**Article:**
Fu, Z., Ma, Y., Li, S. et al. (1 more author) (2022) Peer performance and the asymmetric timeliness of earnings recognition. International Review of Financial Analysis, 85. 102427. ISSN 1057-5219

https://doi.org/10.1016/j.irfa.2022.102427

# Peer performance and the asymmetric timeliness of earnings recognition


## Abstract

This paper investigates the impact of peer performance on the asymmetric timeliness of earnings recognition. We find a positive relationship between peers' poor performance and timely bad news disclosure. Managers promptly disclose bad news when peers perform poorly due to investors' demands rather than managers' herding. Information asymmetry, weak governance, common institutional investors, common analysts, and relative performance evaluation enhance the positive relationship between peers' poor performance and accounting conservatism. We find that timely bad news disclosure mitigates the information asymmetry in underperformance firms, reducing future stock price crash risk. Given that accounting conservatism might curb managers' incentive to invest in risky but profitable projects, we suggest that irrational investors demand more conservative accounting information for outperformers, harming firms' future performance.



**Keywords**: Peer effect; Accounting conservatism; Information asymmetry; Crash risk; Governance

**JEL Classifications**: G10; G38, M41, M48

# 1. Introduction

It is well documented in the information spillover literature that firms reflect peer firms' information on their own decision-making, and peer firms' performance is important information that plays a significant role in shaping corporate governance.[1] For instance, some firms may link peer performance with managerial compensation and turnover decision to evaluate managers' efforts. Similarly, due to the presence of information asymmetry, investors could use the information from peer firms to update beliefs about focal firms' performance. However, much less is known about the influence of peer performance on focal firms' financial reporting strategy. Accounting conservatism requires managers to disclose bad news more timely than good news (e.g., Basu, 1997; Beaver & Ryan, 2005; Fuertes & Robles, 2021), which is one of the most influential properties of financial reporting (Sterling, 1970). In this study, we extend this literature by investigating how peer firms' performance affects accounting conservatism.[2]

From the monitoring perspective, accounting conservatism aids in reducing information asymmetry and overseeing managers' behaviours, providing investors with more relevant information by recognizing losses promptly and improving the detection of default risk (e.g., Watts, 2003; Wittenberg-Moerman, 2008; Zhang, 2008). Investors change their expectations of focal firms more frequently when peer underperformance occurs, as they are more sensitive to bad news than good news (e.g., Kothari et al., 2009; Ng et al., 2013; Skinner, 1994). The shift in expectation could increase investors' concern about managerial bad news hoarding (e.g., Andreou et al., 2016; Callen & Fang, 2013; Shroff et al., 2017), thus increasing monitoring incentives and demanding more accounting conservatism to ease their concerns about corporate performance.

From the herding perspective, according to the covariation theory, managers with career and

[1] Numerous studies provide evidence that peer's information imposes great impact on capital structure (Bernard et al., 2021; Francis et al., 2016; MacKay & Phillips, 2005), innovation (Bessen & Maskin, 2009; Im & Shon, 2019; Zeng, 2001), cash holdings (Chen et al., 2019; Machokoto et al., 2021), investment (Im et al., 2021) and dividend payout (Adhikari & Agrawal, 2018).

[2] In this study, we follow prior studies (Ahmed & Duellman, 2013; Ball & Shivakumar, 2005; Basu, 1997) to use accounting conservatism, timely bad news disclosure, timely recognition of losses and asymmetric timeliness of earnings interchangeably.

reputation concerns have incentives to decrease their responsibility for poor performance by herding on other firms' bad new disclosures (Baginski et al., 2000; Scharfstein & Stein, 1990). Thus, managers aware of poor peer performance might voluntarily announce bad news, especially for managers with insufficient skill and confidence (Jiang & Verardo, 2018; Scharfstein & Stein, 1990). Based on these studies, we hypothesize that weak peer performance is positively associated with the timely recognition of losses.

Another strand of literature investigates the outcome of adopting accounting conservatism. Timely recognition of losses limits the ability of managers to exaggerate accounting figures and hoard bad news, which reduces information asymmetry and stock price crash risk (e.g., Francis et al., 2013; Kim & Zhang, 2016; Watts, 2003). However, accounting conservatism may limit managers' incentive to pursue high-risk but positive NPV investments, affecting firms' long-term performance (Kravet, 2014). Given the conflicting predictions in the literature, we further investigate the outcome of accounting conservatism induced by weak peer performance.

Using the data for the US-listed firms from 1987 to 2019, we find that weak peer performance increases timely bad news disclosure. Such impact increases as peer performance deteriorate since investors are more sensitive to bad news than good ones. Consistent with the notion that weak peer performance induces investors to demand bad news in a timelier manner, the relationship between peer performance and accounting conservatism is more profound for firms facing high information externality, with low governance quality and high information asymmetry. We also find that the effect is greater for firms that adopt relative performance evaluation (RPE) and experience the implementation of the Inevitable Disclosure Doctrine, implying that weak peer performance induces investors to demand timelier recognition of bad news if they perceive that managers are incentivized by their concern for compensation. Finally, we find no evidence for the covariation theory that managers tend to herd others by deliberately recognizing bad news earlier.

In addition, our findings are robust to a vast of tests, including instrument variable approach,

difference-in-differences analysis, alternative measures and subsample analysis. Finally, we further explore the consequence of accounting conservatism induced by weak peer performance. We document that such a decision imposes the constraint of bad news hoarding for underperformed firms and the constraint of investment for outperformed firms.

This study has several contributions. Firstly, we contribute to the literature on information spillover (e.g., Adhikari & Agrawal, 2018; Albuquerque, 2009; Francis et al., 2016). In contrast to most research that concentrates on the information spillover effect on strategy decisions (e.g., Bessen & Maskin, 2009; Fuertes & Robles, 2021; Im & Shon, 2019), we shed light on peer firms' information from the perspective of financial reporting strategy.

Secondly, our study contributes to the literature on the determinants of accounting conservatism (e.g., Ahmed & Duellman, 2013; Basu, 1997; LaFond & Watts, 2008) by documenting the non-trivial role of peer performance in demand for the timely recognition of losses. We also find that the impact is driven by the monitoring incentive of investors rather than managerial herding behaviour. In addition, by discovering the nonlinear relationship between peer performance and accounting conservatism, we provide supportive evidence for the asymmetric reaction of investors to good and bad news (e.g., Kothari et al., 2009; Ng et al., 2013; Skinner, 1994).

Finally, this study contributes to the debate on the benefit and cost of conservative financial reporting (e.g., Francis & Martin, 2010; Kim & Zhang, 2016; Kravet, 2014). The Financial Accounting Standards Board (FASB) and the International Accounting Standards Board (IASB) opposed conservative accounting and removed the requirement for accounting conservatism from the joint conceptual framework in 2010 (FASB, 2010; IASB, 2010). We provide new evidence for the heterogenous outcome of accounting conservatism induced by weak peer performance. We contribute to the debate by highlighting the benefit of reduced information asymmetry for underperformed firms and the drawback of constrained investment.

Our study also has significant implications. During the period of shocks for the entire market

(e.g., financial crisis, coronavirus pandemic), if investors demand more accounting conservatism due to poor peer performance, investors can benefit from reduced information asymmetry of low-quality firms, but such demand also impedes high-quality firms that have experienced financial losses from recovering and harm long-term performance. Our study appeals to policymakers to consider the side effect of accounting conservatism on investment performance when making a policy decision.

The remainder of this study is organized as follows. Section 2 presents the literature review and hypothesis development. Section 3 shows the data and methodology. Section 4 presents the empirical results, and Section 5 concludes.

## 2. Literature review and hypothesis development

Given that information has spillover effects, an increasing body of research demonstrates that managers are more likely to make decisions based on those of their peers. For example, managers take peer financing decisions as an essential reference for their own financing decisions (Bernard et al., 2021; Leary & Roberts, 2014; MacKay & Phillips, 2005). Firms have an incentive to imitate peer innovation (Bessen & Maskin, 2009; Im & Shon, 2019; Zeng, 2001). Peer cash holdings are a key determinant of cash policy in the focal firm (Chen et al., 2019; Machokoto et al., 2021). Besides, firms tend to manipulate earnings when peer firms announce a restatement (Kedia et al., 2015).

In addition, investors use peer firms' information to form their beliefs about focal firms. For instance, Foster (1981) and Han et al. (1989) suggest that peer firms' earnings announcements and forecasts affect the focal firm's stock price. Peer earnings quality also alters investors' belief in focal firms. The Wall Street Journal reports that the earnings restatement of Freddie Mac raises serious concerns about the financial reporting quality of its peer firm, Fannie Mae (Barta, 2004). Consistently, the empirical study, Gleason et al. (2008) suggests that peer firms' accounting restatement leads the stock price of focal firms to decline. In the same vein, Xu et al. (2006) imply that when the restatement impacts the restating firm's stock price, peers with

identical cash flow characteristics experience an abnormal return.

Peer comparison is also one of the most extensively used techniques for professional analysts to conduct equity analysis (Baker & Ruback, 1999; Damodaran, 2009; Nguyen et al., 2021), which creates value in analysts' recommendations (Boni & Womack, 2006). Analysts' selection criteria for peer firms impact their capacity to identify focal firm's performance (Ecker et al., 2013). In addition to shareholders and analysts, debtholders adjust their risk estimations about the focal firm based on peer information. For example, when peer firms have corporate scandals, debtholders demand a higher risk premium from focal firms (Bonini & Boraschi, 2012; Yuan & Zhang, 2015). However, when peer firms perform well, firms have lower loan rates when they borrow from banks that have lent to their peers. The benefit of lower costs increases with the similarity between firms and peers (Bao, 2019).

