Managerial Ownership of Debt and Accounting Conservatism[*]

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Abstract

We examine the relation between accounting conservatism and managerial ownership of debt in the form of deferred compensation and pension benefits. Consistent with debt holdings by managers mitigating the debtholder-shareholder conflicts and reducing debtholders' demand for accounting conservatism, we find significant evidence of less conservative financial reporting at firms whose CEOs have accumulated more deferred compensation and pension benefits. This negative relation is more pronounced in firms with higher leverage, less tangible assets, higher bankruptcy risk, and more growth options, i.e., firms characterized by higher expected agency costs of debt. Our results are robust to correcting for potential endogeneity of managerial ownership of debt and to using a number of alternative accounting conservatism measures. We also find that debt holdings by a firm's CFO and its top management team reduce accounting conservatism as well.

1. Introduction

Financial reporting conservatism, i.e., the practice of applying more stringent verifiability requirements to recognizing economic gains than to recognizing losses, has been a subject of considerable interest among accounting regulators, standard setters, practitioners, and researchers. One of the primary economic explanations for accounting conservatism is that it arises as a mechanism to facilitate contracting among parties to a firm (Watts (2003a, b)).[1] In particular, conservatism plays an important role in debt contracting by mitigating the conflicts of interest between shareholders and creditors due to their divergent payoff structures (Watts and Zimmerman (1986) and Watts (2003a)). Consistent with this notion, recent research shows that debtholder demand for conservatism is higher in firms with larger dividend payout ratios, higher leverage, and more managerial risk-taking incentives from option ownership, i.e., characteristics suggesting greater shareholder-debtholder conflicts and higher expected agency costs of debt (e.g., Ahmed, Billings, Harris, and Morton (2002), Lafond and Roychowdhury (2008), and Ma and Martin (2010)).[2]

In this paper, we examine the relation between accounting conservatism and a new dimension of managerial compensation incentives that potentially alleviates the shareholder-debtholder conflict and agency costs of debt. Specifically, we focus on executives' accumulated deferred compensation and defined-benefits pension value. These are largely unsecured long-term claims against firm assets and as such, are similar to debt (Sundaram and Yermack (2007)). Jensen and Meckling (1976, pp. 352) analyze the incentive effect of debt holdings by managers, which they term as inside debt. They show that managers with a higher ownership of debt against their own firms have less incentive to engage in asset substitution activities to expropriate debtholders, thereby mitigating agency costs of debt. Their prediction is echoed by a more recent theoretical investigation

[1] Other explanations include shareholder litigation, taxation, and regulation (Watts (2003a)).

[2] Several researchers question the importance of debt contracting in explaining accounting conservatism and argue that creditors could use conservative contractual modifications as an alternative mechanism to protect themselves against expropriation by shareholders (Schipper (2005) and Guay and Verrecchia (2006)). Beatty, Weber, and Yu (2008) empirically examine this issue and show that contractual modifications are insufficient to satisfy creditors' demand for conservatism.

by Edmans and Liu (2010) and has received empirical support from several recent studies. For example, Sundaram and Yermack (2007) find that CEOs with more inside debt tend to manage their firms more conservatively. Wei and Yermack (2010) document positive public bond price reactions to firms' disclosure of large inside debt positions. Wang, Xie, and Xin (2010) find that firms with a higher managerial ownership of debt are able to borrow from banks at more attractive terms, especially in the presence of higher expected agency costs of debt.

Based on the above theory and evidence, we hypothesize that debtholder demand for conservatism decreases with the managerial ownership of debt. We also predict that the negative relation is more pronounced when the expected agency costs of debt are higher, since inside debt may play a more important role in mitigating debtholder-shareholder conflicts under such circumstances. To test our conjectures, we follow Jensen and Meckling's theoretical development and construct a relative leverage measure for a firm's CEO to capture her incentives to engage in debtholder expropriation activities. The CEO's relative leverage is equal to her personal debt-equity (D/E) ratio relative to her firm's D/E ratio, where the value of her debt holding is equal to the sum of her deferred compensation and defined-benefits pension and the value of her equity holding is the market value of her stock and stock option ownership.[3] Jensen and Meckling (1976) show that the higher the CEO's relative leverage, the less incentive she has to expropriate debtholders. In fact, when the CEO's relative leverage is above one, she may even have incentives to transfer wealth from shareholders to debtholders.

We construct multiple empirical proxies for accounting conservatism. Consistent with prior studies such as Lafond and Roychowdhury (2008), Ma and Martin (2010), and Nikolaev (2010), we use the asymmetric timely loss recognition estimated from the Basu (1997) model as our primary measure. We also employ several alternatives including an accruals-based asymmetry measure (Ball and Shivakumar (2006)), the amount of negative non-operating accruals (Givoly and Hayn (2000)

[3] The same measure has also been used by Tung and Wang (2010), Wang, Xie, and Xin (2010) and Wei and Yermack (2010).

and Ahmed and Duellman (2007), the difference between skewness in cash flows and earnings (Givoly and Hayn (2000) and Beatty, Weber, and Yu (2008)), and a firm-year specific conservatism measure developed by Khan and Watts (2007). In addition, we construct a composite rank of conservatism measures to account for the possibility that each measure may capture only one aspect of conservatism and does so potentially with errors (Beatty, Weber, and Yu (2008) and Hui, Matsunaga, and Morse (2009)).

Our analysis of 3,135 firm-year observations from 2007 to 2009 yields evidence strongly supportive of our hypothesis.[4] Specifically, controlling for a wide array of determinants of accounting conservatism, we find a significantly negative relation between conservatism and CEO relative leverage. This is consistent with inside debt aligning the incentives of managers and debtholders and reducing debtholder concerns about expropriation. Moreover, the negative relation between CEO relative leverage and accounting conservatism is largely concentrated in firms with higher leverage, higher bankruptcy risk, fewer tangible assets, and more growth options, i.e., characteristics portending greater expropriation risk for debtholders. These results are in line with our expectation that inside debt plays a more important role in alleviating shareholder-debtholder conflicts at firms facing higher expected agency costs of debt (Wang, Xie, and Xin (2010)).

In additional analyses, we show that the effect of inside debt on conservatism is incremental to the influence of CEO equity incentives from stock and stock option ownership (Lafond and Roychowdhury (2008) and Ma and Martin (2010)). We also find that our results are robust to correcting for potential endogeneity of inside debt using two-stage least square regressions. To the extent that non-CEO top executives and CFOs in particular have significant inputs to firms' financial and operating decisions, their inside debt holdings may also have important implications for firms' risk taking behavior and debtholder demand for conservatism. Consistent with this conjecture, we

[4] Our sample period starts in 2007 because in 2006 the Securities Exchange Commission (SEC) adopted new disclosure requirements for executive compensation mandating that firms with fiscal year ends on or after December 15, 2006 report the accumulated deferred compensation and pension benefits of their five highest paid executives.

find that accounting conservatism is significantly and negatively related to the relative leverage of both a firm's CFO and its top management team.

Overall, we present robust evidence that managerial ownership of debt alleviates debtholders' concern about expropriation by shareholders and reduces their demand for financial reporting conservatism. We contribute to the literature in two dimensions. First, we identify managerial ownership of debt in the form of deferred compensation and pension benefits as a new determinant of accounting conservatism. We complement recent studies by Lafond and Roychowdhury (2008) and Ma and Martin (2010), who focus on the effects of CEO stock and stock option ownership on accounting conservatism. Along with these two papers, we present a more complete picture about how CEO incentives arising from various compensation components influence firms' financial reporting choices. We also add to the growing body of research examining the managerial incentive effects of inside debt. Our evidence of less accounting conservatism at firms with more inside debt is consistent with prior findings in the literature that managers with more inside debt run their firms more conservatively (Sundaram and Yermack (2007)) and debtholders respond favorably to a borrowing firm's inside debt position by demanding lower yields and less stringent terms (Wei and Yermack (2010) and Wang, Xie, and Xin (2010)).

Second, our findings have implications for the optimal design of executive compensation contracts. Firms setting up supplemental executive pension plans (SERPs) and paying above-market returns on deferred compensation are prime examples of stealth compensation that are detrimental to shareholder value (Bebchuk and Fried (2004)). However, our evidence suggests that these compensation components can align the interests of managers with those of debtholders and reduce debtholder demand for accounting conservatism. To the extent that accounting conservatism could be costly to shareholders by causing managers to forego highly risky but positive NPV projects,[5] a lower level of accounting conservatism represent a benefit to shareholders from inside debt. This,

[5] For example, Lafond and Roychowdhury (2008) argue that unconditional conservatism may discourage managers from making positive-NPV R&D investments by immediately recognizing the full costs while completely deferring any benefits.

coupled with the more lenient borrowing terms creditors are willing to extend to firms with larger inside debt positions, suggests that a careful cost-benefit analysis is warranted in determining the optimal level and mix of debt and equity-based compensation to top executives.

The remainder of the paper is organized as follows. Section 2 reviews related literature and develops hypotheses. Section 3 discusses sample construction and variable definitions. Section 4 presents our empirical results. Section 5 concludes.

2. Related literature and hypotheses

2.1. Inside debt and agency costs of debt

In their seminal paper, Jensen and Meckling (1976) examine the possibility of managerial debt holding, i.e., inside debt, and its effect on managerial incentives. They show that inside debt reduces equity-holding managers' incentive to expropriate debtholders and mitigates the agency costs of debt. In a more recent study, Edmans and Liu (2010) argue that inside debt is a superior solution to the agency costs of debt than cash compensation because its value is contingent on both the incidence of bankruptcy and the liquidation value in bankruptcy. As a result, it not only discourages risk-shifting behavior by managers but also induces more managerial efforts to increase liquidation value.

Despite the early theoretical investigation into the subject, empirical research on that has been scarce. The extant literature mostly focuses on the managerial incentive effects of equity-based compensation and establishes a large body of evidence on whether managerial stock and stock option ownership impacts firm performance, shareholder and debtholder value, and specific corporate decisions and policies.[6] Several recent studies, however, begin to examine managerial ownership of debt. Based on the voluntary disclosure of a sample of Fortune 500 companies from 1996 to 2002, Sundaram and Yermack (2007) conduct the first empirical investigation of inside debt by studying CEO pension plans. They document that for many CEOs the annual increase in the actuarial value of

[6] See Core, Guay, and Larcker (2003) for a review of the literature.

pension benefits represents a significant portion of their total compensation. In particular, for CEOs aged between 61 and 65, the pension-related compensation is on average 40% larger than the base salary and 23% of the size of equity-based pay. They also find that CEOs with larger pension values take less risk as captured by a distance-to-default measure.

More research follows after the SEC adopted in 2006 enhanced disclosure requirements that made systematic data on executive pensions and deferred compensation available. Wei and Yermack (2010) investigate stockholder and bondholder reactions to initial disclosures of CEO inside debt holdings in early 2007. They find that upon revelation of large inside debt positions, bond prices increase, stock prices decrease, and the volatility of both types of securities declines. Tung and Wang (2010) focus on banks and find that inside debt holdings by bank CEOs are negatively related to bank risk taking during the Global Financial Crisis. Wang, Xie and Xin (2010) study the effects of inside debt on terms of syndicated loans. They show that loans made to firms with larger CEO inside debt positions are associated with lower yield spreads, smaller lending syndicates, fewer covenant restrictions, and less collateral requirement, especially when the expected agency costs of debt are high. Overall, the empirical evidence on inside debt supports the view that managerial debt holdings align the incentives of managers and debtholders and alleviate debtholder concerns about expropriation, thereby reducing agency costs of debt.

