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Managerial Overconfidence and Accounting Conservatism

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ABSTRACT

Overconfident managers overestimate future returns from their firms' investments. Thus, we predict that overconfident managers will tend to delay loss recognition and generally use less conservative accounting. Furthermore, we test whether external monitoring helps to mitigate this effect. Using measures of both conditional and unconditional conservatism respectively, we find robust evidence of a negative relation between CEO overconfidence and accounting conservatism. We further find that external monitoring does not appear to mitigate this effect. Our findings add to the growing literature on overconfidence and complement the findings by Schrand and Zechman [2011] that overconfidence affects financial reporting behavior.

1. *Introduction*

Overconfident (or optimistic) managers overestimate future returns from their firms' investment projects (Heaton [2002], Malmendier and Tate [2005]).[1] Previous research in finance documents that overconfidence affects corporate investment, financing, and dividend policies (e.g.,

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[1] Malmendier and Tate [2005] use the term "overconfidence" to refer to managers who overestimate future returns from their firms' projects. Heaton [2002] uses the term

Malmendier and Tate [2008], Cordeiro [2009], Deshmukh, Goel, and Howe [2010], Malmendier, Tate, and Yan [2011], Hirshleifer, Low, and Teoh [2012]). Recent work in accounting examines the impact of overconfidence on the likelihood of an Accounting and Auditing Enforcement Release (AAER) and managerial overconfidence (Schrand and Zechman [2011]) and the likelihood of issuing a management forecast (Hribar and Yang [2011], Libby and Rennekamp [2012]). We extend this line of research by investigating the effects of managerial overconfidence on accounting conservatism. We find consistent and robust evidence of a significant negative effect of CEO overconfidence on both conditional and unconditional accounting conservatism.

Investigating the effects of overconfidence on corporate policies, including accounting policies, is important because overconfidence can induce decisions that destroy firm value. For example, Roll [1986] argues that managerial hubris (or overconfidence) explains why firms engage in value-destroying mergers or acquisitions. Similarly, distortions in other investment, financing, or accounting policies can be costly (Malmendier and Tate [2005, 2008], Ben-David, Graham, and Harvey [2010]). Alternatively, overconfidence can yield benefits under some conditions. For example, it is less costly to motivate risk-taking by overconfident managers than by other managers (Gervais, Heaton, and Odean [2011], Campbell et al. [2011]).

We hypothesize that if overconfident managers overestimate future returns from their firms' projects, they are likely to delay recognition of losses and use less conditionally conservative accounting. For example, poorly performing negative net present value (NPV) projects may be erroneously perceived as positive NPV projects by overconfident managers, leading to delayed loss recognition. Furthermore, overestimation of future returns from projects may also cause overconfident managers to use optimistic estimates in determining asset values (such as inventory, receivables, or long-lived assets), leading to lower levels of unconditional conservatism. Thus, our first set of hypotheses predicts a negative relation between overconfidence and both conditional and unconditional conservatism respectively.

Next, we examine how the relation between conservatism and overconfidence varies with the strength of external monitoring mechanisms. If external monitors view conservatism as desirable, consistent with the findings in Ahmed and Duellman [2007] and Garcia Lara, Garcia Osama, and Penalva [2009], stronger external monitoring may mitigate the negative effect of overconfidence on conservatism hypothesized above. Alternatively, conservatism can be costly in some situations. For example, it may limit the communication of information about the upside potential of a firm's investments. In such cases, external monitors may choose overconfident

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"optimism" to refer to managers who systematically overestimate the probability of good firm performance and underestimate the probability of poor firm performance. Following the majority of the literature in finance and accounting, we use the term overconfidence and consider it equivalent to optimism.

managers to mitigate the potential costs of conservatism. Thus, how external monitoring affects the relation between conservatism and overconfidence is an empirical question.

Our tests are based on a sample of 14,641 firm-years over 1993 to 2009 from S&P 1500 firms that have the available data to carry out our tests. Our primary measure of overconfidence is based on the timing of CEO option exercise following Malmendier and Tate [2005, 2008], Campbell et al. [2011], and Hirshleifer, Low, and Teoh [2012]. CEOs are generally underdiversified and should exercise their options and sell shares obtained from exercising options to minimize their exposure to idiosyncratic risk. However, an overconfident CEO believes that firm value will continue to increase and thus chooses to delay exercise and hold options that are deep in-the-money. We classify a CEO as being overconfident if the average intrinsic value of his/her exercisable unexercised options exceeds 67% of the average exercise price at least twice over our sample period. CEOs that do not meet this criterion are classified as not being overconfident. Our second measure of overconfidence is based on net purchases of the firm's shares by the CEO. As an overconfident CEO fails to diversify his/her idiosyncratic risk, overconfident CEOs will tend to buy more of their firms' stock relative to other CEOs.

In addition to these measures, we use two other measures related to overinvestment which is a potential consequence of overconfidence: (1) capital expenditures above the industry median, and (2) excess asset growth. Intuitively, firms with overconfident managers will tend to overinvest in assets resulting in above-average capital expenditures and/or above-average growth in assets (relative to sales growth).

We measure conditional conservatism using Basu's [1997] asymmetric timeliness measure, and firm-specific C-Scores following Khan and Watts [2009]. We measure unconditional conservatism using an accrual-based measure (Ahmed et al. [2002]), and the difference between cash flow skewness and earnings skewness (Givoly and Hayn [2000]). We use a simple measure of external monitoring based on the percentage of outside directors on the board, outside director ownership, CEO/Chairman separation, and institutional ownership.

Our findings can be summarized as follows. First, all four of our conservatism measures are negatively related to each of the four overconfidence measures after controlling for firm-specific determinants of conservatism documented in prior research and firm fixed effects. Furthermore, except for the relation between net purchases and the Basu [1997] measure, the relations between conservatism measures and overconfidence are statistically significant at conventional levels. The results survive a battery of robustness checks including the use of industry-differenced dependent and independent variables, first differences, and longer horizon overconfidence measures.

An alternative explanation for the negative relation between managerial overconfidence and conservatism is that overconfident managers self-select

into firms with less conservative accounting. To rule out this alternative explanation, we examine the relation between *changes* in firm-specific measures of conservatism and *changes* in overconfidence following a change in CEO. If our findings are driven by self-selection, CEOs would self-select into firms with their preferred level of conservatism and there should be no change in conservatism after the new CEO takes over. However, we find evidence of a negative relation between changes in conservatism and changes in overconfidence resulting from CEO turnover, albeit the significance levels drop because of a drastic reduction in sample size. Overall, we conclude that the evidence strongly supports the prediction that overconfidence and conservatism are negatively related.

With respect to the potential effects of external monitoring, we do not find that the relation between conservatism and overconfidence weakens for firms with stronger external monitoring. A potential explanation for this result may be that external monitors value certain attributes of overconfident managers and, in some situations, choose overconfident managers to avoid potential costs of conservative accounting.

We contribute to the literature by demonstrating that overconfidence significantly affects both conditional and unconditional conservatism. To our knowledge, prior work has not demonstrated the presence of these effects. In related work, Schrand and Zechman [2011] show that overconfidence affects the likelihood of an AAER. However, given the rarity of an AAER, we cannot infer whether overconfidence affects accounting policies more broadly based on their study. Our paper extends and complements their work.

Our study has at least two limitations. First, while our findings are robust to the use of observable firm-specific control variables, firm fixed effects, industry-adjusted variables, alternative empirical specifications, and extensive robustness checks, we cannot definitively rule out the possibility that our results may be driven by an unidentified factor that is correlated with both conservatism and overconfidence. Second, both overconfidence and conservatism are difficult to measure and therefore the validity of our inferences is critically dependent on the validity of our proxies for these constructs.

The remainder of the paper is organized as follows. Section 2 presents the discussion of the previous literature and develops the hypotheses. Section 3 presents the research design and data definitions. Section 4 presents the empirical results. Section 5 concludes the paper.

2. *Literature Review and Hypotheses Development*

2.1 MANAGERIAL OVERCONFIDENCE

In the finance literature, an overconfident manager is viewed as a manager who systematically overestimates future returns from the firm's projects or equivalently systematically overestimates the likelihood and impact of favorable events on his/her firm's cash flows and/or

underestimates the likelihood and impact of negative (adverse) events on his/her firm's cash flows (Heaton [2002], Malmendier and Tate [2005]).[2]

One of the earliest uses of this concept in finance was by Roll [1986], who argues that managerial hubris (i.e., overconfidence) is one explanation for value-destroying mergers and for overpayment for target firms. Heaton [2002] analytically shows that optimistic managers overvalue their firm's projects and equity as well as invest in negative NPV projects mistakenly perceiving them to be positive NPV investments. Using measures of overconfidence based on managers' stock option holdings, Malmendier and Tate [2005, 2008] document that overconfidence leads to overinvestment and that overconfident managers engage in more acquisitions and value-destroying mergers. Cordeiro [2009] and Deshmukh, Goel, and Howe [2010] document that overconfident managers tend to pay less dividends than other managers. Malmendier, Tate, and Yan [2011] document evidence consistent with overconfidence leading to distortions in corporate financial policies. In summary, a growing literature documents that overconfidence affects corporate investment, financing, and dividend policies (see Baker, Ruback, and Wurgler [2007] for a review).

Recent work in accounting examines the implications of overconfidence for managerial forecasts of earnings (Hilary and Hsu [2011], Hribar and Yang [2011], Libby and Rennekamp [2012]) and misreporting or fraud (Schrand and Zechman [2011]). Most directly related to our study, Schrand and Zechman [2011] find that managerial overconfidence is positively related to the likelihood of financial statement fraud and that higher internal/external monitoring through governance mechanisms does not mitigate this effect. We add to the literature by examining the effects of overconfidence on accounting choices more broadly.

2.2 THE EFFECT OF OVERCONFIDENCE ON ACCOUNTING CONSERVATISM

Conservatism is viewed as requiring higher verification standards for recognizing good news than bad news (Basu [1997], Watts [2003]). Managerial estimates play a critical role in applying conservative accounting. For example, managers estimate the net realizable value of inventory in applying the "lower of cost or market" rule for inventory valuation. Overconfident managers overestimate future returns from their firms' projects. Thus, they are likely to overestimate the probability and magnitude of positive shocks to future cash flows from current projects and underestimate negative or adverse shocks to cash flows.