Due to information asymmetry, investors have more timely responses to bad news than good news (e.g., D'Augusta, 2022; Kothari et al., 2009; Skinner, 1994). Investors are aware that management has a motive to please the market, first respond cautiously to good news and then wait for more confirmation signs. By contrast, investors assign high credibility to bad news disclosure because disclosing bad news contradicts managers' self-interest. When peers have weak performance, investors have great concern about the focal firms' performance. In this regard, investors might demand managers disclose bad news promptly and report earnings conservatively to ease their concerns. It is because timely bad news disclosure curbs managers' ability to conceal negative news (e.g., Kim & Zhang, 2016; Ruch & Taylor, 2015; Watts, 2003), thereby reducing information asymmetry (Francis et al., 2013; Kim et al., 2013) and stock price crash risk (Kim & Zhang, 2016). In the same vein, LaFond & Watts (2008) find that firms are more likely to disclose bad news promptly as information asymmetries increase. Besides, conservative reporting increases the reliability of debt contract-related accounting information, thereby improving the efficiency of debt contracts (e.g., Ball, Bushman, et al., 2008; Ball, Robin, et al., 2008; Zhang, 2008). As such, it is reasonable to conjecture that investors demand more accounting conservatism to alleviate information asymmetry and mitigate the negative impact of poor peer performance on their value.

***H1****: Investors demand more accounting conservatism when peer firms have weak performance.*

Prior studies document that such information externality is much stronger for firms that are cross-held by institutional investors (i.e., common institutional investors), since bad performance by one portfolio firm affects the firm's value and other co-owned peer firms' decisions (Ramalingegowda et al., 2021). For example, peer firm accounting overstatements give a false signal to the focal firm about potential investment possibilities, influencing the focal firm's investment choices (Beatty et al., 2013; Li, 2016). Ramalingegowda et al. (2021) further suggest that such spillover effect among portfolios is exaggerated by the number of cross-held peers. In the same vein, the information externality is considerable to firms that share the same analysts (i.e., common analysts) since common analysts tend to consider peer performance in their forecasting (e.g., Ali & Hirshleifer, 2020; Kaustia & Rantala, 2021; Kini et al., 2009). Thus, we expect that the effect of peer performance on the timely loss recognition is more profound for firms with a high number of cross-held peers and firms with a high number of common analysts.

Investors increase their concern about firm performance when firms have low information quality. For instance, Gleason et al. (2008) suggest that if peers restate their earnings, such information could have a spillover effect on the focal firms because investors raise the concern of earnings manipulation for firms with low information quality. Similarly, Shroff et al. (2017) demonstrate that creditors rely more on peer information to evaluate the information of firms with less publicly available information. Furthermore, such investors' concerns should be stronger when firms have poor governance quality. Under weak governance, managers have a higher ability to hoard bad news because high-quality governance enhances information disclosure (Be´ dard et al., 2004; Larcker et al., 2007). For instance, transient institutional investors have less incentive to monitor managers, leading to a high probability of bad news hoarding. Thus, if investors demand timelier loss recognition under weak peer performance due to the increased concern about managers' bad news boarding, we expect such effect is more profound for firms with low governance.

***H2****: The positive relationship between weak peer performance and accounting conservatism is more profound when information demand is high.*

The RPE is a performance-based incentive compensation contract in which performance is measured relative to peers. RPE used in determining executive compensation has grown more popular among US firms in recent years. However, there are some debates on using RPE. More specifically, on the one hand, RPE is preferred over individual incentive contracts when the performance outcomes of firms are exposed to common external shocks, as peer performance can be used to filter common external shocks to isolate managers' specific performance (Im & Shon, 2019). RPE, on the other hand, increases management competitiveness (e.g., Aggarwal & Samwick, 1999; Feichter et al., 2020; Vrettos, 2013). In times of high competition, managers are less likely to discourse information as they overestimate the cost of disclosing proprietary information (Verrecchia, 1990; Verrecchia & Weber, 2006). Therefore, plenty of studies suggests that managers have more incentive to hoard bad news after RPE implementation. For example, to achieve RPE targets, Gong et al. (2019) find that managers have an incentive to outperform their peers through hoarding bad news (i.e., manipulating earnings). Similarly, Infuehr (2021) provides theoretical evidence that RPE increases earnings management. Given that managers tend to hoard bad news after RPE implementation, we conjecture that investors might demand more timely disclosure of bad news in this situation.

***H3****: The positive relationship between weak peer performance and accounting conservatism is more profound with the use of RPE.*

The covariation theory suggests that assessors ascribe the agent's behaviors to external factors when other agents demonstrate identical behaviors (Kelley, 1967; Koonce & Mercer, 2005). Underpinning covariation theory, some studies suggest that managers have incentives to reduce their responsibility for poor performance by herding with other firms' bad new disclosures. For instance, Tse & Tucker (2010) find that managers are more likely to schedule their earnings warnings following the warnings of peer firms. Consistent with this viewpoint, Myers et al. (2013) suggest that managers tend to utilize Form 8-K to reveal their restatements when peer

firms publish their restatements in Form 8-K filings. Besides, managers have less incentive to meet analysts' estimates when peers fall short of financial analysts' earnings forecasts (Bratten et al., 2016). Thus, we predict that managers tend to disclose bad news when peer firms when their peers perform poorly.

These herding behaviors are affect by managerial ability and confidence. Specifically, in the presence of high noise in performance, investors update their views about managerial talents based on whether manager's choice reflects that of other managers (Scharfstein & Stein, 1990). Thus, less skilled managers have more incentive to "follow the crowd" to appear as talented as others (Jiang & Verardo, 2018). However, confidence managers are more likely to exhibiting anti-herding behavior to demonstrate their ability (Avery & Chevalier, 1999). Therefore, we conjecture that managers have more incentive to timely disclouse bad news follow peers' bad performance, particularly if they lack ability and confidence.

***H4****: Due to mangerial herding behaviors, the positive relationship between weak peer performance and accounting conservatism is more profound.*

The influence of conservative accounting information is a point of contention in current literature. Supporters of accounting conservatism suggest that timely bad news disclourse curbs managers' incentives and abilities to exaggerate performance and conceal losses, thus reducing information asymmetry (e.g., Francis et al., 2013; LaFond & Watts, 2008; Watts, 2003) and lessening the chance of the firms' future stock price risk (Kim & Zhang, 2016). Given that underperformed firms are more likely to manipulate earnings and hoard bad news than outperformed firms, we expect that investors' demand for more accounting conservatism for underperformed firms when peer perform poorly would reduce these firms' information asymmetry and stock price crash risk.

On the contrary, some studies propose the cost of demanding accounting conservatism. For instance, Roychowdhury (2010) argues that accounting conservatism encourages risk-averse managers to take low-risk projects and reject high-risk ones, even if these projects have a

positive net present value (NPV). In the same vein, Kravet (2014) discovers that timely recognition of losses curbs managers' incentive to make risky but valuable acquisitions that will generate positive returns. Thus, investors facing poor peer performance demand outperforming firms to recognise loss timely when focal firms have good investment opportunities, leading to managers abandoning risky but positive NPV projects. In this case, we predict that irrational demand accounting conservatism might constrain investment for outperformed firms.

***H5a**: When peer firms perform poorly, investors demand accounting conservatism for underperformed firms will reduce information asymmetry and stock price crash risk.*

***H5b**: When peer firms perform poorly, investors demand accounting conservatism for outperformed firms will constrain investment opportunities.*

## 3. Data and methodology

We obtain accounting data from the annual Compustat, stock-market-related data from the Center for Research in Security Prices (CRSP), institutional holding data from the Thomson Reuters 13f database, and analyst coverage data from the Institutional Brokers' Estimate System (IBES). Our sample spans from 1987 to 2019. Our sample starts from 1987 because it is the first year that Text-based Network Industry Classifications (TNIC) is available. We exclude non-US firms (Organization country code of incorporation (FIC) not equal to USA) financial firms and utilities (Standard industrial classification (SIC) in the range of 6000-6999 or 4900-4999) because these firms suffer different regulations. After the data cleaning steps, there are 106,322 observations with the non-missing value of accounting conservatism.

### 3.1. Measure of peer performance

We follow prior studies (e.g., Du & Shen, 2018; Leary & Roberts, 2014; Seo, 2021) to employ the idiosyncratic stock returns of a focal firm's peers as the proxy of peer performance. The idiosyncratic stock return is arguably a more exogenous proxy for firm performance than the

raw return because it contains little common variation within a peer group and is uncorrelated with the future performance of the focal firm and its peers. Specifically, we estimate the following equation to calculate a firm's idiosyncratic stock return:

$$Ret_{i,m} - R_{f,m} = \alpha + \beta_{\text{market}}\left(R_{\text{market},m} - R_{f,m}\right) + \beta_{\text{industry}}\left(R_{\text{industry},m} - R_{f,m}\right) + \varepsilon_{i,m} \quad (1)$$

where $i$ and $m$ denote firm and month. $Ret_{i,m}$ and $R_{f,m}$ are the monthly raw stock return for firm $i$ and monthly risk-free rate, respectively. $R_{market,m}$ is the monthly market return, and $R_{industry,m}$ is the equal-weighted three-digit SIC industry monthly return excluding focal firm i's return. For each firm with at least 12 months of non-missing stock returns, we employ the rolling window technique with 60 months to calculate the expected monthly return. Using the coefficients estimated from Equation 1, we calculate firm i's idiosyncratic stock returns as follows:

$$\begin{aligned} IdiosyncraticStock\ Return_{i,m} &= Monthly\ Return_{i,m} - Expected\ Return_{i,m} \\ &= Ret_{i,m} - R_{f,m} - \hat{\alpha} - \hat{\beta}_{market}(R_{market,m} - R_{f,m}) \\ &\quad - \hat{\beta}_{industry}(R_{industry,m} - R_{f,m}) \end{aligned} \quad (2)$$

Panel A of Table 1 reports the statistics for the estimation of Equations 1 and 2. The mean, median, and standard deviation are comparable with the statistics reported by Leary and Roberts [3] (2014). For instance, the average of $\hat{\beta}_{market}$, $\hat{\beta}_{industry}$, Adjusted $R^2$ and idiosyncratic stock return are 0.335, 0.693, 0.258 and -0.001, which is similar to the value in their Table II (0.399, 0.616, 0.258 and -0.002).

To construct the poxy of peer performance, we cumulate monthly idiosyncratic stock returns for each fiscal year, and calculate the peer performance for firm $i$ as the mean of the annual idiosyncratic stock returns of all firm $i$'s peers (excluding firm $i$). We identify a firm $i$'s peers based on TNIC. The TNIC classification is developed by Hoberg & Phillips (2016) using the number of common words in a firm's product description. Compared with SIC industry classification, the unique set of peers for each firm identified by TNIC is time-varying, which is more accurate if firms modify product lines, hence reducing selection bias (Foucault & Fresard, 2014; Rind et al., 2021). However, in our robustness test, we find qualitatively similar

[3] To compare with Leary and Roberts (2014), we report the statistics for the sample starting from 1965.

results for the proxy of peer performance constructed by SIC classifications.