2.2. Agency costs of debt and conservatism

Accounting conservatism evolves as an efficient mechanism to facilitate debt contracting in the presence of agency costs of debt. Debt contracting creates demand for conservatism since debtholders are concerned more about timely recognition of bad news relative to good news due to their asymmetric payoff function (Basu (1997), Watts (2003a), and Ball and Shivakumar (2005)). Conservatism plays several roles in facilitating efficient debt contracting. By applying higher verifiability standards to gains than to losses, conservatism understates net assets and cumulative earnings, thereby limiting excessive payouts to shareholders (Watts (2003a)). By recognizing losses

in a more timely fashion than gains, conservatism reduces managers' incentives to undertake highly risky, negative-NPV projects which lead to expropriation of debtholders (Ball (2001), Watts (2003a), and Ma and Martin (2010)). Early recognition of losses also accelerates debt covenant violations and transfers of control rights to debtholders when firms experience adverse economic conditions (Zhang (2008)). In addition, conservatism makes debt covenants more binding in distress situations and thus improves their effectiveness in restricting managers' opportunistic behaviors (Nikolaev (2010)).

Consistent with the debt contracting explanation, researchers find that debtholder demand for conservatism is higher in firms with larger dividend payout ratios, higher leverage, and more managerial risk-taking incentives from option ownership, i.e., firms characterized by greater shareholder-debtholder conflicts and higher expected agency costs of debt (e.g., Ahmed, Billings, Harris, and Morton (2002), Lafond and Roychowdhury (2008), and Ma and Martin (2010)). In addition, Ball, Robin, and Sadka (2007) document a positive relation between conservatism and debt market size across countries. Nikolaev (2010) shows that firms display a higher level of conservatism when public debtholders rely more heavily on covenants to protect against expropriation. Zhang (2008) finds that firms that are more conservative in their financial reporting are more likely to violate debt covenants after negative stock price shocks.

There is also evidence that accounting conservatism is effective in reducing agency costs of debt and alleviating the information asymmetry in the debt market. For example, firms with more accounting conservatism are associated with lower costs of debt (Ahmed et al. (2002) and Zhang (2008)) and lower bid-ask spreads in the secondary loan market (Wittenberg-Moerman (2008)).

2.3. Hypotheses

Both theories and evidence on accounting conservatism suggest that debtholders demand conservatism in financial reporting as a way to protect their interests against shareholder expropriation. The literature on inside debt, on the other hand, points out that managerial ownership of debt reduces managers' incentive to expropriate debtholders on behalf of shareholders. Therefore,

we expect debtholders to demand less accounting conservatism at firms with larger inside debt positions held by managers. Thus, our first hypothesis is stated as following:

H1: Accounting conservatism is negatively related to managerial ownership of debt.

In addition, we expect the relation between accounting conservatism and managerial ownership of debt to vary with the extent to which debtholders are susceptible to shareholder expropriation. Previous research suggests that inside debt plays a more important role in mitigating debtholder-shareholder conflicts when such conflicts are more serious. As a result, we expect the effect of inside debt on debtholder demand for conservatism to be more pronounced in firms carrying higher expropriation risk to debtholders. Our second hypothesis is stated as following:

H2: The negative relation between accounting conservatism and managerial ownership of debt is more pronounced in firms with higher potential expropriation risk for debtholders.

3. Data and variables

3.1. Sample construction

We begin our sample construction process with Standard & Poor's (S&P) ExecuComp database, which provides information on the stock and stock option ownership and the value of deferred compensation and pension benefits of the five highest paid executives at S&P 1500 companies. The Securities and Exchange Commission (SEC) adopted enhanced executive compensation disclosure requirements in 2006. The new regulations mandate that firms with fiscal year ends on or after December 15, 2006 provide detailed information on the computation and value of executive pension benefits and deferred compensation.

We then require that firms with inside debt information have necessary stock returns data from CRSP and financial statement data from Compustat that allow us to construct such variables as

the annual buy-and-hold returns, net income before extraordinary items, market value of equity, total assets, market-to-book ratio, leverage, asset tangibility, and Altman's Z-score. Our final sample consists of 3,135 firm-year observations from 2007 to 2009, with 1,005 observations in 2007, 1,166 observations in 2008, and 964 observations in 2009.

3.2. Variable definitions

3.2.1. CEO inside debt and relative leverage measure

Jensen and Meckling (1976) show that whether managers have incentives to transfer wealth from debtholders to shareholders is determined by their relative ownership position in debt and equity. More specifically, when managers hold an equal percentage of both claims, they have no incentive to transfer wealth from debtholders to shareholders. For example, if a CEO holds 10% of her company's equity and 10% of her company's debt, then each dollar of wealth transfer from debtholders to shareholders will result in 10 cents increase in the value of her equity ownership and 10 cents decline in the value of her debt ownership, leaving her overall wealth unchanged. More formally, if we use D_i and E_i to denote the market values of the CEO's debt and equity ownership and D_f and E_f to denote the market values of her firm's total debt and equity, the CEO will have no incentive to engage in wealth transfer if $\frac{D_i}{D_f} = \frac{E_i}{E_f}$, or equivalently, $\frac{D_i}{E_i} = \frac{D_f}{E_f}$.

On the other hand, if $\frac{D_i}{D_f} < \frac{E_i}{E_f}$, or equivalently, $\frac{D_i}{E_i} < \frac{D_f}{E_f}$, the CEO will be tempted to engage in debtholder expropriation on behalf of shareholders, creating the classical conflicts of interest between debtholders and shareholders. When $\frac{D_i}{D_f} > \frac{E_i}{E_f}$, or equivalently, $\frac{D_i}{E_i} > \frac{D_f}{E_f}$, the CEO's incentives will become more aligned with debtholders and lead her to take actions to transfer wealth from shareholders to debtholders.

To capture the above dynamics in CEO incentives from her debt and equity holdings, we

construct a measure, *CEO relative leverage*, that is equal to her personal leverage or debt-equity ratio (D_i/E_i) divided by her company's leverage or debt-equity ratio (D_f/E_f). The CEO's debt-equity ratio is equal to the value of her inside debt position divided by the value of her equity holdings, where the former equals the CEO's accumulated deferred compensation plus the present value of her pension benefits as reported by the company, and the latter equals to the market value of her stock (including restricted stock and synthetic or performance shares) and stock option ownership. We compute the market value of stock ownership by multiplying the number of shares held by the fiscal year-end stock price, and compute the market value of stock options by applying the Black-Scholes (1973) formula to each individual tranche of options held by the CEO and then adding up the tranche values.[7] We measure firm leverage by the book value of long-term and short-term debt divided by the market value of equity.

CEO relative leverage is an inverse measure of a CEO's incentives to engage in asset substitution to expropriate debtholders. CEOs with a relative leverage less than one tend to transfer wealth from debtholders to shareholders, and the reverse is true for CEOs with a relative leverage above one. CEOs with a relative leverage equal to one are indifferent to wealth transfers between debtholders and shareholders in either direction. As an alternative to the continuous *CEO relative leverage* measure, we also construct a dummy variable, *high relative leverage*, that is equal to one if *CEO relative leverage* is above one or zero otherwise. We use this dichotomous measure to capture any nonlinearity in the relation between CEO relative leverage and accounting conservatism.

3.2.2. Conservatism measure

Following prior studies such as Lafond and Roychowdhury (2008), Nikolaev (2010), and Ma and Martin (2010), we use the asymmetric timely loss recognition estimated from the Basu (1997)

[7] In applying the Black-Scholes formula to value executive stock options, we set the time-to-maturity of each tranche of options to either its full value or 70% of that to account for the early-exercising tendency of executives. Our results are not sensitive to this variation. Results presented in the paper are based on the full time to maturity of options.

model as our main measure of accounting conservatism. A parsimonious version of the Basu model is specified as follows.

$$Eps = \beta_0 + \beta_1 \mathrm{Re}t + \beta_2 Neg + \beta_3 \mathrm{Re}t * Neg + \varepsilon \qquad (1)$$

In the model, *Eps* is the earnings before extraordinary items for a fiscal year scaled by the market value of equity at the beginning of the fiscal year, *Ret* is the buy-and-hold return over the fiscal year (Lafond and Roychowdhury (2008) and Nikolaev (2010)),[8] and *Neg* is an indicator variable equal to one if *Ret* is negative and zero otherwise. The coefficient β_1 represents the timeliness of earnings with respect to good news (gains), while the coefficient β_3 captures the incremental timeliness of earnings with respect to bad news (losses). If conservatism is defined as the tendency to require a higher degree of verification to recognize good news as gains than to recognize bad news as losses, losses should be recognized in a timelier fashion than gains (Basu (1997). Therefore, the coefficient β_3 measures the asymmetric timeliness in loss recognition and reflects the degree of conditional conservatism.

3.2.3. Control variables

Following prior studies, e.g. Lafond and Roychowdhury (2008), Lafond and Watts (2008), Ma and Martin (2010), we control for firm characteristics that are related to accounting conservatism in the Basu model. These variables include firm size, leverage, market-to-book ratio, and litigation risk. We measure firm size (*Size*) by the natural logarithm of the book value of total assets. Firm leverage (*Lev*) is equal to the book value of total debt divided by the book value of total assets. A firm's market-to-book ratio (*MB*) is equal to its market value of assets over its book value of assets. We capture a firm's litigation risk (*Lit*) by a dummy variable that is equal to one if the firm operates in a high litigation risk industry as identified by SIC codes 2833–2836, 3570–3577, 3600–3674,

[8] Our results become more significant if we measure the buy-and-hold returns over a 12-month period from nine months prior to the end of a fiscal year to three months after the fiscal year end. However, using this alternative measure will exclude most year-2009 observations since the annually updated CRSP stock return data end in December 2009.

5200–5961, and 7370. Detailed variable definitions are in the Appendix. These variables are all measured at the beginning of a fiscal year.

3.3. Summary statistics

Table 1 presents the summary statistics for our sample. We winsorize all continuous variables at the 1st and 99th percentiles to reduce the influence of outliers. The average (median) CEO in our sample has $5.644 (1.279) million in deferred compensation and pension benefits and $93.628 ($17.160) million in stock and stock option holdings.[9] The CEO personal leverage is low with a mean of 0.306 and a median of 0.066. However, once we take into account firm leverage to capture a CEO's incentive to expropriate debtholders, we find that CEO relative leverage is much higher with a mean of 0.714 and a median of 0.206. Moreover, in about 23% of the observations in our sample, CEO relative leverage is above one, indicating that in these observations CEOs actually have incentives to transfer wealth from shareholders to debtholders. The average (median) firm in our sample has a book value of total assets of $15.880 (3.265) billion, a leverage ratio of 0.267 (0.244), and a market-to-book ratio of 1.651 (1.376). Over 16% of our firm-year observations are from high litigation risk industries. We also follow the methodology of Core and Guay (2002) to estimate each CEO's wealth sensitivity to stock price (*delta*) and stock return volatility (*vega*) from her stock and stock option ownership. The CEO at the average (median) firm has a *vega* of $156,831 (68,702) and a *delta* of $1,065,893 (235,272).

