0.4602
Change in net payout	11,984	-0.0055	0.1715	-0.0028	0.0006	0.0063
Change in cash payout	10,079	-0.0179	0.2370	-0.0464	-0.0002	0.0379
CEO relative leverage	10,111	0.5602	0.9773	0.0000	0.1345	0.7645
CEO relative incentive	10,111	4.1528	3.5691	0.0000	5.0585	7.0611
EXCESS	12,408	-0.0193	0.1952	-0.1197	-0.0314	0.0661
OVER	7,571	0.0536	0.1996	-0.0514	0.0571	0.1520
INFO	10,249	0.0564	0.0571	0.0212	0.0383	0.0710
Firm size	12,424	7.4758	1.6237	6.3243	7.3671	8.4939
Firm age	12,427	3.1641	0.6231	2.7081	3.0910	3.7136
Firm growth	12,414	1.9930	1.3002	1.2252	1.6184	2.2975
Firm leverage	12,364	0.2158	0.2203	0.0320	0.1893	0.3193
CEO age	12,348	4.0317	0.1303	3.9512	4.0431	4.1109
CEO delta	12,378	36.0015	2946.2400	0.0009	0.0148	0.0415
CEO vega	12,378	9.3457	737.9206	0.0004	0.0094	0.0224

Table 1.2. Correlation Matrix

N	VARIABLE	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	Net payout / Total assets	1	0.7578	0.0125	0.0227	0.6382	0.8709	0.0737	0.1339	-0.123	0.0065	-0.079	-0.002	-0.002	-0.093	0.1178	0.0623	0.1601	0.0690
			<.0001	0.1694	0.0193	<.0001	<.0001	<.0001	<.0001	<.0001	0.5701	<.0001	0.819	0.7459	<.0001	<.0001	<.0001	<.0001	<.0001
2	Cash payout / Total assets	0.7578	1	0.0315	0.1167	0.8653	0.6524	0.0898	0.1288	-0.101	-0.213	-0.075	-0.025	-0.032	-0.089	0.0776	0.0610	0.1644	-0.031
		<.0001		0.0012	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.0088	0.0007	<.0001	<.0001	<.0001	<.0001	0.0015
3	Net payout / EBIT	0.0125	0.0315	1	0.5955	0.0204	0.0132	0.0061	0.0147	-0.004	0.0149	-0.005	-0.000	-0.000	-0.005	0.0119	0.0135	0.0176	-0.000
		0.1694	0.0012		<.0001	0.0397	0.1485	0.5419	0.1443	0.6457	0.1978	0.575	0.9954	0.9978	0.5276	0.1908	0.1381	0.0526	0.9606
4	Cash payout / EBIT	0.0227	0.1167	0.5955	1	0.1109	0.0134	0.0044	0.0108	0.0028	-0.002	-0.015	0.0016	0.0017	-0.005	0.0106	-0.000	-0.000	-0.002
		0.0193	<.0001	<.0001		<.0001	0.1689	0.6704	0.3003	0.7689	0.8542	0.1444	0.8634	0.854	0.5876	0.2743	0.9995	0.947	0.7905
5	Change in net payout	0.6382	0.8653	0.0204	0.1109	1	0.6887	0.0365	0.0485	-0.087	-0.228	0.0012	-0.022	-0.028	-0.046	0.0306	0.0209	0.0658	-0.025
		<.0001	<.0001	0.0397	<.0001		<.0001	0.0006	<.0001	<.0001	<.0001	0.909	0.0241	0.0038	<.0001	0.0021	0.0362	<.0001	0.0116
6	Change in cash payout	0.8709	0.6524	0.0132	0.0134	0.6887	1	0.0232	0.0402	-0.095	0.0130	0.0255	-0.000	-0.001	-0.059	0.0436	0.0291	0.0703	0.0169
		<.0001	<.0001	0.1485	0.1689	<.0001		0.0219	<.0001	<.0001	0.2623	0.0109	0.964	0.9052	<.0001	<.0001	0.0015	<.0001	0.0636
7	CEO relative leverage	0.0737	0.0898	0.0061	0.0044	0.0365	0.0232	1	0.7526	0.0287	-0.004	-0.075	-0.005	-0.006	0.0761	0.1161	0.1138	0.1974	-0.236
		<.0001	<.0001	0.5419	0.6704	0.0006	0.0219		<.0001	0.0039	0.7588	<.0001	0.5559	0.5284	<.0001	<.0001	<.0001	<.0001	<.0001
8	CEO relative incentive	0.1393	0.1288	0.0147	0.0108	0.0485	0.0402	0.7526	1	-0.052	0.0496	-0.224	-0.011	-0.012	-0.030	0.3271	0.1276	0.3718	-0.119
		<.0001	<.0001	0.1443	0.3003	<.0001	<.0001	<.0001		<.0001	0.0001	<.0001	0.2318	0.2005	0.0019	<.0001	<.0001	<.0001	<.0001
9	EXCESS	-0.123	-0.101	-0.004	0.0028	-0.087	-0.095	0.0287	-0.052	1	-0.022	0.273	-0.000	0.0017	0.1748	-0.064	-0.058	-0.106	-0.1404
		<.0001	<.0001	0.6457	0.7689	<.0001	<.0001	0.0039	<.0001		0.0529	<.0001	0.9503	0.8457	<.0001	<.0001	<.0001	<.0001	<.0001
10	OVER	0.0065	-0.213	0.0149	-0.002	-0.228	0.0130	-0.004	0.0496	-0.022	1	-0.093	-0.026	-0.026	-0.093	0.3219	-0.036	-0.005	0.1368
		0.5701	<.0001	0.1978	0.8542	<.0001	0.2623	0.7588	0.0001	0.0529		<.0001	0.0231	0.0224	<.0001	<.0001	0.0002	0.6074	<.0001
11	INFO	-0.079	-0.075	-0.005	-0.015	0.0012	0.0255	-0.075	-0.224	0.273	-0.093	1	0.0144	0.0141	0.1701	-0.350	-0.114	-0.227	-0.199
		<.0001	<.0001	0.575	0.1444	0.909	0.0109	<.0001	<.0001	<.0001	<.0001		0.1446	0.1519	<.0001	<.0001	<.0001	<.0001	<.0001
12	CEO delta	-0.002	-0.025	-0.000	0.0016	-0.022	-0.000	-0.005	-0.011	-0.000	-0.026	0.0144	1	0.8126	0.0033	0.0140	-0.033	-0.011	-0.006
		0.819	0.0088	0.9954	0.8634	0.0241	0.964	0.5559	0.2318	0.9503	0.0231	0.1446		<.0001	0.7099	0.1191	0.0002	0.2161	0.4766
13	CEO vega	-0.002	-0.032	-0.000	0.0017	-0.028	-0.001	-0.006	-0.012	0.0017	-0.026	0.0141	0.8125	1	-0.000	0.0140	-0.032	-0.010	-0.006
		0.7459	0.0007	0.9978	0.854	0.0038	0.9052	0.5284	0.2005	0.8457	0.0224	0.1519	<.0001		0.9668	0.1186	0.0003	0.2274	0.4579

14	**Firm growth**	-0.093	-0.089	-0.005	-0.005	-0.046	-0.059	0.0761	-0.030	0.1748	-0.093	0.1701	0.0335	-0.000	1	-0.159	-0.091	-0.170	-0.039
		<.0001	<.0001	0.5276	0.5876	<.0001	<.0001	<.0001	0.0019	<.0001	<.0001	<.0001	0.7099	0.9668		<.0001	<.0001	<.0001	<.0001
15	**Firm size**	0.1178	0.0776	0.0119	0.0106	0.0306	0.0436	0.1161	0.3271	-0.064	0.3219	-0.350	0.0140	0.0140	-0.159	1	0.1052	0.3895	0.2602
		<.0001	<.0001	0.1908	0.2743	0.0021	<.0001	<.0001	<.0001	<.0001	<.0001	<.0001	0.1191	0.1186	<.0001		<.0001	<.0001	<.0001
16	**CEO age**	0.0623	0.0610	0.0135	-0.000	0.0209	0.0291	0.1138	0.1276	-0.058	-0.043	-0.114	-0.033	-0.032	-0.091	0.1052	1	0.1878	0.0363
		<.0001	<.0001	0.1381	0.9995	0.0362	0.0015	<.0001	<.0001	<.0001	0.0002	<.0001	0.0002	0.0003	<.0001	<.0001		<.0001	<.0001
17	**Firm age**	0.1601	0.1644	0.0176	-0.000	0.0658	0.0703	0.1974	0.3718	-0.106	-0.005	-0.227	-0.011	-0.010	-0.170	0.3895	0.1878	1	0.0727
		<.0001	<.0001	0.0526	0.947	<.0001	<.0001	<.0001	<.0001	<.0001	0.6074	<.0001	0.2161	0.2274	<.0001	<.0001	<.0001		<.0001
18	**Firm leverage**	0.0690	-0.031	-0.000	-0.002	-0.025	0.0169	-0.236	-0.119	-0.140	0.1368	-0.199	-0.006	-0.006	-0.039	0.2602	0.0363	0.0727	1
		<.0001	0.0015	0.9606	0.7905	0.0116	0.0636	<.0001	<.0001	<.0001	<.0001	<.0001	0.4766	0.4579	<.0001	<.0001	<.0001	<.0001	

Table 1.3. The impact of excess cash on the relationship between CEO inside debt and firm payout

Variable	Net payout / TA	Net payout / EBIT	Δ in Net Payout	Cash payout / TA	Cash payout / EBIT	Δ in Cash Payout
Intercept	-0.20541***	-7.82298	-0.03738	-0.26541**	-21.89186*	-0.0916
	(2.9917)	(1.4687)	(0.7182)	(2.5756)	(1.7459)	(1.1349)
CEO relative leverage	0.00527***	0.07188	0.00194*	-0.01191***	0.03381	-0.01799***
	(4.3738)	(1.1720)	(1.7901)	(3.4878)	(0.1634)	(4.5306)
EXCESS	-0.00221	-0.72255	0.00641**	-0.01261**	-0.51081	0.0032
	(0.7178)	(0.7955)	(2.2289)	(2.2080)	(0.3781)	(0.5420)
CEO relative leverage x EXCESS	0.00143	0.20806	-0.00034	**0.00753***	0.12599	**0.0075***
	(0.7649)	(0.6620)	(0.1919)	**(1.8505)**	(0.2636)	**(1.6987)**
Firm size	0.00512***	0.20659	0.00042	0.00452***	0.15463	0.00167
	(5.3136)	(1.2594)	(0.5512)	(2.7714)	(0.5549)	(1.1996)
Firm age	0.01347***	-0.00603	-0.00055	0.02853***	0.05585	0.00724**
	(5.0274)	(0.0132)	(0.2497)	(6.2157)	(0.1067)	(1.9751)
Firm growth	-0.00492***	0.16778	-0.00024	-0.00614**	0.14957	0.00002
	(3.1093)	(0.9860)	(0.1316)	(2.1474)	(0.7159)	(0.0063)
Firm leverage	0.02103**	1.28011	0.00537	-0.17679***	3.43397	-0.11763***
	(2.1843)	(0.8285)	(0.6921)	(7.4526)	(0.8054)	(5.6463)
CEO age	0.02218	1.6103*	0.00538	0.0441*	4.68033	0.01912
	(1.5787)	(1.7360)	(0.4952)	(1.9429)	(1.5842)	(1.0955)
CEO delta	-0.00095	-0.04822	0.00305	-0.00439***	-0.04145	-0.00143
	(1.5114)	(1.0903)	(0.7999)	(3.3128)	(0.8433)	(0.2751)
CEO vega	0.00149	0.1081	-0.00717	0.00898***	0.09341	0.00259
	(1.0906)	(1.1207)	(0.8623)	(3.1122)	(0.8711)	(0.2288)
N	7,276	7,276	7,223	6,802	6,802	6,551
R^2	12.72%	0.48%	4.93%	8.22%	5.75%	3.50%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 1.4. The impact of excess cash on the relationship between CEO inside debt and firm payout when firm is under overinvestment risk

Variable	Net payout / TA	Net payout / EBIT	Δ in Net Payout	Cash payout / TA	Cash payout / EBIT	Δ in Cash Payout
Intercept	-0.2058***	-7.58809	-0.03165	-0.2663**	-20.87359*	-0.08637
	(3.0075)	(1.4623)	(0.6153)	(2.5788)	(1.8002)	(1.0972)
CEO relative leverage	0.00783***	0.05128	0.00195	-0.00478**	-0.01923	-0.00897***
	(4.9859)	(0.9474)	(1.3404)	(1.9980)	(0.1703)	(3.5174)
EXCESS	-0.01718	-1.01513	0.0431***	-0.04368**	4.39593	0.0622***
	(1.5156)	(0.3913)	(3.1032)	(2.2311)	(0.5644)	(2.7881)
CEO relative leverage x EXCESS	-0.00109	0.43064	0.00011	0.01602	-0.33363	0.03554**
	(0.1553)	(0.5260)	(0.0170)	(0.8968)	(0.1340)	(1.9761)
OVER	-0.00031	-0.74946	-0.0055*	0.00187	-0.73984	0.01561***
	(0.1045)	(1.1679)	(1.9452)	(0.3438)	(0.9495)	(2.7140)
CEO relative leverage x OVER	-0.00378**	0.28751	0.00031	-0.0075*	0.32444	-0.0109**
	(2.0195)	(0.8818)	(0.1747)	(1.8626)	(0.7979)	(2.4448)
CEO relative leverage x EXCESS x OVER	-0.00004	-0.68197	-0.01218	-0.00073	-1.10712	-0.02989
	(0.0049)	(0.9607)	(1.6216)	(0.0375)	(0.9259)	(1.4642)
Firm size	0.00521***	0.20038	0.0003	0.00433***	0.08154	0.00053
	(5.4016)	(1.2185)	(0.3702)	(2.7398)	(0.2687)	(0.3869)
Firm age	0.01306***	-0.0419	-0.00024	0.02818***	0.0976	0.0093**
	(4.7221)	(0.0914)	(0.1037)	(6.0213)	(0.1846)	(2.4579)
Firm growth	-0.00435***	0.15564	-0.00132	-0.00525*	-0.04809	-0.00215
	(2.6062)	(0.8021)	(0.7420)	(1.7585)	(0.1506)	(0.8342)
Firm leverage	0.01963*	1.44721	0.00952	-0.17724***	4.31382	-0.10903***
	(1.9469)	(0.8596)	(1.1465)	(7.5208)	(0.8786)	(5.3054)
CEO age	0.02156	1.6471*	0.00676	0.04265*	4.87345	0.01985
	(1.5257)	(1.7315)	(0.6210)	(1.8669)	(1.5531)	(1.1307)
CEO delta	-0.00093	-0.0297	0.00302	-0.00421***	-0.0216	-0.00154
	(1.4563)	(0.5888)	(0.7903)	(3.1505)	(0.4634)	(0.2906)
CEO vega	0.00144	0.06766	-0.0071	0.0086***	0.05056	0.00283
	(1.0404)	(0.6174)	(0.8522)	(2.9510)	(0.5001)	(0.2457)
N	7,276	7,276	7,223	6,802	6,802	6,551
R^2	12.88%	0.49%	5.39%	8.30%	0.65%	3.89%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 1.5. The impact of firm specific information asymmetry on the relationship between CEO inside debt and firm payout

