

# **How Relative Performance Evaluation Affects Accounting Conservatism: A Tournament Perspective**

## **Abstract**

We investigate whether the relative performance evaluation (RPE) in compensation contracts affects firms' conservative financial reporting. Using a propensity score matching approach, we show that accounting-based RPE firms exhibit less timely loss recognition than non-RPE and equity-based RPE firms. In addition, we find firms that performed poorly in the earlier years of the performance measurement period delay loss recognition to exceed their peers' performance. Thus, we document that less conservative reporting enables firms to meet or barely surpass peer performance to win the tournament. We also find that the negative association between RPE usage and accounting conservatism is more pronounced when less capable CEOs' experienced a decrease in external job opportunities after adopting the Inevitable Disclosure Doctrine. Overall, our findings offer new insights into the consequences of RPE usage and provide further evidence that compensation contracting is a determinant of accounting conservatism.

Keywords: Relative performance evaluation, accounting conservatism, tournament incentive

JEL Classifications: G30, J33

## 1. Introduction

An increasing number of U.S. corporations are adopting relative performance evaluation (RPE) in executive pay packages by benchmarking their own performance in accordance with a group of peer firms to determine performance-based compensation (Bettis, Bizjak, Coles, and Young, 2014; Gong, Li, and Yin, 2019; Bizjak, Kalpathy, Li, and Young, 2022; Do, Zhang, and Zuo, 2022; Hung and Shi, 2024; Tice, 2024).<sup>1</sup> The literature suggests that RPE affects managerial behavior and corporate decisions. On the one hand, properly designed RPE schemes motivate managers to exert greater efforts to achieve superior performance. Such benefits are mainly derived from more efficient performance assessments following the removal of the common risks faced by focal firms and their peers (Holmstrom, 1982; Holmstrom and Milgrom, 1987). On the other hand, RPE creates incentives for managers to beat their peers in tournaments (Lazear and Rosen, 1981; Nalebuff and Stiglitz, 1983; Hannan, Krishnan, and Newman, 2008). Existing studies document that RPE based on unsuitable peers with unequal managerial abilities has negative outcomes. Some examples of these negative consequences include adverse competition outcomes such as managerial slack (O'keeffe, Viscusi and Zeckhauser, 1984), excessive risk-taking (Hvide, 2002), and sabotaging or colluding with peers (Dye, 1984; Gibbons and Murphy, 1990; Aggarwal and Samwick, 1999; Bloomfield, Marvao, and Spagnolo, 2019).

Recent studies suggest that RPE influences financial reporting incentives (Du and Shen, 2018; Gong, Li, and Yin, 2019; Do, Zhang, and Zuo, 2022; Infuehr, 2022). Particularly, Gong, Li, and Yin (2019) find that RPE firms strategically delay earnings releases to reduce the uncertainty

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<sup>1</sup> Previous studies highlight the importance of RPE in executive pay packages. Bizjak, Kalpathy, Li, and Young (2022) show that the use of RPE in the largest 750 U.S. firms covered by the Incentive Lab database increased substantially from 19.2% in 2006 to 53% in 2017. Furthermore, Gong, Li, and Yin (2019) show that during the period from 1998 to 2014, an average of 39% of the RPE grants for the top five executives were based on accounting performance metrics (e.g., return on equity and return on asset), and the accounting-based RPE awards represented 37.5% of the total executive compensation. Comparable to the statistics in existing studies, in our sample considered during 1998–2019, 34% of the RPE firms relied on accounting metrics to evaluate CEO performance, and 44% of the total CEO pay was determined by accounting-based RPE. Hence, we concur with prior studies that RPE is a non-negligible aspect of compensation contracting.

of peer performance and use accrual management to meet or beat performance targets relative to peer groups. Do, Zhang, and Zuo (2022) also find that managers in RPE firms that show poorer performance than their peers in the first half of the performance measurement period (interim losers) engage in accrual management to inflate their performance and exceed peer performance in the second half of the performance measurement period. This study examines whether RPE has any impact on conditional accounting conservatism, that is, timely loss recognition in financial reports (Basu, 1997; Watts, 2003a, 2003b; Khan and Watts, 2009).

We predict the association between RPE usage and a *lower* level of accounting conservatism. Tournament theory predicts that managers may have stronger motivation to manipulate earnings when competitive pressures are high. Since RPE introduces a tournament between an RPE firm and its peers, this competition might incentivize CEOs with RPE contracts to report bad news in a less timely manner than good news to meet or beat peer firms' performance (Lazear and Rosen, 1981; Gibbons and Murphy, 1990; Aggarwal and Samwick, 1999; Murphy and Jensen, 2011). This is consistent with empirical evidence from existing studies such as Gong, Li, and Yin (2019) and Du and Shen (2018), which suggest that RPE could create incentives for earnings management. Such behavior increases agency costs. Consequently, RPE can lead to dysfunctional managerial behavior such as a reduction in conditional conservatism arising from a desire to inflate peer-adjusted performance. Therefore, we postulate that the use of the RPE is associated with less conservative reporting.

We expect that the above tournament effect is manifested more in accounting-based RPE firms than in those using accounting-based absolute performance evaluations (i.e., accounting-based non-RPE firms). Accounting-based RPE firms (which typically also set absolute performance targets) are incentivized to achieve 'dual' targets linked to both absolute performance levels and peer performance levels, whereas accounting-based non-RPE firms do not have the additional pressure created by RPE in a tournament. Therefore, we hypothesize that accounting-

based RPE firms exhibit lower levels of accounting conservatism than accounting-based non-RPE firms.

We also expect that the aforementioned tournament effect is more salient in the use of accounting-based RPE than equity-based RPE. The timeliness of loss versus gain recognition directly affects the accounting earnings used for RPE. It is relatively easier to manipulate accounting-based than equity-based RPE. This is because accounting-based RPE targets are susceptible to accounting earnings manipulation; in contrast, it is less easy to engage in stock price manipulation. Hence, firms that use accounting-(equity-based) RPE compensation schemes are more (less) likely to achieve specific performance rankings in peer groups by delaying loss recognition.

Our study differs from existing research on the relation between RPE usage and financial reporting incentives. Prior studies show that different discretionary reporting methods may or may not enable firms to exceed their peers' performance. For example, firms could achieve their relative performance targets by delaying the timing of earning releases and engaging in accrual management (Du and Shen, 2018; Gong, Li, and Yin, 2019), but it is less so for real earnings management (Do, Zhang, and Zuo, 2022). More importantly, although both accruals management and conditional conservatism affect accounting earnings, they are not entirely substitutive in financial reporting. This is evident from the weak correlation between discretionary accruals and conservatism measures (Dechow, Ge, and Schrand, 2010). Hence, it is unclear *ex-ante* whether delaying the timing of bad news recognition (i.e., less conservatism) allows managers to meet or surpass their peers' performance. In addition, our study compares different types of RPE usage. Apart from a comparison of RPE versus non-RPE firms, we enrich the understanding about whether accounting-based RPE firms will differ from equity-based RPE firms with respect to the level of their conservatism. Specifically, we expect accounting-based RPE firms to exhibit less conservative reporting compared with accounting-based non-RPE firms and equity-based RPE firms. These findings are novel and add to this stream of research.

We obtain RPE information from the Incentive Lab database for the 750 largest U.S. firms from 1998 to 2019. We utilize propensity score matching (PSM) to show that accounting-based RPE firms engage in less conservative reporting, measured using Khan and Watts (2009) C-scores,<sup>2</sup> relative to accounting-based non-RPE firms (i.e., firms that do not adopt RPE but use accounting metrics for absolute performance targets) and equity-based RPE firms. Regarding tournament incentives, we find that firms with poor performance in earlier years tend to reduce accounting conservatism in the last year of their performance measurement period.<sup>3</sup> We further show that firms with less accounting conservatism are more likely to meet or barely surpass their peers, suggesting that delaying bad news recognition is a viable way for firms to outperform their peers and win the tournament.

In another cross-sectional test in support of the tournament incentive, we find that the impact of RPE usage on accounting conservatism is more pronounced when less capable CEOs, measured using Demerjian, Lev, and McVay's (2012) managerial ability scores, experience an exogenous decrease in external employment opportunities following the adoption of the Inevitable Disclosure Doctrine (IDD) by the U.S. states in which their firms are headquartered.

In an additional analysis, we explore an alternative explanation based on agency theory. We find that firms facing greater common risks reduce accounting conservatism after RPE adoption. This is consistent with agency explanation that RPE, as an efficient incentive scheme, removes common shocks from managerial performance. Such risk-sharing benefits decrease agency costs and the demand for conservatism as a substitutive governance mechanism. Furthermore, we find that firms with higher agency costs tend to have stronger tournament incentives, and thus, both agency and tournament considerations jointly explain less conservative reporting.

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<sup>2</sup> Instead of the modified Basu models (Badia, Duro, Penalva, and Ryan, 2017, 2021), we use C-score in the main tests because it avoids high-dimensional interaction terms in our regression analyses for easier interpretation of the findings.

<sup>3</sup> The most common performance measurement period is 36 months, representing 68.5% of the observations in our sample.

Our main results are robust when we use the alternative measures of accounting conservatism based on the modified Basu models developed by Badia, Duro, Penalva and Ryan (2021) and an alternative control sample consisting of all accounting-based non-RPE or equity-based RPE firms (instead of the propensity score-matched sample).

Our study adds to the empirical evidence on the consequences of RPE use on corporate decisions. Based on the tournament incentive introduced by the usage of RPE in executive compensation contracts, a limited number of existing empirical studies suggest that RPE affects risk-taking behavior (Do, Zhang, and Zuo, 2022), strategic timing of earnings release (Gong, Li, and Yin, 2019), and accrual management (Du and Shen, 2018; Gong, Li, and Yin, 2019; Do, Zhang, and Zuo, 2022). Our study provides new evidence of the impact of RPE on accounting conservatism through the channel of tournament consideration. Our results also highlight the findings of Gong, Li, and Yin (2019), which show that accounting-based RPE firms meet or surpass their peers' performance by deferring earnings announcements and engaging in accrual management. Our study suggests that engaging in a lower degree of conservatism by recognizing losses in a less timely manner is an alternative way to achieve the goal of exceeding the relative performance target of earning higher executive pay.

Our study also contributes to the literature on the contracting determinants of accounting conservatism. Watts (2003a, 2003b) suggests that compensation contracting is a key factor of accounting conservatism. However, the existing studies have divergent views. For example, LaFond and Roychowdhury (2008) and Kothari, Ramanna, and Skinner (2010) argue that accounting conservatism is important for constraining overstated CEO pay and that conservative earnings should be tied to executive compensation. However, Lambert (2010) and Na, Zhang, and Zhang (2024) suggest that the earnings measures used in compensation contracting do not exhibit

accounting conservatism. Along this line of research, we provide new evidence that RPE, as a specific structure in compensation design, lowers conservative financial reporting.<sup>4</sup>

Our results are relevant to accounting standard setters and regulators. The FASB's *Concept Statement No.8 – Conceptual Framework for Financial Reporting (2010)* removes the conservatism principle as an aspect of faithful representation in the qualitative characteristics of useful accounting information. The FASB does not advocate for accounting conservatism because such asymmetric treatment of income and expense introduces biases in reported financial information and thus is “inconsistent with neutrality”. However, the FASB's view to abandon conservatism may lead to more aggressive financial reporting. Our results suggest that the use of RPE could further exacerbate the potential misrepresentation arising from inflated financial performance. As such, our findings call for more thoughtful deliberation by the regulators to assess the pros and cons of accounting conservatism.

The remainder of this paper is organized as follows: Section 2 reviews relevant literature and develops the research hypotheses. Section 3 describes the research design. Section 4 discusses the empirical findings. Section 5 concludes this paper.