4. Empirical results

4.1. Baseline analysis of the effect of CEO inside debt on accounting conservatism

[9] In 886 of the 3,135 observations in our sample, CEOs have zero inside debt according to the information provided by ExecuComp. We examine the proxy statements of these firms and find that they either claim to not provide any pension or deferred compensation to their executives or do not mention pension or deferred compensation at all. Since it is difficult to ascertain whether CEOs actually have inside debt for companies that fall into the second category, we delete observations with zero inside debt as a robustness check and find that the results presented in the paper continue to hold.

In this section we examine the impact of CEO relative leverage on accounting conservatism by estimating an augmented Basu (1997) model specified as follows.

$$\begin{aligned} Eps_t = {} & \beta_0 + \beta_1 \mathrm{Ret}_t + \beta_2 Neg_t + \beta_3 \mathrm{Ret}_t * Neg_t \\ & + \beta_4 Id_{t-1} + \beta_5 \mathrm{Ret}_t * Id_{t-1} + \beta_6 Neg_t * Id_{t-1} + \beta_7 \mathrm{Ret}_t * Neg_t * Id_{t-1} \\ & + \beta_8 Size_{t-1} + \beta_9 \mathrm{Ret}_t * Size_{t-1} + \beta_{10} Neg_t * Size_{t-1} + \beta_{11} \mathrm{Ret}_t * Neg_t * Size_{t-1} \\ & + \beta_{12} Lev_{t-1} + \beta_{13} \mathrm{Ret}_t * Lev_{t-1} + \beta_{14} Neg_t * Lev_{t-1} + \beta_{15} \mathrm{Ret}_t * Neg_t * Lev_{t-1} \\ & + \beta_{16} MB_{t-1} + \beta_{17} \mathrm{Ret}_t * MB_{t-1} + \beta_{18} Neg_t * MB_{t-1} + \beta_{19} \mathrm{Ret}_t * Neg_t * MB_{t-1} \\ & + \beta_{20} Lit_{t-1} + \beta_{21} \mathrm{Ret}_t * Lit_{t-1} + \beta_{22} Neg_t * Lit_{t-1} + \beta_{23} \mathrm{Ret}_t * Neg_t * Lit_{t-1} + \varepsilon \end{aligned} \quad (2)$$

In this model, the main variable of interest is Id_{t-1}, which captures a CEO's incentive from her inside debt and equity holdings. We use both the continuous measure, *CEO relative leverage*, and the dichotomous measure, *high relative leverage*. In addition to controlling for firm-specific characteristics, we also include fiscal year and industry (defined based on two-digit SIC codes) fixed-effects in the regression model. As explained earlier, β_3 measures the asymmetric timeliness of bad news (losses) being reflected in earnings relative to good news (gains). The coefficients β_7, β_{11}, β_{15}, β_{19}, and β_{23} capture the effects of *CEO relative leverage*, *Size*, *Lev*, *MB*, and *Lit* on the asymmetric timeliness in loss recognition. Based on our hypothesis that managerial ownership of debt reduces debtholder demand for conservatism, we expect the coefficient β_7 to be significantly negative.

Table 2 presents the regression results of the augmented Basu model. Figures in the parentheses below coefficient estimates are *t*-statistics based on standard errors adjusted for heteroskedasticity (White (1980)) and firm-level clustering (Peterson (2009)). The specifications in columns (1) and (2) use the continuous variable, *CEO relative leverage*, to measure CEO incentives to expropriate debtholders. Consistent with Basu (1997), we find that β_3 is significantly positive in both specifications, suggesting that losses are recognized more timely than gains. More importantly for our purposes, in column (1), β_7 is equal to -0.084 and statistically significant at the 5% level. Neither the magnitude nor the statistical significance of the coefficient changes much when we include additional control variables in column (2). In columns (3) and (4), we replace *CEO relative*

leverage by *high relative leverage*. We find that has β_7 continues to be negative and statistically significant. These results suggest that firms with higher CEO relative leverage display less asymmetric timeliness in loss recognition and support hypothesis 1 that accounting conservatism is negatively related to CEO inside debt positions.

The effect of CEO inside debt on conservatism also appears to be economically significant. For ease of interpretation, we take the specification in column (3) as an example. The coefficient on *Ret*Neg* is 0.543 and the coefficient on *Ret*Neg*High relative leverage* is -0.162, suggesting that the degree of asymmetric timely loss recognition is about 30% (0.162/0.543) lower for firms with *CEO relative leverage* above one than for firms with *CEO relative leverage* below one. The difference in the asymmetric timely loss recognition between the two groups of firms remains large (about 20% or 0.163/0.855) even when we include additional control variables in column (4). The economic significance of our findings is comparable to that of other determinants of conservatism documented in the literature. For example, Lafond and Roychowdhury (2008) find a 41% decline in conservatism as managerial ownership of stock moves from the bottom decile to the top decile of their sample. Ma and Martin (2010) find a 31% increase in conservatism as CEO vega moves from the bottom quintile to the top quintile of their sample.

With respect to the control variables, we find that the coefficients on *Ret*Neg*MB* are significantly negative, consistent with the notion that firms generally do not recognize economic gains and losses from growth opportunities and as a result firms with higher market-to-book ratios display less asymmetry in the timeliness of recognizing losses and gains. Consistent with higher leverage intensifying shareholder-debtholder conflicts and increasing debtholder demand for conservatism, the coefficients on *Ret*Neg*Lev* are positive, albeit insignificant. Finally, the coefficients on *Ret*Neg*Size* and *Ret*Neg*Lit* are insignificant in our sample.[10]

[10] In untabulated tests, we also control for CEO age and tenure as potential determinants of accounting conservatism. Missing CEO age and tenure reduces our sample to 3,019 observations. We find that CEO age has a significantly positive effect on the asymmetric timely loss recognition while CEO tenure has a significantly negative effect. More importantly, the negative effect of CEO relative leverage on accounting

Taken together, the results in Table 2 indicate that financial reporting conservatism is negatively related to CEO inside debt positions, and the relation is significant both statistically and economically.

4.2. Controlling for CEO equity incentives from stock and stock option ownership

Lafond and Roychowdhury (2008) find that shareholders demand more conservative accounting when there is a greater separation of ownership and control as indicated by lower managerial stock ownership. Ma and Martin (2010) find that debtholders demand more conservatism when CEOs have more risk-taking incentives as proxied by higher wealth sensitivity to stock return volatility due to their stock option ownership. In light of their findings, we control for both a CEO's wealth sensitivity to stock price (*delta*) and her wealth sensitivity to stock return volatility (*vega*) in the augmented Basu (1997) model.[11] We take the logarithmic transformation of both variables to reduce the skewness in the original data.

We present the regression results in Table 3. Consistent with Lafond and Roychowdhury (2008), we find that *delta* is significantly negatively correlated with the asymmetric timely loss recognition as indicated by the coefficient on the interaction term *Ret*Neg*Delta*. We also find evidence consistent with Ma and Martin (2010) that *vega* is positively correlated with timely loss recognition, but the relation is insignificant. More importantly, CEO inside debt continues to have a significant and negative effect on the asymmetric timely loss recognition, evidenced by the significantly negative coefficients on the interaction terms between *Ret*Neg* and CEO relative leverage measures. Therefore, the effect of CEO debt incentives on accounting conservatism is incremental to the effects of CEO equity incentives documented by the prior literature.

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conservatism becomes more significant both statistically and economically.

[11] Our results are robust to controlling for CEO stock ownership rather than CEO delta. *Delta*, which measures the sensitivity of a CEO's stock and stock option holdings to stock price, captures the incentive alignment between managers and shareholders as a result of both stock and option ownership.

4.3. Expected agency costs of debt and the effect of CEO inside debt on conservatism

Prior research shows that inside debt plays a more important role in counteracting managerial risk-taking incentives and alleviating debtholder concerns about expropriation when debtholders face higher expropriation risk (Wang, Xie, and Xin (2010)). As a result, we expect the negative effect of CEO relative leverage on debtholder demands for conservatism to be more pronounced under these conditions. We construct a number of proxies for the vulnerability of debtholders to shareholder expropriation: leverage, Altman's Z-score, asset tangibility, and growth options. Firms with higher leverage and lower Z-scores are at greater risk to fall into financial distress and bankruptcy, providing shareholders with more incentives to act opportunistically against debtholders. Firms with fewer tangible assets tend to have lower recovery values in case of bankruptcy, while firms with more growth options have more opportunities to pursue risky investments, making creditor monitoring more difficult.

4.3.1. Leverage

We partition our sample into two subsamples based on whether a firm's leverage at the beginning of a fiscal year is above or below the sample median. We then estimate equation (2) on the two subsamples separately. Columns (1) and (2) in Table 4 present the subsample regression results, where CEO inside debt position is measured by *CEO relative leverage*. We find that the coefficient on *Ret*Neg*CEO relative leverage* is significantly negative (-0.202, *t-stat*: 4.15) for the high-leverage subsample and is negative but insignificant (-0.035, *t-stat*: 0.85) for the low-leverage subsample. The difference in the coefficient between the two subsamples is statistically different at the 1% level.

Similar results emerge when we replace *CEO relative leverage* with *high relative leverage* in columns (3) and (4). The coefficient on *Ret*Neg*High relative leverage* is both larger in magnitude and statistically more significant for the high-leverage subsample (-0.427, *t-stat*: 4.10) than for the low-leverage subsample (-0.024, *t-stat*: 0.21). In terms of the economic significance of our results,

for the high-leverage subsample, the degree of asymmetric timely loss recognition declines from 0.562 to 0.135 (=0.562-0.427), or about 76%, when CEO relative leverage increases from below one to above one. Comparing to the full sample (see columns (3) and (4) of Table 2), the demand from debtholders for conservatism is more sensitive to CEO inside debt holdings at high-leverage firms. Overall, our findings support hypothesis 2 that the negative relation between accounting conservatism and managerial ownership of debt is more pronounced at firms with higher expropriation risk for debtholders.

4.3.2. Bankruptcy risk

As an alternative to leverage, we use Altman's Z-score to capture a firm's default risk and the incentives of shareholders to engage in risk-shifting activities to expropriate debtholders. We partition our sample into high-default risk and low-default risk subsamples based on whether a firm's Z-score at the beginning of a fiscal year is above or below 1.81, and estimate equation (2) on the subsamples separately. We expect inside debt to have a greater impact on conservatism in the high-default risk subsample. Results presented in Table 5 are consistent with our conjecture. Specifically, the coefficient on the interaction between *Ret*Neg* and CEO inside debt measures is negative and statistically significant only in the high-default risk subsample, regardless of whether we use the continuous or dichotomous CEO relative leverage measure.

4.3.3. Asset tangibility

Due to the limited liability of shareholders, debtholders cannot recover more than the value of existing assets in the case of liquidation. Firms with fewer tangible assets tend to have lower recovery values in default and therefore are associated with higher agency costs of debt. Therefore, we expect debtholder demand for conservatism to be more sensitive to CEO inside debt positions at these firms. We partition our sample into two subsamples based on whether a firm's asset tangibility ratio at the beginning of a fiscal year is above or below the sample median and estimate equation (2)

on the two subsamples separately.