Variable	Net payout / TA	Net payout / EBIT	Δ in Net Payout	Cash payout / TA	Cash payout / EBIT	Δ in Cash Payout
Intercept	-0.15382**	-7.24838*	-0.042	-0.25423***	-22.74974*	-0.14321*
	(2.3060)	(1.8755)	(0.8486)	(2.6452)	(1.7588)	(1.7846)
CEO relative leverage	0.00177	0.07205	-0.0035**	-0.01464***	-0.22954	-0.02081***
	(0.8976)	(0.6557)	(2.1595)	(3.9486)	(1.6105)	(5.2747)
INFO	-0.20906***	-2.40861	-0.11826**	-0.31425***	-5.19655	-0.12938**
	(2.9258)	(0.8786)	(2.4850)	(3.9344)	(1.1236)	(2.0547)
CEO relative leverage x INFO	**0.06846***	1.50544	**0.08859****	**0.10061***	**5.13698***	**0.10473***
	(1.6813)	(0.8187)	**(2.3533)**	**(1.9477)**	**(1.8538)**	**(1.9534)**
Firm size	0.00379***	0.137	0.00044	0.00188	0.09766	0.00159
	(4.1674)	(1.2732)	(0.6800)	(1.2026)	(0.4635)	(1.2069)
Firm age	0.01142***	0.3955	-0.00072	0.02417***	0.46374	0.00737**
	(4.6074)	(1.3245)	(0.3528)	(5.6702)	(1.2131)	(2.0924)
Firm growth	-0.00316**	0.13236	0.0011	-0.0039	0.12329	0.00069
	(2.0699)	(1.0072)	(0.6003)	(1.3715)	(0.7254)	(0.2757)
Firm leverage	0.01405	2.036	-0.00301	-0.18844***	4.21851	-0.12728***
	(1.5304)	(1.0567)	(0.4125)	(7.8101)	(0.9418)	(5.9355)
CEO age	(1.5397)	(1.5407)	(0.6805)	(2.2144)	(1.4869)	(1.6794)
	0.01142***	0.3955	-0.00072	0.02417***	0.46374	0.00737**
CEO delta	-0.00058	-0.00543	0.00024	-0.00491***	-0.0338	-0.00583***
	(1.2770)	(0.1839)	(0.2980)	(3.5780)	(0.5791)	(5.8956)
CEO vega	0.00069	0.01507	-0.00103	0.01014***	0.07709	0.0122***
	(0.7017)	(0.2377)	(0.5942)	(3.3890)	(0.6087)	(5.6562)
N	6,796	6,796	6,749	6,360	6,360	6,129
R^2	14.27%	0.47%	5.76%	9.05%	0.64%	3.78%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Appendix 1.1. Option value calculation

$$Option\ value\ = \left[Se^{-dT}N(Z) - Xe^{-rT}N(Z - \sigma T^{\frac{1}{2}})\right]$$

Where

$$Z\ =\ \left[\ln\left(\frac{S}{X}\right) + T\ \left(r - d + \frac{\sigma^2}{2}\right)\right] / \sigma T^{\frac{1}{2}}$$

N = Cumulative probability function for the normal distribution

S = Underlying stock price

X = Option exercise price

T = Time to maturity of the option (in years)

d = Natural log of expected dividend yield over the life of the option

r = Natural log of risk-free interest rate

σ = Expected stock return volatility over the life of the option

In order to estimate the value of the previously granted unexercised options, we follow Cassell et al. (2012) and Phan (2014), and employ Core and Guay (2002) procedure. The exercise price of the unexercised options is calculated as the total realizable value divided by the number of option unexercised minus the fiscal year-end stock price. Time to maturity of the unexercised option is assumed to be three years less than the average maturity of newly granted options (Cassell et al., 2012). If no options are granted in the current year, time to maturity of the unexercisable and exercisable options are set to 9 and 6 years, respectively.

Appendix 1.2. CEO delta and CEO vega calculations

Following Cassell et al. (2012) and Srivastav et al. (2014), we calculate CEO delta and CEO vega as follows:

$$\text{CEO delta} = e^{-d}\ N(Z) * (price \div 100)$$

$$\text{CEO vega} = e^{-dT} N'(Z) S T^{\frac{1}{2}} * 0.01$$

where $N'(.)$ is the normal density function.

CHAPTER 2

ESSAY 2: THE IMPACT OF CEO ATTRIBUTES ON THE RELATIONSHIP BETWEEN CEO INSIDE DEBT AND FIRM FINANCIAL (MIS)REPORTING

2.1 INTRODUCTION

U.S. businesses had experienced a severe turmoil in early 2000s that resulted from corporate financial misreporting. Major corporations went bankrupt as their executives had faced legal charges due to engaging in accounting fraud. Forbes magazine listed Enron, Worldcom, and Fannie Mae among ten biggest frauds in the U.S. history.[6] These corporate scandals had attracted attention of public and regulatory agents as many investors faced losses and many workers lost their jobs. As a response, U.S. Congress passed the Sarbanes-Oxley (hereafter, the SOX) Act in 2002 with the purpose of protecting investors by improving the reliability of financial statement disclosures. The act includes key provisions such as auditor independence, corporate responsibility, and enhanced financial disclosures (Bhamornsiri, Guinn, and Schroeder 2008). Although the SOX Act seems very useful in content, its success is questionable given that it failed to prevent recent scandals such as the Madoff case and Lehman Brothers.[7] Cohen, Dey, and Lys (2008) show despite the fact that accruals management decreased after the SOX, firms has not stopped engaging in earnings management completely, they just switched to real earnings management. Especially the bankruptcy of Lehman Brothers in September of 2008 had major consequences, and was considered as the start of the Great Recession in the U.S. Therefore, the

[6] According to the ten biggest frauds in the U.S. history report of Forbes magazine, Enron and Worldcom paid $7.8 billion and $6.1 billion lawsuit settlement respectively, and went bankrupt, whereas Fannie Mae paid $400 million to SEC due to its financial misstatements between 1996 and 2002.

[7] According to the same report, Barnard Madoff was sentenced to serve 150 years in prison. Lehman Brothers, although fraudulent activities detected, had received no legal charges.

health of corporate financial reporting (or the lack of it) is of great importance for public, investors, regulators, and academics.

Earnings management (hereafter, EM), as a financial misreporting phenomenon (Beneish, 2001) can be defined as the use of managerial judgment to alter financial statements in order to create a delusion of good performance, or to influence contractual outcomes that depend on reported financial performance (Healy and Wahlen, 1999). Firms may even manage earnings to be able to maintain dividend payments (Daniel, Denis, and Naveen, 2008). EM stems from weak corporate governance. Abundant academic research notwithstanding shows misreporting is more likely when CEO is also the chair (Efendi, Srivastava, and Swanson, 2007). It is less likely when audit committee and board are independent (Klein, 2002; Marra, Mazzola, and Prencipe, 2011) and meet frequently (Xie, Davidson, and DaDalt, 2003), when institutional ownership is high and institutional investors are represented on board (Cornett, Marcus, and Tehranian, 2008), and when investor protection is strong (Leuz, Nanda, and Wysocki, 2003).

Another important determinant of EM is executive compensation. Jiang, Petroni, and Wang (2010) document that EM is more sensitive to CFO pay than CEO pay. In fact, Chava and Punanandam (2010) show that CFO's risk-taking incentives are relatively more important in explaining EM decision than those of CEO's. Nevertheless, there is also evidence that CFO is under pressure for achieving financial targets (Matejka, 2009), and does not involve with EM because of self-interest seeking purposes, but because of CEO pressure (Feng, Ge, Luo, and Shevlin, 2011). Furthermore, Feng et al. (2011) find that CFOs leave the company voluntarily in order not to engage in accounting manipulation. Thus, extant literature primarily focuses on the relation between CEO compensation and EM practices.

CEO compensation consists of cash salary, bonus, stocks and options (here after, inside equity), pension benefits and deferred compensation (hereafter, inside debt) components. While inside equity portion induces performance, inside debt portion motivates CEO to make better investment choices (Edmans and Liu, 2011). CEO's equity incentives provide him with ownership in the firm (Jensen and Meckling, 1976), and makes his personal wealth a function of firm's stock price (Burns and Keida, 2006). As a result, CEO with high equity incentives has motivation to increase stock price by assuming high risk, or engaging in EM in order to present a financially healthier firm. Although optimal CEO ownership is chosen in order to incentivize effort without incentivizing earnings manipulation (Goldman and Slezak, 2006), there exists a positive relation between CEO inside equity and his involvement with EM (Carter et al., 2005; Burns and Keida, 2006; Peng and Roell, 2008; Jiang et al., 2010; Uygur, 2013).

On the other hand, empirical evidence provides consistent support for CEO, whose compensation relies more on inside debt than inside equity, adopts conservative corporate policies (Sundaram and Yermack, 2007; Wei and Yermack, 2011; Phan, 2014), and less willing to assume risk (Cassell, Huang, Manuel, and Stuart, 2012). However, our knowledge on how pension benefits and deferred compensation affect EM is still scarce. Burns and Kedia (2006) find no association between misreporting and long-term incentive payouts, and Kalyta (2009) documents CEO pension plans are associated with income-increasing EM only when CEO is in his final years before retirement, and pension plan is based on performance. The closest study to ours, He (2015) argues that since financial misreporting can be detected, CEO is exposed to risk of losing his reputation. Firm may also experience loss in the present value of future cash flow due to lower sales and higher financing cost, followed by decrease in firm value and increase in default risk. As a result, author suggests that inside debt causes CEO to be more risk-averse, and

more sensitive to firm's long-term performance, and shows that CEO inside debt is associated with higher financial reporting quality.

In this study, we follow He (2015) and expand his study by introducing the impact of several CEO attributes on the negative association between CEO inside debt and EM. Lorsch and Khurana (2010) define executive as a self-interest seeking agent who is ready to take advantage of immediate gain opportunities in the expense of not only company but also his own long-term benefits. Extant research shows CEO overconfidence (Odean, 1998; Malmendier and Tate, 2008), gender (Srinidhi, Gul, and Tsui, 2011), tenure (May, 1995), education (Malmendier and Tate, 2005a; Delmas and Toffel, 2008), power (Bebchuk et al., 2011; Liu and Jiraporn, 2010), narcissism (Olsen, Dworkis, and Young, 2014), quality (Bhagat and Bolton, 2008), and ability (Demerjian, Lev, Lewis, and McVay, 2013) have significant impact on corporate financial and accounting policies. Thus, our purpose is to investigate whether these CEO attributes identified by previous literature cause him to act in ways that are different than what is enforced by inside debt component of compensation. Specifically, we seek to find answers to the following research questions: (1) *What is the impact of CEO attributes on the relationship between CEO inside debt and earnings management?;* and (2) *What is the impact of CEO attributes on the relationship between CEO inside debt and earnings quality?* As a result, we aim to contribute to EM and CEO compensation literatures by investigating the impact of above-mentioned CEO attributes.

We employ common CEO inside debt measures[8] that are suggested by compensation literature in relation to several types of EM practices[9] in order to reach rigorous conclusions.

The rest of the paper is as follows. Section 2.2 discusses relevant inside debt and earnings management literatures. Section 2.3 describes different CEO attributes and motivates hypotheses. Section 2.4 describes the sample, and defines the variables. Section 2.5 explains the analytical approach. Section 2.6 reports the results. Section 2.7 discusses limitations. Finally, section 2.8 provides concluding remarks.

2.2 THEORETICAL BACKGROUND

CEO compensation and earnings management

Separation of ownership and control in corporations causes a possible conflict of interest between managers and shareholders. Jensen and Meckling (1976) suggest that providing managers with ownership in the firm will align their interests with those of stockholders'. Including inside equity into compensation package will give managers some ownership in the firm (Core and Guay, 1999). As a result, managers will have incentive to maximize shareholders' wealth and to increase firm value which can be achieved by undertaking profitable projects, making good business decisions, and maintaining firm's financial health. However, managers can also manipulate firm's market value by managing earnings (Collins and Hribar, 2000). Since investors form their opinions about firm's future earnings by evaluating its current earnings (Stein, 1989), reporting earnings that are lower than predicted can negatively affect the

[8] We will employ the following inside debt measures which are all explained in more details in section II and III: Relative CEO leverage as the main variable, and for robustness tests: an indicator variable which is equal to one if relative CEO leverage is greater one, relative incentive ratio, and an indicator variable which is equal to one if relative incentive ratio is greater one (Cassell et al.,2012).

[9] We will examine the relation between inside debt and earnings smoothing and abnormal accruals, as well as earnings predictability and earnings quality which are all explained in more details in section II and III.

relation between the firm and its stakeholders (Bowen, DuCharme, and Shores, 1995). As a result, managers sometimes resort to managing earnings upward in order to maintain an increasing trend (Skinner and Myers, 2007). Inside equity makes managers personal wealth sensitive to stock prices, thus it may also encourage them to take excessive risk in order to increase stock price. Excessive risk-taking may have negative consequences on earnings. In this case, EM can be considered as a mechanism with which those undesired outcomes are avoided (Grant, Markarian, and Parbonetti, 2009).

Compensation package also provide executives with incentives to manipulate the true performance of the firm in order to achieve personal gains (Watts and Zimmerman, 1978). For instance, Baker, Collins, and Reitenga (2003) show managers engage in income-decreasing EM prior to option exercise date in order to lower the option strike price (McAnally, Srivastava, Weaver, 2008). On the other hand, managers with inside equity holdings are sometimes exposed to higher levels of idiosyncratic risk than what they would desire. In this case, managers diversify their personal risk by selling shares (Ofek and Yermack, 2000), and use their information advantage in order to realize personal abnormal returns (Lakonishok and Lee, 2001). They engage in income-increasing EM, increase stock price, and sell their shares (Beneish and Vargus, 2002). Therefore, inside equity holdings may induce opportunistic behavior (Cheng and Warfield, 2005). Firms can distort financial statements using various EM practices such as income smoothing and income-increasing abnormal accruals. Cheng and Warfield (2005) document a positive association between managerial equity incentives and the size of income-increasing abnormal accruals, and earnings smoothing. Bergstresser and Philippon (2006) show that the value of CEO stock and option compensation is positively related to the size of absolute

accruals and discretionary accruals.[10] Eckles, Halek, He, Sommer, and Zhang (2011) find that although being highly regulated insurance firms still engage in earnings smoothing that is motivated by incentive-based compensation. As a result, finance literature suggests that CEO with inside equity in his compensation package will take more risk or manipulate earnings in order to portray a better financial health of the firm.

Although EM literature notwithstanding had examined the relation between CEO inside equity and different types of EM practices, empirical evidence on the relationship between CEO inside debt and EM is limited. Extant research on inside debt documents that CEO with high inside debt holding will behave in a risk-averse manner (Cassell et al., 2012) and will adopt conservative corporate policies (Sundaram and Yermack, 2007; Wei and Yermack, 2011). The conservatism associated with CEO inside debt holding may apply to financial reporting as well. In fact, Burns and Kedia (2006) argue that CEO with long-term incentive plan would choose long-term firm value over short-term personal gains. Consistent with this association, they did not find a significant association between long-term incentive plan and EM. In this study, authors use the magnitude of earnings restatements as a proxy for EM activity. Contradicting with this finding, Kalyta (2009) looks at supplemental executive retirement plans and documents a positive association with discretionary accruals. Author concludes that CEO engages in income-increasing EM during his final years in the office because his retirement benefit is an increasing function of firm's performance during these years. Finally, He (2015) argues that CEO with inside debt holding adopts more conservative accounting practices in order to prevent risky and

[10] Family firms are subject to less agency issue since the ownership and control is not separated. Therefore, there is no need for a mechanism to reduce agency issue which may have negative consequences such as earnings management. Empirical evidence shows financial disclosure is of better quality (Ali, Chen, and Radhakrishman, 2007), and abnormal accruals are lower and earnings informativeness is greater (Wang, 2006) in these firms. These findings support the argument above.

value-destroying investments. The results of He (2015) show that inside debt is negatively associated with abnormal accruals, likelihood of earnings misstatements, incident of beating an earnings benchmark, and positively associated with accruals quality. In the next session, we will discuss different types of EM.