## **2. Literature Review and Hypotheses Development**

### ***2.1 Use of RPE in Executive Compensation***

RPE has gained popularity in executive compensation contracting over the past two decades, especially after 2006 when the SEC stipulated U.S.-listed companies to disclose their RPE

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<sup>4</sup> Several studies suggest that accounting conservatism depends on the managerial and director ownership. Lafond and Roychowdhury (2008) find a negative relation between managerial ownership and conservatism, suggesting that high equity incentives align with the interests of managers and shareholders, consequently decreasing the demand for conservatism. Ahmed and Duellman (2007) show that the degree of conservatism in accounting earnings is greater for firms with higher external director ownership. This is because stronger equity incentives encourage external directors to exert more effort in their monitoring and advisory roles, resulting in more demand for timely information about bad news. The above two studies focus on the stock ownership of the top executives and directors, without investigating detailed incentive pay designs such as RPE.

and composition of peer groups for benchmarking purposes (Bettis, Bizjak, Coles, and Young, 2014). In the RPE design, a firm's performance is benchmarked against the performance of a group of comparable peer firms to determine performance-based compensation (e.g., cash bonuses, stock grants, and stock options). The predetermined performance goals are based on accounting metrics (e.g., return on equity), stock return metrics (e.g., total shareholder return), or both, and are typically specified as ordinal ranks or relative percentiles.

Prior studies focus on the factors that determine RPE usage and selection of peer firms (e.g., Gong, Li, and Shin, 2011; Bizjak, Kalpathy, Li, and Young, 2022; Cheng, Huang, Tang, and Xie, 2025). However, empirical evidence on the consequences of RPE use is limited. Gong, Li, and Yin (2019) suggest that RPE firms have strong incentives to meet or beat their peers' performance by strategically releasing earnings information later than that of their peer firms and engaging in accrual management to overstate earnings. Du and Shen (2018) also found that RPE firms tend to manipulate earnings when their peers' performance is high. Do, Zhang, and Zuo (2022) suggest that RPE firms with worse performance than their peers in the first half of the performance measurement period tend to take more risks in the second half to eventually win the tournament. This study focuses on the impact of RPE usage on firms' conservative financial reporting and hypothesizes that RPE is associated with a lower degree of accounting conservatism.

## ***2.2 RPE and Accounting Conservatism***

The RPE compensation contract introduces a tournament in which a firm competes with its peers to achieve superior performance (Lazear and Rosen, 1981). Although peer evaluation is expected to bring competitive benefits such as better corporate performance (Nalebuff and Stiglitz, 1983, Hannan, Krishnan and Newman, 2008), the tournaments in RPE design could pose peer pressure and moral hazard (Ignatius, 2015) and lead to higher agency and competition costs (Gong, Li and Shin, 2011, O'keeffe, Viscusi and Zeckhauser, 1984, Rosen, 1986, Knoeber and Thurman, 1994, Hvide, xa and K, 2002, Do, Zhang and Zuo, 2022). To achieve relative performance goals,

managers are incentivized to inflate their performance relative to that of their peers, thereby compromising their fundamental value (Gibbons and Murphy, 1990, Chowdhury and Gürtler, 2015). Recent studies show that the incentive to meet or exceed peer firms' performance encourages managers to defer earnings announcements, conduct more accrual management (Gong, Li and Yin, 2019) and take more risks (Do, Zhang and Zuo, 2022).

Given that RPE awards constitute a significant portion of the total compensation of executives (Bettis, Bizjak, Coles and Young, 2014), the potential losses caused by the failure to achieve relative performance goals, are substantial. Furthermore, specifying performance targets based on ordinal rank or relative percentile in the context of a limited number of peers creates significant discontinuity in pay-for-performance schemes, thereby strengthening managers' incentives to achieve performance benchmarks (Murphy and Jensen, 2011). In the context of an RPE bonus plan, if a firm outperforms its peers, managers' compensation increases substantially. This RPE payoff structure, similar to call options, can motivate managers to adopt more risk-taking behaviors if they rank lower among their peers during the RPE performance evaluation period (Do, Zhang and Zuo, 2022). Therefore, under tournament theory, RPE usage is associated with a decrease in accounting conservatism because firms can delay bad news recognition in financial reports as an alternative way to meet or beat relative performance targets for greater compensation benefits.

#### ***2.4 Do Accounting-based RPE Firms Engage in Less Conservative Reporting?***

Based on the above discussion, we expect RPE usage to be negatively associated with accounting conservatism. This relation is likely to manifest in RPE schemes that use accounting-based performance metrics (e.g., return on equity, return on assets, return on invested capital) in comparison to 1) accounting-based non-RPE firms (i.e., those that do not adopt RPE but use accounting metrics for absolute performance targets, or 2) equity-based RPE firms (i.e., those using equity-based performance metrics such as total shareholder returns).

Almost all CEO compensation contracts include certain aspects of performance-based pay linked to absolute targets. As accounting-based RPE firms also typically set absolute performance levels in pay contracts, they have a dual incentive of meeting or beating both absolute and peer performance targets. In contrast, accounting-based non-RPE firms only have the incentive to meet or beat absolute accounting performance targets, but not peer performance. Hence, we expect accounting-based RPE firms to delay bad news recognition to win a tournament, relative to accounting-based non-RPE firms.

We also predict that accounting-based RPE firms have a higher tendency to engage in less conservative reporting than equity-based RPE firms. Firms that use accounting-based RPE can easily delay bad news recognition to meet or exceed specific accounting performance rankings in their peer groups. This is possible because the timing of recognition has a direct impact on earnings metrics. With regard to stock performance metrics, it is more difficult for firms to achieve specific price targets by strategically altering the timeliness of loss versus gain recognition.

Overall, we expect that compared with non-RPE firms using accounting metrics to set absolute performance targets and RPE firms using stock performance indicators, RPE firms using accounting performance metrics will have less timely loss recognition. Therefore, we develop the first hypothesis as follows:

**H1:** Accounting-based RPE firms exhibit lower accounting conservatism than accounting-based non-RPE and equity-based RPE firms.

## ***2.5 RPE and Tournament Theory***

According to tournament theory (e.g., Lazear and Rosen, 1981), managers engage in less conservative reporting (by delaying bad news recognition) to achieve relative performance targets and gain competitive advantage over their peers. The tournament incentive is stronger for firms that show poorer performance than their peers during the early years of the performance measurement period (i.e., interim losers). However, this incentive is relatively weaker for firms that

outperform their peer groups (i.e., interim winners). Interim losers are expected to “rock the boat” to exceed their peers’ performance during the remainder of their performance measurement period (Do, Zhang and Zuo, 2022). As an alternative way to achieve this goal, managers could engage in less conservative reporting to compensate for prior-period deficits before concluding the RPE measurement period. Therefore, we expect that interim losers would reduce accounting conservatism to a greater extent than interim winners.

**H2:** There is a larger reduction in accounting conservatism during the remainder of the evaluation period for RPE firms that show poorer performance than for RPE firms that show better performance during the earlier years of the performance measurement period.

### **3. Research Design**

#### ***3.1 Data and Sample***

We obtain RPE data from the Institutional Shareholder Services Incentive Lab for the period of 1998 to 2019. The Incentive Lab provides detailed data from proxy statements (Form DEF 14A) concerning various aspects of executive compensation contracts, including RPE grants, award types, performance metrics, payout schemes, performance measurement duration, and peer group composition for the largest 750 U.S. firms. We also obtain financial accounting data from Compustat, stock price information from the Center for Research in Security Prices (CRSP), and additional compensation data from Execucomp.

Table 1 presents the sample selection procedure. We begin with 10,476 RPE firm-year observations that provide RPE schemes to CEOs from 1998 to 2019. We hypothesize that the impact of RPE on accounting conservatism is mainly manifested in firms using accounting metrics as relative performance targets; our treatment sample contains RPE firms using accounting-based

performance metrics, while equity-based RPE firms are treated as the control sample.<sup>5</sup> This procedure reduces the number of observations to 3,033 (around 34% of the total RPE firm-year observations), which is comparable to 39% in Gong, Li and Yin (2019) and 36% in De Angelis and Grinstein (2020). Following Gong, Li and Yin (2019) and Do, Zhang and Zuo (2022), we require RPE firms using self-selected peer groups to define performance targets in terms of relative percentiles or ordinal ranks. We further exclude observations with missing values for Khan and Watts (2009) C-score conservatism measure and other variables in the regression analyses. Thus, we obtained 1,121 accounting-based RPE firm-year observations.

Following Gong, Li, and Yin (2019), we use propensity scores to match the treatment sample of accounting-based RPE observations with the control samples of accounting-based non-RPE firms (i.e., firms using accounting metrics as absolute performance target without benchmarking against peers) and equity-based RPE observations. After excluding missing values of RPE determinants and requiring a caliber width lower than 0.25 for PSM-matching, the final sample includes 980 firm-year observations if these firms are matched with the accounting-based non-RPE control sample and 748 firm-year observations if they are matched with the equity-based RPE control sample.

[Table 1]

### ***3.2 PSM and the Regression Model***

To address the endogeneity issue of firms' choice of RPE usage, we implement a PSM approach to match each accounting-based RPE observation with one accounting-based non-RPE

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<sup>5</sup> RPE firms could simultaneously use accounting and stock price metrics (representing 26.6% of the observations in our sample). Such firms are included in the treatment sample of accounting-based RPE firms. As long as accounting metrics are used for RPE, the tournament incentive is expected to take effect.

observation and one equity-based RPE observation in each industry year.<sup>6</sup> Specifically, we follow Gong, Li and Yin (2019) to estimate the logistic regressions of firms' usage of accounting-based RPE (see Appendix B). This approach helps to obtain matched non-RPE firms using accounting metrics for absolute performance targets (Panel A) and matched firms using equity-based RPE (Panel B) based on their closest propensity scores.<sup>7</sup> We require a maximum caliber width of 0.25 to ensure similarity in firm characteristics between the treatment and control samples. As Appendix B shows, the propensity scores do not differ between the sample of accounting-based RPE firms and the matched sample of accounting-based non-RPE firms or equity-based RPE firms.

Based on the propensity score-matched samples, we estimate the following regression to test whether accounting-based RPE firms are associated with lower accounting conservatism:

$$C\_score_{it} = \alpha_0 + \alpha_1 Rpe_{it} + Control\ Variables + \varepsilon_{it}, \quad (1)$$

The dependent variable  $C\_Score_{it}$  is a firm-year measure of conditional conservatism developed by Khan and Watts (2009). This is estimated from an augmented Basu's (1997) regression, which includes firm size, the market-to-book ratio, and leverage as additional explanatory variables.<sup>8 9</sup> A higher C-score indicates more conservative financial reporting and timely bad news recognition. We consider the C-score advantageous in our tests, because it prevents the use of high-dimensional interaction terms in the regressions, which could result in

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<sup>6</sup> In a robustness test, we use the alternative control samples consisting of all accounting-based non-RPE firms or equity-based RPE firms and include the determinants of the RPE usage in the regression of accounting conservatism. The main findings remain unchanged.

<sup>7</sup> As shown in Appendix B, we match by each industry-year based on firm characteristics including firm size, book-to-market ratio, return on asset, leverage, market share, and analyst forecast errors. For matching with the control sample of accounting-based non-RPE firms, we follow Gong, Li, and Yin (2019) to include performance synchronicity and CEO stock ownership as additional factors.

<sup>8</sup> In robustness tests, we use modified Basu models (Badia, Duro, Penalva, and Ryan, 2017; Badia, Duro, Penalva, and Ryan, 2021) as alternative conservatism measures. The main results are similar.

<sup>9</sup> We also consider unconditional conservatism which refers to the systematic understatement of net assets and earnings (e.g., Gigler, Kanodia, Sapiro, and Venugopalan, 2009). In untabulated analyses, we replace the C-score with the proxies for unconditional conservatism, including the Q-score proposed by Penman and Zhang (2002) and the measure of skewness and variance (VAR) from Givoly and Hayn (2000). However, these tests yielded insignificant results, suggesting that the RPE effect exists only for conditional conservatism.

severe multicollinearity problems. Additionally, the use of firm-year C-scores facilitates the interpretation of empirical results (Gong and Luo, 2018). Our main variable of interest,  $Rpe_{it}$ , equals one for accounting-based RPE firms and zero for the PSM sample of accounting-based non-RPE firms or equity-based RPE firms. We expect  $\alpha_1$  to be negative if accounting-based RPE firms are associated with lower accounting conservatism than accounting-based non-RPE and equity-based RPE firms.