Results in Table 6 indicate that CEO inside debt significantly reduces the asymmetric timely loss recognition only in firms with low asset tangibility, evidenced by the significantly negative coefficients on the interaction between *Reg*Neg* and CEO relative leverage measures in column (2) and (4). At firms with high asset tangibility, the effect of CEO inside debt on the asymmetric timely loss recognition is negative, but insignificant (see columns (1) and (3)).

4.3.4. Growth options

Firms with more growth options have a larger investment opportunity set. Since debtholders do not have complete information on all the investment projects firms can choose from, a larger investment opportunity set makes it more difficult for debtholders to observe and monitor firms' investment decisions and increases the expropriation risk faced by debtholders. We use a firm's R&D expenses to sales ratio to capture its growth opportunities, and expect the relation between CEO inside debt and conservatism to be stronger for firms with higher R&D/Sales ratios. We partition our sample into two subsamples based on whether a firm's R&D/Sales ratio at the beginning of a fiscal year is greater than zero and estimate equation (2) separately on the subsamples.

Results presented in Table 7 support our hypothesis 2. As shown in columns (1) and (2), the coefficient on *Ret*Neg*CEO relative leverage* is significantly negative only in firms with positive R&D expenses. We find the same pattern when we use *high relative leverage* in columns (3) and (4). Taken together, these results suggest that the negative relation between CEO inside debt and conservatism is concentrated in firms with more growth options where managers have more opportunities to engage in asset substitution activities.

4.4. Alternative measures of accounting conservatism

In light of recent controversies over the Basu (1997) model (Givoly, Hayn and Natarajan (2007) and Dietrich, Muller and Riedl (2007)), we employ several alternative measures of

accounting conservatism to ensure the robustness of our results.

Ball and Shivakumar (2006) argue that to the extent that changes in the present value of expected future cash flows are accrued as a component of current earnings, accruals are positively correlated with cash flows and revisions of cash flows. Since economic losses are more likely to be recognized in a timely fashion while gains are more likely to be recognized when realized, the positive correlation between accruals and cash flows or revisions of cash flows is greater in the case of losses. Therefore, Ball and Shivakumar propose a model of accruals in relation to cash flows or revisions of cash flows and use the asymmetry in the responsiveness of accruals to cash flows or revisions of cash flows as a measure of conservatism in the absence of stock returns. Since very few firms in our sample have negative cash flows, we use cash flow changes as a proxy for economic news with positive (negative) cash flows changes representing good (bad) news. We estimate the augmented Ball and Shivakumar (2006) model specified in equation (3).

$$\begin{aligned} ACC_t = {} & \beta_0 + \beta_1 \Delta CF_t + \beta_2 Neg_t + \beta_3 \Delta CF_t * Neg_t \\ & + \beta_4 Id_{t-1} + \beta_5 \Delta CF_t * Id_{t-1} + \beta_6 Neg_t * Id_{t-1} + \beta_7 \Delta CF_t * Neg_t * Id_{t-1} \\ & + \beta_8 Size_{t-1} + \beta_9 \Delta CF_t * Size_{t-1} + \beta_{10} Neg_t * Size_{t-1} + \beta_{11} \Delta CF_t * Neg_t * Size_{t-1} \\ & + \beta_{12} Lev_{t-1} + \beta_{13} \Delta CF_t * Lev_{t-1} + \beta_{14} Neg_t * Lev_{t-1} + \beta_{15} \Delta CF_t * Neg_t * Lev_{t-1} \\ & + \beta_{16} MB_{t-1} + \beta_{17} \Delta CF_t * MB_{t-1} + \beta_{18} Neg_t * MB_{t-1} + \beta_{19} \Delta CF_t * Neg_t * MB_{t-1} \\ & + \beta_{20} Lit_{t-1} + \beta_{21} \Delta CF_t * Lit_{t-1} + \beta_{22} Neg_t * Lit_{t-1} + \beta_{23} \Delta CF_t * Neg_t * Lit_{t-1} + \varepsilon \end{aligned} \quad (3)$$

ACC is total accruals estimated as earnings before extraordinary items minus cash flows from operations scaled by total assets, $\triangle CF$ is the change in annual cash flows from operations scaled by total assets, and *Neg* is a dummy variable equal to one if $\triangle CF$ is negative.[12] Other variables are defined as earlier. The coefficient β_3 is the Ball and Shivakumar (2006) measure of accounting conservatism, and the coefficient β_7 captures the effect on accounting conservatism of CEO inside debt positions.

We present the regression results in Table 8. As shown in column (1), β_7 is significantly

[12] We lose 4 observations due to additional data requirements for estimating total accruals and cash flow changes.

negative (-0.390, *t-stat*: 2.13), suggesting that CEO relative leverage is negatively related to Ball and Shivakumar's conservatism measure. The result persists when we include control variables in the regression (see column (2)). In columns (3) and (4), we replace the continuous relative leverage measure with the dichotomous one and continue to find a significant and negative relation between CEO relative leverage and accounting conservatism.

In further analysis, we also try to capture accounting conservatism by (i) the firm-year conservatism measure, *C_SCORE*, developed by Khan and Watts (2009), (ii) the amount of negative non-operating accruals (*NOA*) as in Givoly and Hayn (2000) and Ahmed and Duellman (2007), (iii) the difference between skewness in cash flows and earnings (*SKEW*) as in Givoly and Hayn (2000) and Beatty, Webber and Yu (2008), and (iv) a composite rank based on the three metrics. For each firm-year observation in our sample, *C_SCORE* is estimated strictly following Khan and Watts's methodology, *NOA* is equal to the average non-operating accruals over the previous three years multiplied by negative one, and *SKEW* is measured using quarterly data over the previous six years with a minimum of 5 quarters.[13] Based on each of the three metrics, we assign our sample firms into deciles created annually, with the bottom decile (rank=1) containing firms with the least conservative accounting. We then add the three decile ranks of each firm-year observation to obtain a composite rank of accounting conservatism. Detailed definitions of these variables are in the Appendix.

We estimate regressions of the four conservatism measures with CEO relative leverage as the key independent variable. We also control for firms size, leverage, market-to-book ratio and litigation risk as other potential determinants of accounting conservatism. Table 9 presents the results, with those in Panel A based on the continuous measure of CEO relative leverage and those in Panel B based on the dichotomous measure. We find that the coefficients on both measures of CEO relative leverage are significantly negative in all four models. Therefore, our finding that CEO inside debt holdings reduce debtholder demand for accounting conservatism does not appear to be driven by any particular measure of conservatism.

[13] Additional data requirements reduce our sample size to 3,096.

In addition, we find in untabulated results that the negative relation between CEO relative leverage and accounting conservatism continues to be concentrated in firms where debtholders face higher expropriation risk, even when we replace the Basu (1997) measure with the alternative measures introduced in this section. This lends further support to our hypothesis 2.

4.5. Endogeneity of CEO inside debt

So far our results indicate that firms with higher CEO relative leverage display less accounting conservatism. One interpretation of this finding is that inside debt aligns the incentives of managers with those of debtholders and thus reduces debtholders' concern about expropriation and their demand for accounting conservatism. However, the endogenous nature of CEO inside debt and accounting conservatism suggests alternative interpretations. It is possible that some uncontrolled firm characteristics, e.g., expected agency costs of debt, could drive both CEO inside debt positions and accounting conservatism.

While endogeneity-based explanations are plausible, we do not believe they can account for our results. First, both theory and evidence suggest that firms facing greater shareholder-debtholder conflicts tend to use more debt-based compensation (Sundaram and Yermack (2007) and Edmans and Liu (2010)) and resort to more conservative financial reporting (Watts (2003a) and Ahmed et al. (2002)) in order to reduce agency costs of debt. Therefore, the simultaneous determination of CEO inside debt and accounting conservatism by omitted variables related to risk or expected shareholder-debtholder conflicts would imply a positive relation between inside debt and accounting conservatism, just the opposite of what we find.

Second, any endogeneity-based interpretations need to be able to explain not only the negative relation between accounting conservatism and inside debt, but also the cross-sectional variations in the relation along the dimension of expected agency costs of debt. In particular, these cross-sectional variations suggest that the negative effect of CEO relative leverage on accounting conservatism is more pronounced in firms that expose creditors to greater credit risk and shareholder

expropriation, which is consistent with CEO inside debt playing a more valuable role in alleviating the shareholder-debtholder conflict in these firms. However, endogeneity-based interpretations offer no such prediction.

In addition to the above arguments, we address the endogeneity problem using a two-stage least squares (2SLS) approach that endogenizes CEO relative leverage. We select two instrument variables (IVs) for CEO relative leverage. One is the top personal income tax rate for the state where a firm is headquartered, and the other is a Gibbs estimate of a firm's effective equity trading costs developed by Hasbrouck (2009).[14] We expect the state personal income tax rate to be positively related to CEO relative leverage, as higher tax rates may induce CEOs to defer more of their current compensation. The equity trading cost measure is likely to be negatively related to CEO relative leverage, since higher transaction costs may discourage CEOs from dispensing the shares they receive either as direct compensation or as a result of exercising options. Neither the state personal income tax rate nor a firm's equity trading cost suggests a direct and theoretically sensible linkage with accounting conservatism.

Applying the 2SLS approach to the augmented Basu (1997) model is econometrically difficult because the endogenous variable, CEO relative leverage, appears not only as a standalone explanatory variable but also as a part of three interaction terms. Therefore, we use the firm-year conservatism measure, *C_SCORE*, developed by Khan and Watts (2009) as an alternative to the asymmetric timeliness coefficient in the Basu (1997) model. We estimate a 2SLS regression of *C_SCORE* against CEO relative leverage, which we instrument in the first stage using the two IVs introduced above. In both stages, we control for firm size, leverage, market-to-book ratio, and litigation risk, since these variables have been shown to be related to accounting conservatism. We present the estimation results in Table 10, where we use the continuous CEO relative leverage measure in Panel A and the dichotomous measure in Panel B. In both panels, the first-stage

[14] We thank Joel Hasbrouck for generously sharing his Gibbs estimates of trading costs on his website (http://pages.stern.nyu.edu/~jhasbrou/Research/GibbsCurrent/gibbsCurrentIndex.html).

regressions show that the state personal income tax rate has a significant and positive effect on CEO relative leverage, while the Gibbs estimate of equity trading costs has a significant and negative effect, both consistent with our conjectures. In the second-stage regressions, we find that the instrumented CEO relative leverage measure (continuous or dichotomous) has a significant and negative effect on *C_SCORE*, providing further support for our hypothesis that managerial inside debt holdings reduce debtholder demand for accounting conservatism.

We also repeat the 2SLS regressions for unconditional conservatism measures such as the amount of negative non-operating accruals (*NOA*) and the difference between skewness in cash flows and earnings (*SKEW*) and the composite rank of conservatism based on *C_SCORE*, *NOA*, and *SKEW*. We continue to find significant evidence that financial reporting is less conservative when CEO relative leverage is higher (see Table 10). Together, the evidence from 2SLS regressions indicates that our findings are robust to correcting for endogeneity.[15]

4.6. Inside debt of CFOs and other top executives

Our analysis so far focuses on the inside debt holdings of CEOs. Both anecdotal and systematic evidence suggests that non-CEO executives also wield significant influence on firms' financial and operating decisions. For example, Chava and Purnanandam (2010) find that both the CEO's and CFO's risk-taking incentives affect firm's financial policies. Lafond and Roychowdhury (2008) find that the equity ownership of a firm's top management team (which consists of its five highest paid executives) is negatively related to the firm's accounting conservatism. To the extent that debt holdings by non-CEO executives reduce their incentives to pursue risky strategies that expropriate debtholders, we expect debtholders to demand less accounting conservatism.