Common earnings management practices[11]

Abnormal accruals

Accrual is an earnings component that is not reflected in current cash flows (Bergstresser and Phillippon, 2006). Abnormal accrual, on the other hand, is calculated as the difference between actual total accrual and estimated total accrual, and used as a common proxy for EM. Since calculation of total accrual is under managerial discretion, abnormal accrual is also known as discretionary accrual. There is a large body of research documenting that accruals management is a result of weak corporate governance (Klein, 2002; Xie et al., 2003; Cornett et al., 2008, and Marra et al., 2011).

In firms with poor governance, CEO with inside equity will have incentives to manipulate accruals in order to maintain earnings momentum (Skinner and Myers, 2007) which will increase stock price. CEO will then sell firm's stock (Beneish and Vargus, 2002) and earn abnormal returns (Lakonishok and Lee, 2001). Using abnormal accruals, firms can increase their reported earnings and the market value of the firm (Collins and Hribar, 2000), and maintain dividend payouts (Daniel et al., 2008). CEO can even shadow compensation committee's ability to detect excessive risk taking (Athansakou, Goh, and Ferreira, 2011). Kalyta (2009) argues that

[11] In this section, we discuss the related literature on different types of EM. We complete each subsection with a hypothesis that was previously empirically tested. We explicitly state these hypotheses in order to set a foundation for our hypotheses development. Formal hypotheses to be empirically tested is presented in section III.

CEO with retirement plans may manipulate firm value and report earnings that are larger than real earnings using abnormal accruals, and finds CEO retirement plan is positively associated with abnormal accruals. Contradicting with this argument, He (2015) documents a negative relation between CEO inside debt and absolute value abnormal accruals. In order to stay consistent with compensation literature which predicts a negative relation between inside debt and EM, we follow He (2015) and accept CEO inside debt holding to be negatively associated with absolute value of abnormal accruals.

Hypothesis a: CEO inside debt is negatively associated with absolute value of abnormal accruals.

Earnings smoothing

"Earnings smoothing is a special case of earnings management involving intertemporal smoothing of reported earnings relative to economic earnings; it attempts to make earnings look less variable over time" (Goel and Thakor, 2003: 151). Managers defer earnings of a good year if the following year is expected to be a bad one (Cheng and Warfield, 2005). As a result, firm can maintain steady and predictable earnings. Cheng and Warfield (2005) argue that CEO with high equity incentives benefits from earnings smoothing because it will be easier to meet or beat analysts' forecast in bad years. Since negative earnings surprises are associated with stock price decline (Ali and Kallapur, 2001) and negative publicity (Bowen et al., 1995), CEO with high inside equity is more likely to smooth earnings.

Goel and Thakor (2003) argue that income smoothing reduces the volatility of firm's earnings perceived by investors. CEO inside debt is associated with conservative policies and risk-aversion. Thus, CEO with high inside debt may smooth earnings in order to present his firm

as less risky, and to protect his firm's reputation. Goel and Thakor (2003) propose that CEO whose compensation is tied to long-term firm performance is more likely to smooth earnings than CEO whose compensation is tied to short-term performance. Since inside debt implies that some portion of CEO compensation is deferred, then CEO would have incentive to smooth earnings. Nevertheless, He (2015) finds a negative relation between inside debt and the likelihood of meeting or beating earnings benchmark. Empirical evidence finds support for the following hypothesis:

Hypothesis b: CEO inside debt is negatively associated with earnings smoothing.

Earnings predictability

An alternative way of detecting EM is to examine earnings predictability. Graham et al. (2005) survey indicates that managers believe earnings volatility reduces earnings predictability and leads to a turmoil in equity and debt markets. Controlling the level of earnings volatility is of great importance for CEO because high volatility increases the perceived bankruptcy probability and the cost of borrowing (Trueman and Titman, 1988). Similarly, Dichev and Tang (2009) argue that managers smooth earnings in order to show earnings are more predictable. Thus, CEO who concerns about earnings volatility may consider smoothing as a necessary evil to achieve earnings predictability. However, since CEO with inside debt would stay away from EM, we do not expect him to engage in earnings smoothing to reduce volatility. As a result, we expect CEO inside debt to be associated with more volatile and less predictable earnings.

Hypothesis c: CEO inside debt is negatively associated with earnings predictability.

Earnings quality

Examining EM requires examination of its close relative, earnings quality (Lo, 2008). In general, EM is associated with lower earnings quality (Lo, 2008). Nevertheless, not practicing EM does not guarantee higher earnings quality (Lo, 2008). Earnings quality can be a function or market demand. For instance, Ball and Shivakumar (2005) show that earnings quality of public U.K. firms is higher than those of private U.K. firms due to more demand for quality. This finding is more pronounced during the high regulation periods around initial public offering (Ball and Shivakumar, 2008). Low earnings quality does not imply suboptimal practices, or failure of auditing standards (Ball and Shivakumar, 2005; 2008). High earnings quality, however, requires timely recognition of firm's losses (Ball and Shivakumar, 2005), and is related to the quality of firm's financial disclosures (Francis, Nanda, and Olsson, 2008). Alternatively, since CEOs have significant control over firm's financial reporting choices (Graham, Harvey, and Rajgopal, 2005), earnings quality can also be a function of CEO's personality. For instance, Malmendier and Tate (2007) find that CEOs who are recognized as superstars manage earnings in order to meet market's expectations. On the other hand, inside debt motivates CEOs to take risk and to be more long-term oriented, and it is associated with less likelihood of practicing EM and higher accruals quality (He, 2015). In this paper, we build on this finding and postulate the following hypothesis:

Hypothesis d: CEO inside debt is positively associated with earnings quality.

2.3 HYPOTHESES DEVELOPMENT

Extant literature notwithstanding considers CEO compensation as a mechanism (Jensen and Meckling, 1976) which aligns CEO's incentives with those of shareholders' and bondholders'. Holding inside equity, naturally risk-averse CEO is motivated to take more risk in order to maximize shareholders' wealth. On the contrary, inside debt portion of compensation

forces CEO to adopt more conservative firm policies. Nevertheless, there has been a growing skepticism towards CEO compensation since the corporate accounting scandals in early 2000s, and especially after the U.S. financial crisis of 2007-2008. Some argue that compensation is designed by the management itself so it is not related to firm performance (Bebchuk and Fried, 2004), and inside debt holding doesn't reduce risk-taking (Galle and Alces, 2012). Moreover, some researchers argue that CEO attributes have significant impact on firm policies because they influence his decision-making process (i.e. Bertrand and Schoar, 2003). For instance, Dichev, Graham, Harvey, and Rajgopal's (2013) survey indicates that CFOs point out CEO overconfidence as a motivation for EM. Although, it is a sign of poor corporate governance (Klein, 2002; Xie et al., 2003; Leuz et al., 2003; Efendi et al., 2007; Cornett et al., 2008; Marra et al., 2011), Graham, Harvey and Rajgopal (2005) argue some level of earnings management is inevitable. Therefore, we propose that CEO can be more (or less) inclined to engage in EM due to some of his attributes, despite having inside debt in his compensation package. Consequently, we expect the negative relationship between CEO inside debt to be weaker (or stronger) due to these attributes. In the next subsections, we discuss these CEO attributes individually, and develop our formal hypotheses.

CEO overconfidence

Overconfidence is defined as one's overestimation of his own abilities (Daniel, Hirshleifer, and Subrahmanyam, 1998), such as the belief that one has sufficient skills to start up a new business (Koellinger, Minniti, and Schade, 2007). Overconfident CEOs believe that they have a better understanding of situations (Hiller and Hambrick, 2005), and that they are "miracle workers" (Tang, Li, and Yang, 2012, Shipman and Mumford, 2011). Although overconfidence is likely to result with excess risk, and experiencing unexpected consequences (Odean, 1998), one

line of academic research investigates why corporate boards hire overconfident CEOs, and argues that they are charismatic leaders (Shipman and Mumford, 2011) and can benefit shareholders (Hirshleifer, Low, and Teoh, 2012). It is true that overconfident CEOs are less conservative (Gervais, Heaton, and Odean, 2011) and more optimistic (Campbell, Gallmeyer, Johnson, Rutherford, and Stanley, 2011). Thus, it is easier to motivate them to undertake riskier projects (Gervais et al., 2011) which might match shareholders' risk appetite (Goel and Thakor, 2008). As a result, moderate overconfidence may increase firm value by reducing the underinvestment problem associated with risk-averse CEOs (Goel and Thakor, 2008). Another benefit of overconfidence can be enabling CEOs to take their firms to a new technological direction (Galasso and Simcoe, 2011) by achieving greater innovation, especially in high-growth industries (Hirshleifer et al., 2012). Furthermore, Galasso and Simcoe (2011) document that positive effect of overconfidence on innovation is more profound in competitive industries, and when CEO is less constrained. Overconfidence has positive impact on entrepreneurial orientation (Engelen, Neumann, and Schwens, 2015) as well. Nevertheless, only moderate overconfidence has positive effects (Hirshleifer et al., 2012), and its marginal effect diminishes for higher levels of overconfidence (Engelen et al., 2015). Similarly, its negative side effects are more apparent for higher levels of overconfidence. For instance, Yung, Li, and Sun (2015) show that overconfidence has nonlinear effect.

In spite of some evidence documenting positive effects of overconfidence, there is abundant research predominantly proving the opposite. In general, overconfident CEOs are associated with inferior investment (Malmendier and Tate, 2005; 2008), leverage, and share repurchase (Yung et al., 2015) decisions. Overconfident CEOs tend to overestimate the value of their firms' stock. They find external financing costly because they believe that market

undervalues their firms' stock (Malmendier and Tate, 2005; Deshmukh, Goel, and Howe, 2013). Thus, they lower dividends (Yung et al, 2015; Deshmukh et al., 2013) to create internal funds in order to undertake investment projects. They either overinvest in risky projects, that can be value destroying (Malmendier and Tate, 2008), when firm has enough internal funds or underinvest when external funds are needed (Malmendier, Tate, and Jon, 2011). Overconfident CEOs of REITs are associated with lower operating and property investment performance (Yung et al., 2015; Eicholtz and Yonder, 2015). Overconfidence also leads to weaker bank lending standards and increased leverage prior to crises, and results with more increases in loan defaults, greater drop in performance, and higher likelihood of failure during financial crises (Ho, Huang, Lin, and Yen, 2015). Furthermore, although the likelihood of forced turnover is higher when CEOs are overconfident (Campbell et al., 2011; Ho et al., 2015), these CEOs are resistant to corrective feedback and they continue to make the same mistakes (Chen, Crossland, and Luo, 2015), unless they experience personal stock trading losses (Kolasinski and Li, 2013).

Overconfidence can also manifest itself as CEO's engagement with EM practices. A survey of CFOs indicates that EM stems from senior managers' overconfidence (Dichev et al., 2013). Since overconfident CEOs overestimate their future earnings (Malmendier and Tate, 2015) and underestimate the probability of random events (Hribar and Yang, 2010), they tend to avoid recognizing losses (Ahmed and Duellman, 2013), use more aggressive accounting (Hribar and Yang, 2010; Yu, 2014), and manipulate earnings in order to meet earnings expectations (Malmendier and Tate, 2015). Interestingly, Schrand and Zechman (2012) argue that overconfidence initially causes unintentional EM when optimistic earnings expectations are not realized in the first period. In the next period, however, EM is intentional and motivated by reversing the first period EM. Authors argue that initial overconfidence is the trigger of a

"slippery slope" (Schrand and Zechman, 2011: 312). In this study, building on this line or research, we propose that although inside debt reduces CEOs engagement with EM and leads to higher earnings quality, overconfidence may weaken these associations. Based on four hypotheses identified in section 2.3., our testable hypotheses are as follows:

Hypothesis 1a: The negative association between CEO inside debt and absolute value of abnormal accruals is weaker when CEO is overconfident.

Hypothesis 1b: The negative association between CEO inside debt and earnings smoothing is weaker when CEO is overconfident.

Hypothesis 1c: The negative association between CEO inside debt and earnings predictability is weaker when CEO is overconfident.

Hypothesis 1d: The positive association between CEO inside debt and earnings quality is weaker when CEO is overconfident.

CEO narcissism

Narcissism is a personality trait that can be defined as a sense of arrogance, self-absorption, self-importance, self-admiration, fragile self-esteem, entitlement, hostility, and exploitativeness (Rosenthal and Pittinsky, 2006; Olsen, Dworkis, and Young, 2014). Although it is similar to overconfidence conceptually, narcissism describes a broader set of personality traits such as need for attention and recognition which does not apply to overconfidence (Campbell, Goodie, and Foster, 2004). Narcissism can lead to desirable organizational outcomes (Maccoby, 2000) such as strategic dynamism (Chatterjee and Hambrick, 2007), higher entrepreneurial orientation (Wales, Patel, and Lumpkin, 2013), and better financial performance (Olsen et al.,

2014). Patel and Cooper (2014) show that firms with narcissistic CEOs are more fragile and experience larger falls during crisis, but they recover faster after the crisis.

Nevertheless, the definition of narcissism implies a negative characteristic with bruising effects (Wasylyshyn, 2005). It is considered as a setback to good leadership and ethical conduct (Craig and Amernic, 2011) which may lead to early CEO dismissal (Ertugrul and Krishnan, 2011). Chatterjee and Hambrick (2007) find that narcissistic CEO is prone to take more risk in order to attract attention, and causes organizational performance to fluctuate. Amernic and Craig (2010) argue that narcissism can cause financial misreporting in order to present better financial performance which is more ego satisfying for CEO. In fact, Rijsenbilt and Commandeur (2013) documents a positive association between narcissism and fraud that stems from intentional financial misreporting. Olsen et al. (2014) also show positive association between CEO narcissism and reported earnings. However, study finds evidence for real EM, not accruals management. Authors conclude that accounting-based EM can damage firm and CEO reputation. Thus, narcissistic CEO prefers real EM since it is legitimate, not illegal. Thus, we expect narcissism to strengthen the negative (positive) association between inside debt and EM (earnings quality). Testable hypotheses are stated as follows:

Hypothesis 2a: The negative association between CEO inside debt and absolute value of abnormal accruals is stronger when CEO is narcissistic.

Hypothesis 2b: The negative association between CEO inside debt and earnings smoothing is stronger when CEO is narcissistic.

Hypothesis 2c: The negative association between CEO inside debt and earnings predictability is stronger when CEO is narcissistic.

Hypothesis 2d: The positive association between CEO inside debt and earnings quality is stronger when CEO is narcissistic.

CEO power

Power can be defined as an individual's capacity of exerting their will (Finkelstein, 1992: 506). Finkelstein (1992) considers firm as a coalition of CEO and his subordinates, and identifies four types of power in that coalition: (1) structural power; (2) ownership power; (3) expert power; and (4) prestige power. Author argues that structural power is commonly used in the literature as a proxy of CEO's control over his subordinates. Similarly, Adams, Almedia, and Ferreira (2005) argue that powerful CEOs have significant control over board of directors. Peyer, Cremers, and Bebchuk (2007) argue that the relative significance of CEO stems from his power, and influence over board of directors. Finally, Bebchuk (2005) points out the importance of distributing power between shareholders and management, and argues that management would have a monopoly over decision making without shareholders' power which would consequently lead to weak corporate governance.

Empirical research shows that CEO power has great implications on organizational outcomes. For instance, Adams et al. (2005) document a positive relation between CEO power and stock return volatility which is an outcome of CEO's extreme decisions possibly hurting the company. Other negative consequences of CEO power are lower credit ratings, higher cost of debt financing (Liu and Jiraporn, 2010), lower firm value, and accounting profit (Bebchuck, Cremers, and Peyer, 2011). Powerful CEO may also alter the focus of his compensation package in order to extract rents which leads to lower future performance and firm value (Morse, Nanda, and Seru, 2011), and lower performance sensitivity of CEO turnover (Bebchuk et al., 2011).