Following prior studies (LaFond and Watts, 2008, Khan and Watts, 2009, Khurana and Wang, 2018, Gong and Luo, 2018), we include the following control variables: the natural log of firm assets (*Logsize*), market-to-book ratio (*Mb*), leverage (*Lev*), Big-4 audit firm dummy (*Big4*), Return on asset (*Roa*), standard deviation of sales (*Stdsale*), standard deviation of CFO (*Std CFO*), standard deviation of stock returns (*Stdret*), loss dummy (*Loss*), and operating cycle (*Opcycle*). We also include industry and year fixed effects in the regression to control for constant industry and year characteristics, respectively (Gong and Luo, 2018, Gong, Li and Yin, 2019, Do, Zhang and Zuo, 2022). Robust standard errors were clustered at the firm level to account for potential within-firm correlations.

## 4. Empirical Results

### 4.1 Descriptive Statistics and Correlation Matrix

Table 2 presents the descriptive statistics of the main variables. The accounting conservatism measure of *C-score* has mean and median values of 0.007 and 0.013, respectively. The independent variable of interest, our RPE dummy variable (*RPE*), had a mean of 0.500. This finding is consistent with our PSM approach, suggesting that each accounting-based RPE firm matches an accounting-based non-RPE firm or an equity-based RPE firm. The median *Logsize* is 9.008, which is equivalent to \$8.17 billion in total assets. Moreover, the median market-to-book ratio is 1.888 and the median leverage is 32.9%.

[Table 2]

Table 3 reports the correlations among the main variables in the PSM samples. The RPE dummy is negatively correlated with *C\_Score*, compared to accounting-based non-RPE firms (although insignificant) in Panel A and equity-based RPE firms in Panel B, which preliminarily supports our conjecture that accounting-based RPE firms are associated with lower accounting conservatism. No extremely high correlations among independent variables indicate no severe multicollinearity problem in the regression analyses. The correlation between *C-score* and firm size is significantly negative, suggesting that accounting conservatism is lower for larger firms. This is consistent with Khan and Watts (2009), which suggest that larger firms have lower contracting and taxation demand for conservatism. The correlation between *C-score* and market-to-book ratio is also significantly negative, suggesting that higher market-to-book ratio firms are related to lower accounting conservatism. This correlation is consistent with Roychowdhury and Watts (2007)'s "buffer problem," according to which, the market-to-book ratio is negatively associated with accounting conservatism over a short horizon because the prior unrecognized increases in asset values reduces the necessity to recognize asset value losses. Moreover, the correlation between *C-score* and leverage ratio is significantly positive, consistent with the higher contracting and taxation demand for conservatism in more leveraged firms. This is because highly leveraged firms are usually associated with agency conflicts between debtholders and shareholders, and they have higher taxable earnings.

[Table 3]

#### ***4.2 Relation between RPE Usage and Accounting Conservatism***

Table 4 reports the regression results for testing H1 based on the PSM procedures. In Column 1, we match accounting-based RPE firms with accounting-based non-RPE firms and find that the coefficient on *RPE* is negative (coefficient =  $-0.010$ ) and statistically significant ( $p < 0.05$ ). This result indicates that accounting-based RPE firms are associated with a lower degree of asymmetric timeliness of loss recognition than non-RPE firms. In Column 2, we match accounting-

based RPE firms with equity-based RPE firms and test whether the level of conservatism is lower in accounting-based RPE firms. We find that the coefficient on *RPE* is also negative (coefficient =  $-0.010$ ) and statistically significant ( $p < 0.05$ ). Overall, these results are consistent with H1, suggesting that accounting-based RPE firms have less conservative reporting compared with accounting-based non-RPE firms and equity-based RPE firms.

[Table 4]

Regarding the control variables, we find that smaller firms, more leveraged firms, and firms with longer operating cycles report more conservatively, which is consistent with prior findings (Basu, 1997, Khan and Watts, 2009, Khurana and Wang, 2018, Gong and Luo, 2018).

#### **4.3 RPE's Tournament Theory**

Prior studies suggest that RPE contracts create tournament incentives, encourage managers' strategic timing of earnings announcements (Gong, Li and Yin, 2019), and induce higher risk-taking (Do, Zhang and Zuo, 2022) to meet or beat their peers' performance. In H2, we hypothesize that engaging in less accounting conservatism by delaying bad news recognition could be an alternative way to meet or beat peers' performance.

To examine whether RPE induces CEOs to lower accounting conservatism by decreasing the timeliness of reporting bad news, we use a grant-year-level analysis that is adapted from Do, Zhang and Zuo (2022).<sup>10</sup> Specifically, we test whether CEOs of firms that perform worse than their peers during the earlier years of the grant performance evaluation period are incentivized to delay bad news recognition during the remainder of the evaluation period to achieve the relative performance targets. Specifically, we use grant-level data (focusing on accounting-based RPE

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<sup>10</sup> We acknowledge the presence of RPE grants with overlapping performance measurement periods in the grant-level analysis; however, it is unclear whether this would lessen the incentive of meeting or beating any one performance target, given that other performance periods are ongoing. If the incentive really weakens, it would introduce a bias against our findings.

grants only) to perform a tournament incentive test and exclude grants that span only one year and those with unclear performance measures.

It is reasonable to predict that the incentive to engage in less conservative reporting to meet or beat peer performance is strongest for firms that underperform their peers when only one year remains during the evaluation period. Hence, to test H2, we first define the last year loser dummy, *Lastyear\_loser*, as equal to one if the firm's accounting performance is equal to or below the target performance ranking in the peer group before the last RPE year of each grant and zero otherwise.<sup>11</sup> Next, we include all accounting-based RPE grant-year observations and define a post dummy, *Last\_post*, equal to one for the last RPE year of each grant and zero for the period before the last RPE year. The variable of interest is the interaction term *Lastyear\_loser* × *Last\_post*, which measures the difference in the reduction in accounting conservatism from earlier years to the last year of performance measurement for interim losers versus winners. As hypothesized in H2, we expect the interaction term to be negative if interim loser firms engage in less conservative reporting to exceed their peers' performance in the final year of the evaluation period.

As shown in Table 5, the coefficient of *Lastyear\_loser* × *Last\_post* is negative (coefficient = -0.018) and statistically significant ( $p < 0.05$ ). This result indicates that relative to interim winners, firms with poorer performance before the last year of the performance measurement period reduce accounting conservatism in the remainder of the evaluation period to a greater extent. This is consistent with our expectation that RPE usage induces tournament incentives and motivates CEOs to delay reporting bad news.<sup>12</sup>

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<sup>11</sup> Following Gong, Li, and Yin (2019), we scale the performance rank into percentiles by calculating the difference between peer group size and performance rank plus one, divided by the peer group size plus one. In addition, the target performance ranking is based on actual payout structures as provided by Incentive Lab. The most common target ranking is the 50th percentile in the peer group (58.17% of the grants in the sample), followed by the 60th percentile (6.82% of the grants in the sample).

<sup>12</sup> In an untabulated test, we also define the first-year loser dummy *Firstyear\_loser* as equal to one if the firm's accounting performance is equal to or below the target performance ranking in the peer group in the first RPE year of each grant, and zero otherwise. Accordingly, we define a post dummy, *First\_post*, equal to one for the period after the first RPE year, and zero for the first RPE year. The result shows that the coefficient

#### 4.4 Additional Evidence on the Tournament Incentive

##### 4.4.1 Accounting Conservatism and the Likelihood of Barely Beating Peer Performance

To further explore tournament incentives, we tested whether less conservative reporting enables RPE firms to successfully outperform their peers during the tournament. In this additional analysis, we performed a logistic regression of the likelihood of meeting or barely beating peers (*Beat\_barely*) on the accounting conservatism measure (*C\_score*). *Beat\_barely* equals one if a firm's performance ranking in the peer group meets or exceeds the relative performance target (based on actual payout structures) by a marginal margin of 10% or less, and zero otherwise (i.e., missing the relative target or beating the target by more than 10%).<sup>13</sup> In the regression, we control for firm size (*Logsize*), market-to-book ratio (*Mb*), leverage (*Lev*), performance (*Roa*), and accrual management (*DA*, which is performance-adjusted discretionary accruals estimated based on modified Jones model). This test also uses grant-level data for accounting-based RPE firms.

As Table 6 shows, the coefficient of *C\_score* is negative (coefficient = -1.818) and statistically significant ( $p < 0.05$ ), suggesting that firms with less conservative reporting are more

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on the interaction term, *Firstyear\_loser* × *First\_post*, is marginally significant ( $p < 0.10$ ). This suggests that although interim losers in the first RPE year tend to exhibit a larger decrease in accounting conservatism in the remaining years, the incentive is weaker when there is still time to improve and exceed peer performance.  
<sup>13</sup> There may exist potential measurement errors of *Barely\_beat* because the exact definitions of performance measures are unknown. Firms may have the discretion to make certain adjustments to accounting performance metrics (e.g., whether the income number used to calculate return on asset is net income or income before extraordinary items). For example, firms could use non-GAAP accounting metrics for absolute performance targets in compensation contracts (Curtis, Lee, and Patrick, 2021) and, consequently, the estimation of award payouts by comparing the targets from the award to ex-post GAAP performance could lead to inaccurate assessments of performance (Pawliczek, 2021). To assess the extent of such measurement errors, we manually collect the RPE outcomes (i.e., actual performance rankings) of a random sample of 25 firms, which provide detailed performance evaluation in their proxy statements; then we cross-check with the calculated rankings for defining *Barely\_beat*. The rate of correct classification for *Barely\_beat* is particularly high (96% of the random sample), indicating that the measurement errors do not have substantial impacts on our findings. For example, as disclosed in the 2012 proxy statement of Emulex Corporation, the firm uses “increase in net revenue” as the accounting-based RPE performance benchmark. The reported ranking among the peer group is 86th percentile, and the calculated ranking is 80th percentile. As the target performance ranking is 50th percentile, *Barely\_beat* is correctly defined as zero for Emulex Corporation.

likely to meet or barely beat their relative performance targets to win the tournament. Therefore, the results indicate that, motivated by the RPE's tournament incentive, firms can engage in less accounting conservatism by delaying bad news recognition as an alternative way to outperform their peers and earn higher pay.

[Table 6]

#### *4.4.2 Impact of IDD Adoption*

In this section, we explore a scenario in which tournament effects are potentially stronger than those in our base scenario. We predict that tournament incentives will be stronger for managers with lower managerial abilities when they face a more competitive market with fewer outside opportunities. In such situations, managers are motivated to secure their positions by outperforming their peers. Consequently, they are less likely to adopt conservative accounting practices, as this allows them greater flexibility in meeting or exceeding their peer performance benchmarks. This behavior aligns with the goal of reducing perceived job insecurity and enhancing competitive standing.

Specifically, we utilize the setting of the adoption of the IDD by the state in which a firm is headquartered. IDD is a legal doctrine through which an employee may enjoy accepting a new job or forming a rival company if the former employer can demonstrate that the employee's new duties will inevitably require the employee to disclose, use, or rely on the knowledge of the former employer's trade secrets (Kahnke, Bundy, and Daniels 2013; Ali, Li, and Zhang, 2019). Therefore, the adoption of an IDD in certain U.S. states is considered more powerful than non-compete or non-disclosure agreements (Klasa, Ortiz-Molina, Serfling and Srinivasan, 2018, Ali, Li and Zhang, 2019). As a firm's top management generally has access to its trade secrets, IDD adoption decreases external employment opportunities in the labor market.

Prior literature also suggests that CEOs with different managerial abilities differently react to external opportunities (Ali, Li, and Zhang, 2019). Specifically, managers with lower managerial

abilities and having a downside career concerns become less concerned about losing their current jobs when external opportunities increase. Conversely, managers with higher managerial abilities are more concerned about seeking external promotion opportunities. Hence, we expect that for managers with lower abilities, the pressure from the decrease in job security after IDD adoption amplifies the tournament incentives created by RPE usage. This is particularly true for accounting-based RPE firms. Relative to accounting-based non-RPE firms, accounting-based RPE firms face additional pressure to beat the “dual” targets of absolute and relative performance. In addition, as hypothesized in H1, accounting-based RPE firms can engage in less conservative reporting to achieve relative accounting performance targets, whereas equity-based RPE firms find it more difficult to meet or beat relative targets based on stock returns by delaying loss recognition. Therefore, IDD adoption is expected to have a greater impact on less capable managers in accounting-based RPE firms.