[15] Following Lafond and Roychowdhury (2008) and Nikolaev (2010), we also employ a two-step procedure to re-estimate the augmented Basu (1997) model specified by equation (2). In the first step, we regress CEO relative leverage on a set of firm and CEO characteristics that are shown in the literature to affect CEO inside debt and accounting conservatism. In the second stage, we estimate the augmented Basu model where we replace *CEO relative leverage* by its unexplained portion, i.e., residual, obtained from the first-stage regression. We find that the coefficient on the interaction between *Ret*Neg* and the residual of *CEO relative leverage* is significantly negative, consistent with the results in Table 2.

We empirically examine this proposition by replacing CEO relative leverage with the relative leverage of the CFO and the entire management team (top executives reported by ExecuComp) in the augmented Basu (1997) model. Since inside debt information is not available for all CFOs and other top executives, we have only 2,981 and 3,067 observations for the CFO and top management team regressions, respectively.[16]

We present the regression results for CFOs in the first two columns of Table 11. The coefficient on *Ret*Neg*Relative leverage* is significantly negative, as is the coefficient on *Ret*Neg*High relative leverage*. In column (3) and (4), we report the results from the top management team regressions. We find that both the continuous and dichotomous measures of relative leverage are significantly and negatively related to asymmetric timely loss recognition. Untabulated results show that the negative relation between conservatism and inside debt holdings of CFOs and top management teams is also concentrated in firms where debtholders are most vulnerable to expropriation by shareholders. Overall, our evidence in this section suggests that larger debt holdings by a firm's CFO and its top management team alleviate debtholders' concern about expropriation and reduce their demand for conservatism. This is also consistent with the finding by Wang, Xie, and Xin (2010) that firms with larger debt holdings by CFOs and top executives are able to borrow from banks at lower costs.

5. Conclusion

In this paper we investigate the relation between accounting conservatism and managerial ownership of debt in the form of deferred compensation and pension benefits. Accounting conservatism arises as an important mechanism to address the agency conflicts between shareholders and debtholders and reduce agency costs of debt. Debtholders tend to demand more conservative

[16] Following the method of Chava and Purnanandam (2009), we identify CFOs as the executives with the title contains the string 'CFO', 'Chief finance officer', 'VP-finance', 'treasurer' or 'controller'. If we find more than one person with the finance title among all executives, we take the executive with the highest compensation as the CFO.

financial reporting at firms with more serious shareholder-debtholder conflicts. Managerial ownership of debt, on the other hand, aligns managers' incentives more closely with those of debtholders and reduces their incentives to expropriate debtholders on shareholders' behalf. Facing lower expropriation risk, debtholders demand less accounting conservatism.

Consistent with this hypothesis, we find significant evidence of less conservative financial reporting at firms where CEOs have accumulated more deferred compensation and pension benefits. This negative relation is more pronounced in firms with higher leverage, less tangible assets, higher bankruptcy risk, and more growth options, i.e., firms characterized by higher expected agency costs of debt. Our results are robust to correcting for potential endogeneity of managerial ownership of debt and to using a number of alternative accounting conservatism measures. We also find that debt holdings by a firm's CFO and its top management team reduce accounting conservatism as well.

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Appendix

Variable	Definition
CEO inside debt	Sum of CEO deferred compensation and pension value
CEO inside equity	Market value of CEO stock and stock option holdings.
CEO personal leverage	The ratio of CEO inside debt to inside equity
CEO relative leverage	CEO personal leverage divided by firm leverage, where firm leverage is equal to the book value of long-term and short-term debt (DLTT + DLC) divided by the market value of equity (PRCC_F * CSHO)
High relative leverage	A dummy variable equal to one if CEO relative leverage is greater than one.
EPS	Earnings before extraordinary items (IB) scaled by the market value of equity at the beginning of the year (PRCC_F * CSHO)
Ret	The buy-and-hold stock returns over a fiscal year
Neg	A dummy variable equal to one if Ret is negative
Size	Book value of total assets (AT), in log
Lev	Book value of total debt (DLTT + DLC) divided by book value of total assets (AT)
MB	Market value of total assets (AT - CEQ + PRCC_F * CSHO) divided by book value of total assets (AT)
LIT	A dummy variable equal to one if a firm falls in high litigation risk industry as identified by SIC codes 2833–2836, 3570–3577, 3600–3674, 5200–5961, and 7370
Vega	Dollar change in the value of a CEO's stock and option portfolio per 0.01 increase in the annualized standard deviation of stock returns
Delta	Dollar change in the value of a CEO's stock and option portfolio per 1% increase in stock price
Z-score	Altman's Z-score computed as 3.3* OIADP/AT + 1.2*(ACT- LCT)/AT + SALE /AT + 0.6* PRCC_F * CSHO / (DLTT + DLC) + 1.4* RE/AT
Asset tangibility	Asset Tangibility ratio calculated as net property, plant and equipment (PPENT) divided by book value of total assets (AT)
Growth options	Research and development expenditure (RDX) scaled by net sales (SALE)
ACC	Total accruals, defined as earnings before extraordinary items (NI) minus cash flows from operations (OANCF) scaled by total assets (AT)
$\triangle CF$	Change in cash flows from operations (OANCF) scaled by total assets (AT)
NOA	The average non-operating accruals over the previous three years multiplied by negative one. Non-operating accruals are estimated as (NI+DP-OANCF+RECCH+INVCH+APALCH+TXACH)/AT
SKEW	The difference between skewness in cash flows (OANCF/AT) and earnings (NI/AT) over the previous 24 quarters with a minimum of 5 quarters of data
C_SCORE	A firm-year measure of conservatism developed by Khan and Watts (2007)
RANK	A composite rank measure of accounting conservatism based on NOA, SKEW, and C_SCORE
Tax rate	Top personal income tax rate of the state where a firm is headquartered
Gibbs estimate	Gibbs estimate of a firm's equity trading costs developed by Hasbrouck (2009)

Table 1. Summary statistics

The sample consists of 3,135 observations from 2007 to 2009. Variable definitions are in the Appendix.

	Mean	Stdev	P10	Q1	Median	Q3	P90
Inside debt, D_i (mil $)	5.644	12.049	0.000	0.000	1.279	5.968	15.022
Inside equity, E_i (mil $)	93.628	743.590	2.587	6.592	17.160	46.304	125.259
CEO personal leverage, D_i/E_i	0.306	1.161	0.000	0.000	0.066	0.307	0.732
CEO relative leverage	0.714	1.139	0.000	0.000	0.206	0.920	2.209
High relative leverage	0.234	0.423	0.000	0.000	0.000	0.000	1.000
CEO vega (thousand $)	156.831	290.628	6.209	22.017	68.702	178.723	386.261
CEO delta (thousand $)	1065.893	7529.715	33.668	87.459	235.272	630.763	1607.333
EPS	-0.019	0.253	-0.183	0.004	0.047	0.070	0.098
Ret	-0.025	0.556	-0.604	-0.358	-0.096	0.195	0.539
Total assets (mil $)	15,880	47,642	479	1,100	3,265	10,057	31,195
Size	8.179	1.632	6.171	7.003	8.091	9.216	10.348
Lev	0.267	0.179	0.051	0.135	0.244	0.369	0.508
MB	1.651	0.854	0.983	1.095	1.376	1.920	2.681
Lit	0.166	0.372	0.000	0.000	0.000	0.000	1.000

Table 2. The effect of CEO inside debt on conservatism

This table presents regression results of the augmented Basu (1997) model as specified in equation (2). The dependent variable is earnings before extraordinary items scaled by the market value of equity at the beginning of the year. CEO incentives from inside debt are measured by *CEO relative leverage* in columns (1) and (2) and *high relative leverage* in columns (3) and (4). All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Independent variables	(1)	(2)	(3)	(4)
Ret	-0.057*	-0.381***	-0.047	-0.356***
	(-1.74)	(-2.91)	(-1.51)	(-2.83)
Neg	0.052***	-0.075	0.043***	-0.060
	(3.00)	(-0.95)	(2.59)	(-0.78)
Ret*Neg	0.545***	0.804***	0.543***	0.855***
	(10.20)	(3.31)	(10.42)	(3.53)
CEO relative leverage	0.012	-0.000		
	(1.44)	(-0.01)		
Ret*CEO relative leverage	-0.009	0.015		
	(-0.38)	(0.60)		
Neg*CEO relative leverage	-0.020*	-0.007		
	(-1.82)	(-0.66)		
Ret*Neg*CEO relative leverage	***-0.084****	***-0.082****		
	(-2.32)	***(-2.33)***		
High relative leverage			0.047**	0.018
			(2.12)	(0.82)
Ret*High relative leverage			-0.084	-0.020
			(-1.10)	(-0.26)
Neg*High relative leverage			-0.063**	-0.036
			(-2.39)	(-1.41)
Ret*Neg*High relative leverage			***-0.162****	***-0.163****
			(-1.70)	***(-1.79)***
Size		0.008		0.007
		(1.54)		(1.46)
Ret*Size		0.014		0.015
		(1.15)		(1.25)
Neg*Size		0.008		0.007
		(1.18)		(0.95)
Ret*Neg*Size		0.008		0.000
		(0.33)		(0.01)
Lev		-0.169***		-0.137**
		(-2.60)		(-2.06)
Ret*Lev		0.282**		0.235**
		(2.44)		(1.98)
Neg*Lev		0.166*		0.133
		(1.87)		(1.45)
Ret*Neg*Lev		0.055		0.095
		(0.22)		(0.38)
MB		-0.009		-0.008
		(-0.65)		(-0.60)
Ret*MB		0.086**		0.085**
		(2.53)		(2.49)
Neg*MB		0.004		0.005
		(0.22)		(0.30)

Ret*Neg*MB		-0.241***		-0.251***
		(-4.61)		(-4.71)
Lit		-0.016		-0.016
		(-0.50)		(-0.57)
Ret*Lit		0.033		0.019
		(0.51)		(0.29)
Neg*Lit		-0.003		0.006
		(-0.09)		(0.19)
Ret*Neg*Lit		-0.004		0.020
		(-0.04)		(0.21)
Constant	0.051	-0.018	0.084*	0.009
	(0.90)	(-0.31)	(1.86)	(0.15)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	3,135	3,135	3,135	3,135
Adj. R-squared	0.20	0.25	0.16	0.21

