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ORIGINAL RESEARCH

CFO overconfidence and conditional accounting conservatism

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Abstract
This study investigates the association between Chief Financial Officers (CFOs) overconfidence and conditional accounting conservatism. Relying on upper echelons and overconfidence theories and based on a large sample of US-listed firms' data from 1992 to 2019 (21,626 firm-year observations), we find a statistically and economically significant negative relationship between CFO overconfidence and conditional accounting conservatism, suggesting that overconfident CFOs tend to diminish conditional accounting conservatism. These findings persist in a series of robustness tests. In the mechanism analysis, we predict that overconfident CFOs aim to convey private information by reducing conditional accounting conservatism. We prove this conjecture by observing that overconfident CFOs who adopt lower levels of conditional accounting conservatism increase earnings informativeness (i.e., the amount of information about future cash flows or earnings contained in current stock returns) and reduce their precautionary incentives to save cash. We further rule out another mechanism (i.e. compensation concerns) that may motivate overconfident CFOs to reduce conditional accounting conservatism. Moreover, we show that overconfident CFOs with higher powers are more able to minimize conditional accounting conservatism. Our study highlights the significance and motivation of overconfident CFOs in determining asymmetric recognition of good and bad news.

Keywords CFO overconfidence · Conditional accounting conservatism · Accounting information · Upper echelons theory · Overconfidence theory

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1 Introduction

Many studies suggest that managers hide or delay recognizing negative news to seek private benefits based on the traditional agency theory perspective, which assumes that managers can rationally estimate investment value at any time (e.g., Bleck and Liu 2007; Kim et al. 2011; Wang et al. 2018).[1] However, this assumption only partially matches real-world managers' decision-making. For example, Graham (2022) recently provides survey evidence that irrational managers have optimistic views of their firms' value and performance, which might lead managers to perceive their firms' stock to be undervalued. Consistent with the findings of the survey, the literature suggests that overconfident CEOs, due to the overestimation of the profitability of existing projects, are less likely to timely disclose bad news (Ahmed and Duellman 2013; Kim et al. 2016; Pierk 2021).[2] These studies concentrate on CEOs, whereas other executives' overconfidence has received less attention. This single focus might result in false attribution because it neglects the role of other managers who are accountable for particular areas, especially the firm's accounting and finance (Malmendier et al. 2022).

Inspired by the above concern, our study focuses on the role of overconfident Chief Financial Officers (CFOs) in conditional accounting conservatism for two reasons. Firstly, CFO overconfidence is prevalent and plays a critical role in the firm's financing and accounting decisions for which the CFOs are primarily responsible (Bertrand and Schoar 2003). For instance, CFO overconfidence outweighs CEO overconfidence in financing (Malmendier et al. 2022), cost stickiness (Chen et al. 2022), and earnings management (Qiao et al. 2023).

Secondly, given that information asymmetry exists between managers and outsiders, financial reporting is an essential tool for managers to communicate firm performance with investors (Jensen and Meckling 1976; Healy and Palepu 2001). Conditional accounting conservatism significantly affects earning quality, which continually attracts attention from investors, boards, and policymakers (Mora and Walker 2015).[3] However, much less is known about the association between CFO overconfidence and conditional accounting conservatism, and the motivations that drive overconfident CFOs to influence conservative reporting.

[1] Agency theory suggests that information asymmetries between shareholders and managers cause managers to make decisions contrary to the shareholders' best interests (Jensen and Meckling 1976).

[2] Conditional accounting conservatism refers to accountants' demand for a greater degree of verification to recognize good news than bad news; this is reflected in the accounting recognition of bad news being more timely than good news, where bad news (good news) represents negative (positive) expected cash flows (e.g., Basu 1997; Beaver and Ryan 2005).

[3] The relationship between conditional accounting conservatism and financial reporting quality is controversial. The supporters of the 'contracting efficiency view' suggest that the primary purpose of financial reporting is to improve contract efficiency and monitoring (Holthausen and Watts 2001). From a 'contracting efficiency view', conditional accounting conservatism provides lenders with more relevant information through timely loss recognition, improving the detection of default risk (e.g., Ahmed et al. 2002; Watts 2003). However, adherents of the 'value relevance view' argue that monitoring is a secondary consideration for financial reporting and that financial reporting should be mainly concerned with the utility of forecasting future cash flows (Barth et al. 2001; Schipper 2005). From a 'value relevance view', conditional accounting conservatism makes it difficult for investors to use earnings information to forecast future cash flow (Mensah et al. 2004; Heflin et al. 2015).

Based on upper echelons and overconfidence theories, we predict a negative link between CFO overconfidence and conditional accounting conservatism since overconfident CFOs seek to communicate private information by diminishing conditional accounting conservatism (i.e., Mensah et al. 2004; Heflin et al. 2015; Qiao et al. 2023). However, from an agency perspective, the opposite outcome is possible. When the board of directors and investors are aware of the flaws of managerial overconfidence (e.g., delayed response to negative news), they might require more conservative information to accelerate the timely recognition of bad news (i.e., Francis and Martin 2010; Louis et al. 2012; Hsu et al. 2017). Accordingly, it is an open empirical question.

Empirically, we test the relationship between CFO overconfidence and conditional accounting conservatism using US-listed firms' data from 1992 to 2019. To measure conditional accounting conservatism, we use two methods proposed by Khan and Watts (2009) and Banker et al. (2016) regarding the specific estimation of the timeliness of bad news. Following Malmendier and Tate (2005), Campbell et al. (2011), and Chen et al. (2022), we use managers' option-exercising behaviors to measure CFO overconfidence. Our study finds a statistically and economically significant negative association between CFO overconfidence and conditional accounting conservatism. These findings are robust under difference-in-differences estimation based on propensity-score matching (PSM-DID), using an alternative overconfidence measure, and considering strong governance. In our robustness test, we also suggest that CFO overconfidence has an independent effect on conditional accounting conservatism.

In the analysis of mechanisms, we find that lower conditional accounting conservatism enhances the positive relationship between CFO overconfidence and earnings informativeness (i.e., the amount of information contained in the current stock return concerning future earnings or cash flows) and mitigates the positive relationship between an overconfident CFO and precautionary motives to hold cash. These findings show that overconfident CFOs reduce conditional accounting conservatism to communicate private information, which can give investors more valuable information to predict future cash flow. The released information asymmetry provides managers with better access to external funding and alleviates their precautionary motives (Mensah et al. 2004; Lee 2010; Heflin et al. 2015). It is possible that overconfident CFOs reduce conditional accounting conservatism due to seeking private benefits (Peng and Röell 2008; Chava and Purnanandam 2010; Jiang et al. 2010). We rule out this alternative mechanism and reinforce the validity of the private information explanation. Furthermore, we find that CFO power strengthens the negative association between CFO overconfidence and conditional accounting conservatism, consistent with the notion that managers' power influences the extent to which their cognitive biases affect decision-making (Hambrick 2007).

Our paper makes several contributions to the literature. Since most studies on CFOs (e.g., Francis et al. 2015; Muttakin et al. 2019) focus on the link between CFOs' demographic characteristics (e.g., gender and tenure) and their conservative accounting choices, our study supplements these studies by considering the CFOs' psychological traits (i.e., overconfidence). Moreover, our findings provide fruitful evidence for overconfidence studies. Given that Ahmed and Duellman (2013) only focus on the association between CEO overconfidence and conditional accounting conservatism, we extend their study to reveal the effect of CFO overconfidence. Besides, different from Ahmed and Duellman (2013), we consider the influence of unconditional accounting conservatism in the regression on conditional accounting conservatism as conditional accounting conservatism can be preempted by unconditional accounting conservatism (Beaver and Ryan 2005), which

increases the robustness of inference.[4] Furthermore, our findings suggest that overconfident CFOs would convey private information by reducing conditional accounting conservatism, complementing Ahmed and Duellman (2013) by investigating the motivation for overconfident managers to affect timely bad news disclosure.[5]

In addition, our findings provide additional empirical evidence validating the integration of the upper echelons and overconfidence theories to investigate the influence of managerial overconfidence (Chen et al. 2022; Malmendier et al. 2022; Qiao et al. 2023). Furthermore, we discover that overconfident CFOs with higher power are more likely to lower conditional accounting conservatism, supporting the updated upper echelons theory (Hambrick 2007). Moreover, we find no evidence that overconfident CFOs adopt less conservative accounting information for their private benefit (Kim et al. 2011). Our findings imply that the incentive of overconfident CFOs is to act in the best interests of shareholders by reducing conditional accounting conservatism, which is inconsistent with the explanation of agency theory.

Our findings also have significant implications for policy and practice. The requirement for accounting conservatism was removed from the joint conceptual framework of the International Accounting Standards Board (IASB) and the Financial Accounting Standards Board (FASB) in 2010 due to their belief that neutrality was a more appropriate financial quality objective (FASB 2010; IASB 2010). However, this decision has created considerable and ongoing debate. Our findings suggest that managerial cognitive biases influence conservative reporting, thus providing additional evidence for standard-setters to make or adjust decisions. In addition, our research can help investors better understand the overconfident behavior of managers and bridge the inconsistent understanding of managerial rationality in academia and practice (Ben-David et al. 2013; Graham 2022).

The remainder of this study is organized as follows. Section 2 presents the theoretical framework, literature review, and hypothesis development. Section 3 shows the research design. Section 4 displays the baseline analysis and some robustness tests. Section 5 shows the analysis of mechanisms. Section 6 discusses the moderating effect of CFO power. Section 7 concludes the paper.

[4] Unconditional accounting conservatism refers to the constant under recognition of net assets (Beaver and Ryan 2005). Unconditional accounting conservatism includes expensing R&D and advertising expenditures, using accelerated depreciation methods, accumulating reserves above expected future costs, etc. (Beaver and Ryan 2005).

[5] Similar to Ahmed and Duellman (2013), we also investigate the relationship between CFO overconfidence and unconditional accounting conservatism. Although the origins of conditional and unconditional accounting conservatism are distinct, their underlying causes are comparable (Ma et al. 2020). Specifically, we predict that overconfident CFOs overestimate their firms' future performance, and thus they are more likely to recognize spending on expected future earnings as an investment and choose lower depreciation rates, reducing conditional accounting conservatism. Based on our untabulated result, we also observe a significant negative association between CFO overconfidence and the adoption of unconditional accounting conservatism.

2 Theoretical framework, literature review, and hypothesis development

2.1 The effect of CFO overconfidence on conditional accounting conservatism

Cognitive biases, suggested by overconfidence theory, describe how people overestimate their ability to make accurate judgments, foresee the future, and influence events (Weinstein 1980; Alicke 1985). Managers' cognitive biases influence their behaviors according to upper echelons theory (Hambrick and Mason 1984). To capture the impact of managers' cognitive biases on accounting conservatism, early empirical studies focus on demographic characteristics. For instance, they find that managers' gender (Ho et al. 2015), individual beliefs (Ma et al. 2020), and tenure (Muttakin et al. 2019) can explain firms' conservative accounting reporting.

Some research, however, contends that managers' demographic traits have limited explanatory power for cognitive differences (Ge et al. 2011) and that overconfidence is a prevalent characteristic among executives (Goel and Thakor 2008). These findings inspire researchers to explore managerial behavior from the perspective of overconfidence. Since CEOs set the tone at the top, early overconfidence studies concentrate on this executive type. They show that firms with overconfident CEOs tend to overinvest (Malmendier and Tate 2005), make overly optimistic forecasts (Hribar and Yang 2016), engage in more earnings management (Hsieh et al. 2014) and tax avoidance (Chyz et al. 2019), and adopt less accounting conservatism (Ahmed and Duellman 2013).

As the CFO's role has expanded beyond typical accounting and financial choices and into strategy and operation decisions, recent studies shed light on the impact of CFO overconfidence (Ben-David et al. 2013; Chen et al. 2022; Malmendier et al. 2022). For instance, Ben-David et al. (2013) find that firms with overconfident CFOs tend to make aggressive decisions, such as overinvesting and reducing dividend payouts, because overconfident CFOs are more likely to overestimate their firms' performance. Consistent with this notion, Chen et al. (2022) suggest that overconfident CFOs are more likely to extend resources while sales expand and keep extra resources when sales decrease since they overestimate future sales growth and underestimate risks. Furthermore, Malmendier et al. (2022) demonstrate that overconfident CFOs tend to use more debt than equity finance when they need external funds. They explain that overconfident CFOs deem their firms undervalued by the market, and thus equity funding is more costly. Therefore, based on upper echelons theory, we conjecture that CFO overconfidence plays a non-trivial role in conditional accounting concervatism.