To explore whether IDD adoption differently affects the relationship between RPE usage and accounting conservatism for CEOs with high and low managerial abilities, we modify Equation (1) by including the IDD dummy (Klasa, Ortiz-Molina, Serfling and Srinivasan (2018); Ali, Li and Zhang (2019)). *IDD* is equal to one if the firms’ headquarters are located in a state that recognizes the IDD in year *t*, and zero otherwise.<sup>14</sup> We also include the reversed managerial ability score, *MA\_reversed*, based on the managerial ability measure of Demerjian, Lev and McVay’s (2012) multiplied by -1. Hence, a higher value of *MA\_reversed* indicates a lower managerial ability. The variable of interest is the interaction term  $RPE \times IDD \times MA\_reversed$ .

In Column 1 of Table 7, we find that the coefficient on  $RPE \times IDD \times MA\_reversed$  is negative (coefficient = -0.082) and statistically significant ( $p < 0.01$ ) in the sample of accounting-based RPE firms matched with non-RPE firms. For the sample matched with equity-based RPE

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<sup>14</sup> This test returns to the firm-year level analysis and is based on the main PSM sample. The reduction in sample size is primarily due to the use of managerial ability data from Demerjian, Lev, and McVay (2012), which are not available for all firm-years.

firms, as reported in Column 2 of Table 7, the coefficient of  $RPE \times IDD \times MA\_reversed$  is also negative (coefficient =  $-0.057$ ) and statistically significant ( $p < 0.1$ ). Overall, these results suggest that the effect of RPE usage on accounting conservatism is more pronounced when there are fewer outside opportunities for CEOs with lower managerial abilities who may face decreased job security. Therefore, these findings further support the tournament incentives due to RPE usage.

[Table 7]

#### ***4.5 Alternative Explanation: Agency Theory***

##### ***4.5.1 RPE and Agency Costs***

In this section, we explore the alternative explanation based on the agency theory. From the agency perspective, executive compensation should be tied to relative peer performance to reduce the common external shocks faced by the agent (Holmstrom, 1982, Diamond and Verrecchia, 1982, Holmstrom and Milgrom, 1987, Green and Stokey, 1983). Given that relative performance removes the effect of common shocks on performance, RPE allows the risk-averse agent to bear less risk and the principal to better evaluate and motivate the agent's efforts (Gong, Li and Shin, 2011). Such risk-sharing benefit from the refined performance evaluation reduces agency costs. On one hand, under the situation of positive common shocks, RPE eliminates excessive compensation due to inflated performance unrelated to the agent's efforts. On the other hand, RPE shields the agent's pay from negative common shocks and thus mitigates the incentive to overstatement of earnings. Hence, RPE could serve as an efficient compensation contracting mechanism.

Alternatively, accounting conservatism is also designed an efficient governance mechanism for constraining overcompensation paid to managers (e.g., Khan and Watts, 2009, Watts, 2003b). Accounting conservatism is a set of bookkeeping guidelines that call for a high degree of verification before a company can book a profit. This measure is regarded as one of the most important properties of financial reporting quality (e.g., Ball, Kothari and Robin, 2000). Basu (1997) interprets accounting conservatism as capturing a firm's tendency to require a higher degree

of verification for recognizing good than bad news in financial statements. Specifically, good news is gradually recognized over time, while bad news is incorporated into earnings promptly for the current period. This asymmetric verifiability speeds up the recognition of losses that have more stringent verification standards for gains than for losses (Watts, 2003b). Therefore, conservative reporting restricts managers' incentives of overstating earnings to pursue self-interests such as higher compensation (Basu, 1997, Watts, 2003b, Ball and Shivakumar, 2005).<sup>15</sup>

Based on the above discussion, as an efficient compensation contracting process, RPE removes common risks from managerial performance, resulting in greater risk-sharing benefits and lower agency costs. In the case of high common risk, firms are expected to benefit more from RPE usage and consequently will demand less accounting conservatism as an additional governance mechanism to mitigate agency problems. Hence, we expect firms facing higher common risk experience a larger reduction in accounting conservatism after adopting RPE compared with those facing lower common risk.

We conduct a regression analysis to examine whether the agency theory applies to the reduction of accounting conservatism for accounting-based RPE firms.<sup>16</sup> Following Gong, Li and Shin (2011), we measure the common risk for firm  $i$  in year  $t$  using the  $r$ -squared obtained by regressing firm-level stock returns on value-weighted industry stock returns in the past 36 months. Next, we define a high common risk dummy, *High\_risk*, coded as one if RPE firm's common risk

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<sup>15</sup> The literature also suggest that earnings used for compensation purposes are lack of conditional conservatism (Lambert, 2010; Na, Zhang, and Zhang, 2024). This would work against our findings with respect to the agency explanation for the association between RPE use and accounting conservatism.

<sup>16</sup> In this analysis, we focus on accounting-based RPE firms for the two reasons. First, compared with non-RPE firms (those without RPE but using absolute accounting-based performance targets), accounting-based RPE is better at reducing agency conflict by providing more efficient performance measures after the removal of common risks, while pay contracts with accounting-based absolute performance targets do not have such risk-sharing benefits. Hence, non-RPE firms do not benefit from the resulting decrease in agency costs, and thus would not reduce the demand for accounting conservatism. Second, as an efficient governance mechanism, accounting conservatism could restrict the manipulation of accounting earnings (Watts, 2003a), but is not expected to directly constrain the manipulation of stock prices. Hence, it is more plausible for accounting-based RPE to reduce the demand for conservative reporting. Conversely, it is less likely for equity-based RPE to serve as a substitute for accounting conservatism.

is higher than or equal to the median common risk of firms in the same industry during the three years prior to the RPE usage, and zero otherwise. Furthermore, we define a post dummy, *Post*, equal to one for the year of adopting RPE by accounting-based RPE firms, and 0 for the pre-adoption year.

We then run the *C-Score* regression by including the variable of interest  $High\_risk \times Post$ . The interaction term measures the relative reduction in accounting conservatism following the adoption of accounting-based RPE for firms experiencing high common risk, as opposed to those experiencing low common risk, before RPE usage. As reported in Table 8, the coefficient on  $High\_risk \times Post$  is negative (coefficient =  $-0.015$ ) and statistically significant ( $p < 0.05$ ). The result suggests that after RPE implementation, high common risk firms are negatively associated with the level of accounting conservatism to a greater extent than low common risk firms. This is consistent with the agency explanation that firms facing high common risk benefit more from RPE usage compared with low common risk firms and thus their demand for accounting conservatism is lower.

[Table 8]

#### 4.5.2 Joint Tests of Agency Conflicts and Tournament Incentives

Both agency and tournament theories suggest that RPE usage is negatively associated with accounting conservatism. To investigate the potential interaction between agency conflicts and tournament incentives in explaining conservative reporting, we conduct a further analysis of tournament incentives depending on high versus low agency costs. To measure agency costs, we use the common risk proxy based on the R-squared from a regression of a firm's returns on industry returns over the prior 36 months. Firms are categorized into the group of high or low agency costs with reference to the industry median or the median of their self-selected peer groups (Hung and Shi, 2024; Tice, 2024).

We then re-run the regression in Table 5 separately for high and low agency cost groups. As shown in Table 9, Panel A (where the sample is partitioned based on industry median) and Panel

B (where the sample is partitioned based on the median of self-selected peers), the interaction term,  $Lastyear\_loserit \times Last\_postit$ , is negative and significant in the subgroup with high agency costs, but not in the subsample with low agency costs. The results suggest that firms with higher agency costs tend to have stronger tournament incentives simultaneously, and both factors could jointly lead to lower accounting conservatism.

[Table 9]

## 4.6 Robustness Tests

### 4.6.1 Alternative Measurement of Accounting Conservatism

In the main tests, we used *C-score* developed by Khan and Watts (2009) to measure accounting conservatism. To check for robustness, we measure accounting conservatism based on two versions of the modified Basu (1997) model developed by Badia, Duro, Penalva, and Ryan (2017, 2021), which attempt to tackle the statistical biases in the original Basu model (Banker, Basu, Byzalov, and Chen, 2016; Dietrich, Muller, and Riedl, 2007; Patatoukas and Thomas, 2011).<sup>17,18</sup>

First, we follow the modified Basu model proposed by (Badia, Duro, Penalva and Ryan, 2021) to perform the following regression.

$$\begin{aligned} UX_{it} = & \beta_0 + \beta_1 D_{it} + \beta_2 UR_{it} + \beta_3 D_{it} * UR_{it} \\ & + \beta_4 Mb_{it-1} + \beta_5 D_{it} * Mb_{it-1} + \beta_6 UR_{it} * Mb_{it-1} + \beta_7 D_{it} * UR_{it} * Mb_{it-1} \\ & + \beta_8 VarR_{it} + \beta_9 D_{it} * VarR_{it} + \beta_{10} UR_{it} * VarR_{it} + \beta_{11} D_{it} * UR_{it} * VarR_{it} + \varepsilon_{it}, \end{aligned} \quad (2)$$

<sup>17</sup> The tests use the main PSM-matched sample. However, the alternative accounting conservatism measures developed by Badia, Duro, Penalva, and Ryan (2017, 2021) involve additional variable measurements and thus result in reduced sample sizes.

<sup>18</sup> We also use Callen et al.'s (2010) conservatism ratio (CR) as another firm-year level measure of conditional conservatism. Due to data restrictions imposed by their approach, the PSM sample for the CR test is substantially reduced. As a result of weak statistical power, the result is not significant based on the reduced PSM sample. As an alternative, we conduct the test using an unmatched sample (i.e., including all accounting-based non-RPE firms and equity-based RPE firms as the control sample without PSM). Untabulated result shows that the coefficient on *Rpe* is negative and marginally significant for the sample of accounting RPE and accounting non-RPE firms, while the coefficient continues to be negative but insignificant for the sample of accounting RPE and equity RPS firms. Overall, the main finding remains qualitatively similar.

The dependent variable  $UX_{it}$  is reported earnings minus expected earnings, following Ball, Kothari and Nikolaev (2013), scaled by the initial market value of equity.  $UR_{it}$  is the annual returns obtained by compounding monthly CRSP returns minus value-weighted average returns, following Ball, Kothari and Nikolaev (2013), for the fiscal year.  $D_{it}$  is a bad news indicator that equals one if  $UR_{it}$  is negative and zero otherwise.  $Mb_{it-1}$  is the initial market-to-book ratio of the assets.  $VarR_{it}$  is the standard deviation of daily equity returns during the fiscal year.  $D_{it} \times UR_{it}$  in Equation (2) measures the asymmetric timeliness of loss recognition or accounting conservatism. Positive  $\beta_3$  reflects the timelier recognition of bad news than good news, or higher conservatism. Firm fixed effects are included in the model to remove any remaining persistent expected components of earnings and returns (Badia, Duro, Penalva and Ryan, 2021).

In Table 10, we include  $RPE$  and its interaction with  $D \times UR$  in Equation (2) and repeat the main analysis based on the PSM procedures. Consistent with our expectations, the coefficient of  $RPE \times D \times UR$  is significantly negative, suggesting that RPE induces firms to reduce their levels of accounting conservatism. Hence, the primary results hold.

[Table 10]

Second, we conduct another robustness test using the fair-value-based conditional conservatism measure proposed by Badia, Duro, Penalva, and Ryan (2017). Their fair value method modifies the Basu (1997) regression by using  $FVCI$  (fair value components of comprehensive income divided by beginning market value of equity) as the dependent variable and incorporating the levels of fair value inputs for financial assets and liabilities ( $Lev1$  = Level 1 fair value assets and liabilities divided by total assets;  $Lev23$  = Levels 2 and 3 fair value assets and liabilities divided by total assets) as independent variables. Then a firm's conditional conservatism is assessed by evaluating the relative magnitude of the coefficient on the interaction term of  $D \times Ret \times Lev1$  versus  $D \times Ret \times Lev23$  (where  $Ret$  = annual stock returns and  $D$  = one if  $Ret$  is negative). If  $D \times Ret \times Lev23$  is significantly greater than  $D \times Ret \times Lev1$ , the firm is more conditionally conservative.