Table 3. Controlling for CEO vega and delta in the augmented Basu model

This table presents regression results of the augmented Basu (1997) model specified in equation (2) with CEO delta and vega included as additional determinants of accounting conservatism. The dependent variable is earnings before extraordinary items scaled by the market value of equity at the beginning of the year. CEO incentives from inside debt are measured by *CEO relative leverage* in columns (1) and (2) and *high relative leverage* in columns (3) and (4). All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Independent variables	(1)	(2)	(3)	(4)
Ret	-0.099	-0.403***	-0.091	-0.365***
	(-1.36)	(-2.89)	(-1.31)	(-2.75)
Neg	0.196***	-0.090	0.201***	-0.072
	(3.08)	(-1.10)	(3.19)	(-0.90)
Ret*Neg	1.129***	0.841***	1.134***	0.821***
	(6.96)	(3.62)	(7.02)	(3.59)
CEO relative leverage	0.011	0.005		
	(1.42)	(0.59)		
Ret*CEO relative leverage	-0.009	0.014		
	(-0.37)	(0.59)		
Neg*CEO relative leverage	-0.017*	-0.013		
	(-1.73)	(-1.28)		
Ret*Neg*CEO relative leverage	***-0.086****	***-0.111*****		
	(-2.58)	***(-3.23)***		
High relative leverage			0.045**	0.028
			(2.16)	(1.27)
Ret*High relative leverage			-0.100	-0.034
			(-1.35)	(-0.44)
Neg*High relative leverage			-0.065**	-0.052**
			(-2.55)	(-1.98)
Ret*Neg*High relative leverage			***-0.166****	***-0.224*****
			(-1.87)	***(-2.45)***
Log(Vega)	0.011	0.021*	0.011	0.020*
	(1.08)	(1.73)	(1.10)	(1.67)
Ret*log(Vega)	0.007	-0.009	0.007	-0.007
	(0.46)	(-0.59)	(0.52)	(-0.43)
Neg*log(Vega)	-0.003	-0.016	-0.003	-0.016
	(-0.25)	(-1.26)	(-0.26)	(-1.21)
Ret*Neg*log(Vega)	***0.039***	***0.026***	***0.039***	***0.025***
	(1.52)	***(0.92)***	***(1.52)***	***(0.86)***
Log(Delta)	0.015	0.014	0.015	0.014
	(1.50)	(1.19)	(1.48)	(1.18)
Ret*log(Delta)	0.015	0.029	0.015	0.027
	(0.79)	(1.24)	(0.81)	(1.18)
Neg*log(Delta)	-0.023**	-0.029**	-0.023**	-0.029**
	(-2.01)	(-2.22)	(-2.06)	(-2.27)
Ret*Neg*log(Delta)	***-0.157*****	***-0.201*****	***-0.160*****	***-0.201*****
	(-4.77)	***(-4.88)***	***(-4.88)***	***(-4.90)***
Size		-0.016*		-0.014
		(-1.69)		(-1.57)
Ret*Size		0.010		0.010
		(0.66)		(0.63)
Neg*Size		0.032***		0.031***

		(2.84)		(2.81)
Ret*Neg*Size		0.091***		0.090***
		(2.99)		(3.01)
Lev		-0.145**		-0.137**
		(-2.08)		(-1.97)
Ret*Lev		0.355**		0.321**
		(2.44)		(2.22)
Neg*Lev		0.149		0.139
		(1.64)		(1.53)
Ret*Neg*Lev		-0.114		-0.075
		(-0.47)		(-0.31)
MB		-0.026*		-0.023*
		(-1.95)		(-1.75)
Ret*MB		0.061*		0.056*
		(1.81)		(1.68)
Neg*MB		0.038**		0.035**
		(2.39)		(2.21)
Ret*Neg*MB		-0.084*		-0.079
		(-1.66)		(-1.58)
Lit		-0.023		-0.024
		(-0.72)		(-0.76)
Ret*Lit		0.015		0.004
		(0.23)		(0.07)
Neg*Lit		-0.007		-0.008
		(-0.21)		(-0.26)
Ret*Neg*Lit		-0.021		-0.010
		(-0.23)		(-0.11)
Constant	-0.112**	0.057	-0.108**	0.043
	(-2.54)	(0.78)	(-2.49)	(0.59)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	3,135	3,135	3,135	3,135
Adj. R-squared	0.27	0.31	0.27	0.31

Table 4. The effect of leverage on the relation between inside debt and conservatism

This table presents the subsample regression results of the augmented Basu (1997) model specified in equation (2). The subsamples are formed based on whether a firm's leverage at the beginning of a fiscal year is above or below sample median. The dependent variable is earnings before extraordinary items scaled by the market value of equity at the beginning of the year. CEO incentives from inside debt are measured by *CEO relative leverage* in columns (1) and (2) and *high relative leverage* in columns (3) and (4). All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
Independent variables	High leverage	Low leverage	High leverage	Low leverage
Ret	-0.321*	-0.244	-0.288	-0.186
	(-1.78)	(-1.24)	(-1.58)	(-1.03)
Neg	-0.130	0.011	-0.117	0.033
	(-0.85)	(0.13)	(-0.76)	(0.38)
Ret*Neg	0.593	0.798***	0.562	0.748***
	(1.39)	(2.66)	(1.30)	(2.62)
CEO relative leverage	-0.006	-0.001		
	(-0.62)	(-0.09)		
Ret*CEO relative leverage	0.068***	0.000		
	(2.71)	(0.01)		
Neg*CEO relative leverage	-0.011	-0.003		
	(-0.83)	(-0.23)		
Ret*Neg*CEO relative leverage	***-0.202******	***-0.035***		
	(-4.15)	***(-0.85)***		
High relative leverage			-0.004	0.009
			(-0.19)	(0.29)
Ret*High relative leverage			0.146**	-0.090
			(2.36)	(-0.86)
Neg*High relative leverage			-0.031	-0.023
			(-1.04)	(-0.63)
Ret*Neg*High relative leverage			***-0.427******	***-0.024***
			(-4.10)	***(-0.21)***
Size	-0.002	0.012*	-0.002	0.013**
	(-0.24)	(1.73)	(-0.16)	(2.01)
Ret*Size	0.018	0.008	0.016	0.005
	(1.08)	(0.43)	(0.92)	(0.31)
Neg*Size	0.015	0.002	0.014	0.001
	(1.20)	(0.29)	(1.15)	(0.14)
Ret*Neg*Size	0.009	-0.004	0.010	-0.002
	(0.24)	(-0.15)	(0.25)	(-0.08)
Lev	-0.185	0.257	-0.186	0.275
	(-1.24)	(1.38)	(-1.24)	(1.45)
Ret*Lev	0.239	-0.590	0.256	-0.630
	(1.25)	(-1.01)	(1.30)	(-1.11)
Neg*Lev	0.210	-0.131	0.211	-0.159
	(1.06)	(-0.60)	(1.06)	(-0.73)
Ret*Neg*Lev	0.346	1.054	0.345	1.093
	(0.75)	(1.49)	(0.74)	(1.58)
MB	0.014	-0.018	0.016	-0.015
	(0.73)	(-1.25)	(0.81)	(-1.00)
Ret*MB	0.037	0.095**	0.031	0.085**
	(0.85)	(2.40)	(0.70)	(2.21)

Neg*MB	-0.017	0.006	-0.019	0.002
	(-0.58)	(0.38)	(-0.63)	(0.13)
Ret*Neg*MB	-0.227**	-0.244***	-0.223**	-0.235***
	(-2.40)	(-4.06)	(-2.33)	(-4.02)
Lit	-0.009	-0.023	-0.009	-0.023
	(-0.21)	(-0.72)	(-0.19)	(-0.75)
Ret*Lit	-0.000	0.070	-0.013	0.062
	(-0.00)	(0.87)	(-0.17)	(0.83)
Neg*Lit	0.019	-0.013	0.011	-0.014
	(0.38)	(-0.43)	(0.22)	(-0.48)
Ret*Neg*Lit	0.125	-0.094	0.126	-0.083
	(0.83)	(-0.90)	(0.83)	(-0.84)
Constant	0.009	-0.038	-0.000	-0.043
	(0.09)	(-0.52)	(-0.00)	(-0.60)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	1,568	1,567	1,568	1,567
Adj. R-squared	0.28	0.24	0.27	0.24

Table 5. The effect of bankruptcy risk on the relation between inside debt and conservatism

This table presents the subsample regression results of the augmented Basu (1997) model specified in equation (2). The subsamples are formed based on whether a firm's Z-score at the beginning of a fiscal year is above or below 1.81. The dependent variable is earnings before extraordinary items scaled by the market value of equity at the beginning of the year. CEO incentives from inside debt are measured by *CEO relative leverage* in columns (1) and (2) and *high relative leverage* in columns (3) and (4). All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Independent variables	(1)	(2)	(3)	(4)
	Z-score>=1.81	Z-score <1.81	Z-score >=1.81	Z-score <1.81
Ret	-0.173	-0.834***	-0.172	-0.830***
	(-1.46)	(-2.96)	(-1.44)	(-2.97)
Neg	0.044	-0.273	0.048	-0.252
	(0.78)	(-0.84)	(0.85)	(-0.77)
Ret*Neg	0.796***	1.288**	0.791***	1.292**
	(4.11)	(2.07)	(4.11)	(2.02)
CEO relative leverage	0.010	-0.037		
	(1.40)	(-1.29)		
Ret*CEO relative leverage	-0.024	0.192***		
	(-1.02)	(3.14)		
Neg*CEO relative leverage	-0.010	-0.007		
	(-1.13)	(-0.20)		
Ret*Neg*CEO relative leverage	***-0.000***	***-0.447******		
	(-0.01)	***(-3.87)***		
High relative leverage			0.046**	-0.082
			(1.97)	(-1.18)
Ret*High relative leverage			-0.153*	0.516***
			(-1.65)	(3.20)
Neg*High relative leverage			-0.050*	0.058
			(-1.91)	(0.65)
Ret*Neg*High relative leverage			***0.074***	***-0.799******
			(0.70)	***(-3.81)***
Size	0.006	0.004	0.005	0.007
	(1.46)	(0.23)	(1.14)	(0.36)
Ret*Size	0.003	0.064***	0.009	0.064***
	(0.24)	(3.07)	(0.62)	(3.09)
Neg*Size	-0.004	0.032	-0.003	0.029
	(-0.69)	(1.29)	(-0.44)	(1.17)
Ret*Neg*Size	-0.018	-0.036	-0.023	-0.044
	(-0.87)	(-0.71)	(-1.08)	(-0.85)
Lev	-0.031	-0.383	-0.014	-0.392
	(-0.82)	(-1.42)	(-0.39)	(-1.46)
Ret*Lev	0.300**	0.388*	0.228***	0.454**
	(2.57)	(1.86)	(2.59)	(2.14)
Neg*Lev	0.099*	0.055	0.081	0.081
	(1.74)	(0.20)	(1.45)	(0.28)
Ret*Neg*Lev	-0.230	-0.555	-0.158	-0.536
	(-1.05)	(-1.19)	(-0.77)	(-1.13)
MB	-0.004	0.097	-0.002	0.099
	(-0.52)	(0.66)	(-0.22)	(0.68)

Ret*MB	0.051**	0.047	0.044**	0.037
	(2.28)	(0.40)	(2.26)	(0.32)
Neg*MB	-0.005	0.017	-0.008	0.012
	(-0.55)	(0.11)	(-0.86)	(0.07)
Ret*Neg*MB	-0.194***	-0.070	-0.186***	-0.070
	(-5.24)	(-0.38)	(-5.35)	(-0.37)
Lit	-0.014	0.236	-0.013	0.243
	(-0.85)	(1.28)	(-0.84)	(1.32)
Ret*Lit	0.000	0.117	-0.007	0.097
	(0.01)	(1.05)	(-0.21)	(0.88)
Neg*Lit	0.015	-0.032	0.014	-0.043
	(0.78)	(-0.19)	(0.73)	(-0.26)
Ret*Neg*Lit	0.101	-0.226	0.108	-0.188
	(1.35)	(-0.77)	(1.49)	(-0.63)
Constant	-0.046	0.219	-0.044	0.192
	(-0.88)	(0.81)	(-0.79)	(0.72)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	2,346	789	2,346	789
Adj. R-squared	0.23	0.38	0.24	0.38