Bebchuk et al. (2011) conclude that negative consequences of CEO power imply an agency conflict. In fact, Jiraporn, Chintrakarn, and Liu (2012) find powerful CEO employ less leverage in order to avoid monitoring of creditors. Furthermore, Henderson, Masli, Richardson, and Sanchez (2010) show CEO alters his compensation by substituting equity incentives for bonuses as a response to a layoff. Finally, Farrell, Yu, and Zhang (2013) argue that CEOs who are also the chairman of the board have more control over the outside directors, and find that those CEOs are more likely to engage in earnings per share management. Overall, CEO power intensifies agency conflicts. In this study, we propose that CEO power will weaken the negative (positive) association between inside debt and EM (earnings quality). Our formal hypotheses are stated as follows:

Hypothesis 3a: The negative association between CEO inside debt and absolute value of abnormal accruals is weaker when CEO is powerful.

Hypothesis 3b: The negative association between CEO inside debt and earnings smoothing is weaker when CEO is powerful.

Hypothesis 3c: The negative association between CEO inside debt and earnings predictability is weaker when CEO is powerful.

Hypothesis 3d: The positive association between CEO inside debt and earnings quality is weaker when CEO is powerful.

CEO tenure

CEO tenure is the number of years that CEO has held his position, and it is used as an indication of his experience and his firm-specific knowledge (Baysinger and Hoskisson, 1990). CEO tenure can be viewed as an outcome of past success because only successful CEO can stay

in his seat for a long time (Miller, 1991). Nevertheless, CEO's success in the past may lead to failures in the future because he may alienate himself from the environment surrounding his firm and resist to changes by avoiding risky investments. Miller (1991) argues that longer tenure would create autonomy and overconfidence, and would compromise financial performance. Lin, Wang, Chiou, and Huang (2014) show that CEO with longer tenure is associated with weaker corporate governance that can render EM easier (Klein, 2002). On the contrary, CEO with shorter tenure works harder and chooses efficient investment levels because he is more likely to be concerned with reputation building (Hirshleifer, 1993). In spite of empirical evidence documenting negative consequences of longer CEO tenure, several other studies find support for its positive outcomes. For instance, longer CEO tenure is associated with familiarity with firm's operations (Finkelstein, 1992) and better firm performance (Peni, 2014). CEO tenure may also reduce his overconfidence because of having more experience (Gloede and Menkhoff, 2014) and more demand for risk reduction due to his human capital invested in the firm (May, 1995). On the contrary, CEOs who have longer time until their retirements have different career concerns. They are willing to take actions that are unobservable by the market in order to increase output and influence market's perception of their abilities (Gibbons and Murphy, 1992). Consequently, newly appointed CEO may adopt more aggressive policies such as earnings overstatement in order to impress others and build reputation (Ali and Zhang, 2015). Similarly, Kuang, Qin, and Wielhouwer (2014) argue that newly appointed outside CEO has lower expectations of staying in the firm, therefore, does not worry about the negative consequences of EM in early years of his tenure. However, if CEO can survive the first few years in the office and build his reputation without being detected practicing EM and replaced, he adopts more conservative accounting policies in the following years due to carreer concerns Kuang et al., 2014; Ali and Zhang, 2015).

Ali and Zhang (2015) show that CEO is less likely to engage in income-increasing EM in the later years his tenure. Consistent with the second line of research, we propose the following hypotheses to be empirically tested:

Hypothesis 4a: The negative association between CEO inside debt and absolute value of abnormal accruals is stronger when CEO has longer tenure.

Hypothesis 4b: The negative association between CEO inside debt and earnings smoothing is stronger when CEO has longer tenure.

Hypothesis 4c: The negative association between CEO inside debt and earnings predictability is stronger when CEO has longer tenure.

Hypothesis 4d: The positive association between CEO inside debt and earnings quality is stronger when CEO has longer tenure.

CEO quality

Tenure is the number of years that CEO has held his position. As we discussed in details in the previous section, CEO with longer tenure is expected to be less overconfident due to his experience, assume less risk due to human capital invested in the firm, and be less likely to engage in EM in order to protect his reputation. Although it has been used frequently in corporate governance literature, one drawback of CEO tenure is that it doesn't differentiate between older and younger CEOs who has the same tenure. Nevertheless, younger CEOs are likely to have different incentive, reputation, and career concerns than older CEOs with same number of years of tenure (Bhagat and Bolton, 2008). Younger CEOs with the same tenure are considered to be more talented, devoted to the firm (Peni, 2014), and of higher quality (Bhagat and Bolton, 2008). As a result, there is a link between CEO quality and good governance

(Bhagat and Bolton, 2008) which leads to better firm performance (Bhagat and Bolton, 2008; Peni, 2014). In this study, we expect higher quality CEOs to be more concerned about both personal and firm reputation, and less likely to engage in EM. Thus, we propose the following hypotheses:

Hypothesis 5a: The negative association between CEO inside debt and absolute value of abnormal accruals is stronger when CEO is of higher quality.

Hypothesis 5b: The negative association between CEO inside debt and earnings smoothing is stronger when CEO is of higher quality.

Hypothesis 5c: The negative association between CEO inside debt and earnings predictability is stronger when CEO is of higher quality.

Hypothesis 5d: The positive association between CEO inside debt and earnings quality is stronger when CEO is of higher quality.

CEO ability

CEO ability can be defined as the capability of producing largest quantity of output from given inputs by using business systems and processes (Demerjian, Lev, Lewis, and McVay, 2013). More specifically, CEO ability is his efficiency in generating revenues (Demerjian, Lev, and McVay, 2012). More able CEOs are expected to know more about their firms and industry, and estimate earnings more accurately with less forecast error which leads to higher earnings quality. For instance, Custodio and Metzger (2013) show that industry-expert CEOs negotiate better merger deals, pay lower premium for the target, and earn larger fraction of merger surplus. Demerjian et al. (2012) document CEO ability mitigates the negative reaction to new equity issue announcements because they utilize the proceeds more efficiently. It appears as markets are

capable of differentiating between high and low CEO ability, and appreciate more able CEOs. Labor market forms its opinions about workers' ability by looking at their output, and consequently set their wages (Gibbons and Murphy, 1992). Demerjian et al. (2012) show that there is a negative (positive) price reaction to turnover announcements of more (less) able CEOs.

CEO ability is reflected on firm's financial reporting quality as well. Aier, Comprix, Gunlock, and Lee (2005) document that CEOs with financial expertise are less likely to restate earnings. Similarly, Demerjian et al. (2013) report that CEO ability is negatively associated with earnings restatements and errors in bad debt provisions, and positively related with accruals persistence and accrual estimation quality. In this study, we argue that CEO ability has a positive impact on the negative (positive) relation between CEO inside debt and EM (earnings quality). Related hypotheses are as follows:

Hypothesis 6a: The negative association between CEO inside debt and absolute value of abnormal accruals is stronger when CEO is more able.

Hypothesis 6b: The negative association between CEO inside debt and earnings smoothing is stronger when CEO is more able.

Hypothesis 6c: The negative association between CEO inside debt and earnings predictability is stronger when CEO is more able.

Hypothesis 6d: The positive association between CEO inside debt and earnings quality is stronger when CEO is more able.

CEO education

CEO education is another personal characteristic which influences corporate policies and performance. First line of research that examines CEO education focuses on its quality. CEOs who graduated from prestigious institutions are associated with higher likelihood of post-IPO survival (Bach and Smith, 2007) and better bank performance compared to their peers (King, Srivastav, and Williams, 2016). CEO having access to critical information due to the interaction within his prestigious school network (D'averi, 1990; Finkelstein, 1992) may explain the positive effect of elite education on firm performance. Second research stream that examines CEO education focuses on its level. Extant empirical evidence documents that college educated CEOs invest more on innovation projects (Lin et al., 2005). CEOs with MBA degrees use more sophisticated techniques when evaluating new projects (Baker, Dutta, and Saadi, 2011), adopt more aggressive corporate strategies such as employing more debt and having more capital expenditures (Bertrand and Schoar, 2003), are less likely to restate their earnings (Aier et al., 2005), improve bank performance when banks follow riskier and more innovative business models (King et al., 2016). Interestingly, the effect of CEO education level is curvilinear. King et al. (2016) find undergraduate and doctorate degrees don't matter to bank performance whereas master degree does.

Finally, the subject in which CEO earned his degree has significant impact on corporate policies. For instance, CEOs with legal degrees are trained to act more conservatively to protect clients (Delmas and Toffel, 2008) and they guide down earnings forecasts in order to avoid litigation risk (Bamber, Jiang, and Wang, 2010). On the other hand, CEO finance education is associated with less investment cash flow sensitivity (Malmendier and Tate, 2005a; Ben Mohamed, Souissi, Baccar, and Bouri, 2014). Educated people are often more intelligent (Frey and Detterman, 2004) and act less on impulse (Parker and Fischoff, 2005). Furthermore, CEO

with finance education knows finance literature, investment and financing strategies, and their implications to a greater extent (Malmendier and Tate, 2005a; Ben Mohamed et al., 2014). Overall, empirical evidence suggests that CEO with finance education is more rational and less likely to adopt suboptimal corporate policies.

In this study, we argue that CEO finance education has influence on the negative (positive) relationship between inside debt and EM (earnings quality). Nevertheless, conclusion of whether it weakens or strengthens these relationships is yet to be explored. For instance, CEO with finance degree is more rational and less likely to adopt suboptimal policies, thus, may stay away from engaging in earnings management. On the other hand, CEO's finance education can also provide him with a better understanding of accounting concepts and information which he can use to easily manipulate earnings. Thus, we state our hypotheses without predicting a specific sign or direction:

Hypothesis 7a: The negative association between CEO inside debt and absolute value of abnormal accruals is influenced by CEO finance education.

Hypothesis 7b: The negative association between CEO inside debt and earnings smoothing is influenced by CEO finance education.

Hypothesis 7c: The negative association between CEO inside debt and earnings predictability is influenced by CEO finance education.

Hypothesis 7d: The positive association between CEO inside debt and earnings quality is influenced by CEO finance education.

CEO gender

CEO gender is one of the main tenets of behavioral finance that stems from the fact that women have motherhood instincts and are more nurturing, therefore behave different than men. Despite a few studies suggesting that financial education reduces the gender related differences in risk-aversion (Hibbert, Lawrence, and Prakash, 2013) and that there is very little difference in dividend payments (McGuinness et al., 2015), IPO underpricing (Mohan, 2004), and perceived and actual stock market performance (Gondhaleko and Dalmia, 2007) of female led firms, abundant empirical evidence supports that gender-related behavioral differences reflect on corporate decision making processes. Although there is room for improvement in terms of number of female CEOs (Daily et al., 1999; Gondhaleko and Dalmia, 2007), the significant progress in terms of female representation on corporate bonds since 1990s (Daily, Certo, and Dalton, 1999) has attracted substantial academic research interest in the last decade, and led to several noteworthy insights.

Earlier studies which examine CEO gender argue that women are less aggressive and less overconfident (Hirsleifer, 2002), are less willing to take extreme risk and more likely to avoid losses (Schubert, 2006), and their cooperative leadership style can be more productive compared to men's competitive leadership style (Eagly and Carli, 2003). Female CEOs are less likely to make acquisitions and pay lower premia because they are less overconfident and less likely to overestimate merger gains (Levi et al., 2014). They are associated with lower leverage, less volatile earnings (Faccio, Marchia, and Roberto, 2012), lower firm risk (Khan and Vieito, 2013), and more conservative (higher) levels of equity capital relative to bank's asset risk (Palvia et al., 2015). It appears as capital markets also notice the female risk aversion (Schubert, 2006). For instance, Martin, Nishikawa, and Williams (2009) find firm's risk measure is reduced following the appointment of a female CEO. Similarly, Kolev (2012) argues that underperformance of

female led firms in terms of risk-adjusted stock returns by 0.35 percent can be explained with less risk perceived and lower expected returns required by investors. Although the announcement of female CEO appointment is followed by negative stock price reaction (Lee and James, 2007; Dixon-Fowler et al., 2013), this is a result of appointment focusing on more gender-related issues rather than firm-related issues (Lee and James, 2007). Nevertheless, presence of a female CEO is associated with better firm performance (Khan and Vieito, 2013; Peni, 2014) and less likelihood of bank failure during the financial crisis (Palvia et al., 2015).

Consistent with ethical sensitivity associated with females (Ho, Li, Tam, and Zhang, 2015), female participation on corporate boards and in CEO suites complements to corporate governance (Gul, Srinidhi, and Ng, 2011). Finally, they are associated with higher earnings quality (Srinidhi, Gul, and Tsui, 2011). It appears as empirical evidence consistently documents conservatism, risk-aversion, and strong corporate governance in the presence of female CEOs. In this study, we expect that presence of a female CEO will strengthen the negative (positive) association between inside debt and EM (earnings quality). Our last set of hypotheses are stated as follows:

Hypothesis 8a: The negative association between CEO inside debt and absolute value of abnormal accruals is stronger when CEO is female.

Hypothesis 8b: The negative association between CEO inside debt and earnings smoothing is stronger when CEO is female.

Hypothesis 8c: The negative association between CEO inside debt and earnings predictability is stronger when CEO is female.

Hypothesis 8d: The positive association between CEO inside debt and earnings quality is stronger when CEO is female.

2.4 SAMPLE AND VARIABLE DEFINITIONS

Sample

This study employs a sample of U.S. public firms, excluding ADRs, firms operating in utilities sector (SIC 4900-4999) and financial sector (SIC 6000-6999), and covers eight-year period from 2007 to 2015. U.S. Securities and Exchange Commission (SEC) increased disclosure requirements for all U.S. public firms in 2006. Thus, CEO compensation data, which is readily available at ExecuComp database, starts in 2007. Later, we match this data with accounting information retrieved from Compustat. Earnings smoothing and earnings predictability measures require a four- and a five-year rolling window respectively. Thus, data items to measure earnings smoothing and earnings predictability starts from 2004 and 2003 respectively. CEO attributes are measured by utilizing data from various sources. Overconfidence, narcissism, power, tenure, and quality measures require accounting data which is retrieved from Compustat. Gender information is also available from Campustat. The composite measure for narcissism requires examination of company annual reports in order to code executive pictures. We accessed company annual reports from Mergent Online database or company website. For CEO ability, we used the data provided by Demerjian et al. (2012) on their faculty website. CEO education data is also hand-collected from various resources such as Bloomberg Executive Profile and Biography website, Mergent Online, or Thomson One. Initial sample that contains full CEO compensation data consists of 10,435 CEO-year observation. However, due to missing CEO attributes data, final sample used for each hypothesis testing is different than 10,435.

Variable definitions

Relative CEO leverage

We follow Edmans and Liu (2011), Cassell et al. (2012), and Phan (2014), and calculate "*Relative CEO leverage"* as the ratio of CEO leverage to firm leverage. CEO leverage has two components. CEO inside debt and CEO inside equity. *CEO inside debt* is the sum of the present value of accumulated pension benefits and deferred compensation as reported in ExecuComp database. CEO inside equity is the sum of the value of CEO stock and option holdings. The value of stock is calculated as the number of common stock and restricted stock held by the CEO multiplied by fiscal year-end stock price. In order to calculate option value, we follow the methodologies developed by Black and Scholes (1973), Merton (1973), and Core and Guay (2002). Option value calculation is explained in details in Appendix 2.1.

Relative CEO leverage dummy

The second inside debt measure is an indicator variable that takes value of 1 if the CEO relative leverage ratio exceeds 1, and takes value of 0 otherwise.

Relative CEO incentive

Wei and Yermack (2011) develop an alternative inside debt variable, *relative CEO incentive* which is calculated as the ratio of the marginal change in the value of CEO inside debt to the marginal change in the value of CEO inside equity divided by the ratio of the marginal change in firm debt to the marginal change in firm equity. Appendix 2.2 details the procedure.

Relative CEO incentive dummy

The last inside debt variable that we employ is another indicator variable that takes value of 1 if the CEO relative incentive ratio exceeds 1, and takes value of 0 otherwise.