Overconfident CFOs overestimate the future profits of current projects and believe that investors underestimate the firms' performance (Ben-David et al. 2013; Chen et al. 2022; Malmendier et al. 2022). As key executives responsible for reporting accounting information, overconfident CFOs may find a way to communicate private information and improve investor valuations (Qiao et al. 2023). There is evidence that conditional accounting conservatism makes it difficult for investors to utilize accounting information to forecast future cash flows. To be specific, conditional accounting conservatism requires more stringent verification standards for recognizing gains than losses, which diminishes earnings informativeness (Barth et al. 2014) and persistence (Heflin et al. 2015), and increases information asymmetry (Mensah et al. 2004; Heflin et al. 2015). Accordingly, combining the evidence on upper echelons and overconfidence theories, we predict that overconfident CFOs might accelerate gain recognition and delay loss

recognition to convey private information, adding more information for investors to evaluate firm performance (Barth et al. 2014; Heflin et al. 2015). The foregoing discussion leads to our first hypothesis:

H1 There is a negative association between CFO overconfidence and conditional accounting conservatism.

However, we might find a positive relationship between CFO overconfidence and conditional accounting conservatism from the agency perspective. Prior studies have established that conditional accounting conservatism can be used to monitor managers' behaviors and alleviate agency problems. Specifically, the board of directors and investors use conditional accounting conservatism to urge managers to timely abandon negative net present value (NPV) projects (Francis and Martin 2010; Louis et al. 2012; Hsu et al. 2017) and improve the veracity of reported earnings (Watts 2003). In addition, since lenders' upside is limited to contractual interest payments, lenders are more concerned with debtors' losses than profits when settling debt contracts (Watts 2003). Therefore, lenders might demand more conditional accounting conservatism because it gives them more timely loss information, improves the detection of default risk, and increases the efficiency of debt contracts (e.g., Ahmed et al. 2002; Watts 2003; Wittenberg-Moerman 2008; Zhang 2008). When the board of directors and investors are aware of the shortcomings of managerial overconfidence (e.g., deferring response to bad news), they might demand more conservative information to accelerate the timely recognition of bad news. In view of this counterargument, it is an empirical question whether conditional accounting conservatism is negatively associated with CFO overconfidence.

2.2 CFO power, CFO overconfidence, and conditional accounting conservatism

Based on the updated upper echelons theory, CFO power may moderate overconfident CFOs' conditional accounting conservatism decisions. The updated upper echelons theory contends that managers' powers enhance the association between managerial cognitive biases and their decisions (Hambrick 2007). Consistent with this notion, some empirical evidence suggests that a powerful CFO is more likely to influence firm decisions. For example, Chen et al. (2022) suggest that the positive association between CFO overconfidence and cost stickiness is enhanced when firms have powerful CFOs. Besides, Florackis and Sainani (2021) find that powerful CFOs resist excessive pressure from CEOs who have the incentive to manipulate earnings. As we predict that overconfident CFOs tend to reduce conditional accounting conservatism, we further conjecture that overconfident CFOs with more power have a more pronounced influence on conditional accounting conservatism.

Although directors and investors might demand more conditional accounting conservatism to monitor overconfident CFOs, prior studies find that CFOs can outweigh directors in accounting-related decisions (Beck and Mauldin 2014). Thus, we predict that overconfident CFOs with higher power might be able to resist the demand for conditional accounting conservatism made by directors and investors. The foregoing discussion leads to our second hypothesis:

H2 Overconfident CFOs with greater power are more likely to reduce conditional accounting conservatism.

Table 1 Sample selection

Steps	Observations
Total number of observations for US-listed firms with CCM and ExecuComp data	41,153
Exclude: Financial firms (sic: 6000–6999)	(7,154)
Exclude: Utility firms (sic: 4900–4999)	(2,151)
Exclude: Missing value of the variable used to test the H1 and H2	(10,222)
Total number of observations to test the H1	21,626
Total number of observations to test the H2	The different sample sizes depend on the number of observations of the independent variable

3 Research design

3.1 Sample selection and data sources

We use US-listed firms' data collected from multiple databases. The accounting data is mainly collected from the CRSP/Compustat merged (CCM) and CRSP databases. The CFOs' and CEOs' compensation information comes from the ExecuComp database. For the robustness test, we use institutional investors and corporate governance data collected from Thomson Reuters Institutional (13f) Holdings and BoardEx databases, respectively. The analysts' information is collected from the I/B/E/S database. Our study's sample period is from 1992 to 2019. The sample starts in 1992 as managers' compensation information has been available in the ExecuComp database since then. We exclude financial firms (SIC:6000–6999) and utility firms (SIC:4900–4999). To reduce the potential impact of outliers, we winsorize all continuous variables at the 1st and 99th percentiles. Our main sample has 21,626 firm-year observations. The firm-year observations change when testing the hypothesis related to CFO power, which depends on the available data for each proxy of CFO power. The detailed data sample construction is shown in Table 1.

3.2 Variable measurement

3.2.1 The measurement of conditional accounting conservatism

Based on the definition of conditional accounting conservatism (i.e., recognition of bad news is more timely than recognition of good news), Basu (1997) proposes using the contemporaneous sensitivity of earnings to negative and positive returns to measure it.[6] The measures of Basu (1997) include the industry-year measurement which assumes that all firms in the same industry are homogeneous and the individual firm measurement which assumes that the firm's operating traits are stable. However, Khan and Watts (2009) argue that both measures of Basu (1997) have limitations because firms' conditional accounting

[6] Measuring news with firms' stock returns (Basu 1997).

conservatism is affected by time- and firm-specific factors.[7] Thus, Khan and Watts (2009) modify the method of Basu (1997) and develop a firm-specific estimation of the timeliness of bad news (C-Score) and good news (G-Score). The C-score refers to conditional accounting conservatism. The G-Score and C-Score are estimated as follows.

$$NI_{i,t} = \beta_1 + \beta_2 D_{i,t} + \beta_3 RET_{i,t} + \beta_4 D_{i,t} \times RET_{i,t} + \varepsilon_{i,t}, \tag{1}$$

$$G\_score1_{i,t} = \beta_3 = \mu_1 + \mu_2 MV_{i,t} + \mu_3 MTB_{i,t} + \mu_4 LEV_{i,t} + \varepsilon_{i,t}, \tag{2}$$

$$C\_score1_{i,t} = \beta_4 = \lambda_1 + \lambda_2 MV_{i,t} + \lambda_3 MTB_{i,t} + \lambda_4 LEV_{i,t} + \varepsilon_{i,t}, \tag{3}$$

where, $NI_{i,t}$ refers to net income before extraordinary items deflated by the market value of equity at the beginning of fiscal year t; $RET_{i,t}$ refers to the annual buy and hold return starting from the fourth month after the previous fiscal year-end; $D_{i,t}$ refers to an indicator variable that equals one if $RET_{i,t}$ is negative, and zero otherwise; $MV_{i,t}$ refers to the log of the market value of equity; $MTB_{i,\mathrm{t}}$ refers to the market value of equity divided by the book value of equity; $LEV_{i,t}$ refers to total debt divided by total assets.

Next, replacing β_3 and β_4 from Eqs. (2) and (3) into regression Eq. (1) yields Eq. (4).

$$\begin{aligned} NI_{i,t} = {} & \beta_1 + \beta_2 D_{i,t} + RET_{i,t} \times \left(\mu_1 + \mu_2 MV_{i,t} + \mu_3 MTB_{i,t} + \mu_4 LEV_{i,t}\right) \\ & + D_{i,t} \times RET_{i,t} \times \left(\lambda_1 + \lambda_2 MV_{i,t} + \lambda_3 MTB_{i,t} + \lambda_4 LEV_{i,t}\right) \\ & + \delta_1 MV_{i,t} + \delta_2 MTB_{i,t} + \delta_3 LEV_{i,t} + \delta_4 D_{i,t} \times MV_{i,t} \\ & + \delta_5 D_{i,t} \times MTB_{i,t} + \delta_6 D_{i,t} \times LEV_{i,t} + \varepsilon_{i,t}, \end{aligned} \tag{4}$$

The firm-specific conditional accounting conservatism ($C\_score1_{i,\mathrm{t}}$) is calculated by applying the estimates from Eq. (4) to Eq. (3). The higher value of $C\_score1_{i,\mathrm{t}}$ indicates more conditional accounting conservatism.

In addition, Banker et al. (2016) argue that cost stickiness biases the measurement of Khan and Watts (2009).[8] Thus, Banker et al. (2016) modify the measure of Khan and Watts (2009) by considering the potential confounding effect of sticky costs as follows.

$$\begin{aligned} NI_{i,t} = {} & \beta_1 + \beta_2 D_{i,t} + \beta_3 RET_{i,t} + \beta_4 D_{i,t} \times RET_{i,t} + \beta_5 S_{i,t}/MKT_{i,t-1} \\ & + \beta_6 DS_{i,t} + \beta_7 S_{i,t}/MTK_{i,t-1} \times DS_{i,t} + \varepsilon_{i,t}, \end{aligned} \tag{5}$$

$$G\_score2_{i,t} = \beta_3 = \mu_1 + \mu_2 MV_{i,t-1} + \mu_3 BM_{i,t-1} + \mu_4 LEV_{i,t-1} + \varepsilon_{i,t}, \tag{6}$$

$$C\_score2_{i,t} = \beta_4 = \lambda_1 + \lambda_2 MV_{i,t-1} + \lambda_3 BM_{i,t-1} + \lambda_4 LEV_{i,t-1} + \varepsilon_{i,t}, \tag{7}$$

where, $MV_{i,t-1}$ refers to the log of the market value of equity in the fiscal year t−1; $BM_{i,t-1}$ refers to the book value of equity divided by the market value of equity in the fiscal year t−1; $LEV_{i,t-1}$ refers to total debt divided by total assets in the fiscal year t−1; $S_{i,t}\ /MKT_{i,t-1}$

[7] Since the method of Basu (1997) has a few limitations that are pointed out by many studies, such as Dietrich et al. (2007) and Khan and Watts (2009), we do not use this method in our main analysis. However, untabulated results show that there is a significant negative relationship between CFO overconfidence and conditional accounting conservatism when we use the method of Basu (1997).

[8] Cost stickiness refers to earnings responding more to a decrease than an increase in sales (Banker et al. 2016).

is the changes in sales divided by market value of equity in the fiscal year t−1; $DS_{i,t}$ equals one if $S_{i,t}$ is negative, and zero otherwise.

Next, replacing β_3 and β_4 from Eqs. (6) and (7) into regression Eq. (5) yields Eq. (8).

$$\begin{aligned} NI_{i,t} = {} & \beta_1 + \beta_2 D_{i,t} + RET_{i,t} \times \left(\mu_1 + \mu_2 MV_{i,t-1} + \mu_3 BM_{i,t-1} + \mu_4 LEV_{i,t-1}\right) \\ & + D_{i,t} \times RET_{i,t} \times \left(\lambda_1 + \lambda_2 MV_{i,t-1} + \lambda_3 BM_{i,t-1} + \lambda_4 LEV_{i,t-1}\right) \\ & + \beta_5 S_{i,t}/MKT_{i,t-1} + \beta_6 DS_{i,t} + \beta_7 S_{i,t}/MKT_{i,t-1} \times DS_{i,t} + \delta_1 MV_{i,t-1} + \delta_2 BM_{i,t-1} + \delta_3 LEV_{i,t-1} \\ & + \delta_4 D_{i,t} \times MV_{i,t-1} + \delta_5 D_{i,t} \times BM_{i,t-1} + \delta_6 D_{i,t} \times LEV_{i,t-1} \\ & + \delta_7 S_{i,t}/MKT_{i,t-1} \times MV_{i,t-1} + \delta_8 S_{i,t}/MKT_{i,t-1} \times BM_{i,t-1} + \delta_9 S_{i,t}/MKT_{i,t-1} \times LEV_{i,t-1} \\ & + \delta_{10} DS_{i,t} \times MV_{i,t-1} + \delta_{11} DS_{i,t} \times BM_{i,t-1} + \delta_{12} DS_{i,t} \times LEV_{i,t-1} \\ & + \delta_{13} S_{i,t}/MKT_{i,t-1} \times DS_{i,t} \times MV_{i,t-1} + \delta_{14} S_{i,t}/MKT_{i,t-1} \times DS_{i,t} \times BM_{i,t-1} \\ & + \delta_{15} S_{i,t}/MKT_{i,t-1} \times DS_{i,t} \times LEV_{i,t-1} + \varepsilon_{i,t}. \end{aligned} \tag{8}$$

The firm-specific conditional accounting conservatism ($C\_score2_{i,t}$) is measured by applying the estimates from Eq. (8) to Eq. (7). The higher value of $C\_score2_{i,t}$ indicates more conditional accounting conservatism.