We then perform the regression of Badia, Duro, Penalva, and Ryan (2017) separately for the firms with accounting RPE, PSM accounting non-RPE, and PSM equity RPE. The results are reported in Table 11. Panel A is based on the sample of accounting RPE and PSM accounting non-RPE and Panel B is based on the sample of accounting RPE and PSM equity RPE. In both panels, the coefficient on  $D \times Ret \times Lev23$  is significantly lower than  $D \times Ret \times Lev1$  in Column (1) but not in Column (2). The results suggest that firms with accounting RPE exhibit lower conditional conservatism than those with PSM accounting non-RPE or equity RPE. Hence, the main results remain unchanged.

[Table 11]

#### 4.6.2 Alternative Control Samples

In the main analysis, we use PSM procedures to match each accounting-based RPE firm with one accounting-based non-RPE firm and one equity-based RPE firm. Our results based on this PSM sample suggest that accounting-based RPE firms are associated with significantly lower accounting conservatism. To check for robustness, we rerun Equation (1) by regressing the C-score on the RPE dummy using alternative control samples that include all accounting-based non-RPE firms and equity-based RPE firms. The determinants of RPE usage (see Appendix B) were included as control variables in the regressions.<sup>19</sup>

Column 1 of Table 12 presents the results obtained using an alternative control sample of non-RPE firms. We found that the coefficient of *RPE* was negative (coefficient =  $-0.007$ ) and statistically significant ( $p < 0.05$ ). In Column 2, based on the alternative control sample of equity-based RPE firms, we find that the coefficient of *RPE* continues to be negative (coefficient =  $-0.013$ ) and statistically significant ( $p < 0.01$ ). Therefore, these results are similar to those reported in Table

<sup>19</sup> These results serve as a robustness test using firm-year level data, without conducting PSM. As a result, the sample size is larger than the main PSM sample.

4 using the PSM samples, further supporting our hypothesis that accounting-based RPE firms are associated with less accounting conservatism.

[Table 12]

## 5. Conclusion

This study suggests that peer performance benchmarking in executive pay contracting has a significant impact on firms' conservative reporting behavior. Specifically, we find that firms that use accounting-based RPE exhibit lower levels of accounting conservatism than firms that do not use RPE, or firms using equity-based RPE.

In addition, tournament theory predicts that RPE could result in competition costs because RPE contracts introduce tournaments between a firm and its peers. Performance in a tournament is important for executives because the compensational benefit of winning the competition is substantial. We hypothesize that firms with poorer performance before the last RPE year are more likely to reduce accounting conservatism during the remaining year of the grant performance evaluation period. This result supports tournament incentives, suggesting that engaging in less timely loss recognition is an alternative way for managers to meet or beat their peers.

Our findings shed light on some of the negative consequences stemming from the use of RPE contracts on financial reporting decisions. While prior studies mainly highlight the role of RPE tournament incentives in earnings management, our study also contributes to the literature on the determinants of accounting conservatism by showing that RPE, as a specific compensation design structure, affects conservative reporting from the compensation contracting perspective.

## REFERENCES

- AGGARWAL, R. K. & SAMWICK, A. A. 1999. Executive compensation, strategic competition, and relative performance evaluation: Theory and evidence. *The Journal of Finance*, 54, 1999-2043.
- ALI, A., LI, N. & ZHANG, W. 2019. Restrictions on managers' outside employment opportunities and asymmetric disclosure of bad versus good news. *The Accounting Review*, 94, 1-25.
- BADIA, M., DURO, M., PENALVA, F. & RYAN, S. G. 2021. Debiasing the measurement of conditional conservatism. *Journal of Accounting Research*, 59, 1221-1259.
- BALL, R., KOTHARI, S. & NIKOLAEV, V. V. 2013. On estimating conditional conservatism. *The Accounting Review*, 88, 755-787.
- BALL, R., KOTHARI, S. & ROBIN, A. 2000. The effect of international institutional factors on properties of accounting earnings. *Journal of accounting and economics*, 29, 1-51.
- BALL, R. & SHIVAKUMAR, L. 2005. Earnings quality in UK private firms: comparative loss recognition timeliness. *Journal of accounting and economics*, 39, 83-128.
- BASU, S. 1997. The conservatism principle and the asymmetric timeliness of earnings<sup>1</sup>. *Journal of accounting and economics*, 24, 3-37.
- BETTIS, J. C., BIZJAK, J. M., COLES, J. L. & YOUNG, B. 2014. The presence, value, and incentive properties of relative performance evaluation in executive compensation contracts. *Value, and Incentive Properties of Relative Performance Evaluation in Executive Compensation Contracts (February 8, 2014)*.
- BIZJAK, J., KALPATHY, S., LI, Z. F. & YOUNG, B. 2022. The choice of peers for relative performance evaluation in executive compensation. *Review of Finance*, 26, 1217-1239.
- BLOOMFIELD, M. J., MARVAO, C. & SPAGNOLO, G. 2019. Relative Performance Evaluation, Sabotage and Collusion: Quasi-experimental Evidence on the "RPE Puzzle".
- CHENG, C. S. A, HUANG, W., TANG, F. & XIE, J. 2025. Peer firm selection and executive compensation: The curious case of dual-role peers. *Journal of Accounting, Auditing and Finance*, In Press.
- CHOWDHURY, S. M. & GÜRTLER, O. 2015. Sabotage in contests: a survey. *Public Choice*, 164, 135-155.
- DE ANGELIS, D. & GRINSTEIN, Y. 2020. Relative performance evaluation in CEO compensation: A talent-retention explanation. *Journal of Financial and Quantitative Analysis*, 55, 2099-2123.
- DECHOW, P., GE, W. & SCHRAND, C. 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting and Economics*, 50, 344-401.
- DEMERJIAN, P., LEV, B. & MCVAY, S. 2012. Quantifying managerial ability: A new measure and validity tests. *Management Science*, 58, 1229-1248.
- DIAMOND, D. W. & VERRECCHIA, R. E. 1982. Optimal managerial contracts and equilibrium security prices. *The Journal of Finance*, 37, 275-287.
- DO, T., ZHANG, H. & ZUO, L. 2022. Rocking the boat: How relative performance evaluation affects corporate risk taking. *Journal of Accounting and Economics*, 73.
- DU, Q. & SHEN, R. 2018. Peer performance and earnings management. *Journal of Banking & Finance*, 89, 125-137.
- DYE, R. A. 1984. The trouble with tournaments. *Economic Inquiry*, 22, 147-149.
- GIBBONS, R. & MURPHY, K. J. 1990. Relative performance evaluation for chief executive officers. *ILR Review*, 43, 30-S-51-S.
- GONG, G., LI, L. Y. & SHIN, J. Y. 2011. Relative performance evaluation and related peer groups in executive compensation contracts. *The Accounting Review*, 86, 1007-1043.
- GONG, G., LI, L. Y. & YIN, H. 2019. Relative performance evaluation and the timing of earnings release. *Journal of Accounting and Economics*, 67, 358-386.

- GONG, G. & LUO, S. 2018. Lenders' experience with borrowers' major customers and the debt contracting demand for accounting conservatism. *The Accounting Review*, 93, 187-222.
- GREEN, J. R. & STOKEY, N. L. 1983. A comparison of tournaments and contracts. *Journal of Political Economy*, 91, 349-364.
- HANNAN, R. L., KRISHNAN, R. & NEWMAN, A. H. 2008. The effects of disseminating relative performance feedback in tournament and individual performance compensation plans. *The Accounting Review*, 83, 893-913.
- HOLMSTROM, B. 1982. Moral hazard in teams. *The Bell Journal of Economics*, 324-340.
- HOLMSTROM, B. & MILGROM, P. 1987. Aggregation and linearity in the provision of intertemporal incentives. *Econometrica: Journal of the Econometric Society*, 303-328.
- HUNG, C.-Y. & SHI, Z. 2024. Peer-specific knowledge and peer group properties in relative performance evaluation. *Journal of Management Accounting Research*, 36, 173-201.
- HVIDE, H., XA & K 2002. Tournament rewards and risk taking. *Journal of Labor Economics*, 20, 877-898.
- IGNATIUS, A. 2015. Time to kill forced rankings? *Harvard business review*, 93, 1.
- INFUEHR, J. 2022. Relative performance evaluation and earnings management. *Contemporary Accounting Research*, 39, 607-627.
- KAHNKE, R. E., BUNDY, K. L. & DANIELS, F. B. 2013. *The secrets to winning trade secret cases*, Thomson Reuters.
- KHAN, M. & WATTS, R. L. 2009. Estimation and empirical properties of a firm-year measure of accounting conservatism. *Journal of Accounting and Economics*, 48, 132-150.
- KHURANA, I. K. & WANG, W. E. I. 2018. International mergers and acquisitions laws, the market for corporate control, and accounting conservatism. *Journal of Accounting Research*, 57, 241-290.
- KLASA, S., ORTIZ-MOLINA, H., SERFLING, M. & SRINIVASAN, S. 2018. Protection of trade secrets and capital structure decisions. *Journal of Financial Economics*, 128, 266-286.
- KNOEBER, C. R. & THURMAN, W. N. 1994. Testing the theory of tournaments: An empirical analysis of broiler production. *Journal of Labor Economics*, 12, 155-179.
- LAFOND, R. & WATTS, R. L. 2008. The information role of conservatism. *The accounting review*, 83, 447-478.
- LAMBERT, R. 2010. Discussion of "Implications for GAAP from an analysis of positive research in accounting". *Journal of Accounting and Economics*, 50, 287-295.
- LAZEAR, E. P. & ROSEN, S. 1981. Rank-order tournaments as optimum labor contracts. *Journal of Political Economy*, 89, 841-864.
- MOON, S. H., SCULLEN, S. E. & LATHAM, G. P. 2016. Precarious curve ahead: The effects of forced distribution rating systems on job performance. *Human Resource Management Review*, 26, 166-179.
- NA, K., ZHANG, I. X. & ZHANG, Y. 2024. Is conservatism demanded by performance measurement in compensation contracts? Evidence from earnings measures used in bonus formulas. *Review of Accounting Studies*, 29, 809-851.
- NALEBUFF, B. J. & STIGLITZ, J. E. 1983. Prizes and incentives: towards a general theory of compensation and competition. *The Bell Journal of Economics*, 21-43.
- O'KEEFE, M., VISCUSI, W. K. & ZECKHAUSER, R. J. 1984. Economic contests: Comparative reward schemes. *Journal of labor economics*, 2, 27-56.
- ROSEN, S. 1986. Prizes and incentives in elimination tournaments. *The American Economic Review*, 76, 701-715.
- ROYCHOWDHURY, S. & WATTS, R. L. 2007. Asymmetric timeliness of earnings, market-to-book and conservatism in financial reporting. *Journal of Accounting and Economics*, 44, 2-31.
- TICE, F. M. 2024. The role of common risk in the effectiveness of explicit relative performance evaluation. *Management Science*, 70, 1635-1655.

- WATTS, R. L. 2003a. Conservatism in accounting-part II: evidence and research opportunities.  
*Available at SSRN 438662.*
- WATTS, R. L. 2003b. Conservatism in accounting part I: Explanations and implications.  
*Accounting horizons*, 17, 207-221.

## APPENDIX A

### Variable Definitions

#### Main Variables:

<i>C_score<sub>it</sub></i>	The firm-year level of accounting conservatism, measured by augmenting Basu (1997) piece-wise linear regression with a linear function of firm size, market-to-book ratio, and leverage, following Khan and Watts (2009).
<i>Rpe<sub>it</sub></i>	RPE dummy, equal to 1 for accounting-based RPE firms, and 0 for accounting-based non-RPE firms or equity-based RPE firms.
<i>Lastyear_loser<sub>it</sub></i>	Last year loser dummy, equal to 1 if the firm's accounting performance is equal to or below the target performance ranking in the peer group before the last RPE year of each grant, and 0 otherwise.
<i>Last_post<sub>it</sub></i>	Last post dummy, equal to 1 for the last RPE year of each grant, and 0 otherwise.