Abnormal accruals

Accounting and earnings management literatures frequently employ the modified version of Jones (1991) model (Dechow, Sloan, and Sweeney, 1995) of total accruals (Cheng and Warfield, 2005; Bergstresser and Philippon, 2006; He, 2015). Although commonly used, this model has been criticized due to not being sufficient. Lee and Masulis (2009) argue that accounting information is affected by firm- and industry-specific characteristics as well as the changes in firm's operating environment. Thus, we follow Lee and Masulis (2009) and employ an alternative measure of abnormal accruals which is a modified version of Dechow and Dichev (2002) model (hereafter FDD) in order to estimate firm's total current accruals. In our analyses, we prefer FDD over McNichols (2002) version of the Dechow and Dichev (2002) model due to several reasons. First, FDD model is an estimation with a single panel regression for the entire sample. Second, fixed effect estimation controls for the time invariant effects of some unobservable firm characteristics, as well as mitigates the possible omitted variable bias (Lee and Masulis, 2009). As a result, FDD model is the estimation of the total current accruals using the following model:

$$TCA_{i,t} = \alpha_0 + \beta_1 CFO_{i,t-1} + \beta_2 CFO_{i,t} + \beta_3 CFO_{i,t+1} + \beta_4 \Delta Sales_{i,t} + \beta_5 PPE_{i,t} + \varepsilon_{i,t}$$

TACC, total current accrual, is calculated as the change in current assets minus the change in current liabilities minus the change in cash plus the change in debt in current liabilities. Changes all items are from year *t-1* to year *t*, CFO is the cash flow from operations that is calculated as earnings before extraordinary items minus total accruals. Total accrual is

total current accrual net of depreciation and amortization. All variables are scaled by the average of total assets of year *t-1* and *t*. Similar to Jones (1991) model, residuals of the regression are the portions of total current accruals that left unexplained by FDD, thus, are considered as abnormal accruals. We, again use the absolute value of abnormal accruals as our earnings management measure.

Earnings Smoothing

Extant literature suggests different techniques to measure earnings smoothing. In this study, we follow Leuz et al. (2003) and employ the ratio of the standard deviation of operating income scaled by total assets to the standard deviation of cash flow from operations scaled by total assets. The standard deviations of both components are calculated over a four-year rolling window. Cash flows from operations are calculated as the difference between operating income and total accruals. In order to be consistent with Leuz et al. (2003), we use a different definition of total accruals to calculate earnings smoothing ratio. Specifically, total accrual is calculated as the change in current assets minus the change in current liabilities minus the change in cash minus depreciation and amortization plus the change in debt in current liabilities plus payable taxes.

Earnings Predictability

Following Dichev and Tang (2009), we measure earnings predictability using autoregressive regression of earnings. In this model, current earnings are regressed on lagged earnings:

$$Earn_t = \alpha + \beta Earn_{t-1} + \varepsilon_t$$

where *Earn* is defined the earnings before extraordinary items divided by total assets. Earnings predictability is calculated as the standard deviation of the residuals over a five-year rolling window.

Earnings Quality

The vast literature on earnings quality predominantly employs accruals quality as a measure (Francis et al., 2005; 2008; Lee and Masulis, 2009; He, 2015). Accruals quality is calculated by using the residuals, $\varepsilon_{i,t}$, from the FDD model explained in more details earlier. The rolling five-year standard deviation of firm i's residuals, $\varepsilon_{i,t}$, is calculated over time period *t-4* to *t*. Larger standard deviation of residuals imply greater portion of current accruals left unexplained, lower accruals quality, thus lower earnings quality.

CEO overconfidence

Extant research notwithstanding employs several measures of overconfidence.[12] First measure relates overconfidence to CEO's prior success by using an index of recent firm performance, his relative compensation, and positive media coverage on him (Hayward and Hambrick, 1997; Chen, Crossland, and Luo, 2015). Second one is a press-based measure of overconfidence, and relies on words (i.e. confident, optimism, pessimistic, conservative) mentioned in reputable journal articles (Malmendier and Tate, 2005b; 2008; Hirshleifer et al., 2012). Academic research also employs executive's voluntary earnings forecast as a proxy for overconfidence (Otto, 2014) when expected earnings exceed actual earnings. Another measure of overconfidence is executive's purchasing behavior of his firm's own stock (Malmendier and

[12] Malmendier and Tate (2015) review the literature on CEO overconfidence and provide a summary of all measures employed by previous researchers.

Tate, 2005a; Kolasinski and Li, 2013; Yu, 2014; Ahmed et al., 2015; Eicholtz et al., 2015). Furthermore, survey of executives can also reveal information about their overconfidence (Graham et al., 2013).

In spite of numerous studies employing above-mentioned proxies, the bulk of empirical research in behavioral finance literature predominantly utilizes executive's stock option exercise behavior as a manifestation of his overconfidence. First, Malmendier and Tate (2005a) introduced "*longholder*" as a measure of overconfidence using Hall and Murphy (2002) framework. Basically, this measure relies on the fact that personally risk-averse CEO, who is exposed to idiosyncratic risk due to having firm's stock options in his compensation package, diversify away the risk by exercising these options immediately after they are vested instead of waiting their expiration. On the other hand, "*longholder*" CEO is considered to be overconfident because he holds an option until the year of expiration even though the option is at least 40% in the money entering its final year[13]. Although being commonly used (Malmendier and Tate, 2005a; 2005b; 2008; Malmendier et al., 2011; Galasso and Simcoe, 2011; Deshmukh et al., 2013; Chen et al., 2014), this initial measure of overconfidence utilizes data from a unique sample of hand collected data (Hall and Liebman, 1998) which is not available on commonly used databases. Thus, calculating the *moneyness* of individual option packages renders the examination of more recent time periods a very difficult task. In order to solve this problem, some researchers follow Campbell et al. (2011) and calculate the average moneyness of the

[13] "*Holder 67*"is an alternative overconfidence measure, which is also developed by Malmendier and Tate (2005b), which takes a value of one if CEO holds an option with 5 years remaining to expiration that is at least 67% in the money twice in the sample period. Due to focusing on the vesting period, "*Holder 67*" measure restricts the number of observations in the sample and leads to statistically less powerful conclusions. "*Longholder*" measure that is explained above, on the other hand, focuses on the expiration date of the option package and mitigates the small sample bias associated with "*Holder 67*".

executive's option package for each year (Hirshleifer et al., 2012; Ahmed et al., 2015; Engelen et al., 2015; Ho et al., 2015; Yung et al., 2015) using the available data on Execucomp database.

In our study, we also follow Campbell et al. (2011) and define "*overconfident CEO*" as an indicator variable which takes a value 1 if a CEO holds a stock option that is at least 67 percent in the money (Campbell et al., 2011; Hirshleifer et al., 2012). The average moneyness of the option is calculated using a three-step procedure (Campbell et al., 2011). At the first step, the per option realizable value is computed by dividing the total realizable value of the exercisable options by the number of exercisable options. Later, estimated average option exercise price is calculated by subtracting the per option realizable value from the fiscal year end stock price. Finally, the average moneyness of the option is calculated by dividing the per option realizable value by the estimated average option exercise price.

CEO narcissism

Rijsenbilt and Commandeur (2013) offer several indicators of CEO narcissism such as CEO awards, publicity, number of lines used in biography, corporate jest use, photograph, cash and total compensation. In our study, we employ the same narcissism measure that is used by Olsen et al. (2014). This preference is due to two reasons. First, it is a robust measure after controlling for new CEO or constant firm effects. Second, its three components are proven to be capturing the same construct. As a result, we use the same composite narcissism measure which is created by factor weightings of relative cash pay, relative non-cash pay, and CEO photograph. Relative cash pay is the ratio of the CEO salary and bonus to that if the second highest paid executive. Relative non-cash pay is the ratio of the CEO total compensation minus salary and bonus to that of the second highest paid executive. CEO photograph is evaluated rated as (1) if no photograph, (2) if photograph is with other executives, (3) if photograph is alone and occupies

less than half the page, (4) if photograph is alone and occupies more than half the page, and (5) if photograph is alone and occupies the whole page. The narcissism measure is calculated using factor loadings 0.777 for relative cash pay, 0.794 for relative non-cash pay, and 0.501 for photograph size.

CEO power

Peyer et al. (2007) calculate CPS as the total CEO compensation divided by total compensation of top-5 executives. Latter empirical research relies on CPS to measure CEO power (Liu and Jiraporn, 2010; Bebchuk et al., 2011; Jiraporn et al., 2014). Although there are other proxies that can be used to measure CEO power (i.e. CEO duality and founder CEO), Bebchuk et al. (2011) argue that CPS is a continuous variable, thus, more robust. In this study, we also employ CPS as a measure of CEO power. Total compensation is defined as the sum of salary, bonus, other annual pay, long-term incentive payout, restricted stock, and option grants (ExecuComp item TDC1).

CEO tenure

We use a common measure of CEO tenure which is calculated as the natural logarithm of one plus the number of years that CEO has held his position (Kuang et al., 2014)

CEO quality

Following Bhagat and Bolton (2008) and Peni (2014), we calculate CEO quality is the ratio of CEO tenure to CEO age. Higher ratio indicates that longer time CEO has spent in his position relative to his age, thus, he is of higher quality.

CEO ability

Measuring CEO ability requires more attention. Since CEO ability means efficiency in obtaining largest quantity of output by employing given resources, not well-constructed proxy can account for all of CEO-, firm-, and industry-specific drivers of efficiency. Thus, measurement error is very likely. In order to be consistent with prior research, we employ CEO ability measure that is developed and used by Demerjian et al. (2012) and Demerjian et al. (2013). CEO ability is the residuals of the following regression equation which is estimating firm efficiency:

$$Firm\ Efficiency = \beta_0 + \beta_1 Ln(TotalAssets) + \beta_2 MarketShare + \beta_3 PositiveFCF + \beta_4 Ln(Age) + \beta_5 BusinessSegmentConcentration + \beta_6 ForeignCurrencyIndicator + YearDummy + \varepsilon.$$

In our study, we employ the managerial ability data provided by Demerjian et al. (2012) on their faculty website. This data is updated annually, and the most recent version covers only until 2014.

CEO education

Malmendier and Tate (2005a) employ two indicator variables to measure CEO education. Finance dummy takes value of one if CEO has an undergraduate or a graduate degree in accounting, finance, business, or economics.

CEO gender

We employ female CEO dummy that takes value of one if CEO is female.

2.5 ANALYTICAL APPROACH

In this study, we form our expectations based on the findings of He (2015) study that documented a negative relationship between CEO inside debt and earnings management that is measured by the absolute value of abnormal accruals, and a positive relationship between CEO inside debt and accruals quality that is standard deviation of abnormal accruals over a five-year rolling window. Nevertheless, the relationship between CEO inside debt and earnings smoothing and earnings predictability have not been examined. Thus, we start our analyses by establishing these main relationships once again. We employ all four measures of CEO inside debt explained in variable definitions section. CEO relative leverage and CEO relative incentive variables are first logged, and then lagged in order to control for nonlinear effect and also for possible endogeneity.

In our analyses, we control for several factors that are employed by He (2015). We use *firm size* that is calculated as the natural logarithm of total assets, *firm growth* that is the firm market to book ratio, *firm leverage* is defined as the total debt scaled by total assets, *firm profitability* as measured by ROA, *loss* is an indicator variable that takes value of 1 for firms reported loss for that year, 0 otherwise, and finally, *CEO vega* that is the sensitivity of CEO wealth to stock volatility[14]. Similar to other compensation variables, *CEO vega* is also lagged.

$$EM_{i,t} = \beta_0 + \beta_1 CEO\_ISD_{i,t-1} + \beta_2 Firm\ Size_{i,t} + \beta_3 Firm\ Growth_{i,t} + \beta_4 Firm\ Leverage_{i,t} + \beta_5 Firm\ Profitability_{i,t} + \beta_6 Loss\ Dummy_{i,t} + \beta_7 CEO\ Vega_{i,t-1} + \varepsilon_t$$

(Eq. 1)

We estimate the equation above (Eq. 1) in order to test the main hypotheses. *EM* corresponds to all four measures in relation to earnings management; absolute abnormal

[14] See Appendix 2.3 for CEO vega calculations.

accruals, earnings smoothing, earnings predictability, and earnings quality. Similarly, *CEO_ISD* corresponds to all four CEO inside debt measure; CEO relative leverage, CEO relative leverage indicator variable, CEO relative incentive, and CEO relative incentive indicator variable. We estimate pooled OLS regression that is controlled for industry and year fixed effects.

Later, we employ eight CEO attributes: (1) CEO overconfidence; (2) CEO narcissism; (3) CEO power; (4) CEO tenure; (5) CEO quality; (6) CEO ability; (7) CEO education; and (8) CEO gender. All CEO attributes, except gender and education, are lagged. CEO narcissism required taking the natural logarithm in order to eliminate the effect of outliers. In order to test the influence of CEO attributes on the relationship between *CEO_ISD* and *EM*, we estimate the following regression that is also controlled for industry and year fixed effects:

$$EM_{i,t} = \beta_0 + \beta_1\, CEO\_ISD_{i,t-1} + \beta_2 CEO\_Attribute_i + \beta_3 CEO\_ISD_{i,t-1}\, x\, CEO\_Attribute_i + \beta_4 Firm\ Size_{i,t} + \beta_5 Firm\ Growth_{i,t} + \beta_6 Firm\ Leverage_{i,t} + \beta_7 Firm\ Profitability_{i,t} + \beta_8 Loss\ Dummy_{i,t} + \beta_9 CEO\ Vega_{i,t-1} + \varepsilon_t$$

(Eq. 2)

2.6 RESULTS

In this study, we form our expectations for the CEO attribute hypotheses based on He (2015) findings. He (2015) employs the CEO relative leverage ratio and CEO relative incentive ratio to construct the two indicator variables to be used as the inside debt measurement. Furthermore, author employs abnormal accruals, accruals quality, likelihood of earnings misstatement, and incidence of beating earnings benchmarks. Since this study does not incorporate several other measurements of CEO inside debt and firm financial reporting, we first estimate equation 1 in order to confirm his findings. All four CEO inside debt measurements are

employed for this estimation. The findings are presented in table 2.1. Our results show that there is not a significant relationship between CEO relative leverage and absolute value of abnormal accruals. However, CEO relative incentive ratio, and two indicator variables are significantly related to both absolute value of abnormal accruals and accruals quality. These findings explain the choice of independent variable of interest.

[Insert Table 2.1 about here]

He (2015) concludes that inside debt portion of the compensation package motivates the CEO to have a longer view of the firm's future, thus, prevents him to engage with financial misreporting. In fact, author documents a negative relationship between CEO inside debt and absolute value of abnormal accrual, and a positive relationship between CEO inside debt and accruals quality. Our results provide consistent evidence as well. These findings also lead us to expect a negative relationship between CEO inside debt and earnings smoothing, and also earnings predictability. The sign of the coefficient of the earnings smoothing measure is negative as expected, however, statistically significant only for CEO relative leverage ratio and only at 10 percent level. On the other hand, the sign of the earnings predictability measure is contradicting with our expectations. Earnings predictability is measured as the standard deviation of residuals over a five-year rolling window. Thus, smaller standard deviation implies higher predictability. We hypothesized that if CEO with inside debt does not engage with financial misreporting, his firm's earnings should be less predictable with larger standard deviation. However, our results show that there is a negative relationship between CEO inside debt and the standard deviation of residual that is significant at 1 percent for all CEO inside debt measure except for CEO relative leverage. Thus, our findings conclude that the higher CEO inside debt leads to higher earnings

predictability. Finally, we document a positive relationship, that is significant at 1 percent level, between all CEO inside debt measures and earnings quality.