3.2.2 The measurement of overconfidence

The mainstream method of measuring managers' overconfidence in the current literature is the option-based method proposed by Malmendier and Tate (2005). This method is based on the logic that managers' long-term holding of options demonstrates a consistent unwillingness to limit their personal exposure to firm-specific risks, which shows their overconfidence. Our study, following the method of Malmendier and Tate (2005), regards CFOs or CEOs as overconfident managers when they are reluctant to exercise options that exceed 67% in the money. Malmendier and Tate (2005) use detailed information on each option package. As ExecuComp does not have detailed data on managers' options holdings and exercise prices for each option grant before 2006, this study follows the method of Campbell et al. (2011) using the average moneyness of managers' option portfolios as proxies of overconfidence. The average moneyness is calculated as follows.

$$The\ realizable\ value\ per\ option_{i,t} = \frac{The\ total\ realizable\ value\ of\ the\ exercisable\ options_{i,t}}{The\ number\ of\ exercisable\ options_{i,t}} \tag{9}$$

$$\begin{aligned} &The \text{ estimate of the average exercise } price\ of\ options_{i,t} = \\ &The\ stock\ price\ at\ the\ fiscal\ year\ end_{i,t} - The\ realizable\ value\ per\ option_{i,t} \end{aligned} \tag{10}$$

$$\frac{\begin{aligned} &The\ average\ percent\ moneyness\ of\ the\ options_{i,t} = \\ &The\ \ realizable\ value\ per\ option_{i,t} \end{aligned}}{The\ estimate\ of\ the\ average\ exercise\ price\ of\ the\ options_{i,t}} \tag{11}$$

Therefore, $Holder67CFO_{i,t}$ ($Holder67CEO_{i,t}$) equals one from the first time that CFOs (CEOs) hold vested options that are at least 67% in the money to the end of their tenure, and zero otherwise (Chen et al. 2022).[9]

[9] Results remain robust if we require that CFOs (CEOs) hold vested options that are at least 67% in the money at least twice.

3.3 Baseline regression model design

We examine the relationship between CFO overconfidence on conditional accounting conservatism using the following model.

$$\begin{aligned} C\_score_{i,t} =& \beta_0 + \beta_1 Holder67CFO_{i,t} + \beta_2 Holder67CEO_{i,t} \\ &+ \beta_3 CFO\_male_{i,t} + \beta_4 CFO\_ownership_{i,t} + \beta_5 MTB_{i,t} \\ &+ \beta_6 SaleGrowth_{i,t} + \beta_7 Volsale_{i,t} + \beta_8 CashFlow_{i,t} \\ &+ \beta_9 FirmSize_{i,t} + \beta_{10} Leverage_{i,t} + \beta_{11} RDAD_{i,t} \\ &+ \beta_{12} Big\_four_{i,t} + \beta_{13} High\_LIT_{i,t} \\ &+ \beta_{14} UnAC_{i,t} + Firm\ fixed\ effects \\ &+ Year\ fixed\ effects + \varepsilon_{i,t}, \end{aligned} \tag{12}$$

where, $C\_score_{i,t}$ is one of two conditional accounting conservatism proxies ($C\_score1_{i,t}$ and $C\_score2_{i,t}$); $Holder67CFO_{i,t}$, the proxy of overconfident CFOs, is the variable of interest; β_1 captures the relationship between CFO overconfidence and conditional accounting conservatism. If the β_1 is significantly positive, it indicates a positive association between CFO overconfidence and conditional accounting conservatism (hypothesis H1).

In the regression, we also include control variables based on previous conditional accounting conservatism studies. Specifically, Ahmed and Duellman (2013) find a negative relationship between CEO overconfidence and conditional accounting conservatism decisions. To control for the effect of CEO overconfidence, we include CEO overconfidence ($Holder67CEO_{i,t}$). In addition, we control for some other CFOs' characteristics. We control for CFO gender ($CFO\_male_{i,t}$) since male CFOs tend to use fewer conservative accounting principles than their female counterparts (Francis et al. 2015). In addition to CFO gender, we control for the influence of CFO ownership ($CFO\_ownership_{i,t}$) as top managers' ownership significantly affects conditional accounting conservatism (LaFond and Watts 2008). Given that firms are not static across time, we include firm performance in the regression. Prior studies suggest that firms' growth opportunities, sale growth rates, operating uncertainty, and profitability affect conditional accounting conservatism (e.g., Smith and Watts 1992; Ahmed et al. 2002; Ahmed and Duellman 2007, 2013). As such, we use the market-to-book ratio ($MTB_{i,t}$), sales growth ($SaleGrowth_{i,t}$), sales volatility ($VolSale_{i,t}$), and cash flows from operations ($CashFlow_{i,t}$) to capture them, respectively. We also control for firm characteristics, including firm size ($FirmSize_{i,t}$), leverage ($Leverage_{i,t}$), R&D and advertising expenses ($RDAD_{i,t}$), following Ahmed et al. (2002), Givoly et al. (2007), and Ahmed and Duellman (2013). Considering the monitoring effect, we include auditor type and litigation risk because a high-quality auditor ($Big\_four_{i,t}$) and high litigation risk ($High\_LIT_{i,t}$) affect firms' conditional accounting conservatism decisions (Basu et al. 2001; Watts 2003; Cano-Rodríguez 2010). In addition, Beaver and Ryan (2005) suggest that unconditional accounting conservatism should be controlled for in the study of conditional accounting conservatism as conditional accounting conservatism can be preempted by unconditional accounting conservatism. In response to their call, we control for unconditional accounting conservatism ($UnAC_{i,t}$). Finally, we use firm-fixed effect models and include year dummies to control for the potential omitted time-invariant effects of firms and years. Detailed variable measurements are provided in the Appendix.

4 Empirical results

4.1 Descriptive statistics

Table 2 displays descriptive statistics for all variables in the baseline regression. Panel A of Table 2 shows the descriptive statistics of the full sample. Following Ahmed and Duellman (2013), we use the conditional accounting conservatism measurement ($C\_score1_{i,t}$) proposed by Khan and Watts (2009) as our first conditional accounting conservatism measurement. The mean value of $C\_score1_{i,t}$ is 0.062, which is similar to the result of Ahmed and Duellman (2013). Following Khalilov and Osma (2020), our second conditional accounting conservatism measurement ($C\_score2_{i,t}$) uses the approach of Banker et al. (2016). The mean value of $C\_score2_{i,t}$ is 0.182, which is consistent with the findings of Khalilov and Osma (2020). Our overconfidence measure is consistent with Chen et al. (2022). Although our sample period differs from that used by Chen et al. (2022), we have comparable results: the mean values of overconfident CFOs and overconfident CEOs in their sample are 0.510 and 0.593, respectively, and the mean values of $Holder67CFO_{i,t}$ and $Holder67CEO_{i,t}$ are 0.548 and 0.650 in our sample. Over half of CFOs and CEOs are overconfident, which is in line with previous findings that overconfidence is a common trait among top managers (Goel and Thakor 2008; Malmendier et al. 2022), indicating that CFO overconfidence cannot be ignored.

Panel B of Table 2 shows the descriptive statistics of the subsample. T-tests are conducted to test for differences in independent and control variables between the overconfident CFO sample and the non-overconfident CFO sample. Univariate comparisons show that the mean values of $C\_score1_{i,t}$ and $C\_score2_{i,t}$ in the overconfident CFOs sample are significantly lower than the corresponding values for their non-overconfident CFOs sample.

4.2 Pairwise correlations

Table 3 shows the Pearson correlation coefficients. The correlations between the independent and control variables are less than 0.5, and the untabulated values of variance-inflating factors (VIFs) are lower than the cutoff of 10 (Gujarati et al. 2012), indicating that multicollinearity is not a problem when analyzing the regression results. Besides, $Holder67CFO_{i,t}$ and $Holder67CEO_{i,t}$ have a significant association (a correlation coefficient of 0.479), indicating that both should be included in one regression to avoid the omitted variables problem. $Holder67CFO_{i,t}$ has significant negative correlations with $C\_score1_{i,t}$ and $C\_score2_{i,t}$ without controlling other variables, which is in line with our hypothesis H1 that overconfident CFOs tend to reduce conditional accounting conservatism compared with non-overconfident CFOs.

Table 2 Descriptive statistics

	N	Mean	SD	10P	25P	Median	75P
Panel A—Full sample							
***C_score1*$_{i,t}$**	**21,626**	**0.062**	**0.151**	**−0.130**	**−0.026**	**0.068**	**0.154**
***C_score2*$_{i,t}$**	**21,626**	**0.182**	**0.187**	**−0.035**	**0.072**	**0.178**	**0.293**
Holder67CFO$_{i,t}$	21,626	0.548	0.498	0	0	1	1
Holder67CEO$_{i,t}$	21,626	0.650	0.477	0	0	1	1
CFO_male$_{i,t}$	21,626	0.921	0.269	1	1	1	1
CFO_ownership$_{i,t}$ (%)	21,626	0.087	0.234	0.000	0.000	0.000	0.059
MTB$_{i,t}$	21,626	3.447	3.709	1.051	1.559	2.394	3.840
SaleGrowth$_{i,t}$	21,626	0.106	0.239	−0.114	−0.004	0.075	0.177
VolSale$_{i,t}$	21,626	0.144	0.124	0.038	0.063	0.106	0.182
CashFlow$_{i,t}$	21,626	0.100	0.085	0.014	0.059	0.101	0.147
FirmSize$_{i,t}$	21,626	7.318	1.582	5.378	6.172	7.200	8.348
Leverage$_{i,t}$	21,626	0.213	0.169	0.000	0.056	0.205	0.328
RDAD$_{i,t}$	21,626	0.067	0.126	0.000	0.000	0.022	0.080
Big_four$_{i,t}$	21,626	0.864	0.343	0	1	1	1
High_LIT$_{i,t}$	21,626	0.100	0.300	0	0	0	0
UnAC$_{i,t}$	21,626	0.014	0.051	−0.034	−0.010	0.009	0.031
Panel B—Subsample							
Variable	*Holder67CFO*$_{i,t}$ = 0 (N = 9,775)		*Holder67CFO*$_{i,t}$ = 1 (N = 11,851)		T-statistics for tests of difference in means		
	Mean		Mean		(Non-over-confident CFOs-Over-confident CFOs)		
***C_score1*$_{i,t}$**	**0.079**		**0.047**		**0.032*****		
***C_score2*$_{i,t}$**	**0.210**		**0.159**		**0.051*****		
Holder67CEO$_{i,t}$	0.398		0.858		−0.459***		
CFO_male$_{i,t}$	0.922		0.920		0.002		
CFO_ownership$_{i,t}$	0.062		0.107		−0.045***		
MTB$_{i,t}$	2.829		3.957		−1.129***		
SaleGrowth$_{i,t}$	0.062		0.143		−0.081***		
VolSale$_{i,t}$	0.143		0.145		−0.002		
CashFlow$_{i,t}$	0.087		0.111		−0.025***		
FirmSize$_{i,t}$	7.351		7.290		0.061**		
Leverage$_{i,t}$	0.225		0.203		0.021***		
RDAD$_{i,t}$	0.069		0.066		0.004		
Big_four$_{i,t}$	0.860		0.867		−0.007		
High_LIT$_{i,t}$	0.109		0.092		0.017***		
UnAC$_{i,t}$	0.018		0.011		0.007***		

Notes: Panel A of Table 2 shows the descriptive statistics of the full sample. Panel B of Table 2 shows the descriptive statistics of the subsample sample. T-tests are conducted to test for differences in the means between the overconfident CFOs sample and the non-overconfident CFOs sample. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