#### Control variables:

<i>Logsize<sub>it</sub></i>	Firm size, computed as the natural logarithm of total assets.
<i>Mb<sub>it</sub></i>	Market to book ratio, computed as the market value of equity divided by the book value of equity.
<i>Lev<sub>it</sub></i>	Leverage, computed as total liabilities divided by total assets.
<i>Big4<sub>it</sub></i>	Big four dummy, equal to 1 if the firm is audited by big four accounting firms, and 0 otherwise.
<i>Roa<sub>it</sub></i>	Return on asset, computed as net income divided by total asset.
<i>Stdsale<sub>it</sub></i>	Sales volatility, computed as the standard deviation of sales in the previous five years.
<i>Stdcf<sub>it</sub></i>	Cash flow volatility, computed as the standard deviation of previous five years' cash flows from operations.
<i>Stdret<sub>it</sub></i>	Return volatility, computed as the standard deviation of monthly stock returns in the previous three years.
<i>Loss<sub>it</sub></i>	Loss dummy, equal to 1 if the firm reports negative net income, and 0 otherwise.
<i>Opcycle<sub>it</sub></i>	Operating cycle, computed as the natural logarithm of the sum of inventory period and account receivable period.

#### Additional variables for PSM:

<i>Perf_synch<sub>it</sub></i>	Performance synchronicity, computed as the R-square by regressing the firm's ROA on industry median of ROA over the previous ten years.
<i>Bm<sub>it</sub></i>	Book to market ratio, computed as the book value of equity divided by the market value of equity.
<i>Roa_indadj<sub>it</sub></i>	Industry-adjusted return on asset.
<i>Market_share<sub>it</sub></i>	Market share, computed as the proportion of the firm's market capitalization over the industry's total market capitalization.
<i>Analyst_forecast_error<sub>it</sub></i>	Analyst forecast error, computed as the forecast errors of the last consensus earnings forecast for the year.
<i>Ceo_stock_holding<sub>it</sub></i>	CEO stock holding, computed as the percentage of shares owned by the CEO.

#### Variables for additional tests:

<i>Beat_barely<sub>it</sub></i>	Dummy for barely beating peer performance, equal to 1 if the firm's performance ranking in the peer group reaches or exceeds the relative performance target by 10 percent or less, and zero otherwise.
<i>DA<sub>it</sub></i>	Performance-adjusted discretionary accruals estimated based on modified Jones model.

<i>IDD<sub>it</sub></i>	IDD indicator, equal to 1 if the firm whose headquarter is located in a state that recognizes the Inevitable Disclosure Doctrine (IDD) during the year, and 0 otherwise.
<i>MA_reversed<sub>it</sub></i>	Reversed score of managerial ability, computed as the Demerjian et al.'s (2012) managerial ability score multiplied by -1.
<i>Common_risk<sub>it</sub></i>	The firm-level common risk, measured by the r-square from regressing prior 36 months' firm-level stock returns on value-weighted industry stock returns, following Gong, Li and Shin (2011).
<i>High_risk<sub>it</sub></i>	High risk dummy, equal to 1 if the firm's common risk is equal to or higher than the median common risk of firms in the same industry during the three years prior to the use of accounting-based RPE, and 0 otherwise.
<i>Post<sub>it</sub></i>	Post dummy, equal to 1 for the year of adopting RPE by accounting-based RPE firms, and 0 for the pre-adoption year.
<b>Variables for robustness tests:</b>	
<i>UX<sub>it</sub></i>	Unexpected annual earnings, computed as the reported earnings minus expected earnings, scaled by the beginning market value of equity, following Badia et al. (2021).
<i>UR<sub>it</sub></i>	Unexpected returns, computed as the realized returns minus expected returns, following Badia et al. (2021).
<i>D<sub>it</sub></i>	Bad news indicator, equal to 1 if $UR < 0$ and 0 otherwise.
<i>VarR<sub>it</sub></i>	Daily equity return volatility, computed as the standard deviation of the firm's daily stock return during the year, requiring a minimum of 125 days with non-missing returns.
<i>FVCI</i>	Fair value components of comprehensive income divided by beginning market value of equity.
<i>Lev1</i>	Level 1 fair value assets and liabilities divided by total assets.
<i>Lev23</i>	Levels 2 and 3 fair value assets and liabilities divided by total assets.

**APPENDIX B**  
Covariate balance of PSM procedure

Panel A: Covariate balance between accounting-based RPE firms and matched accounting-based non-RPE firms							
		Mean			Median		
		Control sample	Treatment sample	t-value	Control sample	Treatment sample	t-value
<i>Perf_synch<sub>it</sub></i>	0.071*** (0.000)	0.389	0.376	0.992	0.369	0.352	0.461
<i>Logsize<sub>it</sub></i>	0.023*** (0.000)	9.099	9.115	-0.269	8.958	9.013	0.903
<i>Bm<sub>it</sub></i>	0.020*** (0.003)	0.588	0.601	-0.733	0.504	0.535	1.083
<i>Roa_indadj<sub>it</sub></i>	-0.092*** (0.001)	0.030	0.028	0.700	0.010	0.006	3.441*
<i>Lev<sub>it</sub></i>	-0.001 (0.968)	0.227	0.231	-0.521	0.215	0.209	0.100
<i>Market_share<sub>it</sub></i>	-0.187*** (0.000)	0.030	0.030	-0.077	0.011	0.011	0.461
<i>Analyst_forecast_error<sub>it</sub></i>	-0.012*** (0.004)	-0.045	-0.026	-0.956	-0.020	-0.020	0.250
<i>Ceo_stock_holding<sub>it</sub></i>	-0.062 (0.328)	0.006	0.007	-1.052	0.002	0.002	0.346
<i>Constant</i>	-0.150*** (0.000)						
Fixed Effects	Ind, Year						
Propensity Score		0.169	0.170	-0.165	0.131	0.131	0.002
Panel B: Covariate balance between accounting-based RPE firms and matched equity-based RPE firms							
		Mean			Median		
		Control sample	Treatment sample	t-value	Control sample	Treatment sample	t-value
<i>Logsize<sub>it</sub></i>	0.030*** (0.000)	8.993	9.095	-1.470	8.801	9.012	5.176**
<i>Bm<sub>it</sub></i>	0.009 (0.610)	0.588	0.601	-0.522	0.486	0.487	0.011
<i>Roa<sub>it</sub></i>	0.041 (0.752)	0.050	0.050	-0.128	0.044	0.047	0.385
<i>Lev<sub>it</sub></i>	-0.000 (0.994)	0.261	0.254	0.925	0.238	0.240	0.096
<i>Market_share<sub>it</sub></i>	0.525** (0.031)	0.028	0.028	0.075	0.010	0.011	0.385
<i>Analyst_forecast_error<sub>it</sub></i>	-0.008 (0.609)	-0.032	-0.043	0.514	-0.020	-0.020	0.269
<i>Constant</i>	0.031 (0.692)						
Fixed Effects	Ind, Year						
Propensity Score		0.402	0.416	-1.410	0.397	0.399	0.011

Notes: This appendix shows the covariate balance of PSM procedure. Panel A is the covariate balance between accounting-based RPE firms and matched accounting-based non-RPE firms, along with the propensity scores obtained from the first-stage regression. Panel B is the covariate balance between accounting-based RPE firms and matched equity-based RPE firms, along with the propensity scores obtained from the first-stage regression. In both Panel A and Panel B, each treatment firm is matched with a control firm with the closest propensity score in the same year and a maximum caliper width of 25%. Appendix A lists the definitions of the variables.

**Table 1**  
Sample Selection Procedure

	Number of firm-year observations
Firms with RPE awards to CEOs covered by Incentive Lab during 1998-2019	10,476
Requiring accounting-based performance metrics	3,033
Requiring self-selected peer group	1,713
Requiring performance targets defined as relative percentiles or ordinal ranks	1,285
Requiring non-missing C-score conservatism measure and control variables	1,121
PSM samples (Requiring non-missing RPE determinants and caliber width lower than 0.25):	
Accounting-based RPE treatment sample matched with accounting-based non-RPE control sample	980
Accounting-based RPE treatment sample matched with equity-based control sample	748

Notes: This table reports the sample selection procedure. We obtain RPE data for CEOs over the period 1998-2019 from ISS Incentive Lab. Financial and accounting data are obtained from COMPUSTAT and CRSP.

**Table 2**  
Descriptive Statistics

	Mean	p25	p50	p75	SD
<i>C_score<sub>it</sub></i>	0.007	-0.063	0.013	0.087	0.138
<i>Rpe<sub>it</sub></i>	0.500	0.000	0.500	1.000	0.500
<i>Logsize<sub>it</sub></i>	9.141	8.170	9.008	10.064	1.356
<i>Mb<sub>it</sub></i>	2.873	1.261	1.888	3.159	3.741
<i>Lev<sub>it</sub></i>	0.595	0.152	0.329	0.683	0.898
<i>Big4<sub>it</sub></i>	0.976	1.000	1.000	1.000	0.153
<i>Roa<sub>it</sub></i>	0.046	0.010	0.035	0.079	0.070
<i>Stdsale<sub>it</sub></i>	0.044	0.004	0.018	0.052	0.068
<i>Stdco<sub>it</sub></i>	0.088	0.059	0.078	0.105	0.042
<i>Stdret<sub>it</sub></i>	0.014	0.003	0.008	0.018	0.018
<i>Loss<sub>it</sub></i>	0.125	0.000	0.000	0.000	0.331
<i>Opcycle<sub>it</sub></i>	5.430	4.482	5.007	6.034	1.675

Notes: This table provides the summary statistics of the main variables used in the empirical analyses. Appendix A lists the definitions of the variables.

