Three Essays on Conservative Reporting and Capital Markets

by

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Introduction

This thesis consists of three studies that examine the feedback effect of capital markets in general, and capital market participants in particular, on the quality of accounting information provided by firms. Specifically, I concentrate on the intersection of conservative accounting practice and equity price efficiency. I am particularly keen on analyzing the effect of conservative reporting on the dissemination of information to capital markets and whether firms benefit from such accounting practice. Additionally, I study how the accumulation of conservative accounting practices affects the information provided in the balance sheet and how capital markets react to such information.

In Chapter 1 (co-authored with Beatriz Garcia Osma), we try to tackle the concern that conservatism might increase information asymmetry. Particularly, lower timeliness of good news recognition can lead to incorrect inferences regarding a firm's prospects from the side of investors. This fact echoed in FASB (2005; 2010), where it was argued that conservatism may trigger information asymmetry between informed and uninformed equity investors. To understand whether the timeliness of bad and good news conservative recognition differently affects information asymmetry, we take the case of insider trading. In particular, we predict that accounting conservatism influences insiders' opportunities to speculate on good and bad news, and thus, insider trading profitability. We find that greater conditional (unconditional) conservatism is associated with lower (higher) insiders' profitability from sales. We find limited evidence that conservatism influences profitability from purchases. These findings are consistent with our hypotheses on the different informational roles of conditional and unconditional conservatism, and on the asymmetric influence of conservatism over the opportunities to speculate on good *versus*

bad news. Our research design takes into consideration the endogenous nature of insiders' trading and conservatism. The results are robust to different measures of conservatism and a number of additional analyses.

In Chapter 2 (co-authored with Beatriz Garcia Osma and Juan Manuel García Lara), we take a further step in the analysis of information environment that is generated through conservative reporting. In particular, we examine the benefits of conditional conservatism for equity markets. We predict that conservatism helps market participant to assess firm's equity underlying value, and mitigates bad news hoarding, thereby improving the information efficiency of stock prices. Consistent with our prediction, we find that conservatism lowers the probability of sustained duration of equity overvaluation and reduces abnormal short-selling interest. We also document lower penalties for conditionally conservative firms when they miss earnings forecasts, both in the mid- and short-run. This is consistent with equity markets applying a lower discount for uncertainty to conservative firms. We corroborate our findings exploiting the passage of SFAS 121 as a plausible exogenous shock to conditional conservatism.

Finally, in Chapter 3 (solo authored), I study how and when the accumulation of conservative accounting properties in balance sheet numbers might be beneficial for firms. In particular, I argue that balance sheet conservatism (BSC) was instrumental in alleviating the adverse consequences of the recent financial crisis. I identify two main properties of BSC-firms that led to better performance during the crisis: the informational and cushioning. I document that high BSC-firms raised more capital and obtained lower cost of debt, due to the former property and reduced earnings volatility and experienced less assets write-downs, due to the latter. Next, I study whether these translated into a better performance during the crisis. I find that high BSC-firms outperformed low BSC-firms both in terms of raw and four-factor model adjusted returns. Further, I document that firms with higher BSC passed liquidity shocks with lower reductions in investment, employment and productivity. Overall, BSC benefited both share- and debtholders. Additionally, I conduct an out of sample test exploiting the Great Depression setting and also find that high BSC-firms outperformed low BSC-firms.

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Chapter 1

Accounting Conservatism and the Profitability of Corporate Insiders

1.1 Introduction

We examine the association between conservatism and insider-trading profitability from sales and purchases. We argue that firm-level accounting conservatism influences transparency and thus, the opportunities available for insiders to speculate on good and bad news. Our main focus is on conditional conservatism as it systematically affects the timeliness of good and bad news recognition. Conditional conservatism refers to the asymmetric verifiability requirements for the recognition of economic gains *versus* losses, which results in earnings that capture unfavourable economic events more quickly and completely than favourable events (Basu 1997), leading to asymmetric persistence of good and bad news.[1]

Prior literature usually regards conditional conservatism as a desirable property of accounting numbers, which results in high quality information useful to monitor management (Beekes et al. 2004; Ahmed and Duellman 2007, 2011; Louis et al. 2012; Mora

[1]Conservatism can be classified as conditional or unconditional (Ball and Shivakumar 2005; Beaver and Ryan 2005). Unconditional conservatism refers to the persistent understatement of net assets which results in unrecognised goodwill (of unknown magnitude). It is the result of news independent conservative accounting at the inception of assets and liabilities (Basu 2005a; Ryan 2006). In addition, and somewhat orthogonally to these notions, the most recent conceptual frameworks refer to "cautious prudence," and prior work also identifies balance sheet conservatism (Basu 1997, 2001; Sunder et al. 2018).

and Walker 2015). We build on this literature and argue that conditional conservatism reduces insiders' trading profitability. Two key assumptions underpin our prediction. First, that insiders can earn abnormal returns by exploiting private information (Seyhun 1986; Jagolinzer et al. 2011). Second, that conditional conservatism is positively associated with decreases in information asymmetry (LaFond and R. Watts 2008; Francis et al. 2013) and that it acts as a corporate governance mechanism that disciplines opportunistic decision-making, offsetting managerial tendency to hide bad news and accelerate good news recognition (Watts 2003).

In particular, given that conditional conservatism leads to timely and complete bad news recognition, when conservatism is high, we expect a reduction in insiders' opportunities to speculate on negative news. This should result in lower insiders' profitability from sales. In contrast, the prediction on the effect over the profitability from purchases is not as straightforward. On the one hand, conditional conservatism imposes higher verification standards for the recognition of economic gains (Basu 1997). This means that gains are recognized as the associated cash flows are realized (thus, often with a lag), and could lead investors to make incorrect inferences regarding firm's prospects. Then, conservatism would create opportunities for insiders to speculate on positive news, increasing profitability from purchases. On the other hand, prior work shows that conditional conservatism ameliorates the firm information environment, improving transparency. Conditional conservatism is associated with improvements to corporate governance, lowering the incentives for opportunistic managerial behaviour (Watts 2003; Gao 2013), and enhancing the confirmatory role of accounting, disciplining good news disclosure and increasing its credibility (Ball 2001; Garcia Osma et al. 2018). Then, conditional conservatism would act as a disciplining mechanism that leads to truthful disclosure of good news (Guay and Verrecchia 2007; LaFond and R. Watts 2008), reducing the opportunities to speculate on good news.

We test our predictions on a large sample of U.S. firms over the period 2003 to 2014. To measure insiders' profitability, we focus on opportunistic insiders' sale and purchase transactions aggregated at a firm-day level, following Jagolinzer et al. (2011). We classify

firms as having high (low) profitability if they earn (do not earn) abnormal returns from their transactions. To ensure the robustness of our results, we measure conservatism using two different proxies. The first one is market-based in cross-section (Basu 1997), and the second is firm-specific (Khan and Watts 2009). Both of the measures are modified following Banker et al. (2016). In addition, to address potential endogeneity issues, we run changes analyses and study the effect of an exogenous shock to conservatism: the mandatory adoption of SFAS-142. For robustness, we examine whether our results are robust to different categories of insiders (CEO and CFO, Top-5 insiders, and all other officers and directors). Finally, we study the impact of unconditional conservatism on insiders' profitability.

We report the following key findings. First, our results indicate timelier recognition of bad news in firms where insiders have lower profitability from sales. We find no systematic evidence of an effect over the profitability from purchases. This reduces the concerns that conditional conservatism delays the recognition of good news resulting in higher information asymmetry. In contrast, we find unconditional conservatism is associated with greater profitability from insiders' sales. Unconditional conservatism results in an understatement of net assets that is news independent (Beaver and Ryan 2005), and may prevent the recognition of future negative news in a timely manner (Basu 2001). Our finding is consistent with the view in Ball and Shivakumar (2005) and Basu (2005a) that unconditional conservatism is uninformative and largely exists to circumvent taxes and regulation. Finally, we show that the relation between conditional conservatism and insiders' profitability is sensitive to the constraining effect of unconditional conservatism (Sunder et al. 2018). Because unconditional conservatism pre-empts the recognition of future bad news, it lowers the negative effect of conditional conservatism on insiders' profitability. Our results are robust to the use of different measures for insider trading and conditional and unconditional conservatism, to the inclusion of additional control variables and to a battery of robustness tests.