Table 3 Correlations

	Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1)	$C\_score1_{i,t}$	1							
(2)	$C\_score2_{i,t}$	0.748***	1						
(3)	$Holder67CFO_{i,t}$	**−0.107*** **	**−0.136*** **	1					
(4)	$Holder67CEO_{i,t}$	−0.078***	−0.117***	0.479***	1				
(5)	$CFO\_male_{i,t}$	0.021***	0.033***	−0.004	−0.030***	1			
(6)	$CFO\_ownership_{i,t}$	0.184***	0.131***	0.095***	0.053***	0.031***	1		
(7)	$MTB_{i,t}$	−0.325***	−0.356***	0.151***	0.136***	−0.014**	−0.034***	1	
(8)	$SaleGrowth_{i,t}$	−0.074***	−0.144***	0.168***	0.159***	0.008	−0.018***	0.125***	1
(9)	$VolSale_{i,t}$	0.147***	0.122***	0.009	0.021***	0.003	0.035***	0.007	0.065***
(10)	$CashFlow_{i,t}$	−0.273***	−0.222***	0.145***	0.109***	−0.041***	−0.013*	0.201***	0.056***
(11)	$FirmSize_{i,t}$	−0.587***	−0.469***	−0.019***	−0.041***	−0.022***	−0.186***	0.051***	−0.061***
(12)	$Leverage_{i,t}$	−0.011	−0.080***	−0.063***	−0.064***	0.050***	−0.040***	0.107***	−0.035***
(13)	$RDAD_{i,t}$	0.025***	−0.013*	−0.015**	0.025***	−0.006	−0.029***	0.163***	0.049***
(14)	$Big\_four_{i,t}$	−0.096***	−0.082***	0.009	0.001	−0.032***	−0.066***	0.022***	−0.049***
(15)	$High\_LIT_{i,t}$	−0.015**	0.047***	−0.027***	−0.015**	−0.004	−0.048***	−0.054***	−0.061***
(16)	$UnAC_{i,t}$	0.074***	0.057***	−0.067***	−0.049***	−0.017**	0.008	0.089***	−0.005
	Variable	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
(9)	$VolSale_{i,t}$	1							
(10)	$CashFlow_{i,t}$	−0.088***	1						
(11)	$FirmSize_{i,t}$	−0.175***	0.123***	1					
(12)	$Leverage_{i,t}$	−0.041***	−0.153***	0.355***	1				
(13)	$RDAD_{i,t}$	−0.037***	−0.318***	−0.214***	−0.196***	1			
(14)	$Big\_four_{i,t}$	−0.036***	0.040***	0.240***	0.070***	−0.014**	1		
(15)	$High\_LIT_{i,t}$	0.086***	−0.091***	0.184***	0.099***	0.036***	0.052***	1	
(16)	$UnAC_{i,t}$	0.048***	0.003	−0.064***	−0.055***	0.186***	0.053***	0.042***	1

Table 3 shows the Pearson correlation coefficients. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

Table 4 The impact of CFO overconfidence on conditional accounting conservatism

	(1)	(2)	(3)	(4)
Variable	$C\_score1_{i,t}$	$C\_score2_{i,t}$	$C\_score1_{i,t}$	$C\_score2_{i,t}$
***Holder67CFO*$_{i,t}$**	**−0.016*** **	**−0.025*** **	**−0.012*** **	**−0.018*** **
	(0.002)	**(0.002)**	**(0.002)**	**(0.003)**
$Holder67CEO_{i,t}$			−0.011***	−0.019***
			(0.002)	(0.003)
$CFO\_male_{i,t}$	0.006	0.008	0.006	0.008
	(0.004)	(0.006)	(0.004)	(0.006)
$CFO\_ownership_{i,t}$	0.016***	0.031***	0.016***	0.032***
	(0.005)	(0.008)	(0.005)	(0.008)
$MTB_{i,t}$	−0.010***	−0.008***	−0.009***	−0.008***
	(0.001)	(0.000)	(0.001)	(0.000)
$SaleGrowth_{i,t}$	−0.014***	−0.024***	−0.013***	−0.023***
	(0.003)	(0.004)	(0.003)	(0.004)
$VolSale_{i,t}$	−0.014*	−0.048***	−0.013*	−0.045***
	(0.008)	(0.012)	(0.008)	(0.012)
$CashFlow_{i,t}$	−0.099***	−0.119***	−0.097***	−0.115***
	(0.012)	(0.017)	(0.012)	(0.017)
$FirmSize_{i,t}$	−0.070***	−0.060***	−0.069***	−0.058***
	(0.002)	(0.003)	(0.002)	(0.003)
$Leverage_{i,t}$	0.202***	0.090***	0.200***	0.086***
	(0.009)	(0.012)	(0.009)	(0.012)
$RDAD_{i,t}$	−0.048***	−0.088***	−0.047***	−0.086***
	(0.018)	(0.030)	(0.018)	(0.030)
$Big\_four_{i,t}$	−0.014***	−0.018***	−0.014***	−0.018***
	(0.003)	(0.005)	(0.003)	(0.005)
$High\_LIT_{i,t}$	0.020***	0.014***	0.020***	0.014***
	(0.003)	(0.004)	(0.003)	(0.004)
$UnAC_{i,t}$	0.074***	0.110***	0.071***	0.104***
	(0.016)	(0.022)	(0.016)	(0.022)
Constant	0.424***	0.517***	0.422***	0.514***
	(0.015)	(0.028)	(0.015)	(0.028)
Observations	21,626	21,626	21,626	21,626
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.797	0.751	0.798	0.752

The results of the impact of CFO overconfidence on conditional accounting conservatism are shown in Table 4. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

4.3 *Baseline results—regression analyses of Hypothesis 1*

In this section, we use fixed-effect models to test the relationship between CFO overconfidence and conditional accounting conservatism.[10] Table 4 shows the regression results of the estimation of Eq. (12). The dependent variables are $C\_score1_{i,t}$ measured using the method of Khan and Watts (2009) (columns (1) and (3)) and $C\_score2_{i,t}$ measured using the approach of Banker et al. (2016) (columns (2) and (4)). The variable of interest is CFO overconfidence ($Holder67CFO_{i,t}$) calculated following Campbell et al. (2011) and Chen et al. (2022).

The coefficient of CFO overconfidence ($Holder67CFO_{i,t}$) is significant and negative in column (1), suggesting a negative relationship between CFO overconfidence and conditional accounting conservatism. Given that the mean value of conditional accounting conservatism ($C\_score1_{i,t}$) is 0.062, there appears to be a sizeable difference (25.806%).[11] As shown in column (2), when we change the dependent variable from $C\_score1_{i,t}$ to $C\_score2_{i,t}$, $Holder67CFO_{i,t}$ remains a significantly negative coefficient, indicating that the finding is robust under an alternative conditional accounting conservatism measure.

Given that CFO overconfidence ($Holder67CFO_{i,t}$) and CEO overconfidence ($Holder67CEO_{i,t}$) have a high correlation, and in response to the call made by Black and Gallemore (2013) and Malmendier et al. (2022) that CFO overconfidence and CEO overconfidence should be jointly considered in corporate decision-making, we control for the effect of $Holder67CEO_{i,t}$ in columns (3) and (4). $Holder67CEO_{i,t}$ has a significantly negative coefficient in columns (3) and (4), which is consistent with the finding of Ahmed and Duellman (2013). The coefficient on $Holder67CFO_{i,t}$ remains negative and statistically significant in columns (3) and (4). Besides, the coefficients on $Holder67CFO_{i,t}$ suggest that firms with overconfident CFOs cause a decrease in $C\_score1_{i,t}$ by 19.355% (in comparison to the mean $C\_score1_{i,t}$) in column (3) and a decrease in $C\_score2_{i,t}$ by 9.890% (in comparison to the mean $C\_score2_{i,t}$) in column (4), showing that these findings are also economically significant.[12]

In terms of the control variables, the market-to-book ratio ($MTB_{i,t}$) has a negative and significant coefficient in columns (1) to (4), which is consistent with the findings of Roychowdhury and Watts (2007) that firms with high growth opportunities adopt low conditional accounting conservatism. $CashFlow_{i,t}$ has a negative and significant coefficient in each column, showing that high-profit firms reduce the application of conditional accounting conservatism (Ahmed and Duellman 2013). The coefficient on firm size ($FirmSize_{i,t}$) is negative and significant in each column, suggesting that larger firms are less likely to recognize losses timely (Givoly et al. 2007). $Leverage_{i,t}$ has a positive and significant coefficient in columns (1) to (4), indicating that high-leverage firms increase their accounting

[10] We use two-way fixed-effect models, firm-fixed effect and year-fixed effect, to control for the influence of time-invariant firm features and factors that are common to all firms for a particular fiscal year, respectively. Besides, the untabulated Fischer (F), Breusch-Pagan Lagrange Multiplier (LM), and Hausman tests indicate that fixed-effect models are the best choice for our study compared with random effect and pooled OLS models. The following regressions used the fixed-effect models for the same reasons, which we will not repeat for brevity.

[11] 25.806% equals the absolute value of the coefficient on $Holder67CFO_{i,t}$ (0.016) in column (1) of Table 4 divided by the mean value of $C\_score1_{i,t}$ (0.062) in Table 2, then multiplied by 100%.

[12] 19.355% equals the absolute value of the coefficient on $Holder67CFO_{i,t}$ (0.012) in column (3) of Table 4 divided by the mean value of $C\_score1_{i,t}$ (0.062) in Table 2, then multiplied by 100%. 9.890% equals the absolute value of the coefficient on $Holder67CFO_{i,t}$ (0.018) in column (4) of Table 4 divided by the mean value of $C\_score2_{i,t}$ (0.182) in Table 2, then multiplied by 100%.

conservatism. This finding is in line with Ahmed et al. (2002) in that high-leverage firms have more debt-holder and equity-holder conflicts, which increase conservatism levels. The coefficient of high litigation risk ($High\_LIT_{i,t}$) is significantly positive in columns (1) to (4), indicating that firms under high litigation risk adopt more conditional accounting conservatism (Watts 2003).

Overall, we find a statistically and economically significant association between CFO overconfidence and conditional accounting conservatism, supporting Hypothesis 1.

4.4 Robustness tests

So far, our baseline regression results show that there is a negative association between CFO overconfidence and conditional accounting conservatism. In this section, we will conduct a series of tests to mitigate the endogeneity issues in our main findings.

4.4.1 Reverse causality concern

Someone might be concerned that overconfident CFOs might self-select into firms with less conservative accounting rather than have the incentive to reduce conditional accounting conservatism. To address this concern, we lag all the independent variables and control variables in Eq. (12) by one year relative to the conditional accounting conservatism measures. The results are shown in Table 5. $Holder67CFO_{i,t}$ has a significantly negative coefficient in columns (1) and (2), proving that overconfident CFOs are able to reduce future conditional accounting conservatism.

To further mitigate the reverse causality concern, this study uses the PSM-DID method. Following Ahmed and Duellman (2013), we use CFO turnover as an exogenous shock and require that the outgoing CFO was in office for no less than four years, and that the incoming CFO remains in office for no less than three years to satisfy that CFOs have sufficient time to influence firms' decisions. To eliminate the potential influence of CEOs, we remove the

Table 5 The impact of CFO overconfidence on future conditional accounting conservatism

	(1)	(2)
Variable	$C\_score1_{i,t+1}$	$C\_score2_{i,t+1}$
***Holder67CFO*$_{i,t}$**	**−0.010*****	**−0.021*****
	(0.002)	**(0.003)**
Constant	0.359***	0.565***
	(0.020)	(0.028)
Observations	17,074	17,074
Controls in Eq. (12)	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adj. R^2	0.779	0.785

The results of the impact of CFO overconfidence on future conditional accounting conservatism are shown in Table 5. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

simultaneous CEO and CFO turnovers. Our study matches treatment and control groups based on the control variable included in Eq. (12) and uses the one-to-one nearest-neighbor method for which the caliper does not exceed 5% to find the matched sample. The $Treat_i$ equals one if both outgoing CFO is non-overconfident and the incoming CFO is overconfident, and zero if both the outgoing CFO and incoming CFO are non-overconfident. The $Post_{i,t}$ equals one when observations occur in the first year after CFO turnover, and zero when observations occur in the last year before CFO turnover. The DID estimation model is as follows:

$$C\_score_{i,t} = \beta_0 + \beta_1 Treat_i \times Post_{i,t} + Controls + Firm\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{i,t}, \tag{13}$$

where, the interaction term, $Treat_i \times Post_{i,t}$, is our variable of interest. We include firm fixed effects and year fixed effects, so we exclude $Treat_i$ and $Post_{i,t}$ to avoid multiple collinearities. Control variables are consistent with Eq. (12). Detailed variable information is shown in the Appendix.

Panel A of Table 6 shows the results of one-to-one nearest-neighbor PSM. Panel B of Table 6 describes the result of the DID estimation. In the DID test, we use a fixed-effect model to compare the impacts of firms' changing their CFOs from non-overconfident to overconfident and firms' changing their CFOs from non-overconfident to non-overconfident on conditional accounting conservatism decisions. As shown in Panel A of Table 6, the P values of control variables in the matched sample are larger than 0.1, indicating that these control variables are not significantly different between the treatment and control groups in the matched samples. The coefficient on $Treat_i \times Post_{i,t}$ is significantly negative in Panel B of Table 6, suggesting that the negative relationship between CFO overconfidence and conditional accounting conservatism remains under PSM-DID estimation.