Overestimation of future returns or cash flows from current projects or assets has at least two implications for managers' accounting decisions.

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[2] The notion of managerial overconfidence (or optimism) in this literature is based on the "better-than-average" effect in social psychology (Weinstein [1980], Svenson [1981], Weinstein and Klein [1996]). Experimental evidence suggests that this effect extends to economic decision making and managerial behavior (see Kidd and Morgan [1969], Larwood and Whittaker [1977], and Camerer and Lovallo [1999]).

First, it implies that they are likely to accelerate gain recognition and delay loss recognition. Furthermore, even when they choose to recognize losses, they are likely to underestimate the magnitude of these losses. Thus, overconfidence would lead to less conditionally conservative financial reporting. This suggests the following hypothesis:

H1a: There is a negative relation between overconfidence and conditional conservatism.

A second implication for accounting choices is that overconfident managers will tend to overvalue assets and undervalue liabilities. For example, an overconfident manager will tend to overestimate the probability of the collection of accounts receivables and therefore understate the allowance for bad debts, thereby overstating net receivables. Similarly, an overconfident manager will tend to overestimate salvage values or useful lives of long-lived assets, thus overstating asset values. Such overestimations will lead to more aggressive reporting of assets and lower unconditional conservatism.[3] This suggests the following hypothesis:

H1b: There is a negative relation between overconfidence and unconditional conservatism.

Although the above hypotheses are intuitive, it is possible for overconfidence to be positively related to conservatism. For example, Gervais, Heaton, and Odean [2011] argue that overconfident managers self-select into risky growth firms. If these firms use more conservative accounting, then a positive relation between conservatism and overconfidence could result because of managers' self-selection. In light of this counter argument, whether or not accounting conservatism is negatively related to overconfidence is an empirical question.

2.3 EXTERNAL MONITORING, CONSERVATISM, AND OVERCONFIDENCE

Prior studies document evidence on the benefits of conservative accounting in debt contracting and governance (Ahmed et al. [2002], Ahmed and Duellman [2007], Garcia Lara, Garcia Osama, and Penalva [2009]). To the extent that governance mechanisms such as boards of directors or institutional shareholders view conservative reporting as desirable, external monitoring could constrain the negative effect of managerial overconfidence on conservatism as Kahneman and Lovallo [1993] argue that adverse effects of managerial optimism (or overconfidence) can be alleviated by introducing

[3] Although we develop separate predictions for conditional and unconditional conservatism, we note that Watts [2003, p. 208] argues that "An important consequence of conservatism's asymmetric treatment of gains and losses is the persistent understatement of net asset values." In other words, conditional conservatism should lead to lower book values relative to market values and lower (more negative) accruals (i.e., lower unconditional conservatism). Further discussion for additional reasons why conditional and unconditional conservatism would be related can be found in Ryan [2006] and Roychowdhury and Watts [2007].

an outside view (also see Heaton [2002]). This suggests that strong external monitoring can potentially mitigate the negative relation between overconfidence and conservatism predicted above and leads to the following hypothesis:

H2: The relation between overconfidence and conservatism is weaker for firms with stronger external monitoring.

On the other hand, in certain situations, conservatism can be costly and monitoring mechanisms may choose overconfident managers to reduce conservatism. For example, Ahmed and Duellman [2011] argue that conservatism can lead to premature termination of profitable projects that have negative realizations of cash flows in their earlier periods. Furthermore, conservatism can limit information about the upside potential of a firm's investments. Thus, in these cases, strong external monitoring may not weaken the negative relation between overconfidence and conservatism. Consistent with this argument, Goel and Thakor [2008] find that overconfident managers are more likely to be promoted to the CEO position, implying that boards value certain attributes of overconfident managers. Furthermore, Schrand and Zechman [2011] find that corporate governance structures of firms that misreport earnings are similar to corporate governance structures of control firms. Thus, whether strong external monitoring will mitigate the effects of managerial overconfidence is an open empirical question.

3. Research Design

3.1 MEASURES OF OVERCONFIDENCE

3.1.1. CEO Option and Purchase Based Measures of Overconfidence. We use four measures of overconfidence in our main tests. The first two measures focus on CEOs' option holding behavior and stock purchases whereas the other two measures focus on their investment decisions. The first measure of overconfidence is based on Malmendier and Tate [2005, 2008], who use the timing of CEO option exercises to identify overconfidence. CEOs are typically underdiversified and therefore exposed to the idiosyncratic risk of their company's stock. To decrease their exposure to this risk, CEOs should minimize the holdings of their stock, and, following vesting, exercise options fairly quickly. However, overconfident CEOs are more likely to believe that their companies will continue to outperform a hedged portfolio and postpone option exercise.

However, as we do not have the detailed private data set of Malmendier and Tate [2005, 2008] we estimate managerial overconfidence from Execucomp by following Campbell et al. [2011] and Hirshleifer, Low, and Teoh [2012]. First, we obtain the average value per option ($\bar{C}$) by dividing the value of exercisable unexercised options by the number of exercisable unexercised options. Second, we subtract ($\bar{C}$) from the stock price ($\bar{S}$) at the

fiscal year end to obtain the average exercise price per option ($\bar{X}$). Third, we divide the average value per option ($\bar{C}$) by the average exercise price per option ($\bar{X}$) to calculate the ratio of the options in-the-money. Finally, we set *Holder67* (overconfidence) equal to one when the ratio of the options in-the-money ($\bar{C}/\bar{X}$) exceeds 0.67 at least twice during the sample period, zero otherwise. Consistent with Malmendier and Tate [2005] and Campbell et al. [2011], a CEO is classified as overconfident in the first fiscal year he/she exhibits the overconfident behavior and continues to be classified as overconfident for the remainder of the sample.[4]

Our second measure of overconfidence is based on Malmendier and Tate [2005], who use the net purchases by the CEO to identify overconfident executives. As top executives often have restrictions on the sale of stock, and often lack the ability to hedge against the risk by short selling shares of stock, an executive must be confident about his/her firm's future profitability and prospects to purchase additional shares. Thus, consistent with Campbell et al. [2011], we classify a CEO as overconfident using a dichotomous variable where *Purchase* is set equal to one if the CEO's net purchases (purchases−sales) are in the top quintile of the distribution of net purchases by all CEO and those purchases increase their ownership in the firm by 10% during the fiscal year, otherwise zero.[5]

3.1.2. Investment Measures of Overconfidence. Malmendier and Tate [2005, 2008] and Ben-David, Graham, and Harvey [2010] demonstrate that firms' investment decisions are related to managerial overconfidence. This suggests that these decisions may contain information regarding the level of overconfidence (Campbell et al. [2011]). Thus, we utilize two measures of overconfidence based on the investment decisions of the current CEO.

Our first investment-based proxy for overconfidence (*CAPEX*) is a dichotomous variable set equal to one if the capital expenditures deflated by lagged total assets in a given year is greater than the median level of capital expenditures to lagged total assets for the firm's Fama–French industry in that year, otherwise zero. This proxy is based on the findings in Ben-David, Graham, and Harvey [2010] that firms with overconfident CEOs have larger capital expenditures and the findings of Malmendier and Tate [2005] that overconfident managers tend to overinvest in capital projects.[6]

Our second investment-based proxy for overconfidence, following Schrand and Zechman [2011], is the amount of excess investment in assets

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[4] Results are similar to those reported if we classify CEOs as overconfident starting with the second time they exhibit the overconfident behavior. Also, results are similar to those reported if we only require the CEO to exhibit the overconfident behavior once to become classified as overconfident as in Malmendier and Tate [2008] and Hirshleifer, Low, and Teoh [2012].

[5] In our *Purchase* measure, we exclude purchases due to option exercises, although our results remain qualitatively similar to those reported if we include purchases due to option transactions.

[6] Results are qualitatively similar if we define *CAPEX* as firms with industry-adjusted capital expenditures in the top quintile, quartile, or tercile.

from the residual of a regression of total asset growth on sales growth run by industry-year (*Over-Invest*). We set *Over-Invest* equal to one if the residual from the excess investment regression is greater than zero, otherwise zero. Intuitively, if assets are growing at a faster rate than sales, this suggests that managers are overinvesting in their company relative to their peers.

3.2 MEASURES OF ACCOUNTING CONSERVATISM

3.2.1. Measures of Conditional Conservatism. We use two measures of conditional conservatism in our tests. Our first measure of conditional conservatism is Basu's [1997] asymmetric timeliness measure.[7] To test our hypotheses, we estimate the following regression following LaFond and Roychowdhury [2008]:

$$\begin{aligned} NI_t = {} & \beta_0 + \beta_1 D_t + \beta_2 Own_{t-1} + \beta_3 MTB_{t-1} + \beta_4 Leverage_{t-1} \\ & + \beta_5 Firm\ Size_{t-1} + \beta_6 Litigation_{t-1} + \beta_7 OverCon_{t-1} \\ & + \beta_8 \mathrm{D}_t{}^* Own_{t-1} + \beta_9 D_t{}^* MTB_{t-1} + \beta_{10} D_t{}^* Leverage_{t-1} \\ & + \beta_{11} \mathrm{D}_t{}^* Firm\ Size_{t-1} + \beta_{12} D_t{}^* Litigation_{t-1} + \beta_{13} D_t{}^* OverCon_{t-1} \\ & + \beta_{14} Return_t + \beta_{15} Return_t{}^* Own_{t-1} + \beta_{16} Return_t{}^* MTB_{t-1} \\ & + \beta_{17} Return_t{}^* Leverage_{t-1} + \beta_{18} Return_t{}^* Firm\ Size_{t-1} \\ & + \beta_{19} Return_t{}^* Litigation_{t-1} + \beta_{20} Return_t{}^* OverCon_{t-1} \\ & + \beta_{21} D_t{}^* Return_t + \beta_{22} D_t{}^* Return_t{}^* Own_{t-1} \\ & + \beta_{23} D_t{}^* Return_t{}^* MTB_{t-1} + \beta_{24} D_t{}^* Return_t{}^* Leverage_{t-1} \\ & + \beta_{25} D_t{}^* Return_t{}^* Firm\ Size_{t-1} + \beta_{26} D_t{}^* Return_t{}^* Litigation_{t-1} \\ & + \beta_{27} D_t{}^* Return_t{}^* OverCon_{t-1} + \beta_{Firm} + \beta_{Year} + \varepsilon, \end{aligned} \tag{1}$$

where *NI* is net income before extraordinary items deflated by the market value of equity at the beginning of the fiscal year; *D* is an indicator variable set equal to one if *Return* is negative, zero otherwise; *Return* is the annual buy and hold return beginning four months after the prior fiscal year end; *Own* is the percentage of the firm's outstanding shares held by the CEO at the end of the fiscal year; *MTB* is market value of equity divided by the book value of equity at the end of the fiscal year; *Leverage* is total liabilities divided by total assets at the end of the fiscal year; *Firm Size* is the natural log of total assets at the end of the fiscal year;[8] *Litigation* is the probability of litigation for the firm-year estimated using the coefficients from the litigation risk model of Kim and Skinner [2012] in table 7, model (2); and *OverCon* is one of the four managerial overconfidence measures defined in the previous

[7] A number of recent studies point out limitations of this measure (e.g., Givoly, Hayn, and Nataranjan [2007], Dietrich, Muller, and Riedl [2007], and Patatoukas and Thomas [2011]). Thus, we utilize multiple conservatism proxies to assess the robustness of our results.