For a more straightforward interpretation, we multiply the mean idiosyncratic stock returns of a firm's peers by negative one to construct the proxy of peer performance. A higher value of *WeekPerformance* implies a poorer peer performance.

### 3.2. Measure of conditional conservatism

Following Khan & Watts (2009), we construct the firm-specific estimation of the timeliness of bad news, *Cscore*, as the measure of conditional conservatism. C-score is constructed based on Basu's (1997) model, which reflects the future degree of asymmetric timeliness up to three years ahead. We denote the C-score based on Khan and Watts' (2009) model as *Cscore*. In our robustness tests, we also follow Banker et al. (2016) and Lee et al. (2015) using alternative proxies of conditional conservatism. Appendix 1 provides the details for the construction of the three proxies.

### 3.3. Research design

We employ the following regression to examine the relationship between peer performance and conditional conservatism:

$$\begin{aligned} Cscore_{i,t} = {} & \beta_0 + \beta_1 WeakPerformance_{i,t} + \beta_2 FirmSize_{i,t} + \beta_3 M/B_{i,t} + \beta_4 Leverage_{i,t} \\ & + \beta_5 SalesVolatility_{i,t} + \beta_6 SalesGrowthi,t + \beta_7 RDAD_{i,t} + \beta_8 CashFlow_{i,t} \\ & + \beta_9 LitigationRisk_{i,t} + \beta_{10} FirmAge_{i,t} + \beta_{11} RelativePerformance_{i,t} \\ & + \nu_i + \nu_t + \varepsilon_{i,t} \end{aligned} \quad (3)$$

where $i$ and $t$ denote firm and year. The variable of interest, $WeakPerformance_{i,t}$, is the proxy of stock performance for the focal firm $i$'s peer firms. We control firm characteristics that are known to be the determinants of conservative reporting. We include firm size ($FirmSize_{i,t}$) and age ($FirmAge_{i,t}$) because asymmetric information is lower in larger and older firms, which in turn decreases the asymmetric timeliness of earnings (Givoly et al., 2007; Khan & Watts, 2009; LaFond & Watts, 2008).

Following Ahmed & Duellman (2007) and Roychowdhury & Watts (2007), we include the market-to-book ratio ($M/B_{i,t}$) and sales growth ($SalesGrowth_{i,t}$) to capture the growth options. We follow Lara et al. (2009) to control sales volatility ($SalesVolatility_{i,t}$). High sales volatility indicates a high cash flow risk and a high demand for conservative reporting. We control for leverage ($Leverage_{i,t}$), as firms with high leverage have severe conflict between debtholders and shareholders, which leads to a high demand for accounting conservatism (Ahmed et al., 2002; Ball & Shivakumar, 2005).

We control for research and development and advertising expenditures ($RDAD_{i,t}$) because they reflect GAAP-mandated conservatism (Ahmed & Duellman, 2007, 2013). The relationship between operating cash flow ($CashFlow_{i,t}$) and accounting conservatism is mixed (Ahmed et al., 2002) . High cash flows allow firms to afford the application of conservatism better, as the low profits incurred by conservative reporting are high for firms with low profitability. However, high cash flows convey a signal of high profitability, which reduces the demand for accounting conservatism.

Watts (2003) argues that the threat of shareholder litigation risk induces a high demand for conservatism for firms with overstated earnings. Accordingly, we include a dummy variable that indicates high litigation risk ($LitigationRisk_{i,t}$). We also control for the focal firms' performance relative to their peers' performance ($RelativePerformance_{i,t}$). As we focus on the spillover effect of peer performance, this variable rules out the concern that the effect of peer performance on conservatism is caused by the performance of focal firms that fall behind their peers.

In our baseline regression, we include firm ($v_i$) and year ($v_t$) fixed effects to control time-invariant omitted variable bias and potential variation in the macroeconomic environment over time. Panel B of Table 1 shows the summary statistics for the variables used in the baseline regression. There are 81,558 firm-year observations with the non-missing value of variables in the baseline regression. The details of the variable construction are presented in Appendix 1.

# 4. Empirical results

## 4.1. Peer performance and accounting conservatism

[Insert Table 2]

Column 1 of Table 2 reports the result for the baseline regression with the industry fixed effect. The coefficient of *WeakPerformance* is 0.016, which is positive and significant at 1% level. Specifically, one standard deviation increase in *WeakPerformance* is associated with 2% increase in *Cscore*. In Column 2, we include firm fixed effect, and the result is qualitatively similar. Therefore, the baseline results support *Hypothesis 1* that firms with low peer performance are more likely to accelerate bad news into earnings.

The results for control variables are generally consistent with previous studies (e.g., Ahmed & Duellman, 2013; Khan & Watts, 2009; LaFond & Watts, 2008). For instance, larger firms have low information asymmetry, leading to a lower probability of adopting conservative reporting. Firms with more growth opportunities have lower asymmetric timeliness of earnings. High leverage and sales volatility indicate the high cash flow risk and the conflict of interests between creditors and shareholders, which increases the asymmetric timeliness of earnings.

Since investors are more sensitive to bad news than good ones, we expect that the relationship between peer performance and conservative reporting is nonlinear. In Columns 3 and 4, we follow Gyimah et al. (2020) to include a quadratic term for *WeakPerformance*. The coefficient of the quadratic term is significantly positive, implying that the impact of peer performance on the acceleration of bad news into earnings is growing as peer performance worsens. In Columns 5 and 6, we include an interaction of a quadratic term with a dummy variable that equals one for negative peer performance (*NegativePerformance*). The significant and positive coefficients of interaction suggest that the nonlinear effect is more profound if peers' average firm-specific stock return is negative. Overall, Table 2 is consistent with the notion that weak peer performance induces investors to demand bad news in a timelier manner. Such demand rises with the deterioration of peer performance since investors are more sensitive to bad news than good ones.

### 4.2. Peer performance, accounting conservatism and investors' concern

[Insert Table 3]

In Table 3, we conduct several tests for the potential mechanism. We argue that investors consider peer performance to evaluate focal firms' performance; weak peer performance leads to high demand for timelier loss recognition due to investors' perception that managers could hoard bad news. If investors incorporate peer performance into monitoring decisions, we should observe that the effect of peer performance on the asymmetric timeliness of earnings is more profound for firms with high exposure to information externalities.

We construct two variables to measure the degree of information externality. The first proxy is the number of peer firms cross-held by institutional investors. Park et al. (2019) find that cross-owned relationships facilitate information spillovers across co-owned firms, and Ramalingegowda et al. (2021) find that the greater the number of peers cross-held by institutional investors, the greater the benefit of economies of scale and investors' information acquisition and processing costs. The second proxy is the number of analysts who provide forecasting information for both peers and focal firms. Previous studies find that information spillover is more substantial among firms that share common analysts (Huang et al., 2020; Israelsen, 2016).

As higher information spillover is associated with a higher number of cross-held peers and common analysts, we expect peer performance on conservative reporting to be more profound for firms with a high number of cross-held peer firms by institutional investors or a high number of common analysts. In Columns 1 and 2 of Table 3, we construct *HighCIOpeers*, which equals one if a firm's number of peer firms that are cross-held by institutional investors is above the median value in a given year and zero otherwise, and *HighCApeers*, which equals one if a firm's number of common analysts is above the median value in a given year and zero otherwise. Then we include an interaction of each dummy variable with *WeakPerformance* and rerun the regression model separately. Consistent with the information spillover channel, the results show that the coefficients for the interaction terms are positive and significant, implying

that peer performance affects the asymmetric timeliness of earnings through the information spillover effect. For robustness, in Appendix 2, we also employ the board cross-membership (i.e., outside directors take a position on peers' board) and common auditor (i.e., focal firms share the same auditor with peers) as alternative proxies of information externality since previous studies (e.g., Cai et al., 2016; Francis et al., 2014; Geng et al., 2021) document that information spillover effect is stronger in the presence of board cross-membership or common auditor. Our findings are qualitatively unchanged.

We next explore the moderating role of corporate governance. We expect to observe that peer performance's effect on accounting conservatism is more remarkable for firms with weak governance because low quality of governance attenuates managers' ability to hoard bad news. To test this prediction, we follow prior studies (Cain et al., 2017; Gompers et al., 2003) to use the takeover index and G-index as proxies for corporate governance. Poor governance is associated with a high G-index and a low takeover index.

In Columns 3 and 4 of Table 3, we construct *LowTOindex*, which equals one if a firm's number of a firm's takeover index is below the median value in a given year and zero otherwise, and *HighGindex*, which equals one if a firm's G-index is above the median value in a given year, and zero otherwise. Then we include an interaction of each dummy variable with *WeakPerformance* and rerun the regression model separately. The significant and positive coefficients of interaction terms support the prediction that weak peer performance increases investors' concern of bad news hoarding, leading to high demand for accounting conservatism.

In Columns 5 and 6 of Table 3, we test the moderating role of information asymmetry in the relationship between peer performance and accounting conservatism. Information asymmetry exaggerates managers' ability to hoard bad news (Healy & Palepu, 2001; Kothari et al., 2009), and investors' concerns are more sensitive to peers' information if the focal firms' information is opaque (Park et al., 2019; Shroff et al., 2017). We, therefore, follow the previous study to use the probability of informed trading and analysts' forecast dispersion as the proxies of information asymmetry (e.g., Gyimah et al., 2020; Jacoby & Zheng, 2010; Li & Zhao, 2008).

We employ the same procedure to construct dummy variables of *HighPIN* and *HighDispersion* based on the median value, and rerun the regression with the interaction of each dummy variable with *WeakPerformance*. The results show that peer performance has a more profound effect on the asymmetric timeliness of earnings for firms with high information asymmetry, supporting our hypothesis that weak peer performance affects accounting conservatism by amplifying investors' concern about bad news hoarding.