4.4.2 Measurement error

Our first overconfidence measure uses 67% as the threshold value. However, some studies adopt other threshold values to measure overconfidence. Thus, we repeat our analysis using an alternative overconfidence proxy. Following Campbell et al. (2011) and Hirshleifer et al. (2012), we change the threshold value of option moneyness such that $Holder100CFO_{i,t}$ ($Holder100CEO_{i,t}$) equals one from the first time that CFOs (CEOs) hold vested options that are at least 100% in the money to the end of their tenure, and zero otherwise. In addition, to rule out the concern that CFOs and CEOs exercise their options late because they are risk-tolerant rather than overconfident, our study, following Huang et al. (2016), controls for CFO and CEO risk tolerance ($CFO\_vege_{i,t}$ and $CEO\_vega_{i,t}$). As shown in Table 7, the $Holder100CFO_{i,t}$ has a significant negative coefficient, suggesting that the negative relationship still holds when using the new proxy of overconfidence and controlling for CFOs' and CEOs' risk tolerance.[13]

4.4.3 The effect of CEO characteristics

Some studies suggest that CFO overconfidence might not independently affect corporate decisions because CFOs employ their decision-making authority under the CEOs' explicit

[13] Although we have used two methods to capture firm-specific conditional accounting conservatism, we also use the method proposed by Basu (1997) to further increase robustness. Untabulated results show that overconfident CFOs tend to recognize good news more promptly than bad news.

Table 6 PSM-DID

Panel A—PSM							
Variable	Unmatched	Mean		Bias		T-test	
	Matched	Treated	Control	%bias	%reduct |bias|	t	p>|t|
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
***Holder67CEO*$_{i,t}$**	**U**	**0.610**	**0.326**	**59.100**		**4.820**	**0.000**
	M	**0.610**	**0.598**	**2.500**	**95.700**	**0.160**	**0.874**
CFO_male$_{i,t}$	U	0.890	0.909	−6.100		−0.510	0.612
	M	0.890	0.890	0.000	100.000	0.000	1.000
***CFO_ownership*$_{i,t}$**	**U**	**0.056**	**0.032**	**22.600**		**2.110**	**0.036**
	M	**0.056**	**0.042**	**13.300**	**41.100**	**0.930**	**0.354**
MTB$_{i,t}$	U	2.717	2.449	16.800		1.250	0.213
	M	2.717	2.789	−4.500	73.300	−0.220	0.824
***SaleGrowth*$_{i,t}$**	**U**	**0.107**	**0.035**	**31.300**		**2.210**	**0.028**
	M	**0.107**	**0.108**	**−0.400**	**98.800**	**−0.020**	**0.984**
VolSale$_{i,t}$	U	0.134	0.136	−2.000		−0.180	0.860
	M	0.134	0.149	−11.300	−477.200	−0.740	0.461
CashFlow$_{i,t}$	U	0.099	0.083	22.300		1.580	0.114
	M	0.099	0.102	−3.100	85.900	−0.250	0.803
FirmSize$_{i,t}$	U	7.679	7.795	−7.700		−0.620	0.538
	M	7.679	7.689	−0.700	91.100	−0.050	0.962
Leverage$_{i,t}$	U	0.208	0.231	−15.500		−1.260	0.209
	M	0.208	0.202	3.600	76.800	0.240	0.814
RDAD$_{i,t}$	U	0.060	0.089	−11.900		−0.780	0.437
	M	0.060	0.049	4.200	64.800	0.760	0.449
Big_four$_{i,t}$	U	0.927	0.919	3.100		0.240	0.807
	M	0.927	0.963	−13.600	−342.800	−1.030	0.307
High_LIT$_{i,t}$	U	0.037	0.085	−20.200		−1.470	0.141
	M	0.037	0.049	−5.100	74.600	−0.380	0.701
UnAC$_{i,t}$	U	0.011	0.016	−12.500		−0.960	0.338
	M	0.011	0.005	12.300	2.000	0.950	0.342
Panel B—DID							
				(1)		(2)	
Variable				*C_score1*$_{i,t}$		*C_score2*$_{i,t}$	
***Treat*$_i$ × *Post*$_{i,t}$**				**−0.022***		**−0.025****	
				(0.012)		**(0.010)**	
Constant				0.919***		0.826***	
				(0.174)		(0.139)	
Observations				120		120	
Controls in Eq. (13)				Yes		Yes	
Firm fixed effects				Yes		Yes	
Year fixed effects				Yes		Yes	
Adj. R^2				0.922		0.949	

Panel A of Table 6 reports the results of PSM. Panel B of Table 6 shows the results of DID. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

Table 7 The impact of CFO overconfidence on conditional accounting conservatism-alternative measurement of overconfidence

	(1)	(2)	(3)	(4)
Variable	$C\_score1_{i,t}$	$C\_score2_{i,t}$	$C\_score1_{i,t}$	$C\_score2_{i,t}$
***Holder100CFO*$_{i,t}$**	**−0.010*** **	**−0.019*** **	**−0.011*** **	**−0.021*** **
	(0.002)	**(0.003)**	**(0.002)**	**(0.003)**
***Holder100CEO*$_{i,t}$**	**−0.011*** **	**−0.017*** **	**−0.010*** **	**−0.018*** **
	(0.002)	**(0.003)**	**(0.002)**	**(0.003)**
***CFO_vega*$_{i,t}$**			**0.001**	**−0.003** **
			(0.001)	**(0.001)**
***CEO_vega*$_{i,t}$**			**−0.001**	**−0.003** **
			(0.001)	**(0.001)**
Constant	0.416***	0.510***	0.490***	0.595***
	(0.015)	(0.028)	(0.019)	(0.033)
Observations	21,388	21,388	18,601	18,601
Other controls in Eq. (12)	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.797	0.752	0.799	0.760

The results of using an alternative overconfidence measure are shown in Table 7. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

or implicit policy direction. For example, Hsieh et al. (2018) and Chyz et al. (2019) find the interactive impact of CEO overconfidence and CFO overconfidence on tax-avoidance decisions, but overconfident CFOs do not have an independent effect on tax avoidance. However, a few studies argue that CFO overconfidence outweighs CEO overconfidence in affecting financing method choices (Malmendier et al. 2022), earnings management (Qiao et al. 2023), and stock price crashes (Qiao et al. 2022).

To examine if there is a joint effect of CFO overconfidence and CEO overconfidence or an independent effect of CFO overconfidence on conditional accounting conservatism, we add the interaction term, $Holder67CFO_{i,t} \times Holder67CEO_{i,t}$, into Eq. (12). As shown in Table 8, the coefficient on $Holder67CFO_{i,t} \times Holder67CEO_{i,t}$ is not significant, suggesting that we do not find a statistically significant joint effect of CFO and CEO overconfidence on conditional accounting conservatism. The coefficients on $Holder67CFO_{i,t}$ and $Holder67CFO_{i,t} + Holder67CFO_{i,t} \times Holder67CEO_{i,t}$ are significantly negative, indicating that overconfident CFOs have an independent effect on conditional accounting conservatism no matter whether CEOs are overconfident or not. These findings are held after controlling for CEO gender ($CEO\_male_{i,t}$) and CEO ownership ($CEO\_ownership_{i,t}$), which are shown in columns (3) and (4).

Table 8 The impact of CEO overconfidence on the relationship between CFO overconfidence and conditional accounting conservatism

Variable	(1) $C\_score1_{i,t}$	(2) $C\_score2_{i,t}$	(3) $C\_score1_{i,t}$	(4) $C\_score2_{i,t}$
***Holder67CFO*$_{i,t}$**	**−0.015*** **	**−0.024*** **	**−0.015*** **	**−0.024*** **
	(0.003)	**(0.005)**	**(0.003)**	**(0.005)**
$Holder67CEO_{i,t}$	−0.011***	−0.021***	−0.012***	−0.021***
	(0.003)	(0.004)	(0.003)	(0.004)
***Holder67CFO*$_{i,t}$ × *Holder67CEO*$_{i,t}$**	**0.002**	**0.005**	**0.002**	**0.005**
	(0.004)	**(0.005)**	**(0.004)**	**(0.005)**
$CFO\_vega_{i,t}$	0.001	−0.003**	0.001	−0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
$CEO\_vega_{i,t}$	−0.001	−0.003**	−0.001	−0.003**
	(0.001)	(0.001)	(0.001)	(0.001)
$CEO\_male_{i,t}$			0.013	0.004
			(0.008)	(0.011)
$CEO\_ownership_{i,t}$			0.000	0.000
			(0.000)	(0.001)
Constant	0.496***	0.599***	0.482***	0.594***
	(0.019)	(0.033)	(0.021)	(0.034)
***Holder67CFO*$_{i,t}$ + *Holder67CFO*$_{i,t}$ × *Holder67CEO*$_{i,t}$**	**−0.013*** **	**−0.019*** **	**−0.012*** **	**−0.019*** **
	(0.002)	**(0.004)**	**(0.002)**	**(0.004)**
Observations	18,824	18,824	18,824	18,824
Other controls in Eq. (12)	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.800	0.761	0.800	0.761

The results of the impact of CEO overconfidence on the relationship between CFO overconfidence and conditional accounting conservatism are shown in Table 8. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

4.4.4 The effect of governance

Someone may argue that the strength of governance might mitigate our documented findings on the negative relationship between CFO overconfidence and conditional accounting conservatism as the board of directors and investors might restrict overconfident CFOs' decisions (Qiao et al. 2022). We examine whether the association between CFO overconfidence and conditional accounting conservatism varies with the strength of governance.

We follow Ahmed and Duellman (2013) to measure strong governance. Firms have strong governance ($StrongCG_{i,t}$) if they meet three of the four criteria listed below: First, the CEO is not simultaneously the Chairman. Second, the percentage of outside directors is greater than the sample's median figure. Third, the institutional ownership percentage is higher than the

Table 9 The impact of strong governance on the relationship between CFO overconfidence and conditional accounting conservatism

	(1)	(2)	(3)	(4)
Variable	$C\_score1_{i,t}$	$C\_score2_{i,t}$	$C\_score1_{i,t}$	$C\_score2_{i,t}$
***Holder67CFO*$_{i,t}$**	**−0.016*****	**−0.025*****	**−0.016*****	**−0.025*****
	(0.003)	**(0.004)**	**(0.003)**	**(0.004)**
Variable	$C\_score1_{i,t}$	$C\_score2_{i,t}$	$C\_score1_{i,t}$	$C\_score2_{i,t}$
$StrongCG_{i,t}$	0.002	0.007	0.002	0.008
	(0.003)	(0.004)	(0.004)	(0.006)
***Holder67CFO*$_{i,t}$ × *StrongCG*$_{i,t}$**			**0.000**	**−0.003**
			(0.004)	**(0.007)**
$CFO\_vega_{i,t}$	0.001	−0.002	0.001	−0.002
	(0.001)	(0.002)	(0.001)	(0.002)
$CEO\_vega_{i,t}$	−0.000	−0.001	−0.000	−0.001
	(0.001)	(0.001)	(0.001)	(0.001)
$CEO\_male_{i,t}$	0.009	0.012	0.009	0.012
	(0.011)	(0.017)	(0.011)	(0.017)
$CEO\_ownership_{i,t}$	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)
Constant	0.577***	0.509***	0.577***	0.508***
	(0.028)	(0.053)	(0.028)	(0.053)
***Holder67CFO*$_{i,t}$ + *Holder67CFO*$_{i,t}$ × *StrongCG*$_{i,t}$**			**−0.016*****	**−0.028*****
			(0.005)	**(0.007)**
Observations	11,361	11,361	11,361	11,361
Other controls in Eq. (12)	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.807	0.769	0.807	0.769

The results of the impact of strong governance on the relationship between CFO overconfidence and conditional accounting conservatism are shown in Table 9. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

sample's median figure as institutional investors significantly affect conditional accounting conservatism (Lin 2016). Fourth, the percentage of inside directors is lower than the median value of the sample. As shown in columns (1) and (2) of Table 9, we additionally control the $StrongCG_{i,t}$ in Eq. (12). $Holder67CFO_{i,t}$ remains a significantly negative coefficient. Besides, we add the interaction term, $Holder67CFO_{i,t} \times StrongCG_{i,t}$, into Eq. (12). As shown in columns (3) and (4), the coefficient on the interaction term is not significant. However, the coefficients on Holder$67CFO_{i,t}$ and $Holder67CFO_{i,t} + Holder67CFO_{i,t} \times StrongCG_{i,t}$ are significantly negative, suggesting that strong governance cannot moderate the association between CFO overconfidence and conditional accounting conservatism. These findings are consistent with the findings of Schrand and Zechman (2012) and Ahmed and Duellman (2013) that governance mechanisms do not mitigate the effect of overconfident managers.