Put together, our results contribute to several streams of the literature. We contribute to the literature on insider trading by showing that conditional conservatism

reduces the ability of insiders to speculate on private information. This adds to the work that evidences negative effects associated with insider trading (e.g., Ausubel 1990; Easley et al. 1996; Bernardo 2001; Cheng and Lo 2006; Ellul and Panayides 2018) and suggests conservatism may act as a mechanism against insiders' opportunistic behaviour, limiting speculation on negative news. In contrast, we show that unconditional conservatism triggers greater insiders' profitability from sales, consistent with the view that it increases information asymmetry. Our evidence has policy implications, as it suggests that greater conditional conservatism may increase price informativeness and lower information asymmetry. Ultimately, more efficient prices benefit society as they lead to a more efficient allocation of resources. Therefore, we also add to the literature on the positive economic consequences of conditional conservatism (e.g., A. S. Ahmed et al. 2002; Ahmed and Duellman 2007, 2011; Zhang 2008; Francis and Martin 2010; Louis et al. 2012; Francis et al. 2013; Garcia Lara et al. 2014; Kim and Zhang 2016).

1.2 Literature Review and Hypothesis Development

Insiders often earn abnormal returns when trading on their own firms by exploiting private information (Seyhun 1986; Rozeff and Zaman 1988; Lakonishok and Lee 2001; Marin and Olivier 2008; Jagolinzer et al. 2011). While insider trading may accelerate the resolution of uncertainty, increasing stock price informativeness (Manne 1966; Leland 1992), and spurning the generation, processing, and communication of private information (Ronen 1977), recent work generally highlights its negative effects. This research suggests that insider trading may not be Pareto optimal (Ausubel 1990), that it increases cost of capital (Easley and O' Hara 2004), and lowers liquidity and firm value (Masson and Madhavan 1991; Easley et al. 1996). We add to this literature by examining the role of conservatism in influencing insiders' opportunities to speculate on good and bad news and by proposing conditional conservatism as a plausible mechanism that limits the negative effects of insider trading.

Conservatism is partly non-discretionary and determined by accounting regulation

(Lawrence et al. 2013), taxation, litigation risk, and innate firm characteristics, such as firm size, capital structure or growth opportunities (Watts 2003;Roychowdhury and Watts 2007; Qiang 2007b; Khan and Watts 2009), making it fairly exogenous to the current generation of managers.[2] Concerns exist that conservatism may lead to inefficient decision-making because of the bias it introduces in financial reporting (Guay and Verrecchia 2006; Gigler et al. 2009).[3] However, most of the existing work concludes that conditional conservatism is an efficient mechanism associated with a number of positive economic consequences (Watts 2003; Mora and Walker 2015; Ruch and Taylor 2015). In line with this latter literature, we present a bright side of conditional conservatism, acting as a tool against opportunistic behavior of insiders in exploiting private information to trade on negative economic news. Particularly, we argue that conditional conservatism mitigates information asymmetries between outsiders and insiders through timelier recognition of losses and increasing price informativeness that lowers information asymmetry. Timely loss recognition also enhances the confirmatory role of accounting, disciplining good news disclosure. In contrast, we expect that unconditional conservatism introduces a bias into financial statements that results in higher information asymmetry and higher insiders' profitability. We develop our arguments next.

1.2.1 Conditional conservatism and the opportunities of insiders to speculate on good and bad news

Managers are reluctant to disclose negative firm information (Kothari et al. 2009), and are likely to strategically accelerate the release of good news and to withhold or delay bad news disclosure.[4] Bad news hoarding engenders crash risk (Hutton et al. 2009), and allows firms to continue investing in poor projects, leading to greater losses on abandonment (Francis and Martin 2010; Ahmed and Duellman 2011). However, absent any mechanism

[2]Discretion also exists in conservatism. An ample literature provides evidence of cross-sectional variation in conservatism, driven by changes in regulation and firm determinants, as well as by firm-level choices linked both to managerial decision-making and to pressures from boards of directors, auditors, creditors and other stakeholders (see, e.g. Watts 2003; Mora and Walker 2015; Ruch and Taylor 2015).

[3]These criticisms are usually focused on unconditional conservatism (Ball and Shivakumar 2005).

[4]As noted in Kim and Zhang (2016), this behaviour can be explained by the existence of a variety of incentives linked to earnings- and equity-based compensation, reputation, career concerns, etc.

that counters the incentives for strategic disclosure, insiders may knowingly hide bad performance and disclose unverifiable information about potential future growth, to retain their informational advantage and maximize their profits from insider trading. We predict that conditional conservatism reduces insiders' opportunities to trade on bad news for the following reasons.

First, by imposing lower verification requirements for the recognition of negative news (possible economic losses) relative to positive news, conditional conservatism leads to timely and complete dissemination of negative information that managers would otherwise withhold (Basu 1997; Watts 2003; Kothari et al. 2010). This disciplines insiders' opportunistic behaviour by offsetting managerial tendency to disclose information strategically. As a result, bad news flow into the market more quickly than unverifiable good news, reducing the risk that bad news will be hidden and accumulate (LaFond and R. Watts 2008; Kim and Zhang 2016), thereby reducing insiders' opportunities to profitably trade on bad news information. A growing body of research provides evidence consistent with this view that conservatism reduces the information asymmetry between insiders and outsiders (LaFond and R. Watts 2008; Garcia Lara et al. 2014). For example, Francis et al. (2013), and Kim and Zhang (2016) find that through a decrease in information asymmetry, conservatism mitigates negative market reactions to bad news (economic losses) and reduces crash risk. Further evidence consistent with conditional conservatism leading to improvements in information quality that ameliorate the information environment and allow investors to better assess firm performance is provided in papers that show its association with lower cost of equity (Garcia Lara et al. 2011; Li 2015), lower cost of debt, and better assessment of default risk for lenders (Wittenberg-Moerman 2008; Zhang 2008; Franke and Muller 2019). Thus, we expect that conditional conservatism limits the informational advantage of insiders. Reduction in information asymmetry is an important mechanism to reduce insiders' profitability (e.g., Aboody and Lev 2000).

Second, beyond this direct effect, a number of scholars have linked conditional conservatism to different firm attributes that, in turn, can have an impact on insiders' trading practices and profitability. For instance, prior work shows that conditional conservatism

lowers agency conflicts and is associated with improvements in firm corporate governance and greater institutional ownership (Beekes et al. 2004; Ahmed and Duellman 2007; Ramalingegowda and Yu 2012; Chen et al. 2018). This evidence links with prior work on the profitability of insider trading, which indicates that, on average, better-governed firms have lower profitability of insider sales (Dai et al. 2016), and that greater institutional ownership is negatively related with the profitability of insider trading (Bricker and Markarian 2015).

Further channels through which conservatism may affect insider trading include reductions in earnings management (Basu 1997; Watts 2003; Guay and Verrecchia 2006; Chen et al. 2007; Gao 2013), which should decrease insider-trading profitability since more profitable trades are possible in firms with greater levels of earnings management (Summers and Sweeney 1998; Sawicki and Shrestha 2008; Kraft et al. 2014). Finally, conservatism improves investment efficiency (Francis and Martin 2010; Bushman et al. 2011; Ahmed and Duellman 2011; Louis et al. 2012; Garcia Lara et al. 2016). Under conditional conservatism, managers cannot defer the recognition of losses. This disciplines managers *ex ante* and reduces the likelihood of investment in poorly performing projects. Conditional conservatism also improves investment efficiency *ex post*, by imposing timely disclosure of poor realizations of ongoing investments, and triggering the early abandonment of poor projects. Overall, this results in lower investment in negative NPV projects, which also alleviates possible information asymmetry coming from managers who try to withhold negative information about their investments. Lower investment in poor projects should lead to a reduction of opportunistic speculation on negative information from insiders.