### 4.3. Peer performance, accounting conservatism and managerial compensation incentive

The previous section presents evidence for the investors' concern as the potential explanation for the relationship between peer performance and accounting conservatism. Next, we investigate whether such concern is stronger if managerial compensation is tied to peer performance. In order to align the interests of managers and shareholders, a proportion of firms adopt RPE tying the compensation of their managers to their performance relative to a peer group. However, such RPE compensation may lead to a high incentive for managers to manipulate earnings in pursuit of high compensation (Du & Shen, 2018; Infuehr, 2021). In the same vein, as market valuation will react more negatively to the disclosure of bad news if most of their peers are underperforming, managers with RPE contracts have a strong incentive to hide bad news to avoid significant compensation losses. Therefore, we expect that the impact of peer performance is more profound for firms with RPE compensation contracts.

We follow prior studies (Du & Shen, 2018; Gong et al., 2011) to collect RPE information from Compensation Discussion and Analysis reports manually, and create a dummy variable of *RPE* that equals one if a firm adopts RPE for compensation contract and zero otherwise. The second dummy variable, *IDD*, is based on the argument of Na (2020) that the implementation of the Inevitable Disclosure Doctrine (IDD) by US state courts reduces CEOs' outside opportunities, thereby increasing the likelihood of RPE adoption. We, therefore, follow Klasa et al. (2018) to identify the time of IDD implementation for each state from 1987 to 2011 and create a dummy variable that equals one if a firm operates in a state that has experienced the enforcement of IDD and zero otherwise. We then include an interaction term for each dummy variable with

*WeakPerformance* in the baseline equation.

[Insert Table 4]

Table 4 reports the results. The significant and positive coefficient of the interaction term in Column 1 suggests that weak peer performance has a greater impact on accounting conservatism for firms that adopt RPE in executive compensation contracts. Similarly, Column 2 shows that weak peer performance has a more profound effect on accounting conservatism for firms that experience the implementation of IDD. Overall, the results of Table 4 are consistent with our conjecture that weak peer performance induces investors' concern about managers hoarding bad news to maximize their own interests, leading to higher demand for more timely reporting of bad news.

### 4.4. Alternative explanation-herding behaviour

According to the covariation theory, managers are incentivised to herd by disclosing bad news if they perceive that rivals perform poorly (Kelley, 1967; Koonce & Mercer, 2005). To test this alternative explanation, we follow prior studies to employ managerial ability and managerial overconfidence as the proxies for managers' herding incentive. Scharfstein & Stein (1990) and Jiang & Verardo (2018) find that managers with high ability are less likely to herd. Menkhoff et al. (2006) and Hudson et al. (2020) also document that overconfident managers have low incentive to herd because they are confident about their competence. Therefore, if weak peer performance increases the timely bad news recognition due to the herding behaviour, we should observe that the effect is less profound for firms with high managerial ability and overconfident CEOs. Accordingly, we construct the dummy variable *HighAbility* based on whether the managerial ability is greater than the median value of a given year, and the dummy variable of *OverconfidentCEO* is based on whether a CEO fails to exercise an executive option after their stock price has risen by at least 67%. Next, we interact the two dummy variables with *WeakPerformance* separately and rerun Equation 3.

[Insert Table 5]

Table 5 reports the results of the test for herding behaviour. The interaction terms are insignificant regardless of the proxies for managers' herding incentive used, which indicates that managers' herding incentive could not drive the relationship between weak peer

performance and timely bad news recognition. Overall, we fail to find evidence for the potential explanation that managers deliberately report conservatively to avoid the penalty of the markets when peers perform poorly.

### 4.5. Instrument variable and difference-in-differences analysis

One concern is that the proxy of peer performance contains errors related to a firm's disclosure policy due to the imperfect estimation of the market and industry components in peers' stock return. Therefore, we follow previous studies to use a two-stage instrument variable approach (Du & Shen, 2018; Leary & Roberts, 2014) to test whether our results are consistent. Specifically, for each focal firm, we identify the major customers of its peer firms using the Compustat segment file. The major customers must satisfy three criteria: (1) the customer is in an industry different from a focal firm, (2)the major customer is not a customer of the focal firm, and (3) the customer accounts for at least 10% of the peer firm's sales. Next, we employ the idiosyncratic stock return of the major customers as the instrument variable of focal firms' peer performance[4] (*WeakPerformance_C*). The logic is that customers' performance predicts stock return for supplier firms but not for firms operating in the same supplier industry that do not have active customer-supplier relationships (Cohen & Frazzini, 2008).

[Insert Table 6]

Column 1 of Table 6 reports the results for the first-stage regression with industry fixed effect. *WeakPerformance_C* is significantly and positively correlated with *WeakPerformance*, which is consistent with the notion that customers' stock performance predicts stock performance for supplier firms. Column 2 shows the results for the second-stage regression. The significant and positive coefficient of instrumented *WeakPerformance* is consistent with Table 2 that weak peer performance accelerates bad news into earnings. Columns 3 and 4 include firm fixed effect, and the results remain qualitatively similar.

We also employ the difference-in-differences (DID) analysis to test a causal effect using

[4] We flip the sign of the idiosyncratic stock return of the major customers to align with *WeakPerformance*.

extreme drought events as the exogenous shock for peer performance. Huang et al. (2018) find that climate disasters significantly damage firm performance. Among all extreme climate disasters, drought incurs the greatest economic losses (Huynh et al., 2020). Specifically, we follow Huynh et al. (2020) to identify the state-level severe drought condition as the palmier index of less than negative three. Next, we identify the non-suffered sample as firms without experience of severe drought events within three preceding and following years. Among the non-suffered sample, we construct the treated group as firms that have at least one peer firm experiencing a severe drought event in a given year, and identify control group as firms whose peers do not suffer severe drought events in our sample period.

It is possible that the heterogenous firm characteristics between treat and control firms may bias the DID results, therefore, we use the propensity score matching (PSM) approach to mitigate such differences in characteristics. Specifically, we create a dummy variable that equals one for the treated group and zero for control group. Then we employ the logit model, regress all the control variables in Equation 3 on the dummy variable, and obtain the predicted value (propensity score). We select one control firm, with replacement, with the closest propensity score for each treated firm. After the matching procedure, we find 2338 matched control firms for 3155 treated firms. To better isolate the causal effect, we select three years surrounding each severe drought event. Finally, we conduct the regression below for the treated and matched firms:

$$\begin{aligned} Cscore_{i,t} = {} & \beta_0 + \beta_1 SevereDrought_{i,t} + \beta_2 FirmSize_{i,t} + \beta_3 M/B_{i,t} + \beta_4 Leverage_{i,t} \\ & + \beta_5 SalesVolatility_{i,t} + \beta_6 SalesGrowth_{i,t} + \beta_7 RDAD_{i,t} + \beta_8 CashFlow_{i,t} \\ & + \beta_9 LitigationRisk_{i,t} + \beta_{10} FirmAge_{i,t} + \beta_{11} RelativePerformance_{i,t} \\ & + \nu_i + \nu_t + \varepsilon_{i,t} \end{aligned} \quad (4)$$

where $SevereDrought_{i,t}$ is the difference-in-differences estimator, which equals one if at least one peer firm of the treated firm has experienced the severe drought event by the time *t* and zero otherwise. The firm fixed effect absorbs the time-invariant omitted difference between the treated and matched control groups. The year fixed effect captures the difference in average outcomes between the pre-shock and post-shock periods.

[Insert Table 7]

Table 7 reports the results for the estimation of Equation 4. Column 1 shows that the DID estimator, $SevereDrought_{i,t}$, is positive and significant at the 1% level. The result implies that firms whose peer firms have experienced the severe drought significantly increase asymmetric timeliness of earnings. A valid DID test requires that the treated and control firms share a similar time trend of the outcome before the shocks. Therefore, we include two variables to conduct the pre-trend analysis. *OneYearBeforeSevereDrought* is a dummy variable that equals one if a treated firm's peer firms will experience the shock one year later and zero otherwise. *TwoYearBeforeSevereDrought* is a dummy variable that equals one if a treated firm's peer firms will experience the shock two years later and zero otherwise. If pre-trend variables are significant, the parallel assumption could be violated because the observed difference in asymmetric timeliness of earnings between the treated and control groups already exists before the shock. In Column 2, the pre-trend variables are insignificant, suggesting the DID test is less likely to violate the parallel assumption. In Column 3, we further conduct a placebo test by falsely identifying the time of severe drought two years ahead. The insignificant coefficient of *Placebo* indicates that our difference-in-differences results are indeed driven by the actual shock.

In Appendix 3, we obtain the top ten largest climate events during 1987-2019 from the National Oceanic and Atmospheric Administration's National Climatic Data Center, and employ the events as a robustness check. Our results remain qualitatively unchanged. Overall, our DID tests show evidence for the causal effect of peer performance on the tendency to report conservatively.

### 4.6. Additional robustness

In this subsection, we conduct several robustness tests to validate our inferences. In Column 1 of Table 8, we add additional variables to control internal governance, including CEO's duality (*CEODuality*), CEO's equity ownership (*CEOEquityOwnership*) and the proportion of independent board members (*BoardIndependence*). In Column 2, we use the 3-digit SIC classification to identify a focal firm's peers, and calculate the proxy of peer performance

(*WeakPerformance_SIC*) accordingly. In Columns 3 and 4, we employ alternative proxies of asymmetric timeliness of earnings. Specifically, we construct *Cscore_Banker* by taking into account the variation of cost stickiness, and *Cscore_NC* by considering the reversal of the trend of increase and decrease in accounting income. The results show that the impact of weak peer performance on accounting conservatism remains significant and positive.

[Insert Table 8]

In addition, we further split our sample based on the business cycle to test whether our findings are mainly driven by the business cycle, as stock performance tends to comove over business cycles (Brockman et al., 2010). We rerun Equation 3 for the contraction and expansion identified by the National Bureau of Economic Research (NBER). The coefficients of *WeakPerformance* are positive and significant in both Columns 5 and 6, implying no evidence that our findings are mainly driven by the business cycle. In Columns 7 and 8, we split our sample based on whether a firm has outperformed or underperformed (i.e., whether $RelativePerformance$ is larger than zero). The results show that weak peer performance increases the asymmetric timeliness of earnings for both outperformed and underperformed firms. Overall, the results in Table 8 suggest that our findings are robust to a variety of robustness tests.