[8] Results are qualitatively similar to those reported if we define firm size based on the market value of equity.

section. Consistent with LaFond and Roychowdhury [2008], we use decile ranks for all of the control variables except for *Litigation* in equation (1).

We control for CEO ownership (*Own*) as LaFond and Roychowdhury [2008] find that the asymmetric timeliness of earnings decreases with managerial ownership. We control for market-to-book (*MTB*) as Roychowdhury and Watts [2007] find that the asymmetric timeliness is related to the level of conservatism since the inception of the firm. In addition, market-to-book (*MTB*) captures firms' investment or growth opportunities (Smith and Watts [1992]). We control for leverage (*Leverage*) as Ahmed et al. [2002] find that firms with greater bondholder–shareholder conflicts have higher levels of conservatism. We control for firm size (*Firm Size*) as Givoly, Hayn, and Natarajan [2007] document that larger firms have lower asymmetric timeliness of earnings. We control for litigation risk (*Litigation*) as firms that face higher litigation risk may use more conservative accounting to mitigate these risks (Watts [2003]). We also include firm and year fixed effects as suggested by Ball, Kothari, and Nikolaev [2011] to control for information that is incorporated in lagged earnings.

Our second measure of conditional conservatism is the firm-specific asymmetric timeliness score developed by Khan and Watts [2009]. Khan and Watts [2009] develop a firm-specific estimation of the timeliness of good news (*G-Score*) and bad news (*C-Score*) and document evidence consistent with conservatism increasing in the C-score. The G-Score and C-Score are estimated as follows:

$$NI_t = \beta_1 + \beta_2 D_t + \beta_3 RET_t + \beta_4 D_t{}^* RET_t + \varepsilon \tag{2}$$

$$G\text{-}Score_t = \ \beta_3 = \ \mu_1 + \mu_2 MV_t + \mu_3 MTB_t + \mu_4 LEV_t + \varepsilon \tag{3}$$

$$C\text{-}Score_t = \ \beta_4 \ = \lambda_1 + \lambda_2 MV_t + \lambda_3 MTB_t + \lambda_4 LEV_t + \varepsilon, \tag{4}$$

where *MV* is the log of the market value of equity, *MTB* is market-value of equity divided by the book value of equity, and *LEV* is total debt divided by total assets. Replacing β_3 and β_4 from equations (3) and (4) into regression equation (2) yields:

$$\begin{aligned} NI_t = {} & \beta_1 + \beta_2 D_t + Return_t{}^* (\mu_1 + \mu_2 MV_t + \mu_3 MTB_t + \mu_4 LEV_t) \\ & + D^* RET_t (\lambda_1 + \lambda_2 MV_t + \lambda_3 MTB_t + \lambda_4 LEV_t) + (\delta_1 MV_t + \delta_2 MTB_t \\ & + \delta 3 LEV_t + \delta 4 D * MV_t + \delta 5 D * MTB_t + \delta_6 D * LEV_t) + \varepsilon. \end{aligned} \tag{5}$$

We estimate equation (5) using annual cross-sectional regressions. All variables are as previously defined. The estimates from equation (5) are applied to equation (4) to obtain firm-specific conservatism measures.

3.2.2. Measures of Unconditional Conservatism. We use two measures of unconditional conservatism in our tests. Our first measure, *Con-ACC*, is based on the persistent use of negative accruals following Givoly and Hayn [2000] and Ahmed et al. [2002]. We define *Con-ACC* as income before

extraordinary items less cash flows from operations plus depreciation expense deflated by average total assets, and averaged over the previous three years, multiplied by negative one. Larger values of *Con-ACC* indicate greater unconditional conservatism.

Our second unconditional conservatism measure, *Skewness*, is the difference between cash flow skewness and earnings skewness developed by Givoly and Hayn [2000]. The skewness of earnings (cash flows) is equal to $(x - \mu)^3/\sigma^3$ where μ and σ are the mean and standard deviation of the earnings (cash flows) over the last five years. All variables are deflated by total assets. Larger values of *Skewness* indicate greater unconditional conservatism.

3.2.3. Specification for Tests with Firm-Specific Conservatism Measures. To test H1a and H1b, we use the firm-specific measures of conservatism in the following regression:

$$\begin{aligned} Con_t = {} & \beta_0 + \beta_1 OverCon_{t-1} + \beta_2\, Own_t + \beta_3 MTB_t + \beta_4 Leverage_t \\ & + \beta_5\, Firm\ Size_t + \beta_6 Litigation_t + \beta_7\, Sales\ Growth_t + \beta_8\, R\&D\, AD_t \\ & + \beta_9\, CFO_1 + \beta_{10}\, \sigma\ Revenue_t + \beta_{Firm} + \beta_{Year} + \varepsilon, \end{aligned} \tag{6}$$

where *Con* is one of the three firm-specific measures of accounting conservatism discussed in section 3.2, *Overcon* is one of the four firm-specific overconfidence measures outlined in section 3.1, *Sales Growth* is the percentage of annual growth in total sales, *R&D AD* is total research and development expense plus advertising expense deflated by total sales, *CFO* is cash flows from operations deflated by average total assets, and σ *Revenue* is the standard deviation of the natural log of revenues measured from *t*–5 to year *t*–1. All other variables are as previously defined. In addition, we include both firm and year fixed effects.

The intuition for the control variables *Own*, *MTB*, *Leverage*, *Firm Size*, and *Litigation* is similar to that discussed in section 3.2.1. We control for sales growth (*Sales Growth*) as it may affect measures of conservatism such as *Con-ACC* and *Skewness* due to the increase in accruals in accounts such as inventory and accounts receivable (Ahmed and Duellman [2007]). We control for the level of research and development (*R&D AD*) as this is GAAP-mandated conservatism and could affect measures of conservatism utilizing accruals. We include cash flows from operations (*CFO*) to control for firm profitability. We control for operating uncertainty, using the standard deviation of revenue (σ *Revenue*) as greater operating uncertainty increases conflict of interest between bondholders and shareholders over dividend policies and may lead to more conservative accounting (Ahmed et al. [2002]).[9] Furthermore, we also include firm fixed effects that capture the persistent

[9] The selection of our control variables in the firm-specific conservatism tests is consistent with the determinants of earnings attributes discussed in Dechow, Ge, and Schrand [2010].

level of conservatism that is due to the nature of the firm's operations. Although the firm fixed effects do not completely alleviate omitted variable bias, they do capture omitted variables that are time invariant or relatively static in nature (Graham, Li, and Qiu [2012]).[10]

4. Sample Selection and Results

We utilize a sample of S&P 1500 firms with available information in Compustat and Execucomp from 1993 to 2009 (25,500 firm-years). As our main tests require that we have option holding data available for the CEO, we drop firms that do not have information on the number of options held by the CEO (1,228 firm-years). We also remove financial services and insurance firms (SIC 6000 to 7000) from the sample as these firms have relatively unique financial structures and are subject to regulatory constraints that may affect their reporting (3,469 firm-years). We lose an additional 3,796 firm-years due to missing data in Compustat, an additional 1,448 firm-years are removed due to CEO turnover during the year, and 918 firm-years are lost due to missing data in CRSP, leaving a final sample of 14,641 firm-years. Furthermore, in our tests utilizing *Purchase* we require the firm to have information on the trading activities of the CEO available from Thomson Reuters. The inclusion of purchase and sales information of the CEO causes us to lose an additional 2,528 firm-years, leaving a final sample of 12,113 in our sample when *Purchase* is the measure of managerial overconfidence.

We present the descriptive statistics of our sample in table 1. Using the measure of overconfidence based on option holding, *Holder67*, we find that 35.1% of our firm-years have an overconfident CEO. This finding is consistent with Campbell et al. [2011], who use a similar measure of overconfidence constructed using Execucomp data from 1992 to 2005, and find that 34.1% of firm-years can be classified as having an overconfident CEO. For the stock purchase–based measure of overconfidence, *Purchase*, 26.1% of the firm-years have an overconfident CEO. This finding is slightly below the 34.6% reported in Campbell et al. [2011]. Using our investing measures of overconfidence, we find that 43.1% of our sample firms overinvest in assets relative to sales growth (*Over-Invest*) and 56.5% of firms have capital expenditures greater than the median firm in the industry.[11]

The mean (median) value of the firm-specific measure of conditional conservatism, *C-Score*, is 0.060 (0.063) and consistent with previous

[10] Furthermore, we also provide results based on changes in conservatism and managerial overconfidence following a CEO change and discuss the (untabulated results) based on first differences, which should further reduce the static omitted variable bias (Wooldridge [2002]).

[11] We measure overconfidence using all firms with the relevant available data in Compustat, Execucomp, and Thomson Financial to effectively capture if the manager is overconfident relative to firms with available data. Results are qualitatively similar to those reported if we define overconfidence as excess capital expenditure relative to our sample firms.