Given the previously reviewed evidence, we expect that conditional conservatism limits insiders' opportunities to speculate on bad news. Therefore, our first hypothesis is:

> ***H1:*** *Conditional conservatism reduces insiders' opportunities to earn abnormal returns on negative news, which leads to a lower profitability from sales.*

Regarding good news, conditional conservatism imposes higher verification thresh-

olds for the recognition of economic gains (Basu 1997; Watts 2003). This means that the prediction on the effects of conditional conservatism on insiders' opportunities to speculate on positive news is not as straightforward. On the one hand, conditional conservatism may also reduce insiders' opportunities to exploit their informational advantage with regards to good news for at least two reasons. First, conditional conservatism enhances the confirmatory role of accounting information, acting as a 'hard' benchmark to evaluate the credibility of alternative sources of information (LaFond and R. Watts 2008), such as unverifiable good news disclosures and management forecasts. This confirmatory role disciplines good news disclosure through *ex post* accountability (Ball 2001; Ball et al. 2012). Then, conditional conservatism allows other 'softer' sources of information to flourish (LaFond and Watts 2008), lending credibility to good news disclosure and permitting attaining full disclosure (Guay and Verrecchia 2007). Consistent with this view, Garcia Osma et al. (2018) show that conditional conservatism is associated with greater frequency and credibility of good news management forecasts. Second, all the previously documented mechanisms that are linked to greater conditional conservatism (i.e., better quality corporate governance, greater institutional investor ownership, or lower earnings management) would also hold for the recognition of good news, also reducing information asymmetry with respect to positive economic outcomes.

However, on the other hand, the lower timeliness of good news recognition can lead to incorrect inferences regarding a firm's prospects from the side of investors. In particular, the FASB (2005; 2010) has argued that conservatism may trigger information asymmetry between informed and uninformed equity investors.[5] In this regard, higher verification standards for the recognition of positive news could lead to delays in revealing unverifiable economic gains, and thus, to information asymmetry that would grant opportunities for insiders to speculate on positive news. A number of studies provide evidence that even sophisticated users of financial statements, such as analysts, do not fully understand conservatism (Helbok and Walker 2004; Pae and Thornton 2010), giving

[5]Admittedly, this concern applies mostly to unconditional conservatism, but extends to conditional conservatism. In contrast to this position, the IASB, in recent years, has began walking back their objections to conditional conservatism (IASB 2015 Exposure Draft).

credence to this view.[6]

Thus, ultimately, the link between conservatism and the opportunities to speculate on a firm's good news is an empirical question. Following the aforementioned discussion, we propose to test the following second hypothesis:

> ***H2:*** *Conditional conservatism reduces insiders' opportunities to earn abnormal returns on positive news, which leads to a lower profitability from purchases.*

1.2.2 Unconditional conservatism and insider trading profitability

Unconditional conservatism refers to the persistent understatement of the book value of net assets (Beaver and Ryan 2005), and is often viewed as introducing a bias of unknown magnitude into financial statements (Ball and Shivakumar 2005) and thus, as garbling the earnings signal and increasing information asymmetry. A classical example would be the immediate expensing of R&D costs. Under SFAS 2 *Accounting for Research and Development Costs*, all R&D outlays are considered expenses, independent of whether they represent successful innovations or not. Insiders could be better informed about the future profitability associated with such investments, whilst investors would only observe the annual R&D expense in the financial statements.[7]

Given this, we argue that conditional and unconditional conservatism have different effects on financial statements transparency, and particularly, over the timing of accounting recognition. While the principal mechanism of conditional conservatism is its timely reaction to negative news, unconditional conservatism is news independent and prevents timely loss recognition (Beaver and Ryan 2005; Pope and Walker 2002; Pae et al. 2005; Roychowdhury and Watts 2007). Also, it leads to potential over-reporting of losses which may never be realized. Indeed, unconditional conservatism may provide opportunities for

[6] In addition, prior evidence would suggest markets do not always understand the links between accounting choices and earnings persistence (Sloan 1996; Lev and Nissim 2006).

[7] Alternative sources of information, such as analysts recommendations or management forecasts, would of course be available both in the described expensing scenario, as well as in a capitalizing scenario, to complement financial statements.

earnings management, as it can result in the creation of 'cookie jar' reserves, that can be used to artificially increase earnings when past understatements reverse (Ball et al. 2000; Jackson and Liu 2010). In addition, prior understatement of asset values (as a result of unconditional conservatism), restrains the firm future ability to record losses in a timely manner (Basu 2001, 2005a, Giner and Rees 2001, Beaver and Ryan 2005, Pae et al. 2005).[8] This means that more unconditionally conservative firms have a constraint in signaling future negative economic events (Sunder et al. 2018). Given this, it is likely that insiders can profitably trade on negative information in more unconditionally conservative firms. Formally stated:

> ***H3:*** *Unconditional conservatism increases insiders' opportunities to earn abnormal returns on negative news, which leads to a greater profitability from sales.*

Regarding positive news, under unconditional conservatism, asset values are expected to present their lower bound estimates. This restrains the signalling of potential good news, increasing information asymmetry (Ball and Shivakumar 2005). If negative news are not realized, unconditional conservatism could benefit insiders: knowing that the assets are undervalued in financial statements, insiders can purchase the stock and sell it in the future. However, the problem with this strategy is that even for insiders it would be difficult to time the unravelling of prior conservatism. It is not trivial to track when the company is going to realize gains as conservatism is a 'sticky' policy and partially embedded into accounting frameworks. Firms may smooth realizations of earnings through time (lowering volatility in share prices). Contrary, they may realize earnings all at once. This would increase stock price. Thus, potentially, firm-insiders with perfect foresight and decision-rights on the timing of earnings realizations might profit from unconditional conservatism. This leads us to our final hypothesis:

[8]Unconditional conservatism can help managers hide bad news. Consider a simple case: a firm uses accelerated depreciation for an asset. This is independent of news. Suppose that in year 2, after accounting depreciation, the asset is valued at 30% of its initial value on the balance sheet (while its economic value is 75%), and there is an exogenous shock to the asset that lowers its economic value to 45%. If the firm is unconditionally conservative, there is no need to recognize an impairment, as its current book value (30%) is lower than its economic value (45%). In contrast, if the accounting depreciation had matched economic depreciation, the firm would need to recognize an impairment.

H4: *Unconditional conservatism increases insiders' opportunities to earn abnormal returns on positive news, which leads to a greater profitability from purchases.*

1.3 Research Design

1.3.1 Computation of insider trading

Following Cohen et al. (2012), we separate insiders into two categories: routine and opportunistic, and consider only "opportunistic" insiders in our analyses. Routine insiders are those who trade based on liquidity or other needs, and are identified as those who trade in the same month for at least three consecutive years. All other insiders are classified as opportunistic. Thus, at the beginning of each year, insiders are classified into one of these two categories based on their trading history.[9] We hypothesize that if insiders' consistently earn profits on their trades, this should signal that those trades are based on private (non-public) information. To compute insider trading profitability we follow Jagolinzer et al. (2011). More specifically, we estimate the following four-factor Fama and French (1993) and Carhart (1997) model over 180 days after each transaction (sale and purchase).[10]

$$R_i - R_f = \alpha + \beta_1(R_{mrt} - R_f) + \beta_2 SMB + \beta_3 HML + \beta_4 UMD + \epsilon_t, \tag{1.1}$$

where R_i is firm's i daily return, R_f is the daily risk-free interest rate, R_{mrt} is market return, and SMB, HML and UMD are the Size, Book-to-Market and Momentum factors. Finally, α is the average daily risk-adjusted positive return for insider purchases. Conversely, -α represents profitability for insider sales.[11] Internet Appendix, Table 1

[9] We extend our sample back to 1992 to segregate insiders into these two groups. This is done to preserve the sample size.

[10] Following prior literature, we compute abnormal returns over a six-month horizon (Jagolinzer et al. 2011; Skaife et al. 2013). This is because there is a penalty for profits earned on trades made fewer than 180 days subsequent to prior trades ("short-swing" rule: Section 16(b) of the Securities and Exchange Act of 1934). In robustness tests, we calculate insider's profitability over a one-year period (instead of 180 days). Our main inferences are retained.

[11] Due to data restrictions, we have information on actual sales (not short-selling positions). Thus, in

provides a replication of Jagolinzer et al. (2011) that validates our method to calculate insiders' profitability from sales and purchases. To come to firm-wide net transactions, we separately account for daily net transactions of all officers and directors.