**4.7. The constraint of bad news hoarding vs. the constraint of investment**

Prior studies document that timely bad news recognition efficiently mitigates managerial ability to hoard bad news and reduces information asymmetry (e.g., Kim & Zhang, 2016; Ruch & Taylor, 2015; Watts, 2003). If weak peer performance raises investors' concern that managers hide losses, we expect that the impact of constrained bad news hoarding and reduced information asymmetry is more profound for underperformed firms since these firms are more likely to hide losses than outperformed firms. To test this hypothesis, we follow prior studies (Jacoby & Zheng, 2010; Kim & Zhang, 2016) to construct a crash dummy to measure the probability of hoarding bad news, and analysts' forecast dispersion to measure the information asymmetry. Specifically, *CrashDummy* is an indicator variable that equals one if a firm experiences one or more crash events in a given year and zero otherwise. *Dispersion* is

the standard deviation of the earnings forecast scaled by the absolute value of the mean earnings forecast. In the final step, we estimate the following equation separately for underperformed and outperformed samples separately:

$$y_{i,t} = \beta_0 + \beta_1 WeakPerformance_{i,t-1} + \beta_2 HighCscore_{i,t-1} + \beta_3 WeakPerformance_{i,t-1} \times HighCscore_{i,t-1} + \beta_4 Control\ variables_{i,t-1} + v_i + v_t + \varepsilon_{i,t}, \quad (5)$$

where the dependent variable is $CrashDummy_{i,t}$ or $Dispersion_{i,t}$. $HighCscore_{i,t-1}$ is a dummy variable that equals one if a firm's C-score is higher than the median value in a given year and zero otherwise. The variable of interest is the interaction term of $HighCscore_{i,t-1}$ and $WeakPerformance_{i,t-1}$. Except for the control variables in Equation 3, we also add three additional control variables that are known to be the determinants of crash risk in the previous studies (Kim & Zhang, 2016), including detrended average monthly stock turnover, the standard deviation of firm-specific weekly returns over the fiscal year, and the arithmetic average of firm-specific weekly returns over the fiscal year. All the independent variables are lagged by one year to mitigate the endogenous concern.

[Insert Table 9]

Panel A of Table 9 reports the results of stock crash risk and information asymmetry. Columns 1 and 2 show that the interaction term is negative and significant for underperformed firms, but insignificant for outperformed firms. The results support our hypothesis that reporting bad news timely during weak peer performance constrain bad news hoarding for underperformed firms, leading to a lower probability of a future stock crash. In the same vein, the interaction terms in Columns 3 and 4 show that accelerating bad news into earnings during weak peer performance alleviates information asymmetry only for underperformed firms.

Despite disclosing bad news in a timelier manner can reduce information asymmetry and constrain managers' ability of bad news hoarding, it also incurs the cost that managers may forgone investment opportunities with positive net present value, especially for risky projects (Kravet, 2014). If asymmetric verifiability distorts investment decisions, we conjecture that accounting conservatism imposes severe constraints on investment for outperformed firms, because good performance allows these firms to better access external financing to fund

investments. To test this hypothesis, we replace $y_{i,t}$ in Equation 5 with the proxies of investment. Specifically, we employ capital expenditure (*CE*) and R&D (*R&D*) as the proxies of investment, and estimate Equation 5 for underperformed and outperformed samples, respectively.

Panel B of Table 9 presents the regression results. A noteworthy observation in Columns 1 and 2 is that the interaction term is only negative and significant for outperformed sample. The results show that timelier bad news recognition caused by poor peer performance reduces outperformed firms' capital expenditure. In Columns 3 and 4, we use R&D expense as the proxy of investment. The results remain qualitatively similar. Overall, Table 9 provides supportive evidence that weak peer performance enhances the timely bad news recognition, which in turn imposes the constraint of bad news hoarding for underperformed firms and the constraint of investment for outperformed firms.

## 5. Conclusion

Using the data for the US-listed firms from 1987 to 2019, we find that weak peer performance increases timely bad news disclosure. Such impact is more profound for firms facing high information externality, with low governance quality and high information asymmetry. We also find that the effect is greater for firms that adopt RPE and experience the implementation of the Inevitable Disclosure Doctrine. The evidence suggests that weak peer performance affects accounting conservatism by amplifying investors' concern of bad news hoarding. However, we find no evidence for the explanation of herding behaviour. Our findings are robust to a vast of tests, including instrument variable approach, difference-in-differences analysis, alternative measures and subsample analysis. We further explore the consequence of accounting conservatism induced by weak peer performance and find that such a decision imposes the constraint of bad news hoarding for underperformed firms and the constraint of investment for outperformed firms.

This study highlights the spillover impact of peer performance on financial reporting strategy,

and contributes to the peer effect and accounting conservatism literature. Furthermore, this study demonstrates the significant impact of investors' demands for conservative accounting reporting on firms' investment decisions. For policymakers, our findings provide new evidence for the side effect of accounting conservatism under weak peer performance.

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## Tables

**Table 1.** Summary statistics

**Panel A.** Summary statistics for the stock return regression results

| | (1) Mean | (2) Median | (3) S.D. |
|---|---|---|---|
| $\alpha$ | -0.001 | 0.000 | 0.020 |
| $\beta_{market}$ | 0.335 | 0.323 | 0.971 |
| $\beta_{industry}$ | 0.693 | 0.614 | 0.779 |
| *Adjusted* $R^2$ | 0.258 | 0.226 | 0.215 |
| *MonthlyReturn* | 0.006 | -0.001 | 0.138 |
| *ExpectedMonthlyReturn* | 0.006 | 0.007 | 0.068 |
| *IdiosyncraticMonthlyReturn* | -0.001 | -0.005 | 0.113 |

**Panel B.** Summary statistics for variables in the baseline regression

| | (1) Mean | (2) S.D. | (3) P25 | (4) P50 | (5) P75 | (6) Observations |
|---|---|---|---|---|---|---|
| *Cscore* | 0.154 | 0.172 | 0.050 | 0.152 | 0.255 | 81,558 |
| *WeakPerformance* | 0.025 | 0.159 | -0.048 | 0.027 | 0.105 | 81,558 |
| *FirmSize* | 5.537 | 2.144 | 3.951 | 5.469 | 7.047 | 81,558 |
| *M/B* | 3.387 | 4.605 | 1.217 | 2.054 | 3.604 | 81,558 |
| *Leverage* | 0.222 | 0.194 | 0.040 | 0.195 | 0.351 | 81,558 |
| *SalesVolatility* | 0.185 | 0.180 | 0.071 | 0.131 | 0.233 | 81,558 |
| *SalesGrowth* | 0.201 | 0.615 | -0.020 | 0.085 | 0.242 | 81,558 |
| *RDAD* | 0.296 | 1.449 | 0.000 | 0.018 | 0.092 | 81,558 |
| *CashFlow* | 0.024 | 0.208 | 0.017 | 0.075 | 0.120 | 81,558 |
| *LitigationRisk* | 0.123 | 0.329 | 0.000 | 0.000 | 0.000 | 81,558 |
| *FirmAge* | 2.634 | 0.772 | 2.079 | 2.639 | 3.258 | 81,558 |
| *RelativePerformance* | -0.007 | 0.440 | -0.251 | 0.002 | 0.249 | 81,558 |

Notes: Panel A of this table reports the summary statistics for the variables used to construct peer performance (details are discussed in Section 4.1). Panel B of this table reports the summary statistics of each variable used in the regression analysis. Columns 1-6 show the mean, standard deviation, 25th percentile, median, 75th percentile, and the number of observations for each variable. *Cscore* refers to the accounting conservatism proxy calculated using Basu's (1997) model. *WeakPerformance* is the idiosyncratic stock performance for the focal firm *i*'s peer firms. *FirmSize* is the natural logarithm of total assets. *M/B* is equity market value divided by equity book value, which captures firms' investment opportunities. *Leverage* is total debt divided by total assets. *SaleGrowth* is the percentage change of sales. *SalesVolatility* is the standard deviation of sales using a 5-year rolling window (minimum 3 years required), then deflated by total assets. *SalesGrowth* is the percentage of annual growth in total sales. *RDAD* is total research and development expense plus advertising expense deflated by total sales. *CashFlow* is cash flow divided by total assets. *LitigationRisk* is an indicator variable that equals one if a firms' litigation risk is in the top decile of the sample and zero otherwise (Gao et al. 2020). *FirmAge* is the natural log of the year in which the firm appears in the Compustat database. *RelativePerformance* is the difference between a firm's annual idiosyncratic stock

return and *WeakPerformance*. The details of variable construction are in Appendix 1.

**Table 2.** Peer performance and accounting conservatism

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *WeakPerformance* | 0.018*** | 0.024*** | 0.017*** | 0.024*** | 0.011 | 0.018 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.015) | (0.013) |
| *WeakPerformance*$^2$ | | | 0.026*** | 0.016** | 0.008 | 0.002 |
| | | | (0.008) | (0.007) | (0.033) | (0.030) |
| *NegativePerformance* | | | | | 0.003* | 0.004*** |
| | | | | | (0.001) | (0.001) |
| *NegativePerformance*×*WeakPerformance* | | | | | -0.030 | -0.035** |
| | | | | | (0.020) | (0.018) |
| *NegativePerformance*×*WeakPerformance*$^2$ | | | | | 0.098** | 0.102*** |
| | | | | | (0.042) | (0.039) |
| *FirmSize* | -0.066*** | -0.069*** | -0.065*** | -0.069*** | -0.065*** | -0.069*** |
| | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) |
| *M/B* | -0.012*** | -0.009*** | -0.012*** | -0.009*** | -0.012*** | -0.009*** |
| | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) | (0.000) |
| *Leverage* | 0.293*** | 0.243*** | 0.293*** | 0.243*** | 0.293*** | 0.243*** |
| | (0.004) | (0.005) | (0.004) | (0.005) | (0.004) | (0.005) |
| *SalesVolatility* | 0.013*** | -0.017*** | 0.013*** | -0.017*** | 0.013*** | -0.017*** |
| | (0.003) | (0.004) | (0.003) | (0.004) | (0.003) | (0.004) |
| *SalesGrowth* | -0.009*** | -0.005*** | -0.009*** | -0.005*** | -0.009*** | -0.005*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| *R&D* | -0.004*** | -0.003*** | -0.004*** | -0.003*** | -0.004*** | -0.003*** |
| | (0.000) | (0.001) | (0.000) | (0.001) | (0.000) | (0.001) |
| *CashFlow* | -0.061*** | -0.059*** | -0.062*** | -0.059*** | -0.062*** | -0.059*** |
| | (0.004) | (0.005) | (0.004) | (0.005) | (0.004) | (0.005) |
| *LitigationRisk* | 0.000 | 0.001 | 0.000 | 0.001 | 0.000 | 0.001 |
| | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) | (0.002) |

(The table is continued on the next page.)