TABLE 1
Descriptive Statistics

	Mean	Std. Dev	Q1	Median	Q3
Overconfidence Measures					
Holder 67	0.351	0.477	0.000	0.000	1.000
Purchase	0.261	0.445	0.000	0.000	1.000
CAPEX	0.565	0.496	0.000	1.000	1.000
Over-Invest	0.431	0.495	0.000	0.000	1.000
Conservatism Measures					
C-Score	0.060	0.085	0.014	0.063	0.112
Con-ACC	0.008	0.045	−0.014	0.006	0.027
Skewness	0.224	2.097	−0.771	0.004	1.147
Control Variables					
Own	0.020	0.052	0.001	0.003	0.012
MTB	2.950	2.677	1.525	2.249	3.496
Leverage	0.511	0.194	0.376	0.529	0.653
Firm size	7.247	1.457	6.183	7.176	8.231
Litigation	0.047	0.079	0.003	0.014	0.051
Sales growth	0.125	0.272	0.008	0.087	0.191
R&D AD	0.055	0.101	0.000	0.016	0.062
CFO	0.106	0.082	0.061	0.102	0.152
σ *Revenue*	0.143	0.122	0.062	0.106	0.181
Asymmetric Timeliness Variables					
Return	0.120	0.451	−0.165	0.069	0.320
D	0.417	0.493	0.000	0.000	1.000
NI	0.037	0.083	0.025	0.052	0.074

The sample contains 14,641 firm-years from 1993 to 2009. *Holder67* is equal to one when the ratio of the value of options in-the-money to the average strike price exceeds 0.67 at least twice during the sample period, zero otherwise. Consistent with Malmendier and Tate [2005] and Campbell et al. [2011], a CEO is classified as overconfident in the first fiscal year he/she exhibits the overconfident behavior and continues to be classified as overconfident for the remainder of the sample. *Purchase* is equal to one if the CEO's net purchases (purchases−sales) are in the top quintile of the distribution of net purchases by all CEO and those purchases increase their ownership in the firm by 10%, zero otherwise. *CAPEX* is equal to one if the capital expenditures deflated by lagged total assets is greater than the median level of capital expenditures to lagged total assets for the firm's Fama–French industry, zero otherwise. *Over-Invest* is equal to one if the residual of a regression of total asset growth on sales growth run by industry-year is greater than zero, zero otherwise. *C-Score* is the firm-specific asymmetric timeliness score developed by Khan and Watts [2009]. *Con-ACC* is income before extraordinary items less cash flows from operations plus depreciation expense deflated by average total assets, and averaged over the previous three years, multiplied by negative one. *Skewness* is the difference between the cash flow skewness and earnings skewness. Skewness of earnings (cash flows) is equal to $(x\text{-}\mu)^3/\sigma^3$ where μ and σ are the mean and standard deviation of the earnings (cash flows) over the last five years, and all variables are deflated by average total assets. *Own* is the percentage of the firm's outstanding shares held by the CEO at the end of the fiscal year. *MTB* is market value of equity divided by the book value of equity at the end of the fiscal year. *Leverage* is total liabilities divided by total assets at the end of the fiscal year. *Firm Size* is the natural log of total assets at the end of the fiscal year. *Litigation* is the probability of litigation for the firm-year estimated using the coefficients from the litigation risk model of Kim and Skinner [2012] in table 7, model (2). *Sales Growth* is the percentage of annual growth in total sales. *R&D AD* is total research and development expense plus advertising expense deflated by total sales. *CFO* is cash flows from operations divided by average total assets. σ *Revenue* is the standard deviation of the natural log of revenues measured from year *t*–5 to year *t*–1. *Return* is the annual buy and hold return beginning four months after the prior fiscal year end. *D* is an indicator variable set equal to one if *Return* is negative, zero otherwise. *NI* is net income before extraordinary items deflated by the market value of equity at the beginning of the fiscal year.

research. The accrual-based measure of unconditional conservatism, *Con-ACC*, has a mean (median) value of 0.008 (0.006) and is consistent with the values reported in Ahmed et al. [2002] and Ahmed and Duellman [2007]. The mean (median) value of the skewness-based measure of conservatism,

Skewness, is 0.224 (0.004). The values of *Skewness* in our study are slightly lower than those reported in Beatty, Weber, and Yu [2008] as we use annual data rather than quarterly data. The mean and median values of our control variables are generally consistent with previous research (Ahmed and Duellman [2007], LaFond and Roychowdhury [2008]).

In table 2 we present the means and medians of our sample after partitioning on each dichotomous overconfidence proxy (*Holder67*, *Purchase*, *CAPEX*, and *Over-Invest*). Consistent with H1a and H1b, the mean value for conservatism is significantly lower for the high overconfidence group, using all four measures of managerial overconfidence, in comparison to the low overconfidence group. Furthermore, the median level of overconfidence is significantly lower for the high overconfidence group using *Holder67* as the measure of managerial overconfidence. The difference in means and medians also demonstrates how *Holder67* and *Purchase* tend to capture firms with high equity returns as well as firms with large sales growth.

Table 3 presents the correlations between our overconfidence measures, firm-specific conservatism measures, and control variables. The stock option–based measure of overconfidence (*Holder67*) is positively correlated with *Purchase* (0.08), *CAPEX* (0.12), and *Over-Invest* (0.13). In addition, *CAPEX* has a Spearman correlation with *Over-Invest* of 0.16. The correlation between *Purchase* and the two investing-based measures of overconfidence are positive and significant at the 5% level but small in magnitude. *Con-ACC* is positively correlated with *Skewness* but is uncorrelated with *C-Score*. The lack of correlation between *Con-ACC* and *C-Score* may be due to *C-Score* capturing conditional conservatism while *Con-ACC* is a measure of unconditional conservatism. Consistent with H1a and H1b, all three firm-specific measures of conservatism are negatively correlated with all four measures of managerial overconfidence at the 1% level of significance.

4.1 ASYMMETRIC TIMELINESS OF EARNINGS

Table 4 presents the estimation of equation (1). Consistent with LaFond and Roychowdhury [2008], all control variables, except *Litigation*, are measured as decile ranks in the regression. All *p*-values are based on two-tailed significance tests using firm and year clustered standard errors. In columns (i) through (iv) we report the effects of managerial overconfidence on asymmetric timeliness of earnings. The coefficient on $D^{*}Return$ is positive and significant ($p < 0.001$) across all columns, indicating that bad news is reflected in earnings on a timelier basis. We expect overconfident managers to accelerate good news recognition and delay loss recognition. The coefficient on the interaction term $Return^{*}Overcon$ captures the effect of overconfidence on the timeliness of good news recognition. Except for the *Purchase* measure of overconfidence, the coefficient is positive and significant at conventional levels, consistent with our expectations. Similarly, except for the *Purchase* measure of overconfidence, the incremental coefficient on bad news timeliness ($D^{*}Return^{*}Overcon$) in columns (i), (iii), and (iv) is negative and significant, consistent with our expectations. However,

TABLE 2

Mean and Median Differences in Firm-Specific Conservatism Measures, Control Variables, and Asymmetric Timeliness Variables for High and Low Overconfidence Firms

	Holder 67				*Purchase*			
	Low Overconfidence		High Overconfidence		Low Overconfidence		High Overconfidence	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
C-Score	0.069	0.073	*0.044*	*0.048*	0.069	0.069	*0.035*	*0.040*
Con-ACC	0.011	0.007	*0.004*	*0.005*	0.010	0.009	*0.007*	0.007
Skewness	0.411	0.061	*−0.121*	*−0.073*	0.264	0.007	*0.102*	*−0.014*
Own	0.018	0.003	*0.023*	*0.005*	0.020	0.000	0.015	0.003
MTB	2.409	1.879	*3.947*	*3.162*	2.755	2.200	*3.497*	*2.714*
Leverage	0.533	0.556	*0.472*	*0.485*	0.507	0.533	0.528	0.549
Firm size	7.341	7.251	*7.084*	*7.010*	7.056	7.194	*7.789*	*7.713*
Litigation	0.051	0.016	*0.037*	0.009	0.041	0.015	*0.066*	*0.027*
Sales growth	0.078	0.057	*0.209*	*0.150*	0.115	0.084	*0.157*	*0.104*
R&D AD	0.053	0.014	*0.059*	*0.021*	0.052	0.015	*0.060*	*0.018*
CFO	0.094	0.092	*0.128*	*0.124*	0.106	0.102	*0.118*	*0.112*
σ Revenue	0.136	0.101	*0.154*	*0.115*	0.143	0.107	0.147	0.109
Return	0.032	0.003	*0.279*	*0.208*	0.099	0.048	*0.176*	*0.123*
D	0.491	0.000	*0.281*	0.000	0.435	0.000	*0.368*	0.000
NI	0.026	0.048	*0.056*	*0.059*	0.036	0.051	*0.045*	0.054
N		9,502		5,139		8,952		3,161
	CAPEX				*Over-Invest*			
	Low Overconfidence		High Overconfidence		Low Overconfidence		High Overconfidence	
	Mean	Median	Mean	Median	Mean	Median	Mean	Median
C-Score	0.066	0.069	*0.055*	*0.060*	0.061	0.064	*0.058*	0.062
Con-ACC	0.010	0.007	*0.007*	0.006	0.011	0.007	*0.005*	*0.005*
Skewness	0.315	0.027	*0.155*	*−0.004*	0.306	0.017	*0.116*	*−0.006*
Own	0.018	0.003	*0.021*	0.003	0.020	0.003	0.020	0.004
MTB	2.569	1.989	*3.243*	*2.485*	2.756	2.112	*3.207*	*2.445*
Leverage	0.531	0.555	*0.495*	*0.187*	0.523	0.541	*0.495*	*0.513*
Firm size	7.328	7.257	*7.186*	*7.084*	7.286	7.204	*7.197*	*7.088*
Litigation	0.047	0.014	0.046	0.014	0.047	0.014	0.045	0.014
Sales growth	0.085	0.064	*0.156*	*0.106*	0.116	0.078	*0.138*	*0.101*
R&D AD	0.056	0.013	0.054	0.019	0.054	0.015	*0.056*	*0.018*
CFO	0.085	0.084	*0.123*	*0.119*	0.100	0.098	*0.115*	*0.110*
σ Revenue	0.149	0.108	*0.136*	*0.104*	0.137	0.101	*0.150*	*0.113*
Return	0.111	0.063	0.127	*0.073*	0.114	0.068	0.129	0.070
D	0.421	0.000	0.414	0.000	0.415	0.000	0.421	0.000
NI	0.029	0.051	*0.044*	0.053	0.029	0.051	*0.049*	0.054
N		6,368		8,273		8,339		6,302