1.3.2 Measurement of accounting conservatism

Conditional conservatism using Basu (1997)

In our first set of tests, to examine the links between conditional conservatism and insiders' profitability from sales and purchases, we use Basu's (1997) model as modified by Banker et al. (2016). These authors argue that the timelier recognition of bad news relative to good news as measured by Basu (1997) can arise from a fundamentally different source - cost stickiness.[12] Banker et al. (2016) show that controlling for sticky costs reveals that conservatism estimates (as used in the extant prior research, such as in Basu (1997), Ball et al. (2013), or Collins et al. (2014)) are biased more than 25%. Thus, we follow their method in our first set of tests, modifying Basu's (1997) model to account for cost stickiness. The full model is as follows:

$$\begin{aligned} E_{i,t}/P_{i,t-1} = \beta_0 + \beta_1 DR_{i,t} + \beta_2 RET_{i,t} + \beta_3 DR_{i,t} \times RET_{i,t} + \beta_4 DS_{i,t} \\ + \beta_5 \Delta S_{i,t}/P_{i,t-1} + \beta_6 DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1} + \epsilon_{i,t}, \end{aligned} \tag{1.2}$$

where $E_{i,t}/P_{i,t-1}$ is earnings in year t scaled by the market value of equity at the beginning of the fiscal year. RET is the compounded market-adjusted CRSP stock return over the fiscal year t. DR is a dummy variable that equals one if RET is negative (i.e., in the case of bad news) and zero otherwise (i.e., good news). DS is a dummy variable that is equal to one if there is a decrease in sales from year $t-1$ to t and zero otherwise. $\Delta S_{i,t}/P_{i,t-1}$ is the change in sales from year $t-1$ to year t that is scaled by the market value of equity

line with the previous literature, we estimate the profitability of sales in the sense of 'opportunity cost.' For instance, selling one share when the price goes up by 10% would signal that the insider makes a loss in a cost of opportunity sense (i.e. without the sale, she would have gained 10% over the estimated period). In contrast, if the sale of a stock is followed by a 10% decline in price, the insider makes a profit.

[12] In particular, to avoid adjustment and disposal costs that are associated with the alteration of firms' operations, managers retain some unused resources when sales fall. Correspondingly, when sales rise, managers are in need to add additional resources to meet the demand. Given these features, there is an asymmetric behaviour of costs that can distort inferences about the level of conservative reporting.

at the beginning of the fiscal year, and ϵ is an error term. Appendix 1.7 contains further details on the calculations and definitions of all variables.

In $Eq.(2)$ the β_2 coefficient captures the timeliness of good news recognition, while β_3 measures the asymmetric timeliness of bad news recognition relative to good news, and captures the incremental timeliness of bad news. The sum of β_2 and β_3 measures the total timeliness of bad news recognition. In the presence of conservatism, β_3 is expected to be positive and significant.

To assess whether there is an impact of accounting conservatism on corporate insiders' profitability, we follow extant prior research in conservatism and modify $Eq.(1.2)$ to include interaction terms with yearly average profitability of corporate insiders ($Profit$) and control variables associated with insider trading. Moreover, in line with the literature, we add a number of controls ($Controls$) that are likely to affect profitability of insiders. In particular, we control for firm size, book-to-market ratio and institutional ownership (Seyhun 1986; Rozeff and Zaman 1998; Lakonishok and Lee 2001; Piotroski and Roulstone 2005; Skaife et al. 2013; Bricker and Markarian 2015; Massa et al. 2015). To control for the firm information environment we use the number of analysts following the firm and to control for momentum factor we control for buy-and-hold returns estimated over the three year period. The main regression under consideration is as follows:

$$\begin{aligned} E_{i,t}/P_{i,t-1} = {} & \beta_0 + \beta_1 DR_{i,t} + \beta_2 Profit_{i,t+1} + \beta_3 DR_{i,t} Profit_{i,t+1} + \beta_4 RET_{i,t} \\ & + \beta_5 RET_{i,t} Profit_{i,t+1} + \beta_6 DR_{i,t} RET_{i,t} + \beta_7 DR_{i,t} RET_{i,t} Profit_{i,t+1} \\ & + \beta_8 DS_{i,t} + \beta_9 DS_{i,t} Profit_{i,t+1} + \beta_{10} \Delta S_{i,t}/P_{i,t-1} + \beta_{11} \Delta S_{i,t}/P_{i,t-1} Profit_{i,t+1} \\ & + \beta_{12} DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1} + \beta_{13} DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1} Profit_{i,t+1} + \beta_{14} X_{i,t} \\ & + \beta_{15} DR_{i,t} X_{i,t} + \beta_{16} RET_{i,t} X_{i,t} + \beta_{17} DR_{i,t} RET_{i,t} X_{i,t} + \beta_{18} DS_{i,t} X_{i,t} \\ & + \beta_{19} \Delta S_{i,t}/P_{i,t-1} X_{i,t} + \beta_{20} DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1} X_{i,t} + \psi + \omega + \epsilon_{i,t}, \end{aligned} \tag{1.3}$$

where $X_{i,t}$ is a set of control variables as described above. $Profit$ is our measure of the profitability from sales or purchases. We expect to observe a difference in conditional conservatism between firms with high and low insiders' profitability. Under $H1$ and $H2$

we expect that β_7, which captures the incremental timeliness of loss recognition relative to gains, will be negative and significant. We also expect that the sum of β_5 and β_7, capturing the total timeliness of loss recognition will be different from zero. *Eq.*(3) includes firm- fixed effects (ψ) to control for the cross-sectional correlation between the expected components of earnings and returns (Ball et al. 2013), and year- fixed effects (ω) to control for economy-wide temporal shocks. Standard errors are clustered by firm and year (Petersen 2009).

Conditional conservatism using Khan and Watts (2009)

Our second measure of conditional conservatism is based on the approach in Khan and Watts (2009) that permits calculating a firm-year measure. Augmenting the Basu (1997) model, Khan and Watts (2009) relate timeliness of good news (referred to as G_Score) and incremental timeliness of bad news (referred to as C_Score) to firm-specific characteristics (size, market-to-book ratio, and leverage). As before, we follow Banker et al. (2016) and modify Khan and Watts (2009) model to incorporate sticky costs as follows:

$$\begin{aligned}
E_{i,t}/P_{i,t-1} = {} & \alpha_0 + \alpha_1 DR_{i,t} + \alpha_2 RET_{i,t} + \alpha_3 DR_{i,t} RET_{i,t} \\
& + BM_{i,t-1} \times (\alpha_4 DR_{i,t} + \alpha_5 RET_{i,t} + \alpha_6 DR_{i,t} RET_{i,t}) \\
& + LEV_{i,t-1} \times (\alpha_7 DR_{i,t} + \alpha_8 RET_{i,t} + \alpha_9 DR_{i,t} RET_{i,t}) \\
& + SIZE_{i,t-1} \times (\alpha_{10} DR_{i,t} + \alpha_{11} RET_{i,t} + \alpha_{12} DR_{i,t} RET_{i,t}) \\
& + \gamma_1 BM_{i,t-1} + \gamma_2 LEV_{i,t-1} + \gamma_3 SIZE_{i,t-1} \\
& + \beta_1 DS_{i,t} + \beta_2 \Delta S_{i,t}/P_{i,t-1} + \beta_3 DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1} \\
& + BM_{i,t-1} \times (\beta_4 DS_{i,t} + \beta_5 \Delta S_{i,t}/P_{i,t-1} + \beta_6 DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1}) \\
& + LEV_{i,t-1} \times (\beta_7 DS_{i,t} + \beta_8 \Delta S_{i,t}/P_{i,t-1} + \beta_9 DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1}) \\
& + SIZE_{i,t-1} \times (\beta_{10} DS_{i,t} + \beta_{11} \Delta S_{i,t}/P_{i,t-1} + \beta_{12} DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1}) + \epsilon_{i,t},
\end{aligned} \tag{1.4}$$

where $BM_{i,t-1}$, $LEV_{i,t-1}$, and $SIZE_{i,t-1}$ are the book-to-market ratio, leverage, and size (see Appendix 1.7 for definitions), respectively, at the beginning of the fiscal year.[13] Ta-

[13] C_Score (firm-year conditional conservatism) is defined as $\alpha_3 + \alpha_6 BM_{i,t} + \alpha_9 LEV_{i,t} + \alpha_{12} SIZE_{i,t}$.

ble 1.1 presents descriptive statistics for C_Score and G_Score. In Panel A, C_Score (G_Score) has a mean of 0.210 (0.014) and median of 0.174 (0.068). Conservatism is present, as expected, throughout the sample (Q1 of C_Score is positive). In unreported results, Spearman (-0.253) and Pearson (-0.3316) correlations between C_score and G_Score suggest a negative and significant correlation. Our results replicate the findings of higher asymmetric timeliness as a result of lower good news timeliness (negative correlation). Overall, the results are in line with the ones of Khan and Watts (2009) *Table* 4. This validates our calculations.