5 Analysis of mechanisms

5.1 CFO overconfidence, conditional accounting conservatism, and conveying information

We hypothesize that overconfident CFOs tend to communicate private information by reducing conditional accounting conservatism because they perceive the market underestimates their firms' performance. Then, our baseline results confirm a robust negative relationship between overconfident CFOs and conditional accounting conservatism. In this section, we further test whether overconfident CFOs can convey private information by reducing conditional accounting conservatism.

First, following prior studies (e.g., Lundholm and Myers 2002), we determine that overconfident CFOs' convey their private information to investors by reducing conditional accounting conservatism if the current stock prices are highly related to future earnings. We use the future earnings response coefficient (FERC) to measure the informativeness of stock prices about future earnings (Shu 2021). To test the impact of accounting conservatism on FERC, we extend the basic FERC measurement as follows:

$$
\begin{aligned}
R_{i,t} = {} & \beta_0 + \beta_1 Earn_{i,t-1} + \beta_2 Earn_{i,t} + \beta_3 Earn_{i,t+3} + \beta_4 R_{i,t+3} + \beta_5 Holder67CFO_{i,t} \\
& + \beta_6 Holder67CFO_{i,t} \times Earn_{i,t-1} + \beta_7 Holder67CFO_{i,t} \times Earn_{i,t} + \beta_8 Holder67CFO_{i,t} \times Earn_{i,t+3} \\
& + \beta_9 Holder67CFO_{i,t} \times R_{i,t+3} + \beta_{10} RevC\_score_{i,t} + \beta_{11} RevC\_score_{i,t} \times Earn_{i,t-1} \\
& + \beta_{12} RevC\_score_{i,t} \times Earn_{i,t} + \beta_{13} RevC\_score_{i,t} \times Earn_{i,t+3} + \beta_{14} RevC\_score_{i,t} \times R_{i,t+3} \\
& + \beta_{15} Holder67CFO_{i,t} \times RevC\_score_{i,t} + \beta_{16} Holder67CFO_{i,t} \times RevC\_score_{i,t} \times Earn_{i,t-1} \\
& + \beta_{17} Holder67CFO_{i,t} \times RevC\_score_{i,t} \times Earn_{i,t} + \beta_{18} Holder67CFO_{i,t} \times RevC\_score_{i,t} \times Earn_{i,t+3} \\
& + \beta_{19} Holder67CFO_{i,t} \times RevC\_score_{i,t} \times R_{i,t+3} + \beta_{20} Holder67CEO_{i,t} + \beta_{21} CFO\_male_{i,t} \\
& + \beta_{22} CFO\_ownership_{i,t} + \beta_{23} CEO\_male_{i,t} + \beta_{24} CEO\_ownership_{i,t} + \beta_{25} MTB_{i,t} + \beta_{26} SaleGrowth_{i,t} \\
& + \beta_{27} Volsale_{i,t} + \beta_{28} FirmSize_{i,t} + \beta_{29} FirmAge_{i,t} + \beta_{30} Leverage_{i,t} + \beta_{31} Invest_{i,t} + \beta_{32} PPE_{i,t} \\
& + \beta_{33} Loss_{i,t} + \beta_{34} Analyst\_number_{i,t} + \beta_{35} CFO\_vega_{i,t} + \beta_{36} CEO\_vega_{i,t} + \beta_{37} StrongCG_{i,t} \\
& + Firm\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{i,t},
\end{aligned}
\tag{14}
$$

where, the dependent variable is the stock return ($R_{i,t}$). We include last year's earnings per share ($Earn_{i,t-1}$), earnings per share ($Earn_{i,t}$), the sum of earnings per share for fiscal years t+1 to t+3 ($Earn_{i,t+3}$), the sum of stock returns for fiscal years t+1 to t+3 ($R_{i,t+3}$) and CFO overconfidence ($Hold67CFO_{i,t}$) in the regressions. To easily interpret our results, we multiply $C\_score_{i,t}$ (including $C\_score1_{i,t}$ and $C\_score2_{i,t}$) by a negative one to generate $RevC\_score_{i,t}$ (including $RevC\_score1_{i,t}$ and $RevC\_score2_{i,t}$). The greater the value of $RevC\_score_{i,t}$ the lower the conditional accounting conservatism. We also include interaction terms among them. The variable of interest is the triple interaction term, $Hold67CFO_{i,t} \times RevC\_score_{i,t} \times Earn_{i,t+3}$. In addition, following prior studies (e.g., Shu 2021) control CEO overconfidence ($Hold67CEO_{i,t}$), CFO gender ($CFO\_male_{i,t}$), CFO ownership ($CFO\_ownership_{i,t}$), CEO gender ($CEO\_male_{i,t}$), CEO ownership ($CEO\_ownership_{i,t}$), Market to book ratio ($MTB_{i,t}$), Sales growth ($SaleGrowth_{i,t}$), Sales volatility ($VolSale_{i,t}$), Firm Size ($FirmSize_{i,t}$), Firm age ($FirmAge_{i,t}$), Leverage ($Leverage_{i,t}$), Investment ($Invest_{i,t}$), Property, Plant & Equipment ($PPE_{i,t}$), Negative earnings per share ($Loss_{i,t}$), Number of the analyst ($Analyst\_number_{i,t}$), CFO risk tolerance ($CFO\_vega_{i,t}$), CEO risk tolerance ($CEO\_vega_{i,t}$), and Strong governance ($StrongCG_{i,t}$). Detailed variable measurements are provided in the Appendix.

Table 10 The impact of overconfident CFOs' conditional accounting conservatism decision on earnings informativeness

	(1)	(2)
Variable	$R_{i,t}$	$R_{i,t}$
$Earn_{i,t-1}$	−0.170	−0.074
	(0.223)	(0.335)
$Earn_{i,t}$	−0.319	0.535**
	(0.222)	(0.233)
$Earn_{i,t+3}$	0.551***	0.674***
	(0.094)	(0.115)
$R_{i,t+3}$	−0.154***	−0.150***
	(0.020)	(0.028)
$Holder67CFO_{i,t}$	−0.060**	−0.025
	(0.030)	(0.043)
$Holder67CFO_{i,t} \times Earn_{i,t-1}$	−0.023	−0.502
	(0.390)	(0.488)
$Holder67CFO_{i,t} \times Earn_{i,t}$	0.650**	0.598
	(0.299)	(0.456)
$Holder67CFO_{i,t} \times Earn_{i,t+3}$	0.169	0.238*
	(0.118)	(0.142)
$Holder67CFO_{i,t} \times R_{i,t+3}$	0.031	0.005
	(0.023)	(0.031)
$RevC\_score1_{i,t}$	0.727***	
	(0.144)	
$RevC\_score1_{i,t} \times Earn_{i,t-1}$	1.625*	
	(0.886)	
$RevC\_score1_{i,t} \times Earn_{i,t}$	−1.226	
	(0.754)	
$RevC\_score1_{i,t} \times Earn_{i,t+3}$	0.116	
	(0.406)	
$RevC\_score1_{i,t} \times R_{i,t+3}$	−0.028	
	(0.100)	
$Holder67CFO_{i,t} \times RevC\_score1_{i,t}$	−0.360***	
	(0.135)	
$Holder67CFO_{i,t} \times RevC\_score1_{i,t} \times Earn_{i,t-1}$	−0.499	
	(1.880)	
$Holder67CFO_{i,t} \times RevC\_score1_{i,t} \times Earn_{i,t}$	−1.096	
	(1.645)	
$\boldsymbol{Holder67CFO_{i,t} \times RevC\_score1_{i,t} \times Earn_{i,t+3}}$	**1.106***	
	(0.623)	
$Holder67CFO_{i,t} \times RevC\_score1_{i,t} \times F_{i,t+3}$	0.107	
	(0.139)	
$RevC\_score2_{i,t}$		−1.114***
		(0.123)
$RevC\_score2_{i,t} \times Earn_{i,t-1}$		0.448
		(0.929)
$RevC\_score2_{i,t} \times Earn_{i,t}$		1.529*

Table 10 (continued)

	(1)	(2)
		(0.780)
$RevC\_score2_{i,t} \times Earn_{i,t+3}$		0.348
		(0.379)
$RevC\_score2_{i,t} \times R_{i,t+3}$		0.037
		(0.128)
$Holder67CFO_{i,t} \times RevC\_score2_{i,t}$		−0.248*
		(0.135)
$Holder67CFO_{i,t} \times RevC\_score2_{i,t} \times Earn_{i,t-1}$		−1.039
		(1.313)
$Holder67CFO_{i,t} \times RevC\_score2_{i,t} \times Earn_{i,t}$		−0.498
		(1.397)
$\boldsymbol{Holder67CFO_{i,t} \times RevC\_score2_{i,t} \times Earn_{i,t+3}}$		**0.854***
		(0.496)
$Holder67CFO_{i,t} \times RevC\_score2_{i,t} \times R_{i,t+3}$		0.013
		(0.146)
Constant	1.551***	1.181***
	(0.272)	(0.274)
Observations	5,264	5,264
Controls in Eq. (14)	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adj. R^2	0.340	0.378

The results of the impact of overconfident CFOs' conditional accounting conservatism decision on earnings informativeness are shown in Table 10. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

As shown in Table 10, the coefficients on the $Holder67CFO_{i,t} \times RevC\_score1_{i,t} \times Earn_{i,t+3}$ and $Holder67CFO_{i,t} \times RevC\_score2_{i,t} \times Earn_{i,t+3}$ are significantly positive in columns (1) and (2), respectively. These findings show that overconfident CFOs who reduce conditional accounting conservatism increase earnings informativeness, which is consistent with our prediction that overconfident CFOs tend to convey information by reducing conditional accounting conservatism.

In addition, we predict that the ultimate purpose of overconfident CFOs conveying information via reducing conditional accounting conservatism is to improve financial flexibility as they are the principal executive in charge of financing (Malmendier et al. 2022). This notion will be approved if we can find that overconfident CFOs reduce precautionary motives to save cash by reducing conditional accounting conservatism. Specifically, as suggested by previous studies, when capital markets are frictionless, firms have less incentive to hold cash if they are able to obtain external funds (Miller and Orr 1966). However, firms' precautionary motives increase when they face uncertainty about future access to external funds, thereby holding more cash (Opler et al. 1999; Denis and Sibilkov 2010). Overconfident managers overestimate the cost of obtaining external funds (Malmendier et al. 2022) and hold more cash for future investment (Chen et al. 2020). When firms adopt low-conditional accounting conservatism,

investors will get more useful information for predicting future cash flows. This is a situation where firms can reduce the cost of external financing, and overconfident CFOs alleviate incentives to hold more cash (Lee 2010). Accordingly, we expect overconfident CFOs to reduce precautionary motives to save cash by adopting low- conditional accounting conservatism. We test this prediction using this model:

$$\begin{aligned} Cash_{i,t} &= \beta_0 + \beta_1 Holder67CFO_{i,t} + \beta_2 RevC\_score_{i,t} + \beta_3 Holder67CFO_{i,t} \times RevC\_score_{i,t} \\ &+ \beta_4 Holder67CEO_{i,t} + \beta_5 CFO\_male_{i,t} + \beta_6 CFO\_ownership_{i,t} + \beta_7 CEO\_male_{i,t} \\ &+ \beta_8 CEO\_ownership_{i,t} + \beta_9 MTB_{i,t} + \beta_{10} VolCashFlow_{i,t} + \beta_{11} Vwretd_{i,t} \\ &+ \beta_{12} SdVwretd_{i,t} + \beta_{13} NWC_{i,t} + \beta_{14} CAPEX_{i,t} + \beta_{15} ACQ_{i,t} + \beta_{16} R\&D_{i,t} \\ &+ \beta_{17} FirmSize_{i,t} + \beta_{18} Leverage_{i,t} + \beta_{19} Dividend_{i,t} + \beta_{20} CFO\_vega_{i,t} \\ &+ \beta_{21} CEO\_vega_{i,t} + \beta_{22} StrongCG_{i,t} + Firm\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{i,t}, \end{aligned} \tag{15}$$

where, the dependent variable is Cash ($Cash_{i,t}$). The variable of interest is the interaction term, $Hold67CFO_{i,t} \times RevC\_score_{i,t}$. We follow prior studies (e.g., Lee 2010) to control CEO overconfidence ($Hold67CEO_{i,t}$), CFO gender ($CFO\_male_{i,t}$), CFO ownership ($CFO\_ownership_{i,t}$), CEO gender ($CEO\_male_{i,t}$), CEO ownership ($CEO\_ownership_{i,t}$), Market to book ratio ($MTB_{i,t}$), Volatility of cash flow ($VolCashFlow_{i,t}$), Value-weighted 12-month market-adjusted returns ($Vwretd_{i,t}$), Returns volatility ($SdVwretd_{i,t}$), Net working capital ($NWC_{i,t}$), Capital expenditure ($CAPEX_{i,t}$), Acquisition expenditure ($ACQ_{i,t}$), Research and development expenditure ($R\&D_{i,t}$), Firm Size ($FirmSize_{i,t}$), Leverage ($Leverage_{i,t}$), Dividend payer ($Dividend_{i,t}$), CFO risk tolerance ($CFO\_vega_{i,t}$), CEO risk tolerance ($CEO\_vega_{i,t}$) and Strong governance ($StrongCG_{i,t}$). Detailed variable measurements are provided in the Appendix.