All variables are defined in table 1. Significant differences at the 1% level between the High and Low Overconfidence partitions for each measure of managerial overconfidence are denoted by italic typeface in the High Overconfidence partition.

this coefficient by itself does not indicate whether loss recognition is less timely for firms with overconfident managers relative to other firms. Thus, in untabulated tests we perform a joint test of the sum of the coefficients of *D* Return* Overcon* and *Return* Overcon* and find that this sum is significantly

TABLE 3

Correlations Between Overconfidence Measures, Conservatism Measures, Control Variables, and Asymmetric Timeliness Variables
Spearman (Pearson) Correlation Is Above (Below) the Diagonal

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	*Holder67*	1	*0.08*	*0.12*	*0.13*	*−0.18*	*−0.05*	*−0.12*	*0.14*	*0.41*	*−0.17*	*−0.09*	*−0.11*	*0.32*	*0.03*	*0.22*	*0.08*	*0.26*	*−0.21*	*0.17*
2	*Purchase*	*0.08*	1	*0.03*	**0.02**	*−0.13*	*−0.03*	*−0.02*	0.01	*0.11*	*0.03*	*0.14*	*0.11*	*0.05*	*0.03*	*0.06*	0.01	*0.07*	*−0.05*	*0.05*
3	*CAPEX*	*0.12*	*0.03*	1	*0.16*	*−0.06*	*−0.02*	*−0.03*	*0.04*	*0.17*	*−0.12*	*−0.06*	−0.01	*0.17*	*0.04*	*0.25*	**0.02**	**0.02**	−0.01	*0.04*
4	*Over-invest*	*0.13*	**0.02**	*0.16*	1	*−0.02*	*−0.05*	*−0.04*	*0.05*	*0.11*	*−0.08*	*−0.04*	**−0.02**	*0.06*	*0.04*	*0.09*	*0.06*	0.00	**0.02**	*0.08*
5	*C-Score*	*−0.15*	*−0.12*	*−0.06*	*−0.03*	1	0.00	*0.11*	*0.23*	*−0.42*	−0.01	*−0.51*	*−0.37*	*−0.17*	*−0.08*	*−0.24*	*0.16*	*−0.12*	*0.11*	*−0.08*
6	*Con-ACC*	*−0.07*	*−0.03*	*−0.04*	*−0.06*	0.01	1	*0.11*	*−0.05*	*0.03*	−0.01	−0.01	0.00	*−0.09*	*0.11*	*0.28*	0.00	0.00	0.00	*−0.20*
7	*Skewness*	*−0.12*	*−0.03*	*−0.03*	*−0.04*	*0.08*	*0.14*	1	*0.03*	*−0.11*	0.00	*−0.03*	**0.02**	*−0.14*	**0.02**	*0.18*	**0.02**	*−0.10*	*0.09*	*−0.28*
8	*Own*	*0.06*	*−0.03*	*0.04*	0.00	*0.06*	*−0.05*	0.01	1	*−0.07*	*−0.15*	*−0.39*	*−0.31*	*0.07*	*−0.06*	0.01	*0.14*	*0.02*	0.00	*0.02*
9	*MTB*	*0.29*	*0.09*	*0.12*	*0.08*	*−0.30*	*0.05*	*−0.06*	0.01	1	*−0.07*	**0.02**	*−0.06*	*0.26*	*0.25*	*0.40*	0.00	*0.29*	*−0.24*	*0.03*
10	*Leverage*	*−0.17*	*0.03*	*−0.11*	*−0.08*	**−0.02**	0.00	0.00	*−0.10*	0.00	1	*0.49*	*0.33*	*−0.13*	*−0.34*	*−0.27*	*−0.06*	−0.01	0.00	−0.03
11	*Firm size*	*−0.09*	*0.14*	*−0.06*	*−0.04*	*−0.50*	*−0.03*	*−0.03*	*−0.16*	−0.01	*0.49*	1	*0.77*	*−0.04*	*−0.18*	*−0.05*	*−0.24*	−0.01	*−0.03*	*0.12*
12	*Litigation*	*−0.09*	*0.08*	−0.01	**−0.02**	*−0.33*	0.00	**0.02**	*−0.09*	*−0.04*	*0.24*	*0.61*	1	*0.06*	*−0.07*	*−0.08*	*−0.14*	*−0.36*	*0.27*	*−0.04*
13	*Sales growth*	*0.23*	*0.05*	*0.13*	*0.03*	*−0.10*	*−0.09*	*−0.08*	*0.02*	*0.16*	*−0.09*	*−0.04*	*0.13*	1	*−0.03*	*0.15*	*0.06*	*0.18*	*−0.14*	*0.20*
14	*R&D AD*	0.01	*0.03*	−0.01	0.01	**−0.02**	*0.23*	*0.02*	*−0.02*	*0.21*	*−0.30*	*−0.22*	*−0.02*	*0.07*	1	*0.05*	*0.03*	*−0.05*	*0.06*	*−0.28*
15	*CFO*	*0.21*	*0.06*	*0.24*	*0.09*	*−0.21*	*0.23*	*0.17*	*0.03*	*0.29*	*−0.22*	**−0.02**	*−0.07*	*0.07*	*−0.18*	1	*−0.04*	*0.15*	*−0.12*	*0.26*
16	*σ Revenue*	*0.07*	0.01	*0.04*	*0.06*	*0.13*	0.01	0.01	*0.04*	0.00	*0.03*	*−0.17*	*−0.02*	*−0.18*	0.00	*−0.06*	1	−0.01	*0.04*	*−0.04*
17	*Return*	*0.26*	*0.06*	0.01	0.01	*−0.04*	−0.01	*−0.09*	*0.04*	*0.22*	**0.02**	*−0.06*	*−0.28*	*0.13*	−0.01	*0.12*	**0.02**	1	*−0.86*	*0.27*
18	*D*	*−0.21*	*−0.05*	−0.01	**0.02**	*0.07*	**0.02**	*0.09*	−0.01	*−0.15*	*0.03*	*−0.02*	*0.23*	*−0.09*	*0.06*	*−0.12*	*0.03*	*−0.71*	1	*−0.23*
19	*NI*	*0.18*	*0.05*	*0.09*	*0.12*	*−0.13*	*−0.33*	*−0.28*	0.01	*0.04*	−0.01	*0.13*	*−0.04*	*0.15*	*−0.32*	*0.34*	*−0.06*	*0.19*	*−0.19*	1

Italic typeface indicates significance at the 1% level and bold typeface indicates significance at the 5% level. All variables are defined in table 1.

TABLE 4

The Effect of Managerial Overconfidence on the Asymmetric Timeliness of Earnings

	(i)		(ii)		(iii)		(iv)	
Overcon	*Holder67*		*Purchase*		*CAPEX*		*Over-Invest*	
Measure	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
D	−0.003	0.841	−0.005	0.670	−0.005	0.774	−0.003	0.843
Own	0.000	0.899	0.000	0.725	0.000	0.874	0.000	0.926
MTB	0.000	0.934	0.001	0.917	0.000	0.795	0.001	0.846
Leverage	−0.006	<0.001	−0.005	<0.001	−0.006	<0.001	−0.006	<0.001
Firm Size	0.019	<0.001	0.024	<0.001	0.020	<0.001	0.019	<0.001
Litigation	−0.018	0.392	−0.018	0.422	−0.019	0.372	−0.017	0.422
OverCon	0.009	<0.001	0.007	0.007	0.007	<0.001	0.007	<0.001
D Own*	0.001	0.377	0.001	0.472	0.001	0.370	0.001	0.439
D MTB*	0.001	0.708	0.000	0.814	0.001	0.709	0.001	0.696
D Leverage*	0.000	0.957	0.000	0.831	0.000	0.974	0.000	0.917
D Firm Size*	0.001	0.013	0.001	0.005	0.001	0.009	0.001	0.012
D Litigation*	0.026	0.359	0.016	0.737	0.029	0.319	0.026	0.376
D OverCon*	0.002	0.658	0.005	0.323	0.003	0.503	0.002	0.686
Return	0.019	<0.001	0.024	<0.001	0.022	<0.001	0.023	<0.001
Return Own*	0.004	<0.001	0.003	<0.001	0.003	<0.001	0.003	<0.001
Return MTB*	0.006	<0.001	0.005	<0.001	0.005	<0.001	0.005	<0.001
Return Leverage*	−0.001	0.751	0.000	0.956	−0.001	0.749	0.000	0.683
Return Firm Size*	0.007	<0.001	0.006	<0.001	0.008	<0.001	0.008	<0.001
Return Litigation*	0.024	0.682	0.014	0.835	0.026	0.621	0.023	0.686
Return OverCon*	0.018	<0.001	0.002	0.766	0.015	<0.001	0.014	<0.001
D Return*	0.241	<0.001	0.297	<0.001	0.244	<0.001	0.244	<0.001
D Return* Own*	−0.006	<0.001	−0.005	<0.001	−0.006	<0.001	−0.006	<0.001
D Return* MTB*	0.000	0.901	0.008	0.314	0.000	0.834	0.000	0.912
D Return* Leverage*	0.010	<0.001	0.016	0.155	0.010	<0.001	0.010	<0.001
D Return* Firm Size*	−0.021	<0.001	−0.014	<0.001	−0.021	<0.001	−0.020	<0.001
D Return* Litigation*	0.084	0.338	0.079	0.517	0.097	0.296	0.076	0.416
D Return* OverCon*	−0.017	<0.001	−0.012	0.555	−0.048	<0.001	−0.065	<0.001
Year fixed effects	Included		Included		Included		Included	
Firm fixed effects	Included		Included		Included		Included	
R^2	0.457		0.455		0.457		0.462	
N	14,641		12,113		14,641		14,641	

All variables are defined in table 1. All *p* values are based on two-tailed tests using firm and year clustered standard errors. Consistent with LaFond and Rocyhowdhury [2008], all control variables, except *Litigation*, were measured as decile ranks in the regression.

negative ($p < 0.001$) for *CAPEX* and *Over-Invest* but not significantly less than zero for *Holder67* and *Purchase*. In summation, consistent with H1a, we find evidence consistent with overconfident CEO (i) being more likely to accelerate good news into earnings using three of our four overconfidence proxies, and (ii) being more likely to delay loss recognition using two of our four overconfidence proxies.