Our firm-year measure of conditional conservatism ($CSCORE$) is the three-year average of C_Score (e.g., for year t, $CSCORE$ is the average over years t, $t-1$, and $t-2$).[14] A greater value of $CSCORE$ represents a higher degree of conditional conservatism.[15] In our tests, we control for determinants affecting insiders' profitability as defined in the literature. Our main regression under consideration is as follows:

$$Profit_{i,t} = \beta_0 + \beta_1 CSCORE_{i,t} + \beta_2 Controls_{i,t} + \psi_{i,t} + \omega_{i,t} + \epsilon_{i,t}, \tag{1.5}$$

where all variables are as previously defined. We include industry- (ψ) and year- (ω) fixed effects to control for the industry-specific contracting environment and economy-wide temporal shocks, and cluster standard errors by firm and year (Petersen 2009). Given that conservatism is a sticky policy, we set industry fixed effects as our benchmark to arrive at economic significance. However, all tables include the results of main coefficients, once we control for firm-fixed effects. The dependent variable is alternatively profitability from sales or from purchases. The coefficient of interest is β_1 that is expected to be significant and negative under $H1$ and $H2$.

G_Score, is defined as $\alpha_2 + \alpha_5 BM_{i,t} + \alpha_8 LEV_{i,t} + \alpha_{11} SIZE_{i,t}$.

[14] Given lagged values we estimate $Eq.(1.4)$ over the sample from 2001 until 2014 to preserve sample size.

[15] Our inferences are retained if we calculate $CSCORE$ as total timeliness of bad news recognition by summing C_Score and G_Score.

1.3.3 Unconditional conservatism

We measure unconditional conservatism as the persistent downward bias in book value of equity.[16] Book-to-market (BTM) is a noisy measure of unconditional conservatism since there are factors other than conservatism that affect both book and market value of equity. Following Sunder et al. (2018) we extract these other sources of variation in BTM. In particular, we control for growth and economic rents, distress, market sentiment, unrealized mark-to-market gains, and inflation. The residual from $Eq.(1.6)$ below is our measure of unconditional conservative reporting ($UCONS$):

$$\begin{aligned} BTM_{i,t} = \alpha &+ \beta_2 LTGForecast_{i,t} + \beta_2 SalesGrowth_{i,t} + \beta_3 IndConcentration_{i,t} \\ &+ \beta_4 1/CSI_{i,t} + \beta_5 1/S\&PIndex_{i,t} + \beta_6 Profitability_{i,t} + \beta_7 CreditRating_{i,t} \\ &+ \beta_8 ReturnVolatility_{i,t} + \beta_9 HighInflation_{i,t} + \beta_{10} AOCI_{i,t} + \epsilon_{i,t}, \end{aligned} \tag{1.6}$$

where BTM is the book value of assets divided by the market value of equity plus the book value of debt. Long-term growth forecast ($LTGForecast$) and sales growth ($SalesGrowth$) proxy for firm expected growth. Industry concentration ($IndConcentration$) controls for the effect of a high rent that results in a lower BTM. $1/CSI$ is a proxy for consumer sentiment and $1/S\&P$ accounts for general level of prices that is expected to affect investors' sentiments. $Profitability$, $CreditRating$ and $ReturnVolatility$ control for distress. $HighInflation$ is an indicator variable that controls for inflation, because even without conservatism inflation can decrease BTM (Basu 1997). $AOCI$ is accumulated other comprehensive income scaled by total assets and is a proxy for the extent of fair value accounting.[17] $Eq.(1.6)$ includes year- and industry- (ICODE50 in the Fixed Industry Classification data) fixed effects. All the variables are defined in Appendix 1.7.

$UCONS$ are the residuals from $Eq.(1.6)$. For ease of interpretation, we multiply

[16] We thank the reviewer for suggesting this measure. We are aware that proxy of Sunder et al. (2018) captures not only unconditional conservatism, but balance sheet conservatism on average. However, given that balance sheet conservatism mostly arises from unconditional conservatism (correlation between Sunder et al. (2018) and Beaver and Ryan (2000, 2005) is 71%) we set this as our main proxy. The results do hold if we use the measure of Beaver and Ryan (2000, 2005) instead. Please, refer to Internet Appendix, Table 3.

[17] See Sunder et al. (2018) for detailed explanations of variables construction and estimation procedure.

then by -1, so that the higher $UCONS$, the more unconditionally conservative the firm is. To control for possible measurement error, we use the three-year average of $UCONS$ (e.g., for year t, $UCONS$ is the average over years t, $t-1$, and $t-2$).[18] Internet Appendix, Table 2 provides a replication of Sunder et al. (2018) that validates our calculation. To test $H3$ and $H4$, we run $Eq.(1.5)$ above, substituting $CONS$ for $UCONS$. The coefficient of interest is again β_1 which now is expected to be positive and statistically significant. As before, the dependent variable is either profitability from sales or from purchases.

1.4 Sample and Descriptive Statistics

We study U.S. firms for the period 2003 to 2014. Following Banker et al. (2016) we exclude financial firms (Standard Industrial Classification (SIC) between 6000 and 6999) and those firms with stock price below 1$. Additionally, we exclude observations for which the annual change in sales exceeds 50% to eliminate large acquisitions that distort performance measure like earnings and operating accruals. We start our sample in 2003 to avoid the confounding effect of the Sarbanes-Oxley (SOX) Act of 2002 that imposed stricter regulations for insider trading, particularly in terms of disclosure requirements.[19] Insider trading data comes from Thomson Financial Insider Fillings (Form 4 filings), and covers all transactions made by insiders and their relation to the firm. As noted, we focus on "opportunistic" insiders since their trades are more likely to be based on the use of private information. We perform our analysis within sub-groups as different insiders occupy positions that provide different levels of access to firm-specific information (Seyhun 1986; Lin and Howe 1990; Piotroski and Roulstone 2005; Ravina and Sapienza 2010). Particularly, the CEO and CFO are responsible for accounting estimates and the preparation of financial statements (Skaife et al. 2013). Also, overall, Top-5 insiders have

[18] Given lagged values we estimate $Eq.(1.6)$ over the sample from 2001 until 2014 to preserve sample size.

[19] Brochet (2010) shows an increase in the information content of Form 4 after SOX, and lower insiders' sales around SOX. Before August 2002, insiders needed to file their trades within ten days after the end of the calender month in which the transaction occurred, which could result in a delay of up to 40 days since the trade. SOX requires insiders to file their trades within two business days. In robustness tests, we increase our sample to cover the period from 1996 to 2014. Our results stay in line with the main conclusions.

better access to firm-specific information compared to other insiders (Core et al. 2006).[20] Given this, we classify insiders into three categories: (1) CEO-CFO; (2) Top-5; and (3) Officers and directors other than Top-5 insiders (No Top-5). We focus on open market sales and purchases and follow the steps detailed in Jagolinzer et al. (2011) in terms of our data-cleaning process. Accounting information comes from Compustat annual, and is merged with the insider trading data using six digits CUSIP. Data on daily share prices and returns comes from CRSP. The data on Institutional ownership is from Thomson Reuters 13F Holdings database. Finally, analyst coverage data is from I/B/E/S. All continuous variables are winsorized at the 99% and 1% levels.