In the remaining part of our analyses, we employ only CEO relative incentive ratio since CEO relative leverage is mostly insignificant across different dependent variables. We present the descriptive statistics and the correlation matrix in table 2.2 and table 2.3, respectively.

[Insert Table 2.2 about here]

[Insert Table 2.3 about here]

We, then estimate the second equation using CEO attributes as the moderators. Tables 2.4 through 2.11 represent the results for the eight attributes we employ. In tables, columns 1, 3, 5, and 7 indicate the univariate results, and columns 2, 4, 6, and 8 present multivariate results. Results show that CEO overconfidence and narcissism have no significant impact on the relationship between CEO inside debt and earnings management measures. Univariate results show that CEO overconfidence is associated with smaller absolute value of abnormal accruals, larger earnings smoothing ratio, and higher earnings predictability. However, multivariate results show that the coefficients of the interaction term are not statistically significant. Univariate results for CEO narcissism show that CEO narcissism is negatively related to the absolute value of abnormal accruals. Similar to overconfidence, the multivariate analyses do not document significant results for any of the earnings management measures. The insignificant results from the examination of narcissism may be due to small sample. The results are presented below in table 2.4 and table 2.5.

[Insert Table 2.4 about here]

[Insert Table 2.5 about here]

CEO power is negatively and significantly related with absolute value of accruals according to both univariate and multivariate results. Univariate results also indicate that higher CEO power is associated with higher earnings quality, but the significance disappears in multivariate setting. Furthermore, the interaction of CEO inside debt and power has no statistical significance. CEO tenure is associated with higher earnings predictability and higher earnings quality. Univariate results show that firms whose CEOs have larger inside debt and longer tenure are associated with lower earnings predictability and lower earnings quality. The coefficient on the interaction term is positive and statistically significant at 5 percent level for only earnings quality. This finding concludes that CEO tenure influences CEO inside debt and earnings quality in the opposite direction of our expectation. The results of the analyses of CEO power and CEO tenure are presented in table 2.6 and in table 2.7, respectively.

[Insert Table 2.6 about here]

[Insert Table 2.7 about here]

CEO quality is found to be associated with higher earnings predictability which signals that CEOs who are of higher quality might be managing earnings. Results are consistent in both univariate and multivariate setting. On the contrary, the interaction of CEO inside debt and CEO quality has positive coefficient that is statistically significant at 10 percent level. This finding suggests that higher quality CEO with larger inside debt component in compensation package might be involved with less earnings management since firm's earnings are less predictable. Higher CEO quality is associated with higher quality earnings. However, the sign of the coefficient of the interaction term suggests that firm's earnings are of lower quality when higher quality CEO has larger inside debt in compensation package. More able CEO, alone, is associated with larger absolute abnormal accruals, smaller earnings smoothing ratio, lower

earnings predictability, and lower earnings quality. However, the impact of CEO ability on the relationship between CEO inside debt and earnings management measures are not statistically significant. The results of the analyses of CEO quality and CEO ability are presented in table 2.8 and in table 2.9, respectively.

[Insert Table 2.8 about here]

[Insert Table 2.9 about here]

Finally, we examine the impact of CEO education and gender. The results of the analyses are presented below in table 2.10 and in table 2.11, respectively. The results show that CEO who has a degree in business, finance, accounting, or economics is associated with higher earnings quality. Nevertheless, CEO who holds large inside debt and who has a degree in one of these majors is associated with lower earnings quality. On the other hand, CEO gender does not have significant impact, except for the lower earnings predictability documented which is significant only at 10 percent level. The interaction of CEO gender, specifically female CEO, and CEO inside debt is not statistically significant in any analyses. This can be due to female CEOs being only a small fraction of the total number of CEOs in our sample.

[Insert Table 2.10 about here]

[Insert Table 2.11 about here]

As an additional test, we also employ an alternative overconfidence measure in order to control for the nonlinear effect of overconfidence. Similar to the main overconfidence measure, the *moneyness* of the option is calculated using Campbell et al. (2011). Later, we determine the level of overconfidence is using cut the off percentages employed by Yung et al. (2015). Specifically, CEOs who hold options that are 67-130 percent, 130-250 percent, and 250 percent

and more in the money are categorized as little, moderately, and highly overconfident, respectively. Thus, *CEO high confidence* is defined as an indicator variable that takes value of 1 if the CEO holds options that are at least 250 percent in the money. The results presented in table 2.12 also show that overconfidence does not have a strong influence on CEOs financial reporting and earnings management choices.

[Insert Table 2.12 about here]

2.7 LIMITATIONS

Campbell et al. (2011) introduce a calculation of average moneyness of executive stock options in order to measure CEO optimism as a proxy of overconfidence. However, this method is also far from being perfect, and has its own limitations. Specifically, this method has been criticized because the average moneyness of an option can only be approximated since details of individual option packages such as grant dates, expiration dates, and strike prices are not available before 2006 (Malmendier and Tate, 2015). Furthermore, Malmendier and Tate (2015) offer a new method which applies the initial overconfidence measurement (Malmendier and Tate, 2005a) to post-2006 Execucomp data[15]. In order to remain consistent with the majority of previous empirical studies, we follow Campbell et al. (2011). Thus, one of the limitations of our study is that average moneyness of the stock option is an approximate value. Furthermore, the sample employed for narcissism attribute is small due to data requiring hand-collection. Thus, increasing the sample size might change the significance of the results documented in our analyses. Finally, female CEOs are found to have an insignificant impact. This result can be due to having only a small fraction of female CEOs in our sample.

[15] Malmendier and Tate (2015) apply the same method to time period prior to 2006 using transaction level data on option exercise date obtained from Thomson Reuters.

2.8 CONCLUSIONS

In this study, we investigated the impact of CEO attributes on the relationship between CEO inside debt and several earnings management measures. Initially, we confirmed the negative relationship between CEO inside debt and the absolute value of abnormal accruals, and also the positive relationship between CEO inside debt and earnings quality documented by He (2015). In addition to these two measures, we also investigated earnings smoothing and earnings predictability. While we did not find strong evidence for CEO inside debt being associated with less earnings smoothing, we documented a positive relation between CEO inside debt and earnings predictability which contradicts our prior expectations.

Later, we examined the moderating effects of eight CEO attributes. The results show that while CEO attributes have some impact on earning management as measured by the value of absolute accruals, earnings smoothing, and earnings predictability, and also earnings quality when examined individually, the moderating effects are weak when these attributes are interacted with CEO inside debt. Only significant moderating effects are the interaction of CEO inside debt and tenure on earnings quality, the interaction of CEO inside debt and quality on earnings predictability and quality, and the interaction of CEO inside debt and finance education on earnings quality. These findings conclude that the impact of CEO inside debt on earnings management and earnings quality is not influenced significantly by CEO attributes. Thus, CEO attributes are not strong enough to make CEO behave different than what is imposed by the CEO compensation.

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Table 2.1. The impact of CEO inside debt on firm financial reporting

Variable	ABS_ACC	ABS_ACC	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	ES_RATIO	ES_RATIO
Intercept	0.07559***	0.07246***	0.0701***	0.0658***	0.62929***	0.8029***	0.61512***	0.80001***
	(5.8173)	(5.0820)	(4.4487)	(3.2882)	(7.7587)	(0.8288)	(7.2572)	(0.1868)
CEO relative leverage	-0.00058				-0.02435*			
	(0.7336)				(1.8567)			
CEO relative leverage > 1		-0.0056***				0.00722		
		(3.9212)				(0.2435)		
CEO relative incentive			-0.00106***				-0.00583	
			(4.0870)				(1.2143)	
CEO relative incentive > 1				-0.01065***				0.00129
				(5.9414)				(0.0409)
Firm size	-0.00447***	-0.00454***	-0.00369***	-0.00362***	-0.01142	-0.01946**	-0.0095	-0.01905*
	(7.6803)	(7.8791)	(6.3020)	(6.0860)	(1.0958)	(2.0482)	(0.8417)	(1.8413)
Firm growth	0.00711***	0.00664***	0.00702***	0.0062***	-0.00443	-0.00737	-0.00634	-0.00731
	(5.9893)	(6.8960)	(6.0222)	(6.4698)	(0.3287)	(0.6523)	(0.4673)	(0.6353)
Firm leverage	-0.00199	-0.00642	-0.00333	-0.00136	0.00021	0.06256	0.01711	0.06075
	(0.2771)	(0.9761)	(0.4725)	(0.2057)	(0.0027)	(0.8133)	(0.2124)	(0.8116)
Firm profitability	-0.00072***	-0.00063***	-0.00069***	-0.00062***	0.00018	-0.00162	0.00016	-0.0016
	(4.7702)	(5.2240)	(4.6367)	(5.2014)	(0.1272)	(1.0945)	(0.1125)	(1.0849)
Loss Dummy	0.01475***	0.01869***	0.01475***	0.01788***	0.05364	0.08673	0.04913	0.0871
	(2.9479)	(4.2821)	(2.9651)	(4.1441)	(0.9415)	(1.4616)	(0.8606)	(1.4690)
CEO vega	-0.00002***	-0.00003***	-0.00002***	-0.00003***	-0.00006*	-0.00009**	-0.00006*	-0.00009**
	(8.0586)	(1.2768)	(8.2687)	(1.1670)	(1.7964)	(2.4565)	(1.7186)	(2.4571)
N	5,344	6,586	5,344	6,586	5,301	6,540	5,304	6,540
R^2	14.12%	14.32%	14.60%	14.87%	3.35%	3.00%	3.31%	2.99%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.1. Cont'd.

Variable	Earn Pred.	Earn Pred.	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.	Earn Qual.	Earn Qual.
Intercept	0.09625***	0.1092***	0.08935***	0.10243***	0.09229***	0.08782***	0.08407***	0.07884***
	(0.3022)	(0.6403)	(9.4404)	(0.0104)	(5.7933)	(5.6398)	(4.5085)	(3.5146)
CEO relative leverage	-0.00213				-0.00273***			
	(1.6357)				(2.9120)			
CEO relative leverage > 1		-0.00738***				-0.01099***		
		(2.6519)				(6.2905)		
CEO relative incentive			-0.00152***				-0.00184***	
			(3.2535)				(5.7469)	
CEO relative incentive > 1				-0.01186***				-0.01648***
				(3.7899)				(6.6508)
Firm size	-0.00871***	-0.00946***	-0.00774***	-0.00852***	-0.00651***	-0.00667***	-0.00536***	-0.00543***
	(7.1189)	(7.3517)	(6.1036)	(6.7915)	(8.8956)	(9.5177)	(7.3631)	(7.3443)
Firm growth	0.00833***	0.00583**	0.00811***	0.00534**	0.00773***	0.00677***	0.00746***	0.00609***
	(3.0351)	(2.4571)	(2.9216)	(2.2602)	(6.4290)	(6.3316)	(6.3413)	(5.7340)
Firm leverage	0.01767	0.0165	0.01723	0.02233	-0.01375*	-0.01842**	-0.01409*	-0.01018
	(1.2472)	(1.1761)	(1.2244)	(1.6174)	(1.6717)	(2.4238)	(1.7553)	(1.3466)
Firm profitability	-0.00156***	-0.00155***	-0.00153***	-0.00154***	-0.00041***	-0.00033***	-0.00038***	-0.00032***
	(5.8746)	(6.5308)	(5.7555)	(6.5877)	(3.3360)	(3.0808)	(3.1607)	(3.1143)
Loss Dummy	0.0343***	0.02821***	0.03403***	0.02727***	0.03034***	0.03206***	0.02998***	0.03073***
	(3.9244)	(4.0595)	(3.9337)	(3.9094)	(4.5657)	(5.7090)	(4.5709)	(5.5274)
CEO vega	0.00004***	0.00004***	0.00004***	0.00004***	0.00003***	0.00002***	0.00003***	0.00002***
	(0.0853)	(0.0413)	(9.9599)	(0.1714)	(7.0461)	(8.0078)	(7.0738)	(8.2713)
N	5,344	6,586	5,344	6,586	5,301	6,540	5,304	6,540
R^2	21.32%	20.62%	21.68%	20.88%	27.22%	26.70%	28.46%	27.73%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.2. Descriptive Statistics for full sample. The sample period is 2007-2015

Variable	N	Mean	STD	Minimum	25th percentile	Median	75th percentile	Maximum
CEO relative incentive	6559	4.38984	3.5305537	0	0	5.4231546	7.1648261	20.0794212
ABS_ACC	8636	0.040479	0.052358	5.79E-06	0.010148	0.0235744	0.0493231	0.6330441
ES_RATIO	8580	0.790035	0.7981568	0.0129399	0.3502763	0.6218122	0.9809307	25.2535626
Earnings predictability	8636	0.057666	0.0804784	0.000609656	0.0163355	0.0331887	0.0683858	2.334013
Earnings quality	8636	0.055055	0.0525312	0	0.0214419	0.0379351	0.0702595	0.5383833
Overconfidence	8065	0.485183	0.4998114	0	0	0	1	1
Narcissism	1273	1.649772	0.4269153	0.4061323	1.4162379	1.6371373	1.8060506	5.5753836
Power	8039	0.402372	0.1146444	0	0.3366846	0.404184	0.4650756	1
Tenure	7882	1.832732	0.8803137	0	1.0986123	1.9459101	2.4849066	4.1108739
Quality	8011	0.132886	0.1232568	-0.1956522	0.0408163	0.1034483	0.1875	0.6315789
Ability	7479	0.010362	0.1379028	-0.2949807	-0.068104	-0.0219163	0.0457967	0.6343571
Finance education	9199	0.426894	0.4946536	0	0	0	1	1
Female	9441	0.03506	0.1839409	0	0	0	0	1
High overconfidence	8065	0.129448	0.3357162	0	0	0	0	1
Firm size	8636	7.477437	1.5832359	2.8985053	6.3484368	7.3663165	8.4502647	12.7642388
Firm growth	8636	1.963242	1.1946271	0.4204773	1.236752	1.6254043	2.2810927	22.5488254
Firm leverage	8593	0.195803	0.1871575	0	0.0232593	0.1744734	0.2949612	2.7286458
Firm profitability	10432	4.507213	12.3709865	-310.155	2.1685	5.552	9.221	83.786
Loss	8636	0.064729	0.2460614	0	0	0	0	1
CEO vega	8035	5.292169	441.577317	0	0.0011742	0.010527	0.0243809	39482.03