The coefficient on *D* Return* Own* is negative and significant ($p < 0.001$) across columns (i) to (iv), consistent with the findings of LaFond and Roychowdhury [2008] that firms with greater executive ownership have less conservative accounting. In contrast to Roychowdhury and Watts [2007], we do not find a significant relation between the market-to-book decile (*MTB*) and asymmetric timeliness. However, in untabulated results when we use the three-year backwards cumulation technique of Roychowdhury and Watts [2007] we do find a positive and significant coefficient on *D* Return* MTB*. The coefficients on *D* Return* Overcon* in these

TABLE 5

Regression of Khan and Watts [2009] C-Score on Managerial Overconfidence and Control Variables

	(i)		(ii)		(iii)		(iv)	
Measure	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Holder67	−0.009	<0.001	–	–	–	–	–	–
Purchase			−0.004	<0.001				
CAPEX	–	–	–	–	−0.004	<0.001	–	–
Over–Invest	–	–	–	–	–	–	−0.004	<0.001
Own	−0.051	0.038	−0.035	0.306	−0.051	0.036	−0.051	0.037
MTB	−0.009	<0.001	−0.010	<0.001	−0.010	<0.001	−0.010	<0.001
Leverage	0.120	<0.001	0.129	<0.001	0.125	<0.001	0.126	<0.001
Firm Size	−0.034	<0.001	−0.031	<0.001	−0.034	<0.001	−0.034	<0.001
Litigation	0.007	0.521	0.006	0.611	0.007	0.544	0.007	0.541
Sales Growth	−0.001	0.909	−0.002	0.508	−0.002	0.492	−0.002	0.426
R&D AD	0.022	0.183	0.009	0.691	0.023	0.158	0.023	0.165
CFO	−0.048	<0.001	−0.061	<0.001	−0.051	<0.001	−0.051	<0.001
σ Revenue	0.006	0.375	0.001	0.948	0.004	0.570	0.004	0.569
Year fixed effects	Included		Included		Included		Included	
Firm fixed effects	Included		Included		Included		Included	
R^2	0.710		0.725		0.709		0.709	
N	14,641		12,113		14,641		14,641	

All variables are defined in table 1. All *p*-values are based on two-tailed tests using firm and year clustered standard errors.

alternative specifications remain qualitatively similar to those reported in table 4.

We find a positive and significant ($p < 0.001$) coefficient on *D*Return*Leverage* in columns (i), (iii), and (iv), indicating that firms with greater outstanding debt tend to use more conservative accounting. The coefficient on *D*Return*Firm Size* is negative and significant ($p < 0.001$), consistent with larger firms having less conservative accounting. We find no relation between litigation risk and the asymmetric timeliness of earnings, as the coefficient on *D*Return*Litigation* is positive but not significant at conventional levels. In addition, we continue to find results qualitatively similar to those reported when we substitute industry fixed effects for firm fixed effects and use Fama–MacBeth regressions. Overall, the signs and significance of the control variables are generally consistent with those reported in LaFond and Roychowdhury [2008].

4.2 FIRM-SPECIFIC MEASURES OF CONSERVATISM

Table 5 presents the estimation of equation (6), using the *C-Score* as the dependent variable, which tests for the relation between managerial overconfidence and the firm-specific measure of conditional conservatism. All *p*-values are based on two-tailed significance tests using firm and year clustered standard errors. Consistent with H1a, we find a negative and significant ($p < 0.001$) coefficient on all four measures of managerial overconfidence.

The coefficients on the control variables are fairly consistent across columns (i) through (iv). Consistent with LaFond and Roychowdhury [2008], we find a negative and significant, at the 5% level, coefficient on

TABLE 6

Regression of Accrual-Based Conservatism (Con-ACC) on Managerial Overconfidence and Control Variables

	(i)		(ii)		(iii)		(iv)	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Holder67	−0.005	<0.001	–	–	–	–	–	–
Purchase			−0.003	<0.001				
CAPEX	–	–	–	–	−0.006	<0.001	–	–
Over-Invest	–	–	–	–	–	–	−0.006	<0.001
Own	−0.036	0.060	−0.019	0.428	−0.037	0.055	−0.039	0.044
MTB	−0.002	<0.001	−0.002	<0.001	−0.002	<0.001	−0.002	<0.001
Leverage	0.078	<0.001	0.077	<0.001	0.080	<0.001	0.080	<0.001
Firm Size	−0.006	<0.001	−0.006	<0.001	−0.006	<0.001	−0.005	<0.001
Litigation	0.011	0.075	0.006	0.338	0.007	0.192	0.010	0.088
Sales Growth	−0.017	<0.001	−0.016	<0.001	−0.016	<0.001	−0.018	<0.001
R&D AD	0.155	<0.001	0.155	<0.001	0.158	<0.001	0.155	<0.001
CFO	0.197	<0.001	0.184	<0.001	0.197	<0.001	0.196	<0.001
σ Revenue	0.017	<0.001	0.019	<0.001	0.016	<0.001	0.018	<0.001
Year fixed effects	Included		Included		Included		Included	
Firm fixed effects	Included		Included		Included		Included	
R^2	0.559		0.568		0.551		0.552	
N	14,641		12,113		14,641		14,641	

All variables are defined in table 1. All *p*-values are based on two-tailed tests using firm and year clustered standard errors.

Own in columns (i), (iii), and (iv). The coefficient on *MTB* is negative and significant across all four columns ($p < 0.001$), indicating that firms with more growth opportunities use less conservative accounting. We find a positive and significant coefficient on *Leverage*, consistent with firms with greater bondholder–shareholder conflict demanding greater accounting conservatism. The coefficient on *Firm Size* is negative and significant ($p < 0.001$), consistent with larger firms using less conditionally conservative accounting as found in LaFond and Watts [2008]. We find no relation between litigation risk (*Litigation*), sales growth (*Sales Growth*), research and development (*R&D AD*), and operating uncertainty (*σ Revenue*) and the *C-Score*. We find a negative and significant ($p < 0.001$) relation between cash flows from operation (*CFO*) and conditional conservatism measured by the *C-Score*. We continue to find results qualitatively similar to those reported when we replace the firm fixed effects with industry fixed effects and use Fama-MacBeth regressions.

Table 6 presents the estimation of equation (6) using the accrual-based measures of unconditional conservatism as the dependent variable. Consistent with H1b, we find a negative and significant ($p < 0.001$) coefficient on both the option-and purchases-based measures of overconfidence (*Holder67* and *Purchase*) as well as the investment measures of overconfidence (*CAPEX* and *Over-Invest*), respectively.

Despite utilizing an unconditional measure of accounting conservatism, the control variable coefficients are fairly consistent with those reported in table 5. However, consistent with Ahmed and Duellman [2007], *Sales Growth* is negatively related to *Con-ACC*, indicating that growth firms use less conservative accounting. In addition, the coefficient on *R&D AD* is positive

TABLE 7

Regression of the Skewness-based Conservatism Measure on Managerial Overconfidence and Control Variables

	(i)		(ii)		(iii)		(iv)	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Holder67	−0.525	<0.001	–	–	–	–	–	–
Purchase			−0.279	0.012				
CAPEX	–	–	–	–	−0.231	<0.001	–	–
Over-Invest	–	–	–	–	–	–	−0.270	<0.001
Own	0.900	0.366	0.739	0.304	0.846	0.360	0.766	0.409
MTB	−0.130	<0.001	−0.163	<0.001	−0.169	<0.001	−0.165	<0.001
Leverage	2.718	<0.001	3.273	<0.001	3.041	<0.001	3.040	<0.001
Firm Size	0.022	0.643	0.002	0.892	0.003	0.965	0.043	0.532
Litigation	1.947	<0.001	1.481	<0.001	2.134	<0.001	2.039	<0.001
Sales Growth	−0.770	<0.001	−0.777	<0.001	−0.824	<0.001	−0.871	<0.001
R&D AD	5.602	<0.001	5.986	<0.001	5.747	<0.001	5.670	<0.001
CFO	13.154	<0.001	13.465	<0.001	13.022	<0.001	12.996	<0.001
σ Revenue	0.129	0.581	0.122	0.710	0.017	0.939	0.064	0.783
Year fixed effects	Included		Included		Included		Included	
Firm fixed effects	Included		Included		Included		Included	
R^2	0.281		0.303		0.275		0.277	
N	14,641		12,113		14,641		14,641	

All variables are defined in table 1. All *p*-values are based on two-tailed tests using firm and year clustered standard errors.

and significant ($p < 0.001$), consistent with firms with greater uncertainty about future cash flows via their investment in future technologies using more unconditionally conservative accounting; and we find a positive and significant ($p < 0.001$) relation between cash flows from operations (*CFO*) and accrual-based conservatism. Also, the relation between operating uncertainty (*σ Revenue*) and accrual-based conservatism is positive and significant ($p < 0.001$). Overall, the coefficients on the control variables are similar to those reported in Ahmed and Duellman [2007] in their tests utilizing *Con-ACC*.

Table 7 presents the regression of the difference between cash flow and earnings skewness (*Skewness*) on managerial overconfidence and control variables. We continue to find support for H1b using all four measures of overconfidence as the coefficient on overconfidence is negative and significant at the 0.1% level in columns (i), (iii), and (iv) and at the 2% level in column (ii). The coefficients on the control variables are consistent with those reported in table 6, where *Sales Growth* and *MTB* are negatively related to *Skewness* and *Leverage*, *R&D AD*, and *CFO* are positively related to *Skewness*. However, the coefficients on *Own* and *Firm Size* are positive and insignificant whereas they were significantly negative in table 6. Furthermore, the sign on *Litigation* is positive and significant and we find no relation between operating uncertainty (*σ Revenue*) and *Skewness*. The consistency between the control variables in tables 6 and 7 indicates that our measures of unconditional conservatism are capturing a common component. Results are qualitatively similar to those reported in tables 6 and 7 when we substitute industry fixed effects for firm fixed effects and use Fama–MacBeth regressions.