Table 6. The effect of asset tangibility on the relation between inside debt and conservatism

This table presents the subsample regression results of the augmented Basu (1997) model specified in equation (2). The subsamples are formed based on whether a firm's asset tangibility ratio at the beginning of a fiscal year is above or below sample median. The dependent variable is earnings before extraordinary items scaled by the market value of equity at the beginning of the year. CEO incentives from inside debt are measured by *CEO relative leverage* in columns (1) and (2) and *high relative leverage* in columns (3) and (4). All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Independent variables	(1)	(2)	(3)	(4)
	High tangibility	Low tangibility	High tangibility	Low tangibility
Ret	-0.285*	-0.440*	-0.247	-0.444*
	(-1.79)	(-1.84)	(-1.64)	(-1.84)
Neg	-0.015	-0.090	-0.003	-0.087
	(-0.15)	(-0.69)	(-0.03)	(-0.67)
Ret*Neg	0.575*	1.005***	0.522*	1.034***
	(1.84)	(2.69)	(1.70)	(2.75)
CEO relative leverage	-0.001	-0.016		
	(-0.09)	(-1.37)		
Ret*CEO relative leverage	0.022	0.067**		
	(0.68)	(2.21)		
Neg*CEO relative leverage	0.000	0.001		
	(0.02)	(0.05)		
Ret*Neg*CEO relative leverage	***-0.072***	***-0.151******		
	(-1.47)	***(-3.28)***		
High relative leverage			0.013	-0.033
			(0.42)	(-1.11)
Ret*High relative leverage			-0.027	0.173***
			(-0.26)	(2.59)
Neg*High relative leverage			-0.026	0.005
			(-0.72)	(0.13)
Ret*Neg*High relative leverage			***-0.156***	***-0.350******
			(-1.24)	***(-3.60)***
Size	0.011	0.009	0.011	0.008
	(1.39)	(0.99)	(1.38)	(0.92)
Ret*Size	-0.011	0.029	-0.008	0.030
	(-0.46)	(1.56)	(-0.34)	(1.60)
Neg*Size	-0.010	0.016	-0.009	0.016
	(-0.89)	(1.46)	(-0.79)	(1.44)
Ret*Neg*Size	0.029	-0.012	0.030	-0.018
	(0.73)	(-0.40)	(0.76)	(-0.58)
Lev	-0.148*	-0.269**	-0.130	-0.273**
	(-1.67)	(-2.37)	(-1.40)	(-2.38)
Ret*Lev	0.441**	0.284*	0.369*	0.303*
	(2.11)	(1.67)	(1.65)	(1.72)
Neg*Lev	0.292**	0.165	0.267**	0.174
	(2.36)	(1.13)	(2.10)	(1.18)
Ret*Neg*Lev	0.222	-0.080	0.266	-0.076
	(0.60)	(-0.23)	(0.72)	(-0.22)
MB	-0.017	0.004	-0.014	0.005
	(-1.01)	(0.22)	(-0.78)	(0.23)

Ret*MB	0.095*	0.057	0.089*	0.057
	(1.85)	(1.18)	(1.77)	(1.16)
Neg*MB	0.017	-0.018	0.014	-0.019
	(0.82)	(-0.79)	(0.64)	(-0.84)
Ret*Neg*MB	-0.224***	-0.247***	-0.216***	-0.250***
	(-3.10)	(-3.35)	(-3.04)	(-3.39)
Lit	-0.006	-0.037	-0.005	-0.039
	(-0.18)	(-0.74)	(-0.14)	(-0.78)
Ret*Lit	0.022	0.090	0.004	0.084
	(0.28)	(1.62)	(0.05)	(1.54)
Neg*Lit	0.014	0.013	0.011	0.013
	(0.41)	(0.28)	(0.30)	(0.27)
Ret*Neg*Lit	0.096	-0.137	0.109	-0.125
	(0.81)	(-1.04)	(0.92)	(-0.96)
Constant	-0.013	0.206**	-0.028	0.207**
	(-0.19)	(2.10)	(-0.39)	(2.10)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	1,568	1,567	1,568	1,567
Adj. R-squared	0.29	0.24	0.29	0.23

Table 7. The effect of growth options on the relation between inside debt and conservatism

This table presents the subsample regression results of the augmented Basu (1997) model specified in equation (2). The subsamples are formed based on whether a firm's R&D/Sales ratio at the beginning of a fiscal year is above or below sample median. The dependent variable is earnings before extraordinary items scaled by the market value of equity at the beginning of the year. CEO incentives from inside debt are measured by *CEO relative leverage* in columns (1) and (2) and *high relative leverage* in columns (3) and (4). All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
Independent variables	Positive R&D	Zero R&D	Positive R&D	Zero R&D
Ret	-0.283*	-0.580**	-0.263*	-0.527**
	(-1.78)	(-2.08)	(-1.67)	(-2.08)
Neg	-0.098	-0.015	-0.093	0.002
	(-1.06)	(-0.11)	(-1.04)	(0.02)
Ret*Neg	0.489	1.214***	0.449	1.169***
	(1.51)	(2.98)	(1.43)	(2.99)
CEO relative leverage	0.002	-0.005		
	(0.13)	(-0.57)		
Ret*CEO relative leverage	0.026	-0.000		
	(0.63)	(-0.00)		
Neg*CEO relative leverage	-0.005	-0.008		
	(-0.30)	(-0.68)		
Ret*Neg*CEO relative leverage	***-0.107****	***-0.060***		
	(-1.70)	***(-1.53)***		
High relative leverage			0.018	0.007
			(0.47)	(0.26)
Ret*High relative leverage			0.035	-0.092
			(0.28)	(-0.97)
Neg*High relative leverage			-0.036	-0.033
			(-0.78)	(-1.03)
Ret*Neg*High relative leverage			***-0.310****	***-0.037***
			(-2.01)	***(-0.33)***
Size	0.016*	0.006	0.016*	0.007
	(1.77)	(0.70)	(1.73)	(0.86)
Ret*Size	-0.004	0.033	-0.004	0.031
	(-0.16)	(1.51)	(-0.15)	(1.49)
Neg*Size	-0.004	0.010	-0.002	0.009
	(-0.29)	(0.93)	(-0.20)	(0.82)
Ret*Neg*Size	0.038	-0.017	0.044	-0.017
	(0.82)	(-0.53)	(0.97)	(-0.53)
Lev	-0.236**	-0.196**	-0.229**	-0.190**
	(-2.13)	(-2.14)	(-2.01)	(-2.09)
Ret*Lev	0.358	0.330**	0.337	0.300**
	(1.51)	(2.22)	(1.35)	(2.18)
Neg*Lev	0.371***	0.116	0.358***	0.112
	(2.76)	(0.97)	(2.63)	(0.94)
Ret*Neg*Lev	0.330	-0.157	0.328	-0.114
	(0.81)	(-0.52)	(0.79)	(-0.39)
MB	-0.026	0.009	-0.024	0.011
	(-1.39)	(0.48)	(-1.26)	(0.62)

Ret*MB	0.080**	0.122**	0.078*	0.114**
	(1.98)	(2.35)	(1.90)	(2.34)
Neg*MB	0.038*	-0.041*	0.036	-0.043*
	(1.72)	(-1.74)	(1.56)	(-1.87)
Ret*Neg*MB	-0.182***	-0.376***	-0.182***	-0.369***
	(-2.92)	(-4.45)	(-2.94)	(-4.48)
Lit	0.005	-0.080*	0.003	-0.074*
	(0.11)	(-1.76)	(0.08)	(-1.72)
Ret*Lit	0.011	0.129*	0.004	0.115
	(0.12)	(1.65)	(0.04)	(1.56)
Neg*Lit	-0.022	0.033	-0.024	0.028
	(-0.48)	(0.94)	(-0.52)	(0.84)
Ret*Neg*Lit	-0.032	-0.099	-0.031	-0.086
	(-0.23)	(-0.81)	(-0.23)	(-0.73)
Constant	-0.015	-0.043	-0.032	-0.058
	(-0.24)	(-0.44)	(-0.51)	(-0.63)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	1,193	1,942	1,193	1,942
Adj. R-squared	0.26	0.26	0.26	0.26

Table 8. The effect of CEO inside debt on the Ball and Shivakumar (2006) measure of conservatism

This table presents the regression results of the Ball and Shivakumar (2006) model specified in equation (3). The dependent variable is total accruals estimated as earnings before extraordinary items minus cash flows from operations scaled by total assets. CEO incentives from inside debt are measured by *CEO relative leverage* in columns (1) and (2) and *high relative leverage* in columns (3) and (4). All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Independent variables	(1)	(2)	(3)	(4)
△CF	-0.495**	0.426	-0.463**	0.373
	(-2.29)	(0.49)	(-2.24)	(0.43)
Neg	0.004	0.086	0.008	0.084
	(0.31)	(1.09)	(0.62)	(1.05)
△CF*Neg	1.488***	-0.555	1.469***	-0.416
	(4.41)	(-0.36)	(4.44)	(-0.27)
CEO relative leverage	0.007	-0.000		
	(1.10)	(-0.06)		
△CF *CEO relative leverage	0.248**	0.310**		
	(1.98)	(2.05)		
Neg*CEO relative leverage	0.012	0.008		
	(1.52)	(0.98)		
⊿CF *Neg*CEO relative leverage	***-0.390****	***-0.517****		
	(-2.13)	***(-2.51)***		
High relative leverage			0.022	0.004
			(1.40)	(0.25)
△CF *High relative leverage			0.580**	0.742**
			(2.02)	(2.20)
Neg*High relative leverage			0.020	0.009
			(0.89)	(0.39)
⊿CF *Neg*High relative leverage			***-1.060****	***-1.396****
			(-1.73)	***(-2.16)***
Size		0.019***		0.019***
		(3.60)		(3.51)
△CF *Size		-0.111		-0.097
		(-1.04)		(-0.94)
Neg*Size		-0.007		-0.006
		(-0.95)		(-0.85)
△CF *Neg*Size		0.302		0.279
		(1.48)		(1.39)
Lev		-0.029		-0.027
		(-0.54)		(-0.52)
△CF *Lev		-0.819		-0.884
		(-1.22)		(-1.31)
Neg*Lev		-0.121*		-0.125*
		(-1.72)		(-1.77)
△CF *Neg*Lev		1.718		1.817
		(1.34)		(1.42)
MB		0.045***		0.045***
		(4.61)		(4.59)
△CF *MB		0.050		0.054
		(0.33)		(0.34)
Neg*MB		0.012		0.013