In columns (1) and (2) of Table 11, we find that $Holder67CEO_{i,t}$ and $Holder67CFO_{i,t}$ have a significantly positive coefficient, respectively. These findings suggest that overconfident managers have more incentives to hold cash, which is consistent with the finding of Chen et al. (2020). The coefficient of $Holder67CFO_{i,t} \times RevC\_score1_{i,t}$ ($Holder67CFO_{i,t} \times RevC\_score2_{i,t}$) is significantly negative in column (3) (column (4)), suggesting that overconfident CFOs reduce the incentive to hold cash by reducing conditional accounting conservatism. Overall, this evidence indicates that overconfident CFOs reduce precautionary motives to save cash, as less conditional accounting conservatism conveys more primary information and increases firms' financial flexibility.

5.2 Alternative explanation

Someone might contend that overconfident CFOs recognize good news more quickly than bad news due to their compensation concerns. From an agency perspective, managers' stock and option holdings have been considered useful tools for aligning managers' and shareholders' interests (Bergstresser and Philippon 2006). Nonetheless, substantial evidence suggests that equity incentives may have the unintended consequence of motivating managers to manipulate the short-term stock price rather than enhancing the firms' actual profitability (e.g., Peng and Röell 2008; Chava and Purnanandam 2010; Jiang et al. 2010). Specifically, Chava and Purnanandam (2010) and Jiang et al. (2010) suggest a positive association between CFO equity incentives and earnings management, and CFO equity incentives outweigh CEO equity incentives in affecting earnings management. Kim et al. (2011) extend this line of research by showing that CFO equity incentives dominate CEO equity incentives in hoarding bad news.

Table 11 The impact of overconfident CFOs' conditional accounting conservatism decision on cash holding

	(1)	(2)	(3)	(4)
Variable	$Cash_{i,t}$	$Cash_{i,t}$	$Cash_{i,t}$	$Cash_{i,t}$
$Holder67CFO_{i,t}$		0.011***	0.007**	0.005
		(0.003)	(0.003)	(0.003)
$RevC\_score1_{i,t}$			0.106***	
			(0.015)	
$\boldsymbol{Holder67CFO_{i,t} \times RevC\_score1_{i,t}}$			**−0.036*** **	
			(0.013)	
$RevC\_score2_{i,t}$				0.080***
				(0.011)
$\boldsymbol{Holder67CFO_{i,t} \times RevC\_score2_{i,t}}$				**−0.022** **
				(0.010)
$Holder67CEO_{i,t}$	0.005*	0.001	0.000	0.000
	(0.003)	(0.003)	(0.003)	(0.003)
Constant	0.466***	0.463***	0.516***	0.505***
	(0.058)	(0.058)	(0.059)	(0.060)
Observations	11,568	11,568	11,568	11,568
Controls in Eq. (15)	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.817	0.817	0.819	0.819

The results of the impact of overconfident CFOs' conditional accounting conservatism decision on cash holding are shown in Table 11. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

However, a few studies suggest that managerial overconfidence does not lead to agency problems because overconfident managers believe that their decisions are in the best interest of shareholders. For example, Kim et al. (2016) suggest that overconfident CEOs overestimate the future cash flows of negative NPV projects and continue to execute them. Qiao et al. (2023) find that overconfident CFOs overestimate the stability of their firms' performance and demonstrate their belief to investors by smoothing earnings. To test whether overconfident CFOs reduce conditional accounting conservatism because they have greater equity incentives than their non-overconfident peers, we examine the moderating effect of CFO equity incentives on the relationship between CFO overconfidence and conditional accounting conservatism.

$$\begin{aligned} C\_score_{i,t} = {} & \beta_0 + \beta_1 Holder67CFO_{i,t} + \beta_2 CFO\_equityincentive_{i,t} + \beta_3 Holder67CFO_{i,t} \times CFO\_equityincentive_{i,t} \\ & + \beta_4 Holder67CEO_{i,t} + \beta_5 CFO\_male_{i,t} + \beta_6 CFO\_ownership_{i,t} \\ & + \beta_7 CEO\_male_{i,t} + \beta_8 CEO\_ownership_{i,t} + \beta_9 MTB_{i,t} + \beta_{10} SaleGrowth_{i,t} \\ & + \beta_{11} Volsale_{i,t} + \beta_{12} CashFlow_{i,t} + \beta_{13} FirmSize_{i,t} + \beta_{14} Leverage_{i,t} \\ & + \beta_{15} RDAD_{i,t} + \beta_{16} Big\_four_{i,t} + \beta_{17} High\_LIT_{i,t} + \beta_{18} UnAC_{i,t} + \beta_{19} CFO\_vega_{i,t} \\ & + \beta_{20} CEO\_vega_{i,t} + \beta_{21} StrongCG_{i,t} + Firm\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{i,t}, \end{aligned} \tag{16}$$

where, $CFO\_equityincentive_{i,t}$ is the CFO equity incentive proxy; $Holder67CFO_{i,t} \times CFO\_equityincentive_{i,t}$ is the variable of interest; β_3 captures the moderating effect of CFO equity

incentive on the relationship between CFO overconfidence and conditional accounting conservatism. If the β_3 is significantly negative, overconfident CFOs with high equity incentives are more likely to reduce conditional accounting conservatism. Detailed variable measurements are provided in the Appendix.

As shown in Table 12, the coefficient on $Holder67CFO_{i,t} \times CFO\_equityincentive_{i,t}$ is not significant in columns (1) and (2). There is no evidence to suggest that the CFO equity incentive stimulates the negative relationship between CFO overconfidence and conditional accounting conservatism. Overall, we rule out this alternative explanation and further consolidate our main mechanism.

6 CFO power, CFO overconfidence, and conditional accounting conservatism–regression analyses of Hypothesis 2

This section will examine the moderating effect of CFO power on the relationship between CFO overconfidence and conditional accounting conservatism. According to prior studies, our primary measure of CFO power is based on their compensation (e.g., Finkelstein 1992; Bebchuk et al. 2011; Florackis and Sainani 2021). $CFO\_rank_{i,t}$, is an indicator variable that equals one if the CFO is among the three highest-paid managers, and zero otherwise (Florackis and Sainani 2021). This rank represents the value the board assigns to the CFO and the CFO's authority and responsibility within the firm (Bebchuk et al. 2011; Feng et al. 2011; Baker et al. 2019).[14] In addition to using CFO compensation, we also use a measure that reflects the CFO's position in the management hierarchy to capture CFO power. In particular, earlier research has noted that managers who serve on boards are more likely to influence board and management team decisions (e.g., Beck and Mauldin 2014; Baker et al. 2019). Thus, the CFO board membership is widely used to measure CFO power (e.g., Caglio et al. 2018; Baker et al. 2019; Florackis and Sainani 2021). Besides, since the CEO sets the tone at the top, the close relationship between the CFO and the CEO increases the possibility and power of the CFO to participate in decision-making (e.g., Hsieh et al. 2018). The close relationship between the CEO and CFO is reflected in the long overlap in their tenure (Zenger and Lawrence 1989; Ancona and Caldwell 1992; Zhang 2019; Bowen et al. 2022). To reflect the CFO's position in the management team, we create a dummy variable called $CFO\_PowerAlter_{i,t}$. It equals one if the CFO meets at least one of the following two conditions: being a member of the board of directors; working together with the CEO for a long time; otherwise, it equals zero.

[14] We use two other measures of CFO relative pay share within top management teams to increase the reliability of using CFO pay to capture CFO power. First, $CFO\_topquartile_{i,t}$, is an indicator variable that equals one if the total CFO compensation is divided by the total compensation of the top three executives, excluding the CEO and CFO, in the top quartile of the sample, and zero otherwise (Baker et al. 2019). Second, $CFO\_payslice_{i,t}$ equals CFO total compensation to the top five executives' total compensation. If fewer than five executives' compensations are reported, we assume that the remaining top five unreported executives get the same level of salary as the lowest-paid executive among those disclosed (Bebchuk et al. 2011; Feng et al. 2011). Using the above two CFO power measures does not qualitatively alter our documented findings. The results are not presented for brevity.

Table 12 The impact of CFO equity incentive on the relationship between CFO overconfidence and conditional accounting conservatism

	(1)	(2)
Variable	$C\_score1_{i,t}$	$C\_score2_{i,t}$
$Holder67\_CFO_{i,t}$	−0.017***	−0.025***
	(0.004)	(0.005)
$CFO\_equityincentive_{i,t}$	−0.016***	−0.011***
	(0.003)	(0.004)
$\boldsymbol{Holder67CFO_{i,t} \times CFO\_equityincentive_{i,t}}$	**0.006**	**0.003**
	(0.004)	**(0.005)**
Constant	0.567***	0.492***
	(0.029)	(0.052)
Observations	11,710	11,710
Controls in Eq. (16)	Yes	Yes
Firm fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
Adj. R^2	0.801	0.765

The results of the impact of CFO equity incentive on the relationship between CFO overconfidence and conditional accounting conservatism are shown in Table 12. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

$$
\begin{aligned}
C\_score_{i,t} = {} & \beta_0 + \beta_1 Holder67CFO_{i,t} + \beta_2 CFO\_power_{i,t} + \beta_3 Holder67CFO_{i,t} \times CFO\_power_{i,t} \\
& + \beta_4 Holder67CEO_{i,t} + \beta_5 CFO\_male_{i,t} + \beta_6 CFO\_ownership_{i,t} \\
& + \beta_7 CEO\_male_{i,t} + \beta_8 CEO\_ownership_{i,t} + \beta_9 MTB_{i,t} + \beta_{10} SaleGrowth_{i,t} \\
& + \beta_{11} Volsale_{i,t} + \beta_{12} CashFlow_{i,t} + \beta_{13} FirmSize_{i,t} + \beta_{14} Leverage_{i,t} \\
& + \beta_{15} RDAD_{i,t} + \beta_{16} Big\_four_{i,t} + \beta_{17} High\_LIT_{i,t} + \beta_{18} UnAC_{i,t} + \beta_{19} CFO\_vega_{i,t} \\
& + \beta_{20} CEO\_vega_{i,t} + \beta_{21} StrongCG_{i,t} + Firm\ fixed\ effects + Year\ fixed\ effects + \varepsilon_{i,t},
\end{aligned}
\tag{17}
$$

where, $CFO\_power_{i,t}$ is one of two CFO power proxies ($CFO\_rank_{i,t}$ and $CFO\_PowerAlter_{i,t}$); $Holder67CFO_{i,t} \times CFO\_power_{i,t}$ is the variable of interest; β_3 captures the moderating effect of CFO power on the relationship between CFO overconfidence and conditional accounting conservatism. If the β_3 is significantly negative, overconfident CFOs with more power are more likely to reduce conditional accounting conservatism. Detailed variable measurements are provided in the Appendix.

In columns (1) and (2) of Table 13, the coefficient on $Holder67CFO_{i,t} \times CFO\_rank_{i,t}$ is significantly negative, suggesting that the CFO power enhances the negative relationship between CFO overconfidence and conditional accounting conservatism, which is in line with our second hypothesis (H2). The results are broadly similar when we use $CFO\_PowerAlter_{i,t}$ to measure CFO power.