**Table 2.** Peer performance and accounting conservatism (continued)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| *FirmAge* | 0.006*** | 0.037*** | 0.006*** | 0.037*** | 0.006*** | 0.037*** |
| | (0.001) | (0.003) | (0.001) | (0.003) | (0.001) | (0.003) |
| *RelativePerformance* | 0.014*** | 0.019*** | 0.014*** | 0.019*** | 0.014*** | 0.019*** |
| | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) | (0.001) |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Industry F.E. | Yes | No | Yes | No | Yes | No |
| Firm F.E. | No | Yes | No | Yes | No | Yes |
| Adjusted $R^2$ | 0.681 | 0.758 | 0.681 | 0.758 | 0.681 | 0.758 |
| Observations | 81,558 | 81,558 | 81,558 | 81,558 | 81,558 | 81,558 |

Notes: This table presents the OLS estimates of the effect of peer performance on accounting conservatism. We include industry fixed effect in Columns 1, 3 and 5 and firm fixed effect in Columns 2, 4 and 6. All the regressions include year fixed effect. The dependent variable for each regression is *Cscore*. *WeakPerformance*$^2$ is the quadratic term of *WeakPerformance*. *NegativePerformance* is a dummy variable that equals one for negative peer performance (*WeakPerformance* < 0) and zero otherwise. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

**Table 3.** Peer performance, accounting conservatism and information demand

| | (1) | | (2) | | (3) | |
|---|---|---|---|---|---|---|
| *WeakPerformance* | 0.012*** | 0.010*** | 0.008** | -0.035 | -0.000 | 0.016*** |
| | (0.004) | (0.003) | (0.004) | (0.022) | (0.003) | (0.003) |
| *HighCIOpeers* | 0.000 | | | | | |
| | (0.001) | | | | | |
| *HighCIOpeers*×*WeakPerformance* | 0.009** | | | | | |
| | (0.005) | | | | | |
| *HighCApeers* | | 0.006*** | | | | |
| | | (0.001) | | | | |
| *HighCApeers*×*WeakPerformance* | | 0.014*** | | | | |
| | | (0.004) | | | | |
| *LowTOIndex* | | | 0.043** | | | |
| | | | (0.018) | | | |
| *LowTOIndex*×*WeakPerformance* | | | 0.057** | | | |
| | | | (0.024) | | | |
| *HighGIndex* | | | | -0.001 | | |
| | | | | (0.001) | | |
| *HighGIndex*×*WeakPerformance* | | | | 0.005** | | |
| | | | | (0.002) | | |
| *HighPIN* | | | | | 0.015*** | |
| | | | | | (0.001) | |
| *HighPIN*×*WeakPerformance* | | | | | 0.023*** | |
| | | | | | (0.004) | |
| *HighDispersion* | | | | | | 0.016*** |
| | | | | | | (0.001) |
| *HighDispersion*×*WeakPerformance* | | | | | | 0.013*** |
| | | | | | | (0.004) |

(The table is continued on the next page.)

**Table 3.** Peer performance, accounting conservatism and information demand (continued)

| | (1) | (2) | (3) | (4) | (5) | (6) |
|---|---|---|---|---|---|---|
| | Information externality | | Corporate governance | | Information asymmetry | |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes | Yes | Yes | Yes |
| Adjusted $R^2$ | 0.740 | 0.740 | 0.747 | 0.758 | 0.777 | 0.773 |
| Observations | 81,512 | 81,512 | 69,664 | 4,474 | 50,953 | 52,720 |

Notes: This table presents the OLS estimates of the moderate effect of information demand on the relationship between peer performance and accounting conservatism. All the regressions include controls variables in Equation 3, firm and year fixed effects. The dependent variable for each regression is *Cscore*. In Columns 1 and 2, information externality is proxied by *HighCIOpeer* and *HighCApeers*. *HighCIOpeers* and *HighCApeers* are defined based on whether a firm has the above-median number of cross-held peer firms and the number of common analysts in a given year, respectively. In Columns 3 and 4, corporate governance is measured by *LowTOIndex* and *HighGIndex*. *LowTOIndex* and *HighGIndex* are defined based on whether a firm has the below-median takeover index and above-median G-index in a given year, respectively. In Columns 5 and 6, information asymmetry is measured by *HighPIN* and *HighError*. *HighPIN* and *HighDispersion* are defined based on whether a firm has the above-median probability of informed trading and analyst forecast dispersion in a given year, respectively. All continuous variables are winsorized at their 1st and 99th percentiles. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

**Table 4.** Peer performance, accounting conservatism and managerial compensation incentive

| | (1) | (2) |
|---|---|---|
| *WeakPerformance* | 0.016 | 0.011*** |
| | (0.014) | (0.003) |
| *RPE* | -0.011* | |
| | (0.006) | |
| *RPE*×*WeakPerformance* | 0.035* | |
| | (0.020) | |
| *IDD* | | 0.003* |
| | | (0.002) |
| *IDD*×*WeakPerformance* | | 0.008** |
| | | (0.004) |
| Controls | Yes | Yes |
| Year F.E. | Yes | Yes |
| Firm F.E. | Yes | Yes |
| Adjusted $R^2$ | 0.754 | 0.780 |
| Observations | 4,116 | 66,665 |

Notes: This table presents the OLS estimates of the moderate effect of managerial compensation incentives on the relationship between peer performance and accounting conservatism. All the regressions include controls variables in Equation 3, firm and year fixed effects. The dependent variable for each regression is *Cscore*. Managerial compensation incentive is measured by *RPE* and *IDD*. *RPE* is a dummy variable that equals one if a firm adopts RPE in a given year and zero otherwise. *IDD* is a dummy variable that equals one if a firm operates in a state that has experienced the enforcement of Inevitable Disclosure Doctrine and zero otherwise. All continuous variables are winsorized at their 1st and 99th percentiles. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

**Table 5.** Alternative explanation-herding perspective

| | (1) | (2) |
|---|---|---|
| *WeakPerformance* | 0.019*** | 0.018*** |
| | (0.003) | (0.006) |
| *HighAbility* | -0.010*** | |
| | (0.001) | |
| *HighAbility*×*WeakPerformance* | -0.003 | |
| | (0.004) | |
| *OverconfidentCEO* | | -0.020*** |
| | | (0.002) |
| *OverconfidentCEO*×*WeakPerformance* | | -0.009 |
| | | (0.007) |
| Controls | Yes | Yes |
| Year F.E. | Yes | Yes |
| Firm F.E. | Yes | Yes |
| Adjusted $R^2$ | 0.774 | 0.775 |
| Observations | 69,563 | 23,071 |

Notes: This table presents the OLS estimates of the effect of managerial herding incentive on the relationship between peer performance and accounting conservatism. All the regressions include controls variables in Equation 3, firm and year fixed effects. The dependent variable for each regression is *Cscore*. We use two proxies to measure managerial herding incentives, *HighAbility* and *OverconfidentCEO*. *HighAbility* is a dummy variable that equals one if the managerial ability is greater than the median value of a given year and zero otherwise. *OverconfidentCEO* is a dummy variable that equals one if a CEO fails to exercise an executive option after their stock price has risen by at least 67%, and zero otherwise. All continuous variables are winsorized at their 1st and 99th percentiles. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

**Table 6.** Instrument variable using peers' customer performance

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| Dependent variable | *WeakPerformance* | *Cscore* | *WeakPerformance* | *Cscore* |
| *WeakPerformance_C* | 0.085*** | | 0.079*** | |
| | (0.010) | | (0.011) | |
| *WeakPerformance* | | 0.208*** | | 0.147** |
| | | (0.064) | | (0.064) |
| *FirmSize* | 0.003*** | -0.063*** | 0.016*** | -0.065*** |
| | (0.001) | (0.001) | (0.002) | (0.002) |
| *M/B* | -0.001*** | -0.010*** | -0.002*** | -0.008*** |
| | (0.000) | (0.000) | (0.000) | (0.001) |
| *Leverage* | 0.004 | 0.267*** | 0.005 | 0.228*** |
| | (0.005) | (0.007) | (0.012) | (0.009) |
| *SalesVolatility* | 0.001 | 0.012** | 0.000 | -0.009 |
| | (0.006) | (0.006) | (0.011) | (0.008) |
| *SalesGrowth* | -0.004** | -0.008*** | -0.005** | -0.005*** |
| | (0.001) | (0.001) | (0.002) | (0.002) |
| *R&D* | -0.001** | -0.005*** | -0.002** | -0.002** |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| *CashFlow* | -0.036*** | -0.042*** | -0.054*** | -0.051*** |
| | (0.005) | (0.006) | (0.010) | (0.008) |
| *LitigationRisk* | 0.013*** | -0.010*** | 0.016*** | -0.005** |
| | (0.002) | (0.002) | (0.004) | (0.003) |
| *FirmAge* | -0.010*** | 0.007*** | -0.028*** | 0.032*** |
| | (0.002) | (0.002) | (0.006) | (0.006) |
| *RelativePerformance* | -0.074*** | 0.027*** | -0.076*** | 0.027*** |
| | (0.003) | (0.005) | (0.004) | (0.005) |
| Year F.E. | Yes | Yes | Yes | Yes |
| Industry F.E. | Yes | Yes | No | No |
| Firm F.E. | No | No | Yes | Yes |
| Adjusted $R^2$ | 0.101 | 0.665 | 0.100 | 0.286 |
| Observations | 18,630 | 18,630 | 18,630 | 18,630 |

Notes: This table reports the instrument variables analysis of the effect of peer performance and accounting conservatism using the 2SLS regression. The first row shows the dependent variables for each regression. *WeakPerformance_C* is the average idiosyncratic stock return of peers' major customers. The information on customer relationships is obtained from the Compustat Segment file. Columns 1 and 3 report the results for the first-stage regression. Columns 2 and 4 show the results for the second-stage regression. All continuous variables are winsorized at their 1st and 99th percentiles. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