Overall, the negative relation between managerial overconfidence and accounting conservatism is consistent across multiple measures of overconfidence as well as alternative estimation methods.

4.3 MODERATING EFFECTS OF STRONG EXTERNAL MONITORING

To investigate the effects of external monitoring on the relation between conservatism and overconfidence, we utilize data from The Corporate Library's director information data set from 2001 to 2009 and obtain institutional shareholding data from Thomson Reuters. The year-based data limitations cause a loss of 5,078 firm-years, the lack of available corporate governance data causes a loss of an additional 1,386 firm-years, and the lack of available institutional shareholdings an additional 949 firm-years, leaving a final sample of 7,228 firm-years. We use four common monitoring attributes (percentage of inside directors, ownership of outside directors, institutional ownership, and CEO/Chair duality) in our tests of the moderating effects of external monitoring on managerial overconfidence. These proxies were selected given their prevalence in the accounting and finance literatures. Furthermore, two of the four proxies (percentage of inside directors and the ownership of outside directors) are directly related to accounting conservatism as documented in Ahmed and Duellman [2007]. However, we note that these proxies may not fully capture the complex nature of the overall governance and monitoring structure of the firm.

Because different monitoring mechanisms may act as substitutes, we identify firms that have high levels of external monitoring across multiple dimensions. More specifically, we classify firms as "strong" external monitoring firms if the firm meets three of the following four criteria: (i) a lower percentage of inside directors than the median firm in the sample, (ii) a higher percentage of outside director ownership than the median firm in the sample, (iii) a higher percentage of institutional ownership than the median firm in the sample, and (iv) the CEO is not also serving as Chairman of the Board. Of our 7,228 firm-years, 2,041 firm-years are classified as strong monitoring firms. We then modify equation (6) as follows to allow the effect of overconfidence to vary with the strength of external monitoring:

$$\begin{aligned} Con_t = {} & \beta_0 + \beta_1 OverCon_{t-1} + \beta_2 Strong\ Monitoring_t \\ & + \beta_3 Strong\ Monitoring_t{}^{*}\ Overcon_{t-1} \\ & + \beta_4 Own_t + \beta_5 MTB_t + \beta_6 Leverage_t + \beta_7 Firm\ Size_t \\ & + \beta_8 Litigation_t + \beta_9 Sales\ Growth_t + \beta_{10} R\&D\ AD_t + \beta_{11} CFO_t \\ & + \beta_{12} \sigma\, Revenue_t + \beta_{Firm} + \beta_{Year} + \varepsilon, \end{aligned} \tag{7}$$

where *Strong Monitoring* is a dummy variable set equal to one if the firm has strong external monitoring (as defined above), and zero otherwise. All other variables remain as previously defined. If strong external monitoring

causes overconfident managers to use more (less) conservative accounting, the coefficient on β_3 will be significantly positive (negative).

Table 8 presents the results of estimating equation (7). We continue to find a strong negative relation between all four managerial overconfidence measures and accounting conservatism across the three firm-specific conservatism measures. However, we do not find any consistent evidence of a moderating effect of external monitoring on the relation between overconfidence and any of the conservatism proxies. These findings are consistent with Schrand and Zechman [2011], who find that the governance structures of firms that misreport earnings are very similar to governance structures of the control firms in their study.

4.4 ENDOGENEITY AND SELF SELECTION

Although our results discussed earlier show evidence of a significant negative effect of managerial overconfidence on both conditional and unconditional conservatism, it is possible that these results are driven by self-selection or endogeneity. Thus, we perform additional tests to investigate this possibility.

The negative relation between overconfidence and conservatism could result from overconfident managers self-selecting into firms with less conservative accounting. To rule out this alternative explanation, we examine the relation between *changes* in firm-specific measures of conservatism and *changes* in overconfidence following a change in CEO. If our findings are driven by self-selection, CEOs would self-select into firms with their preferred level of conservatism and there would be no change in conservatism after the new CEO takes over.

In our sample period, we have 1,448 CEO changes. However, we require that the incoming CEO remains in office for a minimum of three years (loss of 632 CEO changes) and the outgoing CEO to have been in office for a minimum of four years (loss of 476 CEO changes). We require these minimum tenure requirements so that the incoming/outgoing CEOs have sufficient time to impact their respective firms' accounting and investment policies. These requirements leave us with a sample of 340 CEO changes. We then take the values of accounting conservatism, managerial overconfidence, and the control variables measured three years after the CEO change and subtract the values of the corresponding variable two years before the CEO change. This specification provides direct evidence on whether a change in managerial overconfidence leads to changes in accounting conservatism.

For these 340 CEO changes, we do not find evidence consistent with CEOs self-selecting into firms with their desired level of conservatism. For example, using the *Holder67* measure of managerial overconfidence, a firm where the previous CEO was classified as overconfident (nonoverconfident) brought in a nonoverconfident (overconfident) manager 66.4% (30.0%) of the time, which is consistent with the rate of nonoverconfident

TABLE 8

The Moderating Effects of Strong Monitoring on the Relation Between Conservatism and Managerial Overconfidence

Panel A

Conservatism Measure	(i) *C-Score*		(ii) *Con-ACC*		(iii) *Skewness*		(iv) *C-Score*		(v) *Con-ACC*		(vi) *Skewness*	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Holder67	−0.009	< 0.001	−0.005	< 0.001	−0.401	< 0.001	–	–	–	–	–	–
Purchase	–	–	–	–	–	–	−0.004	0.039	−0.003	< 0.001	−0.254	< 0.001
Strong Monitoring	0.005	0.011	0.003	0.030	0.177	< 0.001	0.004	0.057	0.004	0.020	0.171	< 0.001
*Strong Monitoring * Holder67*	0.002	0.582	−0.001	0.481	0.273	0.277	–	–	–	–	–	–
*Strong Monitoring * Purchase*	–	–	–	–	–	–	0.001	0.653	−0.002	0.564	−0.017	0.899
Own	−0.045	0.459	−0.021	0.258	1.297	0.517	−0.082	0.221	−0.005	0.751	1.287	0.515
MTB	−0.009	< 0.001	−0.002	< 0.001	−0.157	< 0.001	−0.009	< 0.001	−0.002	< 0.001	−0.198	< 0.001
Leverage	0.141	< 0.001	0.093	< 0.001	3.879	< 0.001	0.184	< 0.001	0.080	< 0.001	3.979	< 0.001
Firm Size	−0.037	< 0.001	−0.017	< 0.001	−0.098	0.745	−0.039	< 0.001	−0.015	< 0.001	−0.384	0.383
Litigation	0.004	0.454	0.003	0.715	2.202	< 0.001	0.004	0.460	0.003	0.801	2.619	< 0.001
Sales Growth	−0.001	0.923	−0.017	< 0.001	−1.326	< 0.001	−0.002	0.826	−0.017	< 0.001	−1.226	< 0.001
R&D AD	0.056	0.047	0.120	< 0.001	6.632	< 0.001	0.056	0.070	0.117	< 0.001	7.938	< 0.001
CFO	−0.038	< 0.001	0.163	< 0.001	16.505	< 0.001	−0.037	< 0.001	0.161	< 0.001	16.935	< 0.001
σ Revenue	0.013	0.583	0.010	0.396	0.398	0.496	0.027	0.298	0.020	0.088	0.534	0.547
Year fixed effects	Included		Included		Included		Included		Included		Included	
Firm fixed effects	Included		Included		Included		Included		Included		Included	
R^2	0.719		0.617		0.400		0.726		0.628		0.417	
N	7,228		7,228		7,228		6,063		6,063		6,063	

(*Continued*)

TABLE 8—*Continued*

Panel B

Conservatism Measure	(i) *C-Score*		(ii) *Con-ACC*		(iii) *Skewness*		(iv) *C-Score*		(v) *Con-ACC*		(vi) *Skewness*	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
CAPEX	−0.004	<0.001	−0.005	<0.001	−0.288	<0.001	–	–	–	–	–	–
Over-Invest	–	–	–	–	–	–	−0.003	0.003	−0.007	<0.001	−0.250	<0.001
Strong Monitoring	0.005	0.018	0.003	0.058	0.185	<0.001	0.005	0.016	0.003	0.061	0.172	<0.001
*Strong Monitoring * CAPEX*	0.001	0.652	−0.003	0.102	0.092	0.217	–	–	–	–	–	–
*Strong Monitoring * Over-Invest*	–	–	–	–	–	–	0.000	0.817	−0.002	0.248	0.045	0.631
Own	−0.043	0.496	−0.021	0.264	1.167	0.605	−0.046	0.478	−0.022	0.213	1.104	0.633
MTB	−0.009	<0.001	−0.002	<0.001	−0.186	<0.001	−0.009	<0.001	−0.002	<0.001	−0.186	<0.001
Leverage	0.149	<0.001	0.092	<0.001	4.151	<0.001	0.150	<0.001	0.093	<0.001	4.173	<0.001
Firm Size	−0.037	<0.001	−0.017	<0.001	−0.139	0.667	−0.039	<0.001	−0.016	<0.001	−0.058	0.826
Litigation	0.003	0.496	0.004	0.611	2.265	<0.001	0.003	0.477	0.002	0.778	2.176	<0.001
Sales Growth	−0.001	0.966	−0.016	<0.001	−1.327	<0.001	−0.001	0.956	−0.018	<0.001	−1.402	<0.001
R&D AD	0.056	0.047	0.121	<0.001	6.676	<0.001	0.055	0.049	0.119	<0.001	6.677	<0.001
CFO	−0.039	<0.001	0.163	<0.001	16.520	<0.001	−0.041	<0.001	0.165	<0.001	16.579	<0.001
σ Revenue	0.009	0.697	0.009	0.427	0.590	0.310	0.009	0.681	0.010	0.390	0.585	0.324
Year fixed effects	Included		Included		Included		Included		Included		Included	
	Included		Included		Included		Included		Included		Included	
R^2	0.718		0.618		0.402		0.718		0.619		0.402	
N	7,228		7,228		7,228		7,228		7,228		7,228	

Where, *Strong Monitoring* is a dichotomous variable set equal to one (zero otherwise) if the firm meets three of the following criteria: (i) a lower percentage of inside directors than the median firm in the sample, (ii) a higher percentage of outside director ownership than the median firm in the sample, (iii) a higher percentage of ownership held by institutional investors than the median firm in the sample, and (iv) the CEO does not also serve as Chairman of the Board. All other variables are defined in table 1. All *p*-values are based on two-tailed tests using firm and year clustered standard errors.