Table 2.3. Correlation Matrix

		1	2	3	4	5	6	7	8	9	10
1	**CEO _Rel_Inc**	1	-0.145	-0.016	-0.181	-0.234	0.0153	-0.05	0.0949	-0.054	-0.13
			<.0001	0.258	<.0001	<.0001	0.2155	0.0928	<.0001	<.0001	<.0001
2	**ABS_ACC**	-0.145	1	-0.097	0.2342	0.639	-0.057	-0.041	-0.058	-0.006	0.0262
		<.0001		<.0001	<.0001	<.0001	<.0001	0.1681	<.0001	0.6442	0.0332
3	**ES_RATIO**	-0.016	-0.097	1	0.0819	-0.162	0.032	0.0453	0.0098	-0.005	-0.016
		0.258	<.0001		<.0001	<.0001	0.0094	0.1322	0.4261	0.7164	0.1987
4	**Earn Pred.**	-0.181	0.2342	0.0819	1	0.3306	-0.057	-0.043	-0.043	-0.039	-0.009
		<.0001	<.0001	<.0001		<.0001	<.0001	0.151	0.0005	0.0018	0.4541
5	**Earn Qual.**	-0.234	0.639	-0.162	0.3306	1	-0.047	-0.062	-0.079	-0.018	0.0206
		<.0001	<.0001	<.0001	<.0001		0.0001	0.0392	<.0001	0.156	0.094
6	**Overconf.**	0.0153	-0.057	0.032	-0.057	-0.047	1	0.0514	0.0817	0.2707	0.2138
		0.2155	<.0001	0.0094	<.0001	0.0001		0.0666	<.0001	<.0001	<.0001
7	**Narcissism**	-0.05	-0.041	0.0453	-0.043	-0.062	0.0514	1	0.682	0.0253	0.0017
		0.0928	0.1681	0.1322	0.151	0.0392	0.0666		<.0001	0.3717	0.9519
8	**Power**	0.0949	-0.058	0.0098	-0.043	-0.079	0.0817	0.682	1	0.0505	-0.004
		<.0001	<.0001	0.4261	0.0005	<.0001	<.0001	<.0001		<.0001	0.7345
9	**Tenure**	-0.054	-0.006	-0.005	-0.039	-0.018	0.2707	0.0253	0.0505	1	0.9019
		<.0001	0.6442	0.7164	0.0018	0.156	<.0001	0.3717	<.0001		<.0001
10	**Quality**	-0.13	0.0262	-0.016	-0.009	0.0206	0.2138	0.0017	-0.004	0.9019	1
		<.0001	0.0332	0.1987	0.4541	0.094	<.0001	0.9519	0.7345	<.0001	
11	**Ability**	0.0158	0.1041	-0.067	0.0665	0.1533	0.024	-0.129	-0.029	-0.009	-0.006
		0.2189	<.0001	<.0001	<.0001	<.0001	0.0379	<.0001	0.0124	0.4676	0.6314
12	**Education**	0.0623	-0.084	0.0016	-0.071	-0.13	-0.007	0.052	0.022	0.0111	0.0122
		<.0001	<.0001	0.8914	<.0001	<.0001	0.5369	0.0644	0.0513	0.3296	0.2812
13	**Female**	0.0113	-0.001	-0.004	0.0206	-0.004	-0.039	-0.027	-0.009	-0.068	-0.054
		0.3595	0.9099	0.7551	0.0695	0.7009	0.0004	0.3294	0.4179	<.0001	<.0001
14	**High Confid.**	-0.093	0.0369	0.0122	0.0151	0.0754	0.3972	0.0388	0.0376	0.1889	0.1867
		<.0001	0.0026	0.3208	0.2196	<.0001	<.0001	0.1666	0.0007	<.0001	<.0001

15	**Firm size**	0.3272	-0.248	-0.027	-0.244	-0.358	0.0229	-0.062	0.0772	-0.094	-0.132
		<.0001	<.0001	0.0121	<.0001	<.0001	0.0614	0.0388	<.0001	<.0001	<.0001
16	**Firm leverage**	-0.073	-0.106	0.0099	0.0168	-0.196	0.0246	0.122	0.056	-0.025	-0.033
		<.0001	<.0001	0.3607	0.1198	<.0001	0.0453	<.0001	<.0001	0.0449	0.0072
17	**Loss Dummy**	-0.078	0.2031	0.0386	0.2404	0.2595	-0.087	-0.012	-0.057	-0.002	0.0242
		<.0001	<.0001	0.0004	<.0001	<.0001	<.0001	0.6896	<.0001	0.8885	0.0492
18	**Profitability**	0.1254	-0.146	-0.022	-0.3	-0.138	0.1096	-0.032	0.024	0.0124	-0.016
		<.0001	<.0001	0.0391	<.0001	<.0001	<.0001	0.2595	0.0314	0.2724	0.145
19	**CEO vega**	-0.016	-0.003	-0.008	0.0047	0.0154	0.0107	0.0081	-0.042	-0.024	-0.013
		0.183	0.8235	0.5156	0.6997	0.2099	0.3382	0.7725	0.0002	0.0343	0.2602
20	**Firm growth**	-0.022	0.1362	-0.006	0.0644	0.1733	0.1627	-0.107	-0.065	0.027	0.0229
		0.1122	<.0001	0.6045	<.0001	<.0001	<.0001	0.0004	<.0001	0.03	0.0632

Table 2.3. Cont'd.

		11	12	13	14	15	16	17	18	19	20
1	**CEO _Rel_Inc**	0.0158	0.0623	0.0113	-0.093	0.3272	-0.073	-0.078	0.1254	-0.016	-0.022
		0.2189	<.0001	0.3595	<.0001	<.0001	<.0001	<.0001	<.0001	0.183	0.1122
2	**ABS_ACC**	0.1041	-0.084	-0.001	0.0369	-0.248	-0.106	0.2031	-0.146	-0.003	0.1362
		<.0001	<.0001	0.9099	0.0026	<.0001	<.0001	<.0001	<.0001	0.8235	<.0001
3	**ES_RATIO**	-0.067	0.0016	-0.004	0.0122	-0.027	0.0099	0.0386	-0.022	-0.008	-0.006
		<.0001	0.8914	0.7551	0.3208	0.0121	0.3607	0.0004	0.0391	0.5156	0.6045
4	**Earn Pred.**	0.0665	-0.071	0.0206	0.0151	-0.244	0.0168	0.2404	-0.3	0.0047	0.0644
		<.0001	<.0001	0.0695	0.2196	<.0001	0.1198	<.0001	<.0001	0.6997	<.0001
5	**Earn Qual.**	0.1533	-0.13	-0.004	0.0754	-0.358	-0.196	0.2595	-0.138	0.0154	0.1733
		<.0001	<.0001	0.7009	<.0001	<.0001	<.0001	<.0001	<.0001	0.2099	<.0001
6	**Overconf.**	0.024	-0.007	-0.039	0.3972	0.0229	0.0246	-0.087	0.1096	0.0107	0.1627
		0.0379	0.5369	0.0004	<.0001	0.0614	0.0453	<.0001	<.0001	0.3382	<.0001
7	**Narcissism**	-0.129	0.052	-0.027	0.0388	-0.062	0.122	-0.012	-0.032	0.0081	-0.107
		<.0001	0.0644	0.3294	0.1666	0.0388	<.0001	0.6896	0.2595	0.7725	0.0004
8	**Power**	-0.029	0.022	-0.009	0.0376	0.0772	0.056	-0.057	0.024	-0.042	-0.065
		0.0124	0.0513	0.4179	0.0007	<.0001	<.0001	<.0001	0.0314	0.0002	<.0001
9	**Tenure**	-0.009	0.0111	-0.068	0.1889	-0.094	-0.025	-0.002	0.0124	-0.024	0.027
		0.4676	0.3296	<.0001	<.0001	<.0001	0.0449	0.8885	0.2724	0.0343	0.03
10	**Quality**	-0.006	0.0122	-0.054	0.1867	-0.132	-0.033	0.0242	-0.016	-0.013	0.0229
		0.6314	0.2812	<.0001	<.0001	<.0001	0.0072	0.0492	0.145	0.2602	0.0632
11	**Ability**	1	-0.064	-0.002	0.036	0.1346	-0.147	-0.015	0.119	0.0031	0.2451
			<.0001	0.8428	0.0019	<.0001	<.0001	0.2231	<.0001	0.7882	<.0001
12	**Education**	-0.064	1	0.037	-0.05	0.1037	0.102	-0.05	0.0347	-0.011	-0.047
		<.0001		0.0004	<.0001	<.0001	<.0001	<.0001	0.0009	0.3519	<.0001
13	**Female**	-0.002	0.037	1	-0.024	-0.009	0.0079	-0.012	0.0038	-0.002	-0.006
		0.8428	0.0004		0.029	0.4327	0.4892	0.2936	0.7107	0.842	0.6002
14	**High Confid.**	0.036	-0.05	-0.024	1	-0.075	-0.028	-0.017	0.0416	-0.005	0.1352
		0.0019	<.0001	0.029		<.0001	0.0205	0.1667	0.0002	0.6794	<.0001

15	**Firm size**	0.1346	0.1037	-0.009	-0.075	1	0.2813	-0.206	0.1429	0.0136	-0.115
		<.0001	<.0001	0.4327	<.0001		<.0001	<.0001	<.0001	0.2693	<.0001
16	**Firm leverage**	-0.147	0.102	0.0079	-0.028	0.2813	1	-0.002	-0.18	-0.012	-0.078
		<.0001	<.0001	0.4892	0.0205	<.0001		0.8532	<.0001	0.311	<.0001
17	**Loss Dummy**	-0.015	-0.05	-0.012	-0.017	-0.206	-0.002	1	-0.458	0.0003	0.0138
		0.2231	<.0001	0.2936	0.1667	<.0001	0.8532		<.0001	0.9831	0.2007
18	**Profitability**	0.119	0.0347	0.0038	0.0416	0.1429	-0.18	-0.458	1	-0.004	0.2612
		<.0001	0.0009	0.7107	0.0002	<.0001	<.0001	<.0001		0.7347	<.0001
19	**CEO vega**	0.0031	-0.011	-0.002	-0.005	0.0136	-0.012	0.0003	-0.004	1	-0.005
		0.7882	0.3519	0.842	0.6794	0.2693	0.311	0.9831	0.7347		0.6966
20	**Firm growth**	0.2451	-0.047	-0.006	0.1352	-0.115	-0.078	0.0138	0.2612	-0.005	1
		<.0001	<.0001	0.6002	<.0001	<.0001	<.0001	0.2007	<.0001	0.6966	