[Insert Table 1.1 about here]

Table 1.1 presents descriptive statistics of our main variables. Panel B contains variables used in the Banker et al. (2016) and modified Khan and Watts (2009) models. Panel C contains the controls for insider trading profitability. Panel D presents descriptive evidence on the profitability from sales and purchases of different groups of insiders. Overall, the evidence reported in Table 1.1 is consistent with prior research, although it suggests that sample firms are slightly under performing, with over half of them (50.5%) experiencing bad news (DR=1). It can also be seen that, consistent with previous literature, on average, insider purchases appear to be more profitable than sales. Moreover, Panel D presents that trades conducted by the CEO, CFO and Top-5 insiders, on average, have higher returns compared to other officers and directors. This is consistent with different insiders having different access to firm-specific information on which to trade on.

[20]The Top-5 includes the Chairman of the Board, CEO, CFO, COO and President (Core et al. 2006).

1.5 Empirical Results

1.5.1 Insiders' profitability and conditional conservatism

Conditional conservatism as measured by modified Basu (1997)

Table 1.2 presents the results of testing $H1$ using the modified Basu (1997) model following Banker et al. (2016). The baseline regression under consideration is as in $Eq.(1.3)$. For completeness, we show results segregated into the 3 groups of insiders as previously described.

[Insert Table 1.2 about here]

The first column presents results of Banker et al. (2016) raw model estimation, $Eq.(1.2)$. The incremental coefficient on negative news, $DR \times RET$, is both positive and statistically significant (0.273; t-stat = 12.155). This is as expected and indicates that, on average, firms in the sample are conditionally conservative. The main results are presented in columns (2) to (7).[21] The coefficient of interest is the interaction of incremental timeliness and insiders' profitability (β_{10}). As represented in columns (2), (4) and (6), conservative reporting, on average, decreases insiders' profit from sales. This effect is statistically significant for all officer and directors (excluding Top-5 insiders, column (6)) (-0.395, t-stat=-2.637). Additionally, we report coefficient estimates of β_{10} with firm-fixed effects. As before, the results are negative for all officer and directors (excluding Top-5 insiders, column (6)) (-0.354, t-stat=-2.713). Overall, this is consistent with lower insiders' profitability from sales in more conditionally conservative firms, and thus, suggests conditional conservatism is associated with less opportunities to profitably trade on negative news.

Columns (3), (5) and (7) present the results for insiders' profitability from purchases. The results support the negative association as predicted in $H2$. There is some

[21] We do not report the estimation results of control variables for brevity. Internet Appendix, Table 4 provides the benchmark regression for this specification, where we include all the control variables.

evidence that conservative reporting has negative effect on CEO-CFO profits from purchases (-0.620, t-stat=-2.007). However, due to limited number of observations, this result lacks statistical power. For the other groups of insiders, the effect of conditional conservatism on insiders profitability from purchases is statistically insignificant at conventional levels (-0.365, t-stat=-1.491; -0.054, t-stat=-0.433). Once we control for firm-fixed effects the results are statistically insignificant for all the groups of insiders. Overall, our results accept $H1$ and fail to accept $H2$, suggesting that conditional conservatism reduces insiders' opportunities to profitably trade on bad news.

Conditional conservatism as measured by modified Khan and Watts (2009)

Table 1.3 presents the estimation results of $Eq.(1.5)$, where we use a firm-year measure of conditional conservatism ($CSCORE$) based on the modified Khan and Watts (2009) model.[22] As predicted, there is a negative association between conditional conservatism and insiders' profitability from sales. The coefficient of $CSCORE$ is negative and significant for all types of insiders, columns (1), (2) and (3) (-0.254, t-stat = -7.226; -0.209, t-stat = -5.528; -0.212, t-stat = -3.835). In terms of economic significance, a one standard deviation increase in CSCORE (0.144) decreases insiders' profitability by 3.7%, 3% and 3.1% for CEO-CFO, Top-5 and non-Top-5 groups of insiders, subsequently. Adding firm-fixed effects does not alter the conclusions, there is still negative and statistically significant effect of conservative reporting on insiders' profitability (-0.191, t-stat = -2.644; -0.178, t-stat = -2.387; -0.221, t-stat = -4.537). Columns (2), (4) and (6) present the results on the association between conditional conservatism and profitability from purchases. As in Table 1.2 the effect is statistically insignificant, but not for officers and directors excluding Top-5 insiders. However, adding firm-fixed effects results in statistically insignificant effect of conservative reporting on insiders' profitability for all group of insiders (-0.047, t-stat = -0.268; -0.011, t-stat = -0.071; 0.145, t-stat = 1.484).

[Insert Table 1.3 about here]

[22]Internet Appendix, Table 5 provides the benchmark regressions for this specification.

Overall, our results thus far support $H1$, as we provide evidence of a negative association between conditional conservatism and insiders' profitability from sales. On average, we fail to accept $H2$ consistent with the idea of no effect of conditional conservatism over the opportunities of insiders to profitably trade on good news. Additionally, our results systematically reveal lower insider trading profitability for officers and directors excluding Top-5 insiders. The results for the group of CEO-CFO and Top-5 insiders have lower negative statistical significance. This may indicate that top insiders have superior access to firm-specific information that would allow them to overcome the alleviation of information asymmetry by means of conservative reporting (Seyhun 1986; Lin and Howe 1990; Piotroski and Roulstone 2005; Ravina and Sapienza 2010). Results are robust to the inclusion of control variables, firm-, industry- and year-fixed effects and robust standard errors clustered at the firm and year level.

1.5.2 Additional analyses to account for endogeneity

A concern with our results thus far is endogeneity, and in particular, reverse causality. One may argue that more insider trading-prone firms are more likely to use conservative reporting. We try to control for this issue in a number of ways. First, as noted before, conservatism is a stable property of accounting numbers, which is the result of accounting choices, regulations, macro-economic factors and innate firm determinants (Watts 2003;Roychowdhury and Watts 2007; Qiang 2007b; Khan and Watts 2009) that are fairly exogenous to the existing generation of managers. In our analyses, we construct our conservatism proxy as a three-year average so that it measures prior committent to conditional conservatism. Second, we include in our models time- and firm-fixed effects to account for economy-wide temporal shocks and the firm-specific contracting environment and corporate governance. Third, we study the effect of conservative reporting on insiders' profitability within different groups of insiders that are expected to have different quality of private information. However, despite these steps, we cannot entirely rule out endogeneity concerns. A perfect experimental setting would be an exogenous shock to conservative reporting. However, due to the absence of such a shock, in this section, we

propose additional analyses to mitigate this concern.

First, we repeat our main analyses using a changes specification. In particular, we study the association between current changes in conservatism and future changes in insiders' profitability. Additionally, to mitigate the issue of reverse causality we introduce a current change in insiders' profitability ($Profit_{i,t}$) as follows:

$$\Delta Profit_{i,t+1} = \beta_0 + \beta_1 \Delta CSCORE_{i,t} + \beta_2 \Delta Profit_{i,t} + \beta_3 \Delta Controls_{i,t} + \psi_{i,t} + \omega_{i,t} + \epsilon_{i,t+1}, \tag{1.7}$$

Table 1.4 presents the estimation results of $Eq.(1.7)$. Columns (1), (3) and (5) indicate a negative association between conditional conservatism and insiders' profitability from sales. The results are only significant at conventional levels for all officers and directors excluding Top-5 insiders (-0.115, t-stat=-2.321). Interestingly, columns (2) indicates a positive association between conditional conservatism and CEO-CFOs' profitability from purchases. Main conclusions remain the same if we include firm-fixed effects.

[Insert Table 1.4 about here]

Overall, the results suggest that current changes in conservatism are associated with lower profitability from sales. Additionally, we find evidence that some insiders may profit from the asymmetric timeliness of positive news recognition. However, a concern with this test is the small sample sizes, particularly for the profitability from purchases analyses (except for the No Top-5 group), and thus, results should be interpreted with caution.