**Table 7.** Difference-in-differences analysis using severe drought events

| | (1) | (2) | (3) |
|---|---|---|---|
| *SevereDrought* | 0.005*** | 0.005** | |
| | (0.002) | (0.002) | |
| *OneYearBeforeSevereDrought* | | -0.001 | |
| | | (0.002) | |
| *TwoYearBeforeSevereDrought* | | 0.001 | |
| | | (0.002) | |
| *Placebo* | | | 0.002 |
| | | | (0.002) |
| Controls | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes |
| Adjusted $R^2$ | 0.770 | 0.770 | 0.783 |
| Observations | 29,877 | 29,877 | 25,402 |

Notes: This table reports the effect of peer performance and accounting conservatism using the difference-in-differences framework. All the regressions include controls variables in Equation 3, firm and year fixed effects. The dependent variable for each regression is *Cscore*. *SevereDrought* is the difference-in-differences estimator that equals one if at least one peer firm of the treated firm has experienced the severe drought event by the time *t* and zero otherwise. *OneYearBeforeSevereDrought* is a dummy variable that equals one if a treated firm's peer firms will experience the shock one year later and zero otherwise. *TwoYearBeforeSevereDrought* is a dummy variable that equals one if a treated firm's peer firms will experience the shock two years later and zero otherwise. *Placebo* is constructed by falsely identifying the shock time two years ahead. All continuous variables are winsorized at their 1st and 99th percentiles. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

**Table 8.** Additional robustness

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| Sample | Full | Full | Full | Full | Contraction period | Expansion period | Outperformed sample | Underperformed sample |
| Dependent variable | *Cscore* | *Cscore* | *Cscore_Banker* | *Cscore_NC* | *Cscore* | *Cscore* | *Cscore* | *Cscore* |
| *WeakPerformance* | 0.017*** | | 0.020*** | 0.055*** | 0.022*** | 0.017*** | 0.021*** | 0.020*** |
| | (0.005) | | (0.002) | (0.007) | (0.004) | (0.003) | (0.003) | (0.003) |
| *WeakPerformance_SIC* | | 0.022*** | | | | | | |
| | | (0.003) | | | | | | |
| *CEODuality* | -0.005* | | | | | | | |
| | (0.003) | | | | | | | |
| *CEOEquityOwnership* | 0.001*** | | | | | | | |
| | (0.000) | | | | | | | |
| *BoardIndependence* | 0.014* | | | | | | | |
| | (0.008) | | | | | | | |
| Controls | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes | Yes | Yes | Yes | Yes | Yes |
| Adjusted $R^2$ | 0.770 | 0.775 | 0.689 | 0.580 | 0.851 | 0.760 | 0.771 | 0.768 |
| Observations | 15,652 | 91,474 | 81,558 | 80,449 | 15,308 | 66,250 | 40,932 | 40,626 |

Notes: This table reports the results of robustness tests. In Column 1, we add additional variables to control internal governance, including the CEO's duality (*CEODuality*), CEO's equity ownership (*CEOEquityOwnership*) and the proportion of independent board members (*BoardIndependence*). In Column 2, we replace the TNIC-classification based peer performance with the 3-digit SIC classification based peer performance. Columns 3 and 4 show the alternative proxies of asymmetric timeliness of earnings. Columns 5 and 6 report the results for the split samples based on the business cycle. Columns 7 and 8 are for the split samples based on whether a firm has outperformed or underperformed. All the regressions include controls variables in Equation 3, firm and year fixed effects. All continuous variables are winsorized at their 1st and 99th percentiles. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at

the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

**Table 9.** The constraint of bad news hoarding vs. the constraint of investment

| Panel A. Information asymmetry outcome | | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Dependent variable | *CrashDummy* | *CrashDummy* | *Dispersion* | *Dispersion* |
| *HighAC* | -0.005 | -0.002 | 0.078 | 0.067 |
| | (0.009) | (0.009) | (0.053) | (0.053) |
| *WeakPerformance* | 0.033 | 0.108*** | 0.118 | 0.164** |
| | (0.027) | (0.028) | (0.109) | (0.075) |
| *HighAC*× *WeakPerformance* | -0.031 | -0.075*** | -0.163 | -0.319*** |
| | (0.037) | (0.039) | (0.230) | (0.119) |
| Year F.E. | Yes | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes | Yes |
| Adjusted $R^2$ | 0.262 | 0.305 | 0.001 | -0.064 |
| Observations | 28,775 | 28,501 | 20,591 | 18,008 |
| Panel B. Investment outcome | | | | |
| | (1) | (2) | (3) | (4) |
| Dependent variable | *CE* | *CE* | *R&D* | *R&D* |
| *HighAC* | -0.008*** | -0.006*** | -0.001 | -0.001 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| *WeakPerformance* | 0.023*** | -0.005** | 0.005*** | 0.003 |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| *HighAC*× *WeakPerformance* | -0.007** | 0.004 | -0.005** | -0.001 |
| | (0.003) | (0.003) | (0.002) | (0.002) |
| Year F.E. | Yes | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes | Yes |
| Adjusted $R^2$ | 0.600 | 0.603 | 0.848 | 0.849 |
| Observations | 37,715 | 37,299 | 39,748 | 35,266 |

Notes: Panel A reports the joint effect of accounting conservatism and peer performance on stock crash risk and information asymmetry. Stock crash risk is measured by *CrashDummy*, which is a dummy variable that equals one if a firm experiences one or more crash events in a given year and zero otherwise. Information asymmetry is measured by *Dispersion*, which is the standard deviation of the earnings forecast scaled by the absolute value of the mean earnings forecast. Panel B reports the joint effect of accounting conservatism and peer performance on investment. Investment is measured by capital expenditure (*CE*) and R&D investments (*R&D*). All the regressions include controls variables in Equation 3, firm and year fixed effects. Column 1 of Panel A also includes three additional control variables. *Dutrn* is the detrended average monthly stock turnover. *Sigma* is the standard deviation of firm-specific weekly returns over the fiscal year. *Ret* is the arithmetic average of firm-specific weekly returns over the fiscal year. All continuous variables are winsorized at their 1st and 99th percentiles; all standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

## Appendix 1. Variable definition

***Cscore*:** C-score developed by Khan & Watts (2009) is based on Basu's (1997) model. Specifically, Basu's (1997) cross-sectional model is as follow:

$$NI_{i,t} = \beta_0 + \beta_1 D_{i,t} + \beta_2 R_{i,t} + \beta_3 D_{i,t} \times R_{i,t} + e_{i,t} \quad \text{(A1)}$$

Where, $i$ and $t$ denotes firm and year, respectively; $NI_{i,t}$ is net income before extraordinary items scaled by the lagged market value of equity; $R_{i,t}$ is the annual stock returns compounded from monthly returns beginning the fourth month after fiscal year end; $D_{i,t}$ is a dummy variable that equals one if $R_{i,t}$ is negative, and zero otherwise; Khan & Watts (2009) defines the Gscore (the timeliness of earnings to good news) and C-score (the incremental timeliness of earnings to bad news) as follows:

$$Gscore_{i,t} = \beta_2 = \mu_1 + \mu_2 MV_{i,t} + \mu_3 M/B_{i,t} + \mu_4 Leverage_{i,t} \quad \text{(A2)}$$

$$Cscore_{i,t} = \beta_3 = \lambda_1 + \lambda_2 MV_{i,t} + \lambda_3 M/B_{i,t} + \lambda_4 Leverage_{i,t} \quad \text{(A3)}$$

where, $MV_{i,t}$ refers to the log of market value of equity.

Substituting $\beta_2$ and $\beta_3$ from Equations A2 and A3 into Equation A1 yields Equation A4:

$$\begin{aligned} NI_{i,t} = {} & \beta_0 + R_{i,t}\left(\mu_1 + \mu_2 MV_{i,t} + \mu_3 M/B_{i,t} + \mu_4 Leverage_{i,t}\right) \\ & + D_{i,t} \times R_{i,t}\left(\lambda_1 + \lambda_2 MV_{i,t} + \lambda_3 M/B_{i,t} + \lambda_4 Leverage_{i,t}\right) \\ & + D_{i,t}\left(\delta_1 + \delta_2 MV_{i,t} + \delta_3 M/B_{i,t} + \delta_4 Leverage_{i,t}\right) \\ & + \beta_4 MV_{i,t} + \beta_5 M/B_{i,t} + \beta_6 Leverage_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad \text{(A4)}$$

we employ the annual cross-sectional estimation for Equation A4, and apply estimates to Equation A3 to obtain *Cscore*.

***Cscore_Banker***: It is based on Banker et al.'s (2016) argument that the variation in cost stickiness has compounding effect on C-score.

$$\begin{aligned} NI_{i,t} = {} & \beta_1 + \beta_2 D_{i,t} + \beta_3 RET_{i,t} + \beta_4 D_{i,t} \times RET_{i,t} + \beta_5 S_{i,t}/MKT_{i,t-1} + \beta_6 DS_{i,t} \\ & + \beta_7 S_{i,t}/MTK_{i,t-1} \times DS_{i,t} + \varepsilon_{i,t}, \end{aligned} \quad \text{(A5)}$$

$$Gscore2_{i,t} = \beta_3 = \mu_1 + \mu_2 MV_{i,t-1} + \mu_3 BM_{i,t-1} + \mu_4 LEV_{i,t-1} + \varepsilon_{i,t}, \quad \text{(A6)}$$

$$Cscore2_{i,t} = \beta_4 = \lambda_1 + \lambda_2 MV_{i,t-1} + \lambda_3 BM_{i,t-1} + \lambda_4 LEV_{i,t-1} + \varepsilon_{i,t}, \quad \text{(A7)}$$

where, $MV_{i,t-1}$ refers to the log of the market value of equity in the fiscal year t-1; $BM_{i,t-1}$ refers to the book value of equity divided by the market value of equity in the fiscal year t-1; $LEV_{i,t-1}$

refers to total debt divided by total assets in the fiscal year t-1; $S_{i,t}/MKT_{i,t-1}$ is the changes in sales divided by market value of equity in the fiscal year t-1; $DS_{i,t}$ equals one if $S_{i,t}$ is negative, and zero otherwise.