Table 2.4. The impact of CEO overconfidence on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.05274***	0.07038***	0.53506***	0.61614***	0.04614***	0.09031***	0.05524***	0.08471***
	(3.4367)	(4.4779)	(9.5805)	(7.3776)	(8.5894)	(9.4896)	(9.3555)	(4.5005)
CEO relative incentive	-0.00251***	-0.00145***	-0.00562	-0.00364	-0.00422***	-0.00185***	-0.00345***	-0.00214***
	(5.6124)	(3.7462)	(1.0169)	(0.6378)	(5.9404)	(2.8294)	(6.2790)	(4.8932)
CEO overconfidence	-0.00661*	-0.00595*	0.07816	0.08925*	-0.01063*	-0.00592	-0.00246	-0.00213
	(1.9006)	(1.8212)	(1.6002)	(1.7700)	(1.6853)	(1.0812)	(0.5555)	(0.5400)
CEO_Rel_Inc x Overcon.	0.00099*	0.00066	-0.00412	-0.00512	0.00114	0.00036	0.00075	0.00031
	(1.8149)	(1.3317)	(0.5100)	(0.6290)	(1.2130)	(0.4414)	(1.1282)	(0.5420)
Firm size		-0.00375***		0.00375***		-0.00787***		-0.00545***
		(6.4330)		(6.4330)		(6.1640)		(7.4411)
Firm growth		0.00766***		0.00766***		0.00933***		0.00834***
		(6.5628)		(6.5628)		(3.3906)		(7.0287)
Firm leverage		-0.00242		-0.00242		0.01853		-0.01278
		(0.3384)		(0.3384)		(1.3197)		(1.5730)
Firm profitability		-0.00065***		0.00065***		-0.00147***		-0.00032***
		(4.3441)		(4.3441)		(5.4968)		(2.7083)
Loss Dummy		0.01416***		0.01416***		0.03296***		0.02918***
		(2.8481)		(2.8481)		(3.8756)		(4.4535)
CEO vega		-0.00003***		0.00003***		0.00004***		0.00003***
		(8.7883)		(8.7883)		(9.3608)		(6.4742)
N	5,360	5,347	5,304	5,304	5,360	5,347	5,360	5,347
R^2	8.00%	14.48%	3.39%	3.47%	10.43%	21.27%	16.97%	26.98%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.5. The impact of CEO narcissism on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.07951***	0.07514***	0.47885***	0.68735**	0.02843	0.035*	0.09503***	0.09177***
	(6.9999)	(4.7780)	(2.7470)	(2.3902)	(1.6497)	(1.7230)	(7.5369)	(5.5767)
CEO relative incentive	-0.00283	-0.00245	-0.01124	-0.00981	0.0013	0.00156	-0.00279	-0.00235
	(1.4762)	(1.4305)	(0.2968)	(0.2604)	(0.3970)	(0.5112)	(1.3876)	(1.2760)
CEO narcissism	-0.00913*	-0.00678*	-0.00156	-0.01312	-0.00429	-0.00274	-0.00791	-0.00574
	(1.8130)	(1.7514)	(0.0184)	(0.1558)	(0.6400)	(0.5556)	(1.5284)	(1.3680)
CEO_Rel_Inc x Narcissism	0.00008	0.00001	0.01571	0.01783	-0.00127	-0.0012	-0.00072	-0.00078
	(0.0768)	(0.0078)	(0.7007)	(0.8052)	(0.7801)	(0.7812)	(0.6546)	(0.7431)
Firm size		-0.0013		-0.03945		-0.00264		-0.00219
		(0.8511)		(1.5987)		(1.6063)		(1.4084)
Firm growth		0.0093**		0.03825		0.00891		0.0104***
		(2.5363)		(1.0279)		(1.4525)		(3.4561)
Firm leverage		-0.01482		0.39271*		-0.00646		0.00004
		(0.7858)		(1.7545)		(0.3588)		(0.0014)
Firm profitability		-0.0007		-0.00232		-0.00073		-0.00034
		(1.0346)		(0.6571)		(1.6461)		(0.8345)
Loss Dummy		0.01358		-0.02192		0.01247		0.0152
		(1.0897)		(0.1662)		(0.9645)		(1.5797)
CEO vega		-0.02925		-0.36177		-0.04282		-0.01944
		(0.7470)		(0.6719)		(1.1241)		(0.5074)
N	983	981	979	977	983	981	983	981
R^2	10.08%	15.21%	10.63%	11.98%	37.06%	42.24%	26.17%	32.58%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.6. The impact of CEO power on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.06166***	0.07626***	0.55403***	0.63136***	0.05381***	0.09021***	0.06282***	0.08732***
	(6.3588)	(4.6995)	(6.4197)	(6.0924)	(4.4385)	(7.1794)	(3.8502)	(3.1754)
CEO relative incentive	-0.00235***	-0.00128*	-0.01839	-0.01767	-0.00326	-0.00068	-0.00261***	-0.00131
	(2.9418)	(1.7455)	(1.1210)	(1.0352)	(1.5719)	(0.3571)	(2.9674)	(1.6431)
CEO power	-0.0254***	-0.01635*	-0.03466	-0.03659	-0.02286	-0.0004	-0.02044*	-0.00786
	(2.6138)	(1.7424)	(0.1505)	(0.1552)	(0.7256)	(0.0138)	(1.7578)	(0.7203)
CEO_Rel_Inc x Power	0.00092	0.00044	0.02646	0.02839	-0.00087	-0.00242	-0.00101	-0.00159
	(0.5086)	(0.2642)	(0.6805)	(0.7255)	(0.1799)	(0.5398)	(0.4939)	(0.8584)
Firm size		-0.0037***		-0.01007		-0.00779***		-0.0054***
		(6.3730)		(0.8920)		(6.0870)		(7.3685)
Firm growth		0.00734***		-0.00485		0.00898***		0.00825***
		(6.4212)		(0.3630)		(3.2604)		(7.0848)
Firm leverage		-0.00271		0.01903		0.01828		-0.01272
		(0.3795)		(0.2367)		(1.3007)		(1.5567)
Firm profitability		-0.00066***		0.00031		-0.00149***		-0.00033***
		(4.4097)		(0.2298)		(5.6763)		(2.6716)
Loss Dummy		0.01439***		0.04605		0.03335***		0.02918***
		(2.8508)		(0.8110)		(3.8969)		(4.3748)
CEO vega		-0.00003***		-0.00006		0.00004***		0.00002***
		(9.1135)		(1.4070)		(6.7904)		(6.5964)
N	5360	5347	5317	5304	5360	5347	5360	5347
R^2	8.08%	14.45%	3.26%	3.32%	10.37%	21.22%	17.21%	27.08%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.7. The impact of CEO tenure on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.05777***	0.07548***	0.39279***	0.4639***	0.08976***	0.12757***	0.08028***	0.11289***
	(3.0107)	(5.6177)	(2.4598)	(5.2971)	(7.9202)	(3.4084)	(0.9515)	(8.8378)
CEO relative incentive	-0.00295***	-0.00155***	0.00106	0.0037	-0.0059***	-0.00264***	-0.00502***	-0.00326***
	(4.3840)	(2.6538)	(0.1252)	(0.4152)	(5.2585)	(2.9652)	(5.9073)	(4.6873)
CEO tenure	-0.002	-0.00134	0.02494	0.02671	-0.0085***	-0.00656**	-0.00496**	-0.00442**
	(1.1257)	(0.8052)	(1.0530)	(1.1154)	(2.7455)	(2.5583)	(2.3932)	(2.4306)
CEO_Rel_Inc x Tenure	0.0005*	0.00023	-0.00457	-0.00515	0.00125**	0.00062	0.00103***	0.00067**
	(1.6789)	(0.8498)	(1.0656)	(1.1907)	(2.5101)	(1.5149)	(2.9400)	(2.2621)
Firm size		-0.00376***		-0.00986		-0.00829***		-0.00552***
		(6.3986)		(0.8564)		(6.8004)		(7.4297)
Firm growth		0.00672***		-0.0045		0.00991***		0.00809***
		(6.4432)		(0.3325)		(3.6070)		(6.7565)
Firm leverage		-0.00221		0.01934		0.01736		-0.01314
		(0.3052)		(0.2328)		(1.2646)		(1.5703)
Firm profitability		-0.0006***		0.00005		-0.00156***		-0.00029**
		(4.2372)		(0.0331)		(5.8589)		(2.3200)
Loss Dummy		0.01519***		0.04205		0.027***		0.0295***
		(2.9802)		(0.7493)		(4.2435)		(4.4062)
CEO vega		-0.00002***		-0.00006*		0.00004***		0.00003***
		(8.5522)		(1.7004)		(9.8256)		(6.5463)
N	5,251	5,239	5,211	5,199	5,251	5,239	5,251	5,239
R^2	8.17%	14.07%	3.19%	3.25%	11.05%	22.07%	17.77%	27.44%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.8. The impact of CEO quality on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.05234***	0.07085***	0.54551***	0.63103***	0.04481***	0.0921***	0.05478***	0.08397***
	(2.2342)	(4.5887)	(9.8206)	(7.3841)	(7.2296)	(9.8943)	(7.0103)	(4.3256)
CEO relative incentive	-0.00255***	-0.00141***	-0.00337	-0.0009	-0.00504***	-0.00234***	-0.00405***	-0.00265***
	(5.3729)	(3.3875)	(0.5863)	(0.1419)	(6.4865)	(3.6252)	(6.6771)	(5.3485)
CEO quality	-0.00631	-0.00393	0.04394	0.05528	-0.05467***	-0.0448**	-0.02496*	-0.02453*
	(0.4942)	(0.3310)	(0.2596)	(0.3239)	(2.5950)	(2.5592)	(1.6795)	(1.9164)
CEO_Rel_Inc x Quality	0.00427*	0.00213	-0.03128	-0.0371	0.0109***	0.00578*	0.00747***	0.00483**
	(1.8598)	(1.0325)	(0.9548)	(1.1183)	(2.8754)	(1.8409)	(2.8030)	(2.1134)
Firm size		-0.00374***		-0.01128		-0.0083***		-0.00541***
		(6.3473)		(0.9892)		(6.7839)		(7.3345)
Firm growth		0.00691***		-0.00322		0.0099***		0.00825***
		(6.4691)		(0.2411)		(3.5986)		(6.8672)
Firm leverage		-0.00202		0.00627		0.01704		-0.01301
		(0.2820)		(0.0788)		(1.2572)		(1.5776)
Firm profitability		-0.0006***		0.00027		-0.00157***		-0.00031**
		(4.1914)		(0.1919)		(5.9244)		(2.4446)
Loss Dummy		0.01503***		0.0525		0.02636***		0.02913***
		(2.9579)		(0.9268)		(4.1800)		(4.3754)
CEO vega		-0.00002***		-0.00006*		0.00004***		0.00003***
		(8.4091)		(1.9111)		(9.7026)		(6.4570)
N	5,334	5,321	5,292	5,279	5,334	5,321	5,334	5,321
R^2	7.91%	13.67%	3.31%	3.39%	10.98%	21.98%	17.27%	26.91%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.9. The impact of CEO ability on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.05262***	0.07643***	0.5478***	0.60302***	0.04584***	0.10121***	0.05569***	0.09351***
	(3.1256)	(5.9228)	(9.9073)	(7.2949)	(8.2084)	(1.1597)	(9.3345)	(6.5663)
CEO relative incentive	-0.002***	-0.00108***	-0.00636	-0.00488	-0.00356***	-0.00147***	-0.00305***	-0.00188***
	(6.9364)	(4.2999)	(1.4965)	(1.0909)	(7.0846)	(3.2378)	(8.1970)	(5.9948)
CEO ability	0.03447***	0.03519***	-0.25246*	-0.25777**	0.05752**	0.07447***	0.06205***	0.06022***
	(2.7345)	(2.6556)	(1.9586)	(1.9656)	(2.5390)	(3.5988)	(3.8263)	(3.5827)
CEO_Rel_Inc x Ability	-0.002	-0.00119	-0.00651	-0.00429	-0.00311	-0.00194	-0.00428*	-0.00297
	(1.0633)	(0.6264)	(0.3132)	(0.2050)	(0.8752)	(0.6003)	(1.7373)	(1.2336)
Firm size		-0.00428***		-0.00947		-0.00899***		-0.00627***
		(7.4916)		(0.9283)		(7.2575)		(8.8694)
Firm growth		0.0058***		0.00554		0.00744***		0.00641***
		(5.3990)		(0.3991)		(2.6252)		(5.5950)
Firm leverage		0.00126		0.01134		0.02359		-0.00807
		(0.1726)		(0.1358)		(1.6282)		(0.9632)
Firm profitability		-0.00062***		0.00047		-0.00162***		-0.00036***
		(4.2945)		(0.3207)		(6.0414)		(2.8336)
Loss Dummy		0.01405***		0.06638		0.02937***		0.02818***
		(2.7250)		(1.1498)		(4.1266)		(4.0880)
CEO vega		-0.00002***		-0.00007**		0.00004***		0.00003***
		(8.2177)		(2.0106)		(9.6709)		(6.5552)
N	5,271	5,259	5,228	5,216	5,271	5,259	5,271	5,259
R^2	8.18%	13.86%	3.99%	4.08%	10.99%	22.50%	18.22%	27.86%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.10. The impact of CEO education on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.06162***	0.07646***	0.49007***	0.55527***	0.05596***	0.09633***	0.07004***	0.09442***
	(4.6768)	(2.3410)	(7.5758)	(5.1364)	(7.2581)	(8.6293)	(3.1831)	(3.9399)
CEO relative incentive	-0.00246***	-0.00146***	-0.00397	-0.00261	-0.00424***	-0.00202***	-0.00369***	-0.00247***
	(6.3597)	(4.2418)	(0.7106)	(0.4501)	(6.2738)	(3.4710)	(7.3502)	(5.4647)
CEO finance education	-0.00934**	-0.00586	0.05494	0.05702	-0.01011	-0.00386	-0.01454***	-0.00959*
	(2.3501)	(1.6001)	(0.9585)	(0.9979)	(1.4667)	(0.6126)	(2.7744)	(1.9376)
CEO_Rel_Inc x Finance	0.00115*	0.0008	-0.00972	-0.0096	0.00163	0.00101	0.00177**	0.00129*
	(1.9243)	(1.4858)	(1.0551)	(1.0385)	(1.5811)	(1.0879)	(2.2987)	(1.8424)
Firm size		-0.00371***		-0.00934		-0.008***		-0.00534***
		(6.2442)		(0.8138)		(6.1921)		(7.2526)
Firm growth		0.00714***		-0.0026		0.00859***		0.00791***
		(6.0206)		(0.1965)		(3.0654)		(6.7562)
Firm leverage		-0.00286		0.02076		0.01865		-0.01344
		(0.3898)		(0.2522)		(1.2863)		(1.5906)
Firm profitability		-0.00066***		0.00031		-0.00147***		-0.00032***
		(4.3602)		(0.2217)		(5.4767)		(2.6316)
Loss Dummy		0.01461***		0.05254		0.03685***		0.02941***
		(2.7716)		(0.9007)		(4.1884)		(4.1330)
CEO vega		-0.00002***		-0.00006*		0.00004***		0.00003***
		(8.5940)		(1.8459)		(9.5100)		(6.7652)
N	5,250	5,237	5,207	5,194	5,250	5,237	5,250	5,237
R^2	8.05%	14.28%	3.31%	3.36%	10.23%	21.47%	17.42%	27.05%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.11. The impact of CEO gender on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.05246***	0.07066***	0.54294***	0.61363***	0.04537***	0.08952***	0.05533***	0.08499***
	(3.3028)	(4.4524)	(9.9167)	(7.2405)	(8.2918)	(9.5970)	(0.0690)	(4.4571)
CEO relative incentive	-0.00205***	-0.00116***	-0.00695	-0.00553	-0.00355***	-0.00158***	-0.0031***	-0.00203***
	(6.8584)	(4.3772)	(1.5928)	(1.1416)	(6.9537)	(3.3034)	(8.0011)	(6.1230)
Female	0.00001	-0.00207	0.00362	-0.00185	0.03983	0.03498*	-0.00205	-0.00466
	(0.0021)	(0.3676)	(0.0348)	(0.0178)	(1.6273)	(1.7289)	(0.3097)	(0.7609)
CEO_Rel_Inc x Female	0.00051	0.00097	-0.01823	-0.01732	-0.00445	-0.00371	0.00081	0.00158
	(0.5084)	(1.1428)	(1.1151)	(1.0502)	(1.2895)	(1.3028)	(0.6641)	(1.4850)
Firm size		-0.00375***		-0.00942		-0.00777***		-0.00547***
		(6.3548)		(0.8337)		(6.1860)		(7.4320)
Firm growth		0.0074***		-0.00478		0.00906***		0.00827***
		(6.4242)		(0.3623)		(3.2864)		(7.1001)
Firm leverage		-0.00313		0.02577		0.01834		-0.01329
		(0.4365)		(0.3173)		(1.3125)		(1.6176)
Firm profitability		-0.00067***		0.00028		-0.00148***		-0.00033***
		(4.4425)		(0.1991)		(5.6307)		(2.6966)
Loss Dummy		0.01473***		0.04418		0.03358***		0.02946***
		(2.9297)		(0.7822)		(3.9154)		(4.4366)
CEO vega		-0.00002***		-0.00006*		0.00004***		0.00003***
		(8.7295)		(1.7108)		(0.0482)		(6.8311)
N	5360	5347	5317	5304	5360	5347	5360	5347
R^2	7.82%	14.36%	3.29%	3.34%	10.56%	21.47%	16.90%	27.01%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Table 2.12. The impact of high CEO overconfidence on the relationship between CEO inside debt and firm financial reporting

Variable	ABS_ACC	ABS_ACC	ES_RATIO	ES_RATIO	Earn Pred.	Earn Pred.	Earn Qual.	Earn Qual.
Intercept	0.05235***	0.07037***	0.54216***	0.61409***	0.04551***	0.09047***	0.05511***	0.08448***
	(3.1605)	(4.4066)	(9.9179)	(7.2803)	(8.2858)	(9.4095)	(9.6619)	(4.3707)
CEO relative incentive	-0.00206***	-0.00113***	-0.00781*	-0.00628	-0.00391***	-0.00177***	-0.00304***	-0.00192***
	(6.4701)	(4.0678)	(1.7087)	(1.2524)	(7.0128)	(3.5577)	(7.4780)	(5.7824)
High CEO overconfidence	0.00209	0.00215	-0.00367	0.00094	-0.0097	-0.00604	0.00721	0.00642
	(0.4234)	(0.4483)	(0.0553)	(0.0140)	(1.3694)	(0.9164)	(1.1507)	(1.0479)
CEO_Rel_Inc x High Con.	0.00067	0.0002	0.00295	0.00227	0.00177	0.0005	0.00055	0.00002
	(0.7906)	(0.2379)	(0.2069)	(0.1578)	(1.2663)	(0.3575)	(0.5383)	(0.0205)
Firm size		-0.00369***		-0.00943		-0.00789***		-0.00536***
		(6.2245)		(0.8405)		(6.1241)		(7.2411)
Firm growth		0.0073***		-0.00491		0.00914***		0.00804***
		(6.3488)		(0.3708)		(3.3289)		(6.9116)
Firm leverage		-0.00308		0.02008		0.0182		-0.01328
		(0.4299)		(0.2478)		(1.2971)		(1.6168)
Firm profitability		-0.00067***		0.0003		-0.00149***		-0.00034***
		(4.4619)		(0.2157)		(5.6397)		(2.7896)
Loss Dummy		0.01476***		0.04569		0.03312***		0.02968***
		(2.9277)		(0.8038)		(3.8858)		(4.4831)
CEO vega		-0.00002***		-0.00006*		0.00004***		0.00003***
		(8.6159)		(1.7359)		(9.5663)		(6.8883)
N	5,360	5,347	5,317	5,304	5,360	5,347	5,360	5,347
R^2	7.93%	14.37%	3.23%	3.29%	10.31%	21.23%	17.29%	27.15%
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm F.E.	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

*, **, *** Denote significance level at 10%, 5%, and 1% level respectively.

Appendix 2.1. Option Value Calculation

$$Option\ value\ = \left[Se^{-dT}N(Z) - Xe^{-rT}N(Z - \sigma T^{\frac{1}{2}})\right]$$

Where

$$Z\ =\ \left[\ln\left(\frac{S}{X}\right) + T\ \left(r - d + \frac{\sigma^2}{2}\right)\right] / \sigma T^{\frac{1}{2}}$$

N = Cumulative probability function for the normal distribution

S = Underlying stock price

X = Option exercise price

T = Time to maturity of the option in years

d = natural log of expected dividend yield over the life of the option

r = natural log of risk-free interest rate

σ = expected stock return volatility over the life of the option

In order to estimate the value of the previously granted unexercised options, we follow Cassell et al. (2012) and Phan (2014), and employ Core and Guay (2002) procedure. The exercise price of the unexercised options is calculated as the total realizable value divided by the number of option unexercised minus the fiscal year-end stock price. Time to maturity of the unexercised option is assumed to be three years less than the average maturity of newly granted options (Cassell et al., 2012). If no options are granted in the current year, time to maturity of the unexercisable and exercisable options are set to 9 and 6 years, respectively.

Appendix 2.2. Δ CEO inside equity calculations

Following Wei and Yermack (2011) and Cassell et al. (2012), *Δ CEO inside debt* and *Δ firm debt* are simplified to CEO inside debt and firm debt. *Δ CEO inside equity* is accepted as CEO delta and calculated as follows:

$$\Delta\, CE \quad inside\ equity = S + \sum_i N_i\,(\Delta N_i)$$

Where

S = CEO's total stock delta which is equal to the number of stocks held multiplied by assumed delta of 1.

$\sum_i N_i\,(\Delta N_i)$ = CEO's total option delta

N_i = Number of options in tranche *i*

ΔN_i = Option delta for tranche *i*

Option delta is calculated as follows:

$$\Delta N_i = e^{-dT} N(Z) * (price \div 100)$$

Appendix 2.3. CEO delta and CEO vega calculations

Following Cassell et al. (2012) and Srivastav et al. (2014), we calculate CEO delta and CEO vega as follows:

$$\text{CEO delta} = e^{-dT}N(Z) * (price \div 100)$$

$$\text{CEO vega} = e^{-dT}N'(Z)ST^{\frac{1}{2}} * 0.01$$

Where $N'(.)$ is the normal density function.

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Erkan, A., Fainshmidt, S., & Judge, W. Forthcoming. Variance decomposition of country, industry, firm, and firm-year effects on dividend policy. *International Business Review*, 2016.

RESEARCH PAPERS

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