Conditional conservatism and insider trading, evidence from SFAS 142

As a further robustness test, we use the adoption of SFAS 142 as a plausible external shock to conservatism. In particular, we follow Cedergren et al. (2017) who study the period before and after the introduction of SFAS 142. After the effective date of SFAS 142 (June 30, 2001) firms are required to replace periodic amortization of goodwill for impairments based on a fair value test with write-offs if necessary.[23] Moreover, it required

[23]Before SFAS 142 provision, firms amortized goodwill over a period not exceeding 40 years.

that a firm's goodwill is allocated to its reporting value. This resulted in an increase in goodwill impairments (Li and Sloan 2017). Thus, this regulatory change led to an increase in conditional conservatism as it increased the timeliness of loss recognition, that before SFAS 142 could be deferred as periodic expenses (Roychowdhury and Watts 2007).[24]

Goodwill appears as a result of mergers and acquisitions, representing intangible assets that are acquired in the transaction, but are not separately identifiable (e.g., customer loyalty, intellectual capital). The sample of acquisitions is obtained from Thomson Reuters Securities Data Company (SDC) Platinum database. To avoid the confounding effects of SOX (August 2002) that imposed stricter disclosure requirements for insider trades, we perform the analysis within a one-year window. In particular, we require that deals are completed between 2000-Q2 through 2002-Q2, a one-year window around SFAS 142. Following Cedergren et al. (2017) we exclude observations with missing transaction value, those where the percentage of target's firm acquired shares is less than 90 percent, and transactions where the value of the transaction is less than the bottom 1 percent or more than 100 percent of the firm's market value at the beginning of the fiscal year.

To test whether the passage of SFAS 142 has an impact on a firm-insiders' profitability within our sample we consider the following regression:

$$Profit_{i,t} = \beta_0 + \beta_1 T + \beta_2 SFAS + \beta_3 SFAS \times T + \beta_4 Controls_{i,t} + \psi_{i,t} + \omega_{i,t} + \epsilon_{i,t}, \tag{1.8}$$

as before, we include calendar quarter fixed-effects (ψ) setting 2000Q2 as a benchmark, industry (4-digit SIC) -fixed effects (ω) and clustered standard errors by firm and time (ϵ). $SFAS$ is a dummy variable equal to one for all observations after 2001-Q2, when SFAS 142 became effective, and zero otherwise. T is a dummy variable equal to one if the firm had at least one M&A deal before SFAS 142, and zero otherwise. $SFAS \times T$ captures the effect of SFAS 142 (increase in conditional conservatism) on the treated

[24]Basu (2001, pp. 1336-7) points out that SFAS 142 reduced unconditional (income) conservatism by stopping goodwill amortization while simultaneously increasing conditional (income) conservatism by mandating annual goodwill impairment reviews. To the extent that SFAS 142 reduced unconditional conservatism, and that unconditional conservatism constrains conditional conservatism, we expect that the overall effect of this regulation will be an increase in conditional conservatism.

group, and is expected to be negative and statistically significant.

Table 1.5 presents the results on our causal analysis on the links between conditional conservatism and insiders' profitability. The coefficient of $SFAS \times T$, β_3, is negative and statistically significant for all groups. Additionally, there is a positive effect for the No Top-5 insiders group (0.151; t-stat = 2.400). Interestingly, the coefficient on $SFAS$ is positive and statistically significant for some of insiders' transactions. Possibly, we might capture the effect of corporate scandals of early 2000s or the dot.com bubble, where insiders could possibly profit on firm-specific information. However, this conclusion is suggestive and requires further analysis.

[Insert Table 1.5 about here]

Overall, given the restrictions imposed on our sample in these tests, we still fail to fully assure causality of our results. However, this section provides additional support for $H1$ on the negative association between conditional conservatism and insiders' profitability from sales. The results on $H2$ are more mixed, but suggest that there may be a positive association between conservatism and profitability from purchases, particularly, for those insiders with more direct access to private information. We have argued that conditional conservatism disciplines good news disclosure, but its confirmatory role only exists when insiders opt to disclose. While accounting rules mandate timely recognition of bad news information, disclosure of good news remains voluntary. Also, financial statements are provided on a quarterly basis. This means insiders may still time their actions and profit from their private information in between reporting periods.

1.5.3 Insiders' profitability and unconditional conservatism

We now turn to examine whether unconditional conservatism is associated with the profitability of sales ($H3$) and purchases ($H4$). To the extent that unconditional conservatism introduces a bias of unknown magnitude into financial statements, it may create opportunities for insiders to trade profitably.

[Insert Tables 1.6 and 1.7 about here]

Table 1.6 presents estimation results of $Eq.(1.5)$, where we now focus on $UCONS$.[25] It can be readily seen that β_1 is positive and statistically significant for insiders' profitability from sales, but not for purchases (except for non-Top-5 insiders' group: -0.067; t-stat = -.2.640) (0.198, t-stat=7.461; 0.185, t-stat=7.773; 0.146, t-stat=6.956). In terms of economic significance, a one standard deviation increase in UCONS (0.21) increases insiders' profitability by 4.2%, 3.7% and 0.029% for CEO-CFO, Top-5 and non-Top-5 groups of insiders, subsequently. Adding firm-fixed effects does not alter the conclusions, there is still positive and statistically significant effect (0.443, t-stat = 9.277; 0.395, t-stat = 7.335; 0.343, t-stat = 9.037).

Table 1.7 presents the results for the association between current changes in unconditional conservatism and future changes in insiders' profitability. As before, β_1 is positive and statistically significant for CEO-CFO and Top-5 insiders' profitability from sales (0.176, t-stat=2.755; 0.102, t-stat=2.028). We find no statistically significant evidence for purchases. Overall, our findings support $H3$ and our arguments that unconditional conservatism is a news independent form of conservatism that constrains firm's signaling of future negative economic events, leading to increased asymmetry of information and opportunities for insiders to speculate on negative information. Results are robust to the inclusion of control variables affecting insiders' profitability, firm-, industry- and year-fixed effects and robust standard errors clustered at the firm and year level.

1.6 Additional Analyses

1.6.1 Cross-sectional analyses

To shed light on the underlying mechanism and ensure the robustness of the conclusions drawn so far, we conduct a number of split sample analyses to better understand the effects of conservative reporting. For these analyses, we classify firms into high (low) portfolios of firm-specific features if the observation is above (below) of the sample median.

[25] Internet Appendix, Tables 5 and 6 provides benchmark regressions for the specifications in Tables 1.6 and 1.7.

First, an ample literature suggest that litigation risk is an important determinant of conditional conservatism (see, e.g., Basu 1997; Ball et al. 2000; Holthausen and Watts 2001; Lang et al. 2003; Huijen and Lubberink 2005; Ball and Shivakumar 2005; Lang et al. 2006; Lobo and Zhou 2006; Qiang 2007b; Chung and Wynn 2008). There is also evidence for the link between litigation risk and insider trading in Cheng et al. (2016), which suggests that increases in litigation risk due to lawsuits lead to a decrease in the volume of insider sales. Given this evidence, we expect the effect of conservatism to vary with litigation risk, where conservative reporting should play a more significant role in the reduction of opportunistic behavior in settings with low litigation risk. To check this assumption, we split our sample into firms with high (above median) and low (below median) level of litigation risk following Kim and Skinner (2012).

Table 1.8 Panels A presents the results.[26] As before, we use our benchmark regression following *Eq.*(1.5). The effect of conditional conservatism on insiders' profitability is more pronounced in the sample of firms with lower litigation risk. The difference between firms with high and low litigation risk is statistically significant for all insiders (p-value < 0.1).[27]

Second, we separate firms in high and low corporate governance. Garcia Lara et al. (2009) document that firms with strong corporate governance show significantly higher levels of conditional conservatism. Thus, we expect that the effect of conservative reporting to also vary with corporate governance. We measure corporate governance as a sum of percentage of independent directors on the board, percentage of independent directors on the compensation committee and institutional ownership. Table 1.8, Panel B presents the results. The effect of conservative reporting on insiders' profitability from sales is more pronounced for the sample with high corporate governance. Although the difference between firms with high and low corporate governance is only statistically significant for CEO-CFO group (p-value < 0.05). Interestingly, we document that the effect

[26]Similar results are found if we split the sample into firms operating in industries with high and low litigation risk

[27]To make sure that our results are not biased by omitting controls for litigation risk, Internet Appendix, Table 7 and Table 8 additionally control for idiosyncratic risk, stock return volatility turnover ratio and probability of a litigation (Kim and Skinner 2012) that are associated with firm's litigation risk (Jones and Weingram 1996; Gande and Lewis 2009). All the results stay in line with previous findings.

of conservative reporting on CEO-CFO insiders' profitability is negative and statistically significant in low corporate governance firms (p-value = 0.04). However, this result should be taken with caution given low statistical power (186 observations).