(overconfident) CEOs for the entire sample as shown in table 1. Similarly, we do not find evidence consistent with CEOs self-selecting into firms with the desired amount of conservatism using the *Purchase*, *CAPEX*, and *Over-Invest* measures of managerial overconfidence.

Table 9 provides the results of our changes specification of equation (6) using the CEO turnover subsample. Despite the small sample size of 340 observations, we find consistent evidence that changes in managerial overconfidence, following a CEO change, is negatively related to changes in accounting conservatism. In table 9, panel A, we find a negative relation between changes in the option and purchase measures of overconfidence and changes in accounting conservatism at the 5% level of significance in five of the six specifications. Similarly, when using our investment-based measures of overconfidence, in table 9, panel B, we find a negative relation between changes in overconfidence and accounting conservatism at the 5% level of significance in three of the six specifications and at the 10% level of significance in four of the six specifications. The coefficients on the control variables in table 9 are generally consistent with expectations and the previous results reported in tables 5–8

We also estimate equation (6) using a first differences approach. For this test, we utilize a firm-year based measure of *Holder67*. Overall, we find that changes in managerial overconfidence are negatively related to changes in accounting conservatism. Thus, the inferences from this test are qualitatively similar to the inferences in tables 5–7. However, we note that, because accounting conservatism is measured over a three-(five-) year period using Con-ACC (Skewness), these first differences are not independent over time. Overall, these additional tests suggest that our results are unlikely to be driven by self-selection or endogeneity.

4.5 ADDITIONAL ROBUSTNESS TESTS

In addition to the previously discussed tabulated and untabulated tests, we perform several additional robustness and sensitivity checks. First, three of our measures of overconfidence are measured on an annual basis. However, overconfidence is a behavioral trait that should remain relatively static over time.[12] Thus, we repeat our tests utilizing overconfidence proxies measured over a three-year period, which may better reflect the behavioral trait of overconfidence. We compute these overconfidence measures by calculating each of the dichotomous annual overconfidence variables for years t–3 through t–1 and dividing the sum of these overconfidence proxies by 3. We require that the firm has the same CEO for years t–3 through t for our three-year overconfidence measure, which reduces our sample size to

[12] The annual proxies of overconfidence are fairly stable over time. For example, we find that CEO change overconfidence partitions between firm years for *Purchase*, *CAPEX*, and *Over-Invest* approximately 21.3%, 16.9%, and 17.9%, respectively.

TABLE 9

Relation Between Changes in Accounting Conservatism and Changes in Managerial Overconfidence Following a CEO Change

Panel A

Conservatism Measure	(i) Δ *C-Score*		(ii) Δ *Con-ACC*		(iii) Δ *Skewness*		(iv) Δ *C-Score*		(v) Δ *Con-ACC*		(vi) Δ *Skewness*	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Δ *Holder67*	−0.014	0.038	−0.008	0.008	−0.679	0.031	–	–	–	–	–	–
Δ *Purchase*	–	–	–	–	–	–	−0.021	0.045	−0.002	0.411	−0.465	0.019
Δ *Own*	−0.126	0.118	−0.106	0.085	−5.074	0.168	−0.132	0.100	−0.101	0.102	−4.718	0.202
Δ *MTB*	−0.008	<0.001	−0.001	0.487	−0.072	0.221	−0.009	<0.001	−0.001	0.339	−0.110	0.047
Δ *Leverage*	0.116	<0.001	0.053	0.002	0.643	0.474	0.119	<0.001	0.056	<0.001	0.901	0.287
Δ *Firm Size*	−0.037	<0.001	0.002	0.535	−0.186	0.130	−0.037	<0.001	0.002	0.568	−0.199	0.097
Δ *Litigation*	0.003	0.808	0.007	0.820	−0.497	0.787	0.004	0.751	0.005	0.900	−0.098	0.955
Δ *Sales Growth*	−0.006	0.581	−0.028	0.023	−0.394	0.531	−0.008	0.424	−0.029	0.019	−0.569	0.327
Δ *R&D AD*	0.086	0.118	0.107	<0.001	1.036	0.484	0.084	0.126	0.107	<0.001	1.203	0.409
Δ *CFO*	−0.084	0.073	0.222	<0.001	8.742	<0.001	−0.088	0.067	0.220	<0.001	8.269	<0.001
Δ σ *Revenue*	0.018	0.570	0.023	0.244	−1.479	0.237	0.016	0.611	0.022	0.260	−1.649	0.246
Year fixed effects	Included		Included		Included		Included		Included		Included	
Industry fixed effects	Included		Included		Included		Included		Included		Included	
R^2	0.637		0.355		0.285		0.637		0.353		0.274	
N	340		340		340		340		340		340	

(*Continued*)

TABLE 9—*Continued*

Panel B

Conservatism measure	(i) Δ *C-Score*		(ii) Δ *Con-ACC*		(iii) Δ *Skewness*		(iv) Δ *C-Score*		(v) Δ *Con-ACC*		(vi) Δ *Skewness*	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
Δ *CAPEX*	−0.007	0.081	−0.009	0.047	−0.171	0.368	–	–	–	–	–	–
Δ *Over-Invest*	–	–	–	–	–	–	−0.010	0.035	−0.004	0.377	−0.287	0.044
Δ *Own*	−0.139	0.088	−0.086	0.184	−4.248	0.248	−0.125	0.128	−0.105	0.085	−4.399	0.214
Δ *MTB*	−0.009	<0.001	−0.001	0.435	−0.112	0.034	−0.009	<0.001	−0.001	0.398	−0.119	0.034
Δ *Leverage*	0.120	<0.001	0.056	<0.001	0.961	0.244	0.121	<0.001	0.056	<0.001	0.939	0.260
Δ *Firm Size*	−0.038	<0.001	0.001	0.664	−0.218	0.065	−0.038	<0.001	0.001	0.619	−0.205	0.091
Δ *Litigation*	0.003	0.862	0.001	0.968	−0.008	0.991	0.003	0.805	−0.002	0.966	−0.130	0.940
Δ *Sales Growth*	−0.008	0.441	−0.028	0.019	−0.576	0.335	−0.008	0.463	−0.029	0.017	−0.591	0.326
Δ *R&D AD*	0.083	0.125	0.108	<0.001	1.362	0.327	0.084	0.110	0.106	<0.001	1.364	0.332
Δ *CFO*	−0.084	0.057	0.227	<0.001	8.538	<0.001	−0.087	0.064	0.219	<0.001	8.420	<0.001
Δ σ *Revenue*	0.015	0.626	0.020	0.302	−1.711	0.220	0.020	0.532	0.024	0.245	−1.735	0.225
Year fixed effects	Included		Included		Included		Included		Included		Included	
Industry fixed effects	Included		Included		Included		Included		Included		Included	
R^2		0.637		0.364		0.272		0.641		0.356		0.272
N		340		340		340		340		340		340

Of the firms in our primary sample, 340 firms made a change in CEO where the previous CEO occupied the position for at least four years and the incoming CEO remained in the position for at least three years. We take the values of accounting conservatism, managerial overconfidence, and the control variables measured three years after the CEO change and subtract their values two years before the CEO change. Using this changes analysis, we are able to determine if changes in managerial overconfidence are related to changes in accounting conservatism after the turnover of the CEO position. All variables are defined in table 1. All *p*-values are based on two-tailed tests using firm and year clustered standard errors.

9,281 (8,211) firm-years for our three-year proxies for *CAPEX* and *Over-Invest* (*Purchase*). Using the three-year measure of overconfidence, we find over 65% of all firms are classified as either overconfident or not overconfident for three consecutive years for each of the managerial overconfidence measures, indicating the stability of these behavioral proxies. When we use these three-year overconfidence measures to test our hypotheses using equations (1), (6), and (7), we find results qualitatively similar to those reported in the tables.

Second, in untabulated tests, we estimate equation (6) controlling for industry by deducting the Fama–French industry median of the dependent and independent variable from the observation. Thus, we have controls for the firm-specific operating environment (firm fixed effects) and the business environment (growth opportunities, debt levels, performance, etc.) across industry and find results consistent with those reported in tables 5–7.

Third, we use a measure of overconfidence that incorporates investment in intangibles as well as capital expenditures, *CAPEX-Intangible*, as an overconfident CEO may not only over invest in tangible assets but intangible assets as well. We set *CAPEX-Intangible* equal to one if the capital expenditures plus research and development expense plus advertising expense all deflated by lagged total assets is greater than the median level of capital expenditures plus research and development plus advertising expense (all deflated by lagged total assets) for the firm's Fama–French industry, zero otherwise. Consistent with H1a and H1b, *CAPEX-Intangible* is negatively related to both conditional and both unconditional conservatism measures at the 1% level of significance.

5. *Conclusion*

Recent studies in accounting and finance investigate the relation between managerial overconfidence and corporate investment, financing, and dividend policies, as well as managerial forecasts and financial misreporting. We contribute to this literature by providing evidence on the effects of overconfidence on both conditional and unconditional accounting conservatism. Because overconfident managers overestimate future returns from their firms' projects, we predict that overconfidence and conservatism will be negatively related. Using 14,641 firm-years from 1993 to 2009, we find evidence of a significant negative relation between overconfidence and both conditional and unconditional conservatism, respectively. Furthermore, we find that changes in managerial overconfidence are negatively related to changes in accounting conservatism following a CEO change. We do not find that external monitoring affects this relation. Our results are robust to a battery of robustness and specification tests. Overall, our results are consistent with overconfidence having a significant negative effect on accounting conservatism.

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