Next, replacing $\beta_3$ and $\beta_4$ from Equations A6 and A7 into regression Equation A5 yields Equation A8.

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

(A8)

The firm-specific conditional accounting conservatism ($Cscore\_Banker_{i,t}$) is measured by applying the estimates from Equation A8 to Equation A7.

***Cscore_NC***: This proxy takes into account the reversal of the trend of increase and decrease in accounting income (Ball & Shivakumar, 2005; Basu, 1997). We follow Lee et al. (2015) to estimate the following equation:

$$
\begin{aligned}
\Delta NI_{i,t} = {} & \beta_0 + \Delta NI_{i,t-1}(\mu_1 + \mu_2 MV_{i,t} + \mu_3 M/B_{i,t} + \mu_4 Leverage_{i,t}) \\
& + DN_{i,t} \times \Delta NI_{i,t-1}(\lambda_1 + \lambda_2 MV_{i,t} + \lambda_3 M/B_{i,t} + \lambda_4 Leverage_{i,t}) \\
& + DN_{i,t}(\delta_1 + \delta_2 MV_{i,t} + \delta_3 M/B_{i,t} + \delta_4 Leverage_{i,t}) \\
& + \beta_4 MV_i + \beta_5 M/B_i + \beta_6 Leverage_i + \varepsilon_i,
\end{aligned}
\qquad \text{(A9)}
$$

where, $\Delta NI_{i,t}$ is the change in net income before extraordinary items scaled by the lagged market value of equity; $DN_{i,t}$ is a dummy variable equal to one if the $\Delta NI$ in the prior year is negative and zero otherwise. *Cscore_NC* is obtained by applying the new estimates from Equation A9 to Equation A3.

***WeakPerformance***: The mean of annual idiosyncratic stock return of a firm's peers (excluding the focal firm). Peers are identified by the Text-based Network Industry Classifications (TNIC). The data of TNIC is obtained from Hoberg-Phillips Data Library.

***FirmSize***: The natural logarithm of total assets.

***M/B***: Equity market value divided by equity book value.

***Leverage***: Total debt divided by total assets.

***SalesVolatility***: The standard deviation of sale using a 5-year rolling window (minimum 3 years required) deflated by total assets.

***SalesGrowth***: The percentage of annual growth in total sales.

***RDAD***: Total research and development expense plus advertising expense deflated by total sales. Missing research and development expenses are replaced by zero.

***CashFlow***: Cash flow divided by total assets.

***LitigationRisk***: An indicator variable that equals one if a firms' litigation risk is in the top decile of the sample and zero otherwise (Gao et al., 2021).

***FirmAge***: Natural log of the year in which the firm appears in the Compustat database (Compustat).

***RelativePerformance***: The difference between a firm's annual idiosyncratic stock return and WeakPerformance.

***HighCIOpeers***: A dummy variable that equals one if a firm's number of peer firms that are cross-held by institutional investors is above the median value in a given year and zero otherwise. The information for institutional ownership is obtained from the Thomson Reuters 13F database.

***HighCApeers***: A dummy variable that equals one if a firm's number of common analysts is above the median value in a given year and zero otherwise. The information for analyst forecast is obtained from the IBES database.

***CrossBoard***: A dummy variable that equals one if a firm's outside director also takes board position in their peer firms and zero otherwise. Data is obtained from BoardEx database.

***CrossAudit***: A dummy variable that equals one if a firm share same auditor with at least one peer firm and zero otherwise. Data is obtained from the Audit Analytics database.

***LowTOindex***: A dummy variable that equals one if a firm's number of a firm's takeover index is below the median value in a given year and zero otherwise. The takeover index is available on Stephen McKeon's personal website.

***HighGindex***: A dummy variable that equals one if a firm's G-index is above the median value in a given year and zero otherwise. G-index is available on Andrew Metrick's personal website.

***HighPIN***: A dummy variable that equals one if a firm's probability of informed trading is above the median value in a given year and zero otherwise. Data on the probability of informed

trading comes from Brown et al.'s (2004) continuously updated database of PIN estimates.

***HighDispersion***: A dummy variable that equals one if a firm's analyst forecast dispersion is above the median value in a given year and zero otherwise. Analyst forecast Dispersion (*Dispersion*) is the standard deviation of the earnings forecast scaled by the absolute value of the mean earnings forecast. The information for analyst forecast is obtained from the IBES database.

***RPE***: A dummy variable that equals one if a firm adopts RPE in a given year and zero otherwise.

***IDD***: A dummy variable that equals one if a firm operates in a state that has experienced the enforcement of the Inevitable Disclosure Doctrine (IDD) and zero otherwise.

***HighAbility***: A dummy variable that equals one if a firm's managerial ability is greater than the median value of a given year and zero otherwise.

***OverconfidentCEO***: A dummy variable that equals one if a CEO fails to exercise an executive option after their stock price has risen by at least 67% and zero otherwise.

***WeakPerformance_C***: The average idiosyncratic stock return of peers' major customers. The information on customer is obtained from the Compustat Segment file.

***SevereDrought***: is a dummy variable that equals one if at least one peer firm of the treated firm has experienced the severe drought event by the time *t* and zero otherwise. The state-level palmier index is available on https://climatedataguide.ucar.edu/climate-data/palmer-drought-severity-index-pdsi.

***OneYearBeforeSevereDrought***: is a dummy variable that equals one if a treated firm's peer firms will experience the shock one year later and zero otherwise.

***TwoYearBeforeSevereDrought***: is a dummy variable that equals one if a treated firm's peer firms will experience the shock two years later and zero otherwise.

***WeatherEvents***: is the difference-in-differences estimator that equals one if at least one peer firm of the treated firm has experienced the top ten largest extreme weather events event by the time *t* and zero otherwise. The events of extreme weather are obtained from https://www.ncei.noaa.gov/access/monitoring/billions/events.

***OneYearBeforeWeatherEvents***: is a dummy variable that equals one if a treated firm's peer firms will experience the shock one year later and zero otherwise.

***TwoYearBeforeWeatherEvents***: is a dummy variable that equals one if a treated firm's peer firms will experience the shock two years later and zero otherwise.

***WeakPerformance_SIC***: The mean of annual idiosyncratic stock return of a firm's peers (excluding the focal firm). Peers are identified by 3-digit SIC industry classification.

***CEODuality***: A dummy variable that equals one if a CEO serves as board chairperson and zero otherwise. The information for CEOs' employment is obtained from the Executive Compensation database.

***CEOEquityOwnership***: The proportion of stock ownership held by a firm's CEO.

***BoardIndependence***: The number of independent board directors over the total number of board members. The information for the board is obtained from the BoardEx database.

***HighAC***: A dummy variable that equals one if *Cscore* is greater than the median value of a given year and zero otherwise.

***CrashDummy***: A dummy variable that equals one if a firm experiences one or more crash events in a given year and zero otherwise.

***CE***: Capital expenditure scaled by total assets.

***R&D***: Research and development expenses scaled by total assets.

***Dutrn***: Detrended average monthly stock turnover.

***Sigma***: The standard deviation of firm-specific weekly returns over the fiscal year

***Ret***: The arithmetic average of firm-specific weekly returns over the fiscal year.

**Appendix 2. Cross-board member and cross-auditor**

| | (1) | (2) |
|---|---|---|
| *WeakPerformance* | 0.004 | 0.002 |
| | (0.004) | (0.005) |
| *CrossBoard* | -0.001 | |
| | (0.002) | |
| *CrossBoard*×*WeakPerformance* | 0.016* | |
| | (0.009) | |
| CrossAudit | | -0.014*** |
| | | (0.004) |
| CrossAudit×*WeakPerformance* | | 0.015** |
| | | (0.007) |
| Controls | Yes | Yes |
| Year F.E. | Yes | Yes |
| Firm F.E. | Yes | Yes |
| Adjusted $R^2$ | 0.766 | 0.767 |
| Observations | 36,674 | 31,925 |

Notes: This table presents the OLS estimates of the moderate effect of information demand on the relationship between peer performance and accounting conservatism. All the regressions include controls variables in Equation 3, firm and year fixed effects. The dependent variable for each regression is *Cscore*. Information externality is proxied by *CrossBoard* and *CrossAudit*. *CrossBoard* is a dummy variable that equals one if a firm's outside director also takes a board position in their peer firms and zero otherwise. *CrossAudit* is a dummy variable that equals one if a firm share the same auditor with at least one peer firm and zero otherwise. All continuous variables are winsorized at their 1st and 99th percentiles. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.

**Appendix 3. Robustness for DID - Top ten largest extreme weather events during 1987-2019**

| | (1) | (2) | (3) |
|---|---|---|---|
| *WeatherEvents* | 0.007*** | 0.006** | |
| | (0.002) | (0.002) | |
| *OneYearBeforeWeatherEvents* | | 0.004 | |
| | | (0.003) | |
| *TwoYearBeforeWeatherEvents* | | -0.005 | |
| | | (0.004) | |
| *Placebo* | | | -0.000 |
| | | | (0.003) |
| Controls | Yes | Yes | Yes |
| Year F.E. | Yes | Yes | Yes |
| Firm F.E. | Yes | Yes | Yes |
| Adjusted $R^2$ | 0.810 | 0.810 | 0.810 |
| Observations | 12,809 | 12,809 | 12,800 |

Notes: This table reports the effect of peer performance and accounting conservatism using the difference-in-differences framework. All the regressions include controls variables in Equation 3, firm and year fixed effects. The dependent variable for each regression is *Cscore*.
$WeatherEvents$ is the difference-in-differences estimator that equals one if at least one peer firm of the treated firm has experienced the top ten largest extreme weather events event by the time *t* and zero otherwise. *OneYearBeforeWeatherEvents* is a dummy variable that equals one if a treated firm's peer firms will experience the shock one year later and zero otherwise. *TwoYearBeforeWeatherEvents* is a dummy variable that equals one if a treated firm's peer firms will experience the shock two years later and zero otherwise. *Placebo* is constructed by falsely identifying the shock time two years ahead. All continuous variables are winsorized at their 1st and 99th percentiles. All standard errors in the brackets adjust for heteroskedasticity and clustering at the firm level. *, ** and *** indicate significance at the 10%, 5% and 1% level, respectively. The details of variable construction are in Appendix 1.