**Table 3**  
**Correlation Matrix**

Panel A: Correlation for the sample of accounting-based RPE with PSM accounting-based non-RPE												
	<i>C_score</i>	<i>Rpe</i>	<i>Logsize</i>	<i>Mb</i>	<i>Lev</i>	<i>Big5</i>	<i>Roa</i>	<i>Sidsale</i>	<i>Stdco</i>	<i>Std_ret</i>	<i>Loss</i>	<i>Opcycle</i>
<i>C_score</i>	1.000	-0.018 (0.428)	-0.652*** (0.000)	-0.302*** (0.000)	0.265*** (0.000)	-0.041* (0.068)	-0.259*** (0.000)	-0.019 (0.412)	0.035 (0.119)	0.244*** (0.000)	0.181*** (0.000)	0.080*** (0.000)
<i>Rpe</i>	-0.008 (0.712)	1.000	0.015 (0.496)	-0.036 (0.109)	0.053** (0.018)	0.007 (0.770)	-0.034 (0.135)	-0.066*** (0.004)	-0.080*** (0.000)	-0.036 (0.107)	-0.028 (0.222)	0.082*** (0.000)
<i>Logsize</i>	-0.636*** (0.000)	0.007 (0.767)	1.000	0.283*** (0.000)	-0.143*** (0.000)	0.064*** (0.005)	0.219*** (0.000)	-0.080*** (0.000)	-0.076*** (0.001)	-0.376*** (0.000)	-0.196*** (0.000)	0.032 (0.163)
<i>Mb</i>	-0.272*** (0.000)	-0.070*** (0.002)	0.265*** (0.000)	1.000	-0.538*** (0.000)	-0.019 (0.391)	0.579*** (0.000)	0.319*** (0.000)	0.187*** (0.000)	-0.156*** (0.000)	-0.206*** (0.000)	-0.273*** (0.000)
<i>Lev</i>	0.376*** (0.000)	0.051** (0.024)	-0.195*** (0.000)	-0.209*** (0.000)	1.000	-0.004 (0.843)	-0.577*** (0.000)	-0.324*** (0.000)	-0.179*** (0.000)	0.069*** (0.002)	0.209*** (0.000)	0.227*** (0.000)
<i>Big4</i>	-0.036 (0.116)	0.007 (0.770)	0.063*** (0.006)	0.009 (0.680)	0.015 (0.495)	1.000	0.020 (0.366)	0.063*** (0.006)	-0.009 (0.702)	-0.041* (0.072)	0.011 (0.637)	-0.098*** (0.000)
<i>Roa</i>	-0.240*** (0.000)	-0.024 (0.288)	0.248*** (0.000)	0.361*** (0.000)	-0.336*** (0.000)	0.017 (0.455)	1.000	0.345*** (0.000)	0.196*** (0.000)	-0.110*** (0.000)	-0.576*** (0.000)	-0.302*** (0.000)
<i>Sidsale</i>	0.035 (0.126)	-0.013 (0.562)	-0.116*** (0.000)	0.042* (0.061)	-0.123*** (0.000)	0.053** (0.018)	0.100*** (0.000)	1.000	0.497*** (0.000)	0.315*** (0.000)	0.159*** (0.000)	-0.425*** (0.000)
<i>Stdco</i>	0.057** (0.011)	-0.066*** (0.004)	-0.139*** (0.000)	0.083*** (0.000)	-0.060*** (0.000)	-0.030 (0.185)	0.078*** (0.001)	0.403*** (0.000)	1.000	0.334*** (0.000)	0.191*** (0.000)	-0.252*** (0.000)
<i>Std_ret</i>	0.257*** (0.000)	-0.051** (0.025)	-0.373*** (0.000)	-0.125*** (0.000)	0.187*** (0.000)	-0.039* (0.083)	-0.158*** (0.000)	0.222*** (0.000)	0.313*** (0.000)	1.000	0.304*** (0.000)	-0.117*** (0.000)
<i>Loss</i>	0.188*** (0.000)	-0.028 (0.222)	-0.207*** (0.000)	-0.099*** (0.000)	0.254*** (0.000)	0.011 (0.637)	-0.558*** (0.000)	0.155*** (0.000)	0.216*** (0.000)	0.333*** (0.000)	1.000	-0.088*** (0.000)
<i>Opcycle</i>	0.088*** (0.000)	0.052** (0.020)	0.032 (0.151)	-0.151*** (0.000)	0.170*** (0.000)	-0.120*** (0.000)	-0.211*** (0.000)	-0.289*** (0.000)	-0.187*** (0.000)	-0.086*** (0.000)	-0.092*** (0.000)	1.000
Panel B: Correlation for the sample of accounting-based RPE with PSM equity-based RPE												
	<i>C_score</i>	<i>Rpe</i>	<i>Logsize</i>	<i>Mb</i>	<i>Lev</i>	<i>Big5</i>	<i>Roa</i>	<i>Sidsale</i>	<i>Stdco</i>	<i>Std_ret</i>	<i>Loss</i>	<i>Opcycle</i>
<i>C_score</i>	1.000	-0.045* (0.059)	-0.655*** (0.000)	-0.240*** (0.000)	0.250*** (0.000)	-0.075*** (0.001)	-0.261*** (0.000)	0.007 (0.769)	0.056** (0.018)	0.247*** (0.000)	0.195*** (0.000)	0.003 (0.889)
<i>Rpe</i>	-0.050** (0.033)	1.000	0.040* (0.093)	-0.020 (0.395)	-0.010 (0.657)	-0.024 (0.311)	-0.008 (0.729)	-0.019 (0.424)	-0.060** (0.011)	-0.043* (0.066)	0.000 (1.000)	0.086*** (0.000)
<i>Logsize</i>	-0.616*** (0.000)	0.035 (0.138)	1.000	0.277*** (0.000)	-0.206*** (0.000)	0.107*** (0.000)	0.261*** (0.000)	-0.095*** (0.000)	-0.108*** (0.000)	-0.404*** (0.000)	-0.229*** (0.000)	0.088*** (0.000)
<i>Mb</i>	-0.060** (0.011)	-0.055** (0.021)	0.176*** (0.000)	1.000	-0.461*** (0.000)	0.012 (0.616)	0.519*** (0.000)	0.206*** (0.000)	0.129*** (0.000)	-0.124*** (0.000)	-0.211*** (0.000)	-0.162*** (0.000)
<i>Lev</i>	0.246*** (0.000)	0.004 (0.861)	-0.199*** (0.000)	-0.099*** (0.000)	1.000	0.018 (0.456)	-0.569*** (0.000)	-0.209*** (0.000)	-0.162*** (0.000)	0.094*** (0.000)	0.232*** (0.000)	-0.001 (0.981)
<i>Big4</i>	-0.062*** (0.009)	-0.024 (0.311)	0.111*** (0.000)	0.030 (0.197)	0.025 (0.284)	1.000	-0.018 (0.454)	-0.018 (0.434)	-0.014 (0.544)	-0.062*** (0.008)	0.002 (0.926)	0.017 (0.479)
<i>Roa</i>	-0.220*** (0.000)	-0.011 (0.626)	0.270*** (0.000)	0.212*** (0.000)	-0.309*** (0.000)	-0.011 (0.643)	1.000	0.239*** (0.000)	0.138*** (0.000)	-0.109*** (0.000)	-0.576*** (0.000)	-0.136*** (0.000)
<i>Sidsale</i>	0.037 (0.117)	0.006 (0.811)	-0.070*** (0.003)	-0.016 (0.507)	-0.074*** (0.002)	-0.011 (0.654)	-0.007 (0.772)	1.000	0.459*** (0.000)	0.339*** (0.000)	0.130*** (0.000)	-0.286*** (0.000)
<i>Stdco</i>	0.085*** (0.000)	-0.040* (0.093)	-0.144*** (0.000)	0.049** (0.039)	-0.058** (0.015)	-0.021 (0.380)	0.009 (0.690)	0.357*** (0.000)	1.000	0.333*** (0.000)	0.162*** (0.000)	-0.132*** (0.000)
<i>Std_ret</i>	0.304*** (0.000)	-0.063*** (0.008)	-0.400*** (0.000)	-0.049** (0.036)	0.186*** (0.000)	-0.058** (0.014)	-0.185*** (0.000)	0.176*** (0.000)	0.282*** (0.000)	1.000	0.288*** (0.000)	-0.117*** (0.000)
<i>Loss</i>	0.194*** (0.000)	0.000 (1.000)	-0.231*** (0.000)	-0.061*** (0.010)	0.218*** (0.000)	0.002 (0.926)	-0.580*** (0.000)	0.149*** (0.000)	0.180*** (0.000)	0.304*** (0.000)	1.000	-0.061** (0.010)
<i>Opcycle</i>	0.003 (0.914)	0.071*** (0.002)	0.120*** (0.000)	-0.082*** (0.000)	0.099*** (0.000)	-0.011 (0.655)	-0.108*** (0.000)	-0.220*** (0.000)	-0.107*** (0.000)	-0.114*** (0.000)	-0.071*** (0.003)	1.000

Notes: This table provides the correlation matrix of the main variables used in the empirical analyses. Pearson (Spearman) correlations are reported above (below) the diagonal of the matrix. Appendix A lists the definitions of the variables. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 4**  
RPE and Accounting Conservatism

	Accounting RPE and PSM Accounting Non-RPE	Accounting RPE and PSM Equity RPE
	(1) <i>C score<sub>it</sub></i>	(2) <i>C score<sub>it</sub></i>
<i>Rpe<sub>it</sub></i>	<b>-0.010**</b> (0.019)	<b>-0.010**</b> (0.016)
<i>Logsize<sub>it</sub></i>	-0.056*** (0.000)	-0.060*** (0.000)
<i>Mb<sub>it</sub></i>	-0.001 (0.617)	-0.004 (0.101)
<i>Lev<sub>it</sub></i>	0.033*** (0.000)	0.003 (0.569)
<i>Big4<sub>it</sub></i>	-0.006 (0.623)	0.019 (0.360)
<i>Roa<sub>it</sub></i>	0.047 (0.299)	0.040 (0.403)
<i>Stdsale<sub>it</sub></i>	-0.040 (0.247)	-0.003 (0.900)
<i>Stdco<sub>it</sub></i>	0.016 (0.885)	0.154** (0.019)
<i>Stdret<sub>it</sub></i>	0.008 (0.358)	0.009 (0.240)
<i>Loss<sub>it</sub></i>	0.003 (0.236)	0.000 (0.904)
<i>Opcycle<sub>it</sub></i>	0.486*** (0.000)	0.537*** (0.000)
<i>Constant</i>	-0.010** (0.019)	-0.010** (0.016)
Fixed Effects	Ind, Year	Ind, Year
Clustering	Firm	Firm
N	1,960	1,496
Adj. R-square	0.682	0.693

Notes: This table reports the results for the firm-level regressions relating a firm's RPE use to accounting conservatism based on C-score developed by Khan and Watts (2009) by implementing PSM procedures. In column 1, we match each accounting-based RPE firm with one accounting-based non-RPE firm which has the closest propensity score in the same year and a caliper width of less than 25%. In column 2, we match each accounting-based RPE firm with one equity-based RPE firm which has the closest propensity score in the same year and a caliper width of less than 25%. Appendix A lists the definitions of the variables. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 5**  
RPE's Tournament Incentive

	<i>C score<sub>it</sub></i>
<i>Lastyear_loser<sub>it</sub></i>	0.004 (0.296)
<i>Last_post<sub>it</sub></i>	-0.006 (0.903)
<i>Lastyear_loser<sub>it</sub> × Last_post<sub>it</sub></i>	<b>-0.018**</b> <b>(0.029)</b>
<i>Constant</i>	0.449*** (0.000)
<i>Control variables</i>	Yes
Fixed Effects	Ind, Year
Clustering	Firm
N	1,053
Adj. R-square	0.808

Notes: This table reports the results for the grant-level regressions (for accounting-based RPEs) to test whether CEOs in firms that perform poorer than their peers before the last grant performance evaluation year engage in less conservative reporting in the last evaluation year. Appendix A lists the definitions of the variables. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 6**  
Accounting Conservatism and Barely Beating Relative Performance Target

	<i>Beat barely<sub>it</sub></i>
<i>C_score<sub>it</sub></i>	<b>-1.818**</b> <b>(0.021)</b>
<i>Logsize<sub>it</sub></i>	0.113 (0.268)
<i>Mb<sub>it</sub></i>	-0.043 (0.132)
<i>Lev<sub>it</sub></i>	0.081 (0.630)
<i>Roa<sub>it</sub></i>	-1.238 (0.297)
<i>DA<sub>it</sub></i>	-0.725 (0.391)
<i>Constant<sub>it</sub></i>	-3.013*** (0.008)
Fixed Effects	Ind, Year
Cluster	Firm
N	1,989
Pseudo R-square	0.021

Notes: This table reports the results for the grant-level logistic regression (for accounting-based RPEs) to test whether low conservatism firms are more likely to barely beat relative performance target. Appendix A lists the definitions of the variables. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 7**  
IDD and Managerial Ability

	Accounting RPE and PSM Accounting Non-RPE (1) <i>C_score<sub>it</sub></i>	Accounting RPE and PSM Equity RPE (2) <i>C_score<sub>it</sub></i>
<i>Rpe<sub>it</sub></i>	0.031** (0.012)	0.015 (0.345)
<i>IDD<sub>it</sub></i>	0.041*** (0.006)	0.002 (0.883)
<i>Rpe<sub>it</sub> × IDD<sub>it</sub></i>	-0.066*** (0.001)	-0.041* (0.056)
<i>MA_reversed<sub>it</sub></i>	-0.017 (0.193)	0.018 (0.249)
<i>Rpe<sub>it</sub> × MA_reversed<sub>it</sub></i>	0.041** (0.020)	0.025 (0.257)
<i>IDD<sub>it</sub> × MA_reversed<sub>it</sub></i>	0.057*** (0.007)	0.017 (0.462)
<i>Rpe<sub>it</sub> × IDD<sub>it</sub> × MA_reversed<sub>it</sub></i>	<b>-0.082***</b> <b>(0.003)</b> (0.150)	<b>-0.057*</b> <b>(0.054)</b> (0.304)
<i>Constant</i>	0.386*** (0.000)	0.473*** (0.000)
<i>Control variables</i>	Yes	Yes
Fixed Effects	Ind, Year	Ind, Year
Clustering	Firm	Firm
N	1,183	1,287
Adj. R-square	0.720	0.713

Notes: This table reports the results for the firm-level regressions relating a firm's RPE use, IDD adoption and managerial ability to accounting conservatism. In column 1, we match each accounting-based RPE firm with one accounting-based non-RPE firm which has the closest propensity score in the same year and a caliper width of less than 25%. In column 2, we match each accounting-based RPE firm with one equity-based RPE firm which has the closest propensity score in the same year and a caliper width of less than 25%. Appendix A lists the definitions of the variables. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 8**  
RPE's Agency Explanation

	<i>C score<sub>it</sub></i>
<i>High_risk<sub>it</sub></i>	0.006 (0.450)
<i>Post<sub>it</sub></i>	0.017 (0.757)
<b><i>High_risk<sub>it</sub> × Post<sub>it</sub></i></b>	<b>-0.015**</b> <b>(0.048)</b>
<i>Constant</i>	0.461*** (0.000)
<i>Control variables</i>	Yes
Fixed Effects	Ind, Year
Clustering	Firm
N	1,604
Adj. R-square	0.617