		(0.89)		(0.91)
△CF *Neg*MB		-0.182		-0.195
		(-0.77)		(-0.82)
Lit		-0.004		-0.006
		(-0.17)		(-0.26)
△CF *Lit		0.377		0.405
		(1.17)		(1.23)
Neg*Lit		-0.002		-0.002
		(-0.06)		(-0.07)
△CF *Neg*Lit		-0.175		-0.203
		(-0.35)		(-0.39)
Constant	0.042	-0.258***	0.037	-0.262***
	(0.82)	(-4.66)	(0.76)	(-4.70)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	3,131	3,131	3,131	3,131
Adj. R-squared	0.11	0.15	0.11	0.15

Table 9. The effect of CEO inside debt on alternative measures of conservatism

This table presents the results from OLS regressions of alternative conservatism measures. The dependent variable is the *C_SCORE* measure in column (1), the amount of negative non-operating accruals (*NOA*) in column (2), the difference between skewness in cash flows and earnings (*SKEW*) in column (3), and a composite rank based on the above three metrics (*Rank*) in column (4). Results in Panel A are based on the continuous measure of CEO relative leverage, while those in Panel B are based on the dichotomous measure. All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: Using the continuous CEO relative leverage measure				
	(1)	(2)	(3)	(4)
Independent variables	C_SCORE	NOA	SKEW	Rank
CEO relative leverage	***-0.015****	***-0.004*****	***-0.054****	***-0.386*****
	(-2.41)	***(-4.34)***	***(-2.08)***	***(-3.90)***
Size	-0.012***	-0.005***	0.030	-0.554***
	(-3.74)	(-5.11)	(1.35)	(-6.78)
Lev	0.142***	0.006	-0.144	4.396***
	(2.78)	(0.62)	(-0.71)	(5.49)
Mb	-0.116***	-0.003*	-0.050***	-1.474***
	(-8.95)	(-1.79)	(-6.71)	(-8.83)
Lit	-0.055**	0.027***	0.035	1.762***
	(-2.10)	(4.09)	(0.21)	(3.05)
Constant	-0.036	0.073***	1.686	22.056***
	(-0.15)	(5.52)	(1.47)	(8.51)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	3,096	3,096	3,096	3,096
Adj. R-squared	0.24	0.17	0.10	0.15
Panel B: Using the dichotomous CEO relative leverage measure				
	(1)	(2)	(3)	(4)
Independent variables	C_SCORE	NOA	SKEW	Rank
High relative leverage	***-0.022****	***-0.013*****	***-0.172****	***-1.136*****
	(-1.66)	***(-6.10)***	***(-2.51)***	***(-4.42)***
Size	-0.013***	-0.004***	0.030	-0.558***
	(-4.07)	(-4.40)	(1.36)	(-6.87)
Lev	0.151***	-0.002	-0.152	4.376***
	(2.98)	(-0.18)	(-0.75)	(5.48)
Mb	-0.117***	-0.006***	-0.050***	-1.476***
	(-9.04)	(-3.10)	(-6.76)	(-8.90)
Lit	-0.050*	0.027***	0.032	1.754***
	(-1.93)	(4.41)	(0.20)	(3.07)
Constant	-0.032	0.066***	1.724	22.299***
	(-0.13)	(4.94)	(1.52)	(8.97)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	3,096	3,096	3,096	3,096
Adj. R-squared	0.24	0.18	0.10	0.15

Table 10. Two-stage least square (2SLS) regressions of accounting conservatism measures

This table presents the results of two-stage least squares regressions of accounting conservatism measures, where CEO relative leverage is instrumented by (i) the top personal income tax rate in the state where a firm is headquartered and (ii) the Gibbs estimate of a firm's equity trading costs developed by Hasbrouck (2009). Results in Panel A are based on the continuous measure of CEO relative leverage, while those in Panel B are based on the dichotomous measure. Definitions of all variables are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

Panel A: 2SLS regressions using the continuous CEO relative leverage measure						
Panel A.1: First-stage regression		Panel A.2: Second-stage regression				
Dependent variable: CEO relative leverage			Dependent variable:			
			C_SCORE	NOA	SKEW	Rank
Gibbs estimate	-0.054***	***Predicted relative***	-0.503***	-0.043***	-0.642**	-3.739***
	(-4.43)	***leverage***	(-3.90)	(-2.72)	(-2.13)	(-2.89)
Tax rate	1.502*					
	(1.85)					
Size	0.127***	Size	0.061***	0.001	0.093*	-0.064
	(6.24)		(2.71)	(0.57)	(1.79)	(-0.29)
Lev	-1.256***	Lev	-0.494***	-0.051**	-0.942**	0.075
	(-8.12)		(-2.58)	(-2.23)	(-2.04)	(0.04)
MB	0.128***	MB	-0.049*	-0.000	-0.263***	-1.006***
	(3.74)		(-1.78)	(-0.13)	(-4.42)	(-3.90)
Lit	-0.599***	Lit	-0.337***	0.006	-0.208	-0.116
	(-3.80)		(-3.05)	(0.45)	(-0.85)	(-0.11)
Constant	0.202	Constant	-0.067	0.062***	2.662***	21.927***
	(0.48)		(-0.48)	(2.64)	(3.57)	(12.41)
Industry effects	Included	Industry effects	Included	Included	Included	Included
Year effects	Included	Year effects	Included	Included	Included	Included
Observations	3,025	Observations	3,025	3,025	3,025	3,025
Adj. R-squared	0.16	Adj. R-squared	0.27	0.21	0.16	0.17
Panel B: 2SLS regressions using the dichotomous CEO relative leverage measure						
Panel B.1: First-stage regression		Panel B.2: Second-stage regression				
Dependent variable: High relative leverage			Dependent variable:			
			C_SCORE	NOA	SKEW	Rank
Gibbs estimate	-0.021***	***Predicted relative***	-1.191***	-0.095***	-1.504**	-8.403***
	(-4.78)	***leverage***	(-4.05)	(-2.58)	(-1.98)	(-2.73)
Tax rate	0.695**					
	(2.35)					
Size	0.038***	Size	0.042**	-0.000	0.068	-0.225
	(5.01)		(2.47)	(-0.22)	(1.57)	(-1.28)
Lev	-0.441***	Lev	-0.387**	-0.039**	-0.799*	1.072
	(-7.97)		(-2.46)	(-2.00)	(-1.89)	(0.63)
MB	0.041***	MB	-0.065***	-0.002	-0.285***	-1.150***
	(3.34)		(-2.84)	(-0.83)	(-5.39)	(-5.21)
Lit	-0.205***	Lit	-0.280***	0.012	-0.131	0.401
	(-3.86)		(-3.10)	(1.15)	(-0.59)	(0.46)
Constant	0.287	Constant	0.192	0.083***	2.989***	23.765***
	(1.23)		(1.61)	(2.87)	(4.53)	(16.52)
Industry effects	Included	Industry effects	Included	Included	Included	Included

Year effects	Included	Year effects	Included	Included	Included	Included
Observations	3,025	Observations	3,025	3,025	3,025	3,025
Adj. R-squared	0.15	Adj. R-squared	0.20	0.16	0.27	0.17

Table 11. The effect of inside debt of CFOs/top management teams on conservatism

This table presents the regression results of the augmented Basu (1997) model specified in equation (2) where CEO relative leverage measures are replaced by those of CFOs (columns (1) and (2)) and the top management teams (columns (3) and (4)). The dependent variable is earnings before extraordinary items scaled by the market value of equity at the beginning of the year. A CFO's relative leverage is defined as the CFO's debt-equity ratio divided by the firm's debt-equity ratio, and a top management team's relative leverage is defined as the debt-equity ratio of top executives as a group divided by the firm's debt-equity ratio. All variable definitions are in the Appendix. In parentheses are *t*-statistics based on robust standard errors adjusted for heteroskedasticity and firm-level clustering. The notations of *, **, and *** represent statistical significance at the 10%, 5% and 1% level, respectively.

	(1)	(2)	(3)	(4)
Independent variables	CFOs		Top Five Executives	
Ret	-0.356***	-0.368***	-0.386***	-0.371***
	(-2.90)	(-3.05)	(-3.07)	(-2.99)
Neg	-0.075	-0.072	-0.045	-0.042
	(-0.97)	(-0.92)	(-0.57)	(-0.53)
Ret*Neg	0.734***	0.760***	0.856***	0.847***
	(2.88)	(3.03)	(3.55)	(3.56)
Relative leverage	-0.007*		-0.010	
	(-1.77)		(-1.51)	
Ret*Relative leverage	0.021***		0.037*	
	(3.74)		(1.90)	
Neg*Relative leverage	0.004		0.003	
	(0.83)		(0.36)	
Ret*Neg*Relative leverage	***-0.036******		***-0.079******	
	(-3.85)		***(-3.26)***	
High relative leverage		-0.051***		-0.007
		(-3.05)		(-0.39)
Ret*High relative leverage		0.158***		0.036
		(4.91)		(0.62)
Neg*High relative leverage		0.034		-0.028
		(1.62)		(-1.29)
Ret*Neg*High relative leverage		***-0.299******		***-0.254******
		(-4.78)		***(-3.54)***
Size	0.009**	0.009*	0.010**	0.010*
	(2.00)	(1.81)	(1.96)	(1.89)
Ret*Size	0.012	0.014	0.009	0.010
	(1.00)	(1.28)	(0.76)	(0.80)
Neg*Size	0.008	0.008	0.003	0.004
	(1.15)	(1.15)	(0.51)	(0.61)
Ret*Neg*Size	0.013	0.012	0.004	0.005
	(0.55)	(0.51)	(0.17)	(0.21)
Lev	-0.121**	-0.097**	-0.169***	-0.167***
	(-2.57)	(-2.22)	(-2.66)	(-2.62)
Ret*Lev	0.256**	0.187*	0.319***	0.309***
	(2.41)	(1.91)	(2.82)	(2.67)
Neg*Lev	0.124	0.097	0.164*	0.155*
	(1.52)	(1.23)	(1.82)	(1.73)
Ret*Neg*Lev	0.111	0.145	-0.001	-0.031
	(0.45)	(0.59)	(-0.00)	(-0.13)
MB	-0.011	-0.012	-0.007	-0.007
	(-0.87)	(-0.91)	(-0.53)	(-0.55)
Ret*MB	0.086**	0.087***	0.099***	0.099***

	(2.52)	(2.62)	(2.97)	(2.89)
Neg*MB	0.007	0.006	0.005	0.006
	(0.43)	(0.39)	(0.31)	(0.34)
Ret*Neg*MB	-0.242***	-0.243***	-0.248***	-0.246***
	(-4.49)	(-4.60)	(-4.68)	(-4.66)
Lit	-0.019	-0.017	-0.022	-0.018
	(-0.62)	(-0.55)	(-0.72)	(-0.58)
Ret*Lit	0.010	0.015	0.030	0.020
	(0.16)	(0.24)	(0.49)	(0.32)
Neg*Lit	-0.005	-0.007	0.001	-0.001
	(-0.18)	(-0.23)	(0.04)	(-0.05)
Ret*Neg*Lit	0.018	0.010	0.009	0.015
	(0.19)	(0.10)	(0.10)	(0.16)
Constant	-0.025	-0.030	-0.042	-0.040
	(-0.43)	(-0.53)	(-0.72)	(-0.69)
Industry effects	Included	Included	Included	Included
Year effects	Included	Included	Included	Included
Observations	2,981	2,981	3,067	3,067
Adj. R-squared	0.28	0.28	0.25	0.25