Table 13 The impact of CFO power on the relationship between CFO overconfidence and conditional accounting conservatism

	(1)	(2)	(3)	(4)
Variable	$C\_score1_{i,t}$	$C\_score2_{i,t}$	$C\_score1_{i,t}$	$C\_score2_{i,t}$
$Holder67CFO_{i,t}$	−0.013***	−0.018***	−0.021***	−0.020***
	(0.004)	(0.005)	(0.004)	(0.004)
$CFO\_rank_{i,t}$	0.006**	0.014***		
	(0.003)	(0.004)		
$\boldsymbol{Holder67CFO_{i,t} \times CFO\_rank_{i,t}}$	**−0.007***	**−0.015*****		
	(0.004)	**(0.005)**		
$CFO\_PowerAlter_{i,t}$			0.007**	0.013***
			(0.003)	(0.003)
$\boldsymbol{Holder67CFO_{i,t} \times CFO\_PowerAlter_{i,t}}$			**0.005**	**−0.010****
			(0.004)	**(0.005)**
Constant	0.566***	0.484***	0.614***	0.483***
	(0.030)	(0.053)	(0.032)	(0.051)
Observations	10,679	10,679	11,890	11,890
Controls in Eq. (17)	Yes	Yes	Yes	Yes
Firm fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
Adj. R^2	0.804	0.764	0.743	0.764

The results of the impact of CFO power on the relationship between CFO overconfidence and conditional accounting conservatism are shown in Table 13. The standard errors clustering at the firm level are displayed in parentheses. Detailed variable information is shown in Appendix. *, **, and *** represent significance levels of 0.10, 0.05, and 0.01, respectively. Variables of interest are marked in bold

7 Conclusion

Our study provides statistically and economically significant evidence that overconfident CFOs tend to use less conditional accounting conservatism than non-overconfident CFOs, especially when they have great power. To address the potential endogeneity problems, we use the PSM-DID test to rule out the concern that overconfident CFOs self-select into firms with a low level of conditional accounting conservatism. Besides, we use an alternative overconfidence measurement and consider the effects of risk tolerance, CEO characteristics, and governance. These robustness tests show the consistency and reliability of our main findings. In the mechanism tests, we prove that overconfident CFOs who reduce conditional accounting conservatism aim to increase earnings informativeness and decrease precautionary motives rather than pursue private benefit.

Our findings contribute significantly to literature and theory. These findings extend the growing literature on the influence of CFO overconfidence on corporate decisions and provide a new understanding of the determinants of conditional accounting conservatism. Our study extends Ahmed and Duellman (2013), by showing that CFO overconfidence can determine asymmetric recognition of good and bad news. Theoretically, our findings provide more empirical support for the combination of upper echelons and overconfidence theories in explaining CFO behavior. Besides, we find that overconfident CFOs with high power are more likely to reduce conditional accounting conservatism, supporting the updated upper echelons theory. We rule out the agency theory-based view that overconfident CFOs reduce

conservative accounting information for their own benefit. We suggest that overconfident CFOs believe they act in the best interests of shareholders by reducing conditional accounting conservatism to increase earnings informativeness and financial flexibility.

Our findings also have great implications for practice and policy. For policymakers, our findings provide more evidence from a CFO overconfidence perspective for the current discussion over FASB and IASB's decisions, which removed conservatism from the joint conceptual framework. Furthermore, our findings can assist investors in better comprehending CFO overconfidence and bridge the gap between academic and practical understandings of managerial rationality.

Given that the effect of CFO overconfidence has received little attention within the current literature and CFOs have a growing role in firms' strategic decision-making (e.g., Chen et al. 2022; Malmendier et al. 2022; Qiao et al. 2023), we suggest that future studies pay more attention to the effect of CFO overconfidence as well as the joint effect of CEO overconfidence and CFO overconfidence on corporate decision-making.

Appendix: Variable information

Variable name	Variable measurement	Data source
Dependent variables		
Conditional Accounting Conservatism ($C\_score1_{i,t}$)	The method of Khan and Watts (2009). Detailed information is provided in Sect. 3.2.1	CCM; CRSP
Conditional Accounting Conservatism ($C\_score2_{i,t}$)	The method of Banker et al. (2016). Detailed information is provided in Sect. 3.2.1	CCM; CRSP
Independent variable		
CFO Overconfidence ($Holder67CFO_{i,t}$)	The method of Campbell et al. (2011) and Chen et al. (2022). Detailed information is provided in Sect. 3.2.2	ExecuComp
Control variables		
CEO Overconfidence ($Holder67CEO_{i,t}$)	The method of Campbell et al. (2011) and Chen et al. (2022). Detailed information is provided in Sect. 3.2.2	ExecuComp
CFO gender ($CFO\_male_{i,t}$)	An indicator variable that equals one if CFO is male, and zero otherwise (Francis et al. 2015)	ExecuComp
CFO ownership ($CFO\_ownership_{i,t}$)	The percentage of share outstanding excluded options held by the CFO (LaFond and Watts 2008)	ExecuComp
Market to book ratio ($MTB_{i,t}$)	Equity market value divided by equity book value (Ahmed and Duellman 2013)	CCM
Sales growth ($SaleGrowth_{i,t}$)	The percentage of annual growth in total sales (Ahmed and Duellman 2013)	CCM
Sales volatility ($VolSale_{i,t}$)	The standard deviation of sales measured from fiscal year t-5 to fiscal year t-1 deflated by the total asset (Wang et al. 2018)	CCM
Cash Flow ($CashFlow_{i,t}$)	Cash flow divided by total assets (Hsieh et al. 2014)	CCM
Firm Size ($FirmSize_{i,t}$)	The natural logarithm of total assets (Jiang et al. 2010)	CCM

Variable name	Variable measurement	Data source
Leverage ($Leverage_{i,t}$)	Total debt divided by total assets (Ahmed and Duellman 2013)	CCM
Research and development expense and advertising expense ($RDAD_{i,t}$)	Total research and development expense plus advertising expense deflated by total sales (Ahmed and Duellman 2013)	CCM
Audit firm ($Big\_four_{i,t}$)	An indicator variable that equals one if the audit firm belongs to one of the big four auditor firms, Deloitte, EY, KPMG, and PwC, and zero otherwise	CCM
High litigation risk ($High\_LIT_{i,t}$)	An indicator variable that equals one if firms' litigation risk is in the top decile of the sample, and zero otherwise (Gao et al. 2020). The coefficients from the model (2) in Table 7 of Kim and Skinner (2012) are used to calculate the litigation risk	CCM; CRSP
Unconditional accounting conservatism ($UnAC_{i,t}$)	Income before extraordinary items minus cash flows from operations plus depreciation expense divided by total assets, and averaged over the preceding three years, multiplied by negative one (Ahmed et al. 2002)	CCM
Additional variables used in robustness tests		
$Treat_i$	An indicator variable that equals one if the outgoing CFO is non-overconfident and the incoming CFO is overconfident, and zero if both the outgoing CFO and incoming CFO are non-overconfident	ExecuComp
$Post_{i,t}$	An indicator variable that equals one when observations occur in the first year after CFO turnover, and zero when observations occur in the last year before CFO turnover	ExecuComp
Alternative CFO Overconfidence measurement ($Holder100CFO_{i,t}$)	An indicator variable that equals one from the first time that CFOs hold vested options that are at least 100% in the money to the end of their tenure, and zero otherwise (Hirshleifer et al. 2012)	ExecuComp
Alternative CEO Overconfidence measurement ($Holder100CEO_{i,t}$)	An indicator variable that equals one from the first time that CEOs hold vested options that are at least 100% in the money to the end of their tenure, and zero otherwise (Hirshleifer et al. 2012)	ExecuComp
CFO risk tolerance ($CFO\_vega_{i,t}$)	Natural logarithm of CFOs' vega plus one (Huang et al. 2016). Vega is measured following the method of Core and Guay (2002)	CRSP
CEO risk tolerance ($CEO\_vega_{i,t}$)	Natural logarithm of CEOs' vega plus one (Huang et al. 2016). Vega is measured following the method of Core and Guay (2002)	CRSP
CEO gender ($CEO\_male_{i,t}$)	An indicator variable that equals one if CEO is male, and zero otherwise (Francis et al. 2015)	ExecuComp
CEO ownership ($CEO\_ownership_{i,t}$)	The percentage of share outstanding excluded options held by the CEO (LaFond and Watts 2008)	ExecuComp

Variable name	Variable measurement	Data source
Strong governance ($StrongCG_{i,t}$)	Firms have strong governance if they meet three of the four criteria listed below: First, the CEO is not simultaneously the Chairman. Second, the percentage of outside directors is greater than the sample's median figure. Third, the institutional ownership percentage is more than the sample's median figure. Fourth, the percentage of inside directors is lower than the median value of the sample (Ahmed and Duellman 2013)	Thomson Reuters Institutional (13f) Holdings; BoardEx
Additional variables used in the analysis of mechanisms		
Low conditional accounting conservatism ($RevC\_score1_{i,t}$)	The $C\_score1_{i,t}$ multiply by −1. The higher value of $RevC\_score1_{i,t}$ indicates low conditional accounting conservatism	CCM; CRSP
Low conditional accounting conservatism ($RevC\_score2_{i,t}$)	The $C\_score2_{i,t}$ multiply by −1. The higher value of $RevC\_score2_{i,t}$ indicates low conditional accounting conservatism	CCM; CRSP
Stock return ($R_{i,t}$)	The annual buy-and-hold stock return (Shu 2021)	CRSP
Last year's earnings per share ($Earn_{i,t-1}$)	Earnings per share for fiscal year t-1 scaled by the stock price at the beginning of year t (Shu 2021)	CCM
Earnings per share ($Earn_{i,t}$)	Earnings per share for fiscal year t scaled by the stock price at the beginning of year t (Shu 2021)	CCM
The sum of earnings per share for fiscal year t + 1 to t + 3 ($Earn_{i,t+3}$)	The sum of earnings per share scaled by the stock price at the beginning of year t from fiscal year t + 1 to t + 3 (Shu 2021)	CCM
The sum of stock return for fiscal year t + 1 to t + 3 ($R_{i,t+3}$)	The sum of annual buy-and-hold stock return from fiscal year t + 1 to t + 3 (Shu 2021)	CRSP
Firm age ($FirmAge_{i,t}$)	The sum of years from the firm that appears in the Compustat database (Shu 2021)	Compustat
Investment ($Invest_{i,t}$)	R&D expenses plus capital expenditures minus sales of fixed assets scaled by total assets (Shu 2021)	CCM
Property, Plant & Equipment ($PPE_{i,t}$)	The net property, plant, and equipment scaled by total assets (Shu 2021)	CCM
Negative earnings per share ($Loss_{i,t}$)	An indicator variable that equals one if the firm has negative earnings per share, zero otherwise (Shu 2021)	CCM
Number of analysts ($Analyst\_number_{i,t}$)	The natural logarithm of one plus the number of analysts (Shu 2021)	I/B/E/S
Cash ($Cash_{i,t}$)	The sum of cash and cash equivalents scaled by total assets (Lee 2010)	CCM
Volatility of cash flow ($VolCashFlow_{i,t}$)	The standard deviation of cash flow measured from fiscal year t-5 to fiscal year t-1 deflated by the total asset (Wang et al. 2018)	CCM
Value-weighted 12-month market-adjusted returns ($Vwretd_{i,t}$)	Value-weighted 12-month market-adjusted returns (Lee 2010)	CRSP
Returns volatility ($SdVwretd_{i,t}$)	12-month market-adjusted returns volatility (Lee 2010)	CRSP

Variable name	Variable measurement	Data source
Net working capital ($NWC_{i,t}$)	Working capital less cash scaled by total assets (Lee 2010)	CCM
Capital expenditure ($CAPEX_{i,t}$)	Capital expenditure scaled by total assets (Lee 2010)	CCM
Acquisition expenditure ($ACQ_{i,t}$)	Acquisition expenditure scaled by total assets (Lee 2010)	CCM
Research and development expenditure ($R\&D_{i,t}$)	Research and development expenditure scaled by total assets (Lee 2010)	CCM
Dividend payer ($Dividend_{i,t}$)	An indicator variable that equals one the firm is a dividend payer, and zero otherwise (Lee 2010)	CCM
CFO equity incentive ($CFO\_equityincentive_{i,t}$)	ONEPCT/(ONEPCT + Salary + Bonus). ONEPCT refers to the dollar change in the value of the CFOs' stock and option holdings as a result of a 1% increase in the firm stock price (Bergstresser and Philippon 2006)	ExecuComp
Additional variables used in the analysis of CFO power		
CFO power ($CFO\_rank_{i,t}$)	An indicator variable that equals one if the CFO is among the three highest-paid managers, and zero otherwise (Florackis and Sainani 2021)	ExecuComp
Alternative CFO power measurement ($CFO\_PowerAlter_{i,t}$)	An indicator variable that equals one if the CFO meets at least one of the following two conditions: being a member of the board of directors; working together with the CEO for a long time; otherwise, it equals zero (Florackis and Sainani 2021; Bowen et al. 2022)	ExecuComp

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Declarations

Conflict of interest The authors have no relevant financial or non-financial interests to disclose.

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