Notes: This table reports the result for the firm-level regression to test whether firms with higher common risk experience a larger reduction in accounting conservatism after implementing accounting-based RPE. Appendix A lists the definitions of the variables. Both models include industry and year fixed effects. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 9**

RPE's Tournament Incentive Partitioned by High and Low Agency Costs

Panel A: Based on Industry Median		
	High Agency Costs Group:	Low Agency Costs Group:
	$C\_score_{it}$	$C\_score_{it}$
	(1)	(2)
$Lastyear\_loser_{it}$	0.001 (0.907)	0.018 (0.150)
$Last\_post_{it}$	0.003 (0.279)	-0.004 (0.378)
$Lastyear\_loser_{it} \times Last\_post_{it}$	<b>-0.026*</b> <b>(0.068)</b>	<b>-0.021</b> <b>(0.238)</b>
Constant	0.425*** (0.000)	0.577*** (0.000)
Control variables	Yes	Yes
Fixed Effects	Ind, Year	Ind, Year
Clustering	Firm	Firm
N	711	275
Adj. R-square	0.805	0.806
Panel B: Based on the Median of Self-selected Peer Group		
	High Agency Costs Group:	Low Agency Costs Group:
	$C\_score_{it}$	$C\_score_{it}$
	(1)	(2)
$Lastyear\_loser_{it}$	0.005 (0.626)	0.007 (0.486)
$Last\_post_{it}$	0.002 (0.683)	-0.003 (0.515)
$Lastyear\_loser_{it} \times Last\_post_{it}$	<b>-0.030**</b> <b>(0.039)</b>	<b>-0.016</b> <b>(0.449)</b>
Constant	0.310*** (0.000)	0.470*** (0.000)
Control variables	Yes	Yes
Fixed Effects	Ind, Year	Ind, Year
Clustering	Firm	Firm
N	461	567
Adj. R-square	0.836	0.781

Notes: This table reports the results for the grant-level regressions (for accounting-based RPEs) to test whether tournament incentive depends on high agency costs versus low agency costs. Agency costs are measured by common risk based on R-squared from a regression of a firm's returns on industry returns over the prior 36 months. Firms are partitioned into the group of high or low agency costs with reference to the industry median (Panel A) or the median of self-selected peer group (Panel B) of R-squared. Appendix A lists the definitions of the variables. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 10**

Alternative Conservatism Measure: Badia et al.'s (2021) Modified Basu Model

	Accounting RPE and PSM Accounting Non- RPE (1) $UX_{it}$	Accounting RPE and PSM Equity RPE (2) $UX_{it}$
$D_{it}$	0.041 (0.351)	0.008 (0.843)
$UR_{it}$	0.026 (0.709)	-0.042 (0.340)
$D_{it} \times UR_{it}$	0.330* (0.053)	0.255* (0.057)
$Rpe_{it}$	-0.005 (0.789)	0.009 (0.718)
$D_{it} \times Rpe_{it}$	-0.017 (0.524)	-0.018 (0.440)
$Rpe_{it} \times UR_{it}$	0.126 (0.119)	0.075** (0.039)
$D_{it} \times Rpe_{it} \times UR_{it}$	<b>-0.257**</b> <b>(0.019)</b>	<b>-0.215**</b> <b>(0.021)</b>
$Mb_{it}$	-0.135** (0.043)	-0.070 (0.195)
$D_{it} \times Mb_{it}$	-0.054 (0.381)	-0.060 (0.228)
$UR_{it} \times Mb_{it}$	0.166 (0.105)	-0.004 (0.949)
$D_{it} \times UR_{it} \times Mb_{it}$	-0.333* (0.098)	-0.097 (0.575)
$VarR_{it}$	-0.096 (0.968)	-1.052 (0.631)
$D_{it} \times VarR_{it}$	0.914 (0.622)	1.780 (0.271)
$UR_{it} \times VarR_{it}$	-5.392 (0.276)	1.319 (0.541)
$D_{it} \times UR_{it} \times VarR_{it}$	3.063 (0.689)	0.788 (0.884)
<i>Constant</i>	0.085 (0.192)	0.085 (0.120)
Fixed Effects	Firm, Year	Firm, Year
Clustering	Firm	Firm
N	1,034	995
Adj. R-square	0.163	0.135

Notes: This table reports the results for the firm-level regressions relating a firm's RPE use to accounting conservatism based on the modified Basu model developed by Badia, Duro, Penalva and Ryan (2021). In column 1, we match each accounting-based RPE firm with one accounting-based non-RPE firm which has the closest propensity score in the same year and a caliper width of less than 25%. In column 2, we match each accounting-based RPE firm with one equity-based RPE firm which has the closest propensity score in the same year and a caliper width of less than 25%. Appendix A lists the definitions of the variables. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 11**

Alternative Conservatism Measure: Badia et al.'s (2017) Fair-value-based Model

Panel A: Accounting RPE and PSM Accounting Non-RPE		
	Accounting RPE	PSM Accounting Non-RPE
	(1)	(2)
	$FVCI_{it}$	$FVCI_{it}$
$D_{it}$	0.000	0.001
	(0.755)	(0.670)
$Ret_{it}$	0.001	-0.004
	(0.626)	(0.143)
$D_{it} \times Ret_{it}$	-0.008	0.013**
	(0.370)	(0.038)
$MB_{it}$	0.000	0.000
	(0.475)	(0.136)
$D_{it} \times MB_{it}$	0.000	-0.001
	(0.763)	(0.330)
$Ret_{it} \times MB_{it}$	-0.001	-0.001
	(0.279)	(0.290)
$D_{it} \times Ret_{it} \times MB_{it}$	0.003	0.001
	(0.118)	(0.564)
$LevI_{it}$	0.041**	-0.031*
	(0.046)	(0.054)
$D_{it} \times LevI_{it}$	-0.009	0.031
	(0.787)	(0.361)
$Ret_{it} \times LevI_{it}$	-0.047	0.020
	(0.169)	(0.593)
$D_{it} \times Ret_{it} \times LevI_{it}$	<b>0.173**</b>	<b>0.073</b>
	<b>(0.012)</b>	<b>(0.754)</b>
$Lev23_{it}$	0.000	0.012
	(0.971)	(0.205)
$D_{it} \times Lev23_{it}$	0.003	-0.033*
	(0.776)	(0.065)
$Ret_{it} \times Lev23_{it}$	0.057**	0.020
	(0.011)	(0.188)
$D_{it} \times Ret_{it} \times Lev23_{it}$	<b>-0.026</b>	<b>-0.075</b>
	<b>(0.670)</b>	<b>(0.251)</b>
Constant	-0.001	0.003**
	(0.592)	(0.026)
Significance		
$D_{it} \times Ret_{it} \times Lev23_{it}$	P-value=0.097	P-value=0.595
$= D_{it} \times Ret_{it} \times LevI_{it}$		
Fixed Effects	Firm, Year	Firm, Year
Clustering	Firm	Firm
N	1,218	1,218
Adj. R-square	0.128	0.010
Panel B: Accounting RPE and PSM Equity RPE		
	Accounting RPE	PSM Equity RPE
	(1)	(2)
	$FVCI_{it}$	$FVCI_{it}$
$D_{it}$	-0.000	-0.000
	(0.952)	(0.992)
$Ret_{it}$	0.001	-0.002

	(0.857)	(0.324)
$D_{it} \times Ret_{it}$	-0.004	0.010
	(0.677)	(0.200)
$MB_{it}$	0.000	0.000
	(0.266)	(0.334)
$D_{it} \times MB_{it}$	-0.000	-0.000
	(0.726)	(0.863)
$Ret_{it} \times MB_{it}$	-0.001	0.000
	(0.234)	(0.574)
$D_{it} \times Ret_{it} \times MB_{it}$	0.001	-0.002
	(0.697)	(0.263)
$Lev1_{it}$	0.064*	0.021
	(0.070)	(0.453)
$D_{it} \times Lev1_{it}$	0.001	0.094
	(0.991)	(0.199)
$Ret_{it} \times Lev1_{it}$	-0.102	-0.031
	(0.256)	(0.398)
$D_{it} \times Ret_{it} \times Lev1_{it}$	<b>0.345**</b>	<b>0.229</b>
	<b>(0.011)</b>	<b>(0.483)</b>
$Lev23_{it}$	-0.008	0.005
	(0.582)	(0.697)
$D_{it} \times Lev23_{it}$	0.030	-0.050
	(0.110)	(0.160)
$Ret_{it} \times Lev23_{it}$	0.113**	0.002
	(0.012)	(0.933)
$D_{it} \times Ret_{it} \times Lev23_{it}$	<b>-0.051</b>	<b>-0.104</b>
	<b>(0.647)</b>	<b>(0.174)</b>
Constant	-0.002*	0.000
	(0.081)	(0.666)
Significance		
$D_{it} \times Ret_{it} \times Lev23_{it}$	P-value=0.089	P-value=0.336
$= D_{it} \times Ret_{it} \times Lev1_{it}$		
Fixed Effects	Firm, Year	Firm, Year
Clustering	Firm	Firm
N	852	852
Adj. R-square	0.074	0.065

Notes: This table reports the results for the firm-level regressions relating a firm's RPE use to accounting conservatism based on the fair-value-based measure developed by Badia, Duro, Penalva and Ryan (2021). In Panel A, we match each accounting-based RPE firm (Column 1) with one accounting-based non-RPE firm (Column 2) which has the closest propensity score in the same year and a caliper width of less than 25%. In Panel B, we match each accounting-based RPE firm (Column 1) with one equity-based RPE firm (Column 2) which has the closest propensity score in the same year and a caliper width of less than 25%. Appendix A lists the definitions of the variables. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**Table 12**  
Alternative Samples

	Accounting RPE and Accounting Non-RPE	Accounting RPE and Equity RPE
	(1) <i>C score<sub>it</sub></i>	(2) <i>C score<sub>it</sub></i>
<i>Rpe<sub>it</sub></i>	<b>-0.007**</b> (0.045)	<b>-0.013***</b> (0.005)
<i>Logsize<sub>it</sub></i>	-0.053*** (0.000)	-0.062*** (0.000)
<i>Mb<sub>it</sub></i>	-0.001** (0.042)	0.001 (0.755)
<i>Lev<sub>it</sub></i>	0.117*** (0.000)	0.066*** (0.002)
<i>Big4<sub>it</sub></i>	0.000 (0.913)	0.005 (0.749)
<i>Roa<sub>it</sub></i>	0.033* (0.062)	-0.059 (0.173)
<i>Stdsale<sub>it</sub></i>	-0.007 (0.600)	-0.018 (0.506)
<i>Stdcf<sub>it</sub></i>	-0.054 (0.267)	-0.135 (0.169)
<i>Stdret<sub>it</sub></i>	0.150*** (0.000)	0.140** (0.027)
<i>Loss<sub>it</sub></i>	0.012*** (0.001)	-0.002 (0.772)
<i>Opcycle<sub>it</sub></i>	0.005*** (0.005)	0.004 (0.115)
<i>Perf_synch<sub>it</sub></i>	-0.001 (0.778)	0.006 (0.413)
<i>Market_share<sub>it</sub></i>	-0.021 (0.280)	0.118 (0.349)
<i>Analyst_forecast_error<sub>it</sub></i>	0.004 (0.263)	-0.010 (0.131)
<i>Ceo_stock_holding<sub>it</sub></i>	-0.042* (0.088)	-0.059 (0.645)
<i>Constant</i>	0.425*** (0.000)	0.518*** (0.000)
Fixed Effects	Ind, Year	Ind, Year
Clustering	Firm	Firm
N	13,670	2,947
Adj. R-square	0.641	0.731

Notes: This table reports the results for the firm-level regressions relating a firm's RPE use to accounting conservatism based on C-score developed by Khan and Watts (2009). In column 1, we include all accounting-based RPE and accounting-based non-RPE firm-year observations. In column 2, we include all accounting-based RPE and equity-based RPE firm-year observations. Appendix A lists the definitions of the variables. All continuous variables are winsorized at 1% and 99%. The values in the parentheses are p-values clustered by firm in the regressions. \*\*\*, \*\*, and \* represent the significance levels of 1%, 5%, and 10%, respectively.

**How Relative Performance Evaluation Affects Accounting Conservatism:  
A Tournament Perspective**

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