[Insert Table 1.8 about here]

Third, we study firms with high (low) information asymmetry. Again, we use two separate proxies: the overall informational opaqueness of the firm proxied by the bid-ask spread, and the quality of their textual disclosure. In particular, we consider a proxy for "readability" of financial disclosures - the Bog index (Bonsall et al. 2017). It captures linguistic attributes (e.g. length of sentences, complex words, jargon, etc.) that are associated with the costs of the language used in financial disclosure. The higher is the Bog index, the lower is the level of financial disclosure readability. While insiders have higher profitability from their trades under higher information asymmetry (Aboody and Lev 2000), in settings with higher informational asymmetry, debt-holders are expected to require higher level of conservatism to reduce their concerns.

Table 1.8 Panel C evidences more pronounced negative effect of conditional conservatism on insiders' profitability from sales when information asymmetry is high. The difference between firms with high and low information asymmetry is statistically significant (p-value < 0.1). We do not find statistically significant difference when we split sample by "readability" of financial disclosures in Panel D.

Overall, this section sheds additional light on all our previous findings. First, we find that the effect of conservative reporting on insiders' profitability from sales is higher when firms are expected to be under lower scrutiny from market participants (i.e. lower litigation risk). Second, consistent with the findings that link conservative reporting with the decrease in information asymmetry, we find that conditional conservatism reduces insiders' profitability from sales in a setting with high information asymmetry. Third, the demand side for conservatism (i.e. better governed firms) results in a more pronounced negative effect on insiders' profitability from sales. Finally, the results on the effect of conditional conservatism on insiders' profitability from purchases remain mixed and weakly positive, suggesting that there might be a positive association in certain settings.

1.6.2 Additional control variables and alternative proxies

To ensure the robustness of our findings, we consider additional control variables that are likely to affect insiders' profitability. In particular, to the extent that CEOs drive corporate culture (Bushman et al. 2017) and carry out firm policies (Dyreng et al. 2008) it may be important to control for CEO characteristics. In particular, we control age, tenure, shareholdings and gender. Additionally, given that an increase in firm size might be due to inflation rather than growth, we introduce inflation-adjusted size measure. Finally, Dai et al. (2016) find that corporate governance reduces profitability of insider sales. We use a composite proxy of corporate governance to examine whether our previous results are driven by underlying governance structures. See Appendix 1.7 for variables definitions.

Internet Appendix, Table 9 and Table 10 present the results. Including additional control variables reduces sample sizes. Of the variables included, share holdings and corporate governance appear to have a significant negative effect. Additionally, once we include firm-fixed effect the evidence suggests lower profitability from insider sales when the CEO is female (not reported). The results obtained confirm the previously documented effects of conservatism on insiders profitability, both with industry- and with firm-fixed effects.

[Insert Tables 1.9 and 1.10 about here]

In Table 1.9, Panels A and B we introduce an alternative proxy for insiders' profitability. In particular, we estimate the Sharpe Ratio as the firm-year insiders' profitability minus interest rate of one-year Treasure bill scaled by the annualized standard deviation of daily returns over the fiscal year. The results stay in line with all the previous findings. Finally, instead of aggregating insiders' profitability over a year, we let the dependent variable change on a daily basis (given insiders' transactions), while all the control variables we update on a yearly basis. This significantly increases the sample size. We report the results in Table 1.10, Panels A and B. As before, the results stay in line with all the previous findings.

1.6.3 Moderating effect of unconditional conservatism

In our final test, we analyses the constraint hypothesis discussed by Sunder et al. (2018). Past high levels of unconditional conservatism might prevent the recognition of future bad news. For example, in the case of accelerated depreciation, write-offs lead to more conservative values early on, but also, limit future write-offs in case of negative expectations regarding a firm's prospects: i.e., assets can only be written-off once. Overall, we would expect a higher effect of conditional conservatism on insiders' profitability when there is a low level of past unconditional conservatism (i.e. higher scope for timely bad news recognition). We set firms with high level of past unconditional conservatism equal to one if the level of unconditional conservatism over the past five years (min. three years) is higher than the median level during the sample period, and zero otherwise.

[Insert Table 1.11 about here]

Table 1.11 presents the results. Following Sunder et al. (2018), we split a sample into firms with high (low) levels of unconditional conservatism. The results are consistent with our expectations. In firms with low unconditional conservatism (Panel A) $CSCORE$ is larger and has higher statistical significance. However, the difference between low and high levels of unconditional conservatism is only statistically significant for non-Top-5 group of insiders (p-value = 0.04).

1.7 Summary and Conclusion

We predict that accounting conservatism influences insiders' opportunities to speculate on good and bad news, and thus, insider trading profitability. We find that greater conditional (unconditional) conservatism is associated with lower (greater) insiders' profitability from sales. We also find limited evidence of a positive association between conservatism and insiders' profitability from purchases, although this result is sensitive to model specification. We measure conservatism using a number of different proxies,

and our research design takes into consideration the endogenous nature of insiders' profitability.

Our results are consistent with our hypotheses on the different informational roles of conditional and unconditional conservatism, and on the asymmetric influence of conservatism over the opportunities to speculate on good *versus* bad news. In particular, our evidence suggests that conditional conservatism ameliorates the firm information environment, and that timely and complete recognition of losses reduces the opportunities of insiders to speculate on negative news. In contrast, greater unconditional conservatism leads to greater information asymmetry and further opportunities for insiders to profitably trade on their private negative information. These findings may be of particular interest for regulators, given the ongoing debate on the desirable properties of accounting information.

Also, for decades, there has existed a debate on whether insider trading should be allowed (see, e.g., Fishman and Hagerty 1992). Proponents argue that insider trading increases the informativeness of stock prices, accelerating uncertainty resolution. In contrast, those in favor of restricting it argue that insider trading may deter other traders from acquiring information, following the firm, or trading, leading to lower liquidity and greater information asymmetry. In this paper, we argue and show that conditional conservatism, by imposing a quicker and more complete recognition of bad news, limits the opportunities for insiders to exploit their information advantage. This has policy implications, because through conditional conservatism, bad news that insiders would otherwise not disclose are timely communicated to capital markets, and thus, the potential positive consequences of insider trading (lower uncertainty) is achieved in a timely manner (without waiting for trades), while avoiding its negative consequences. This should mean greater price informativeness and lower information asymmetry. Ultimately, more efficient prices benefit society as they lead to more efficient allocation of resources.

Our study is not without limitations. Private information is produced throughout the year, while financial statements are only available on a quarterly basis and other disclosure are also not that frequent, even in firms that provide management forecasts

and that are followed by many analysts. This provides opportunities for insider trading. We have argued that conditional conservatism has a disciplining role on disclosure (LaFond and R. Watts 2008; Garcia Osma et al. 2018), and also, is associated with good corporate governance, appeasing concerns that insiders would use private information for personal profit in the interim between financial statements. However, a pending, relevant issue linked with conservatism and information flows within the firm refers to further researching the role of other corporate disclosures.

Appendix: Variable Definitions

Variable	Definition of main variables
Variables used in construction of BSC following Sunder et al. (2018)	
BTM	The book-to-market ration, computed as the ratio of the book value of total assets to the market value of equity plus the book value of debt
LT Growth Forecast	The median of long-term growth estimates by analysts (I/B/E/S data). Missing values of firms that have at least one non-missing observation within the sample period are replaced by the closest non-missing value to preserve the sample size.
Sales	Ratio of sales to lagged sales
IndustryConcentration	Herfindahl index (FIC300HHI) constructed by Hoberg and Phillips (2010, 2016) following the Fixed Industry Classification (FIC) available at http://cwis.usc.edu/projects/industrydata.
Consumer Sentiment Index	Published by the University of Michigan, available at http://www.sca.isr.umich.edu/tables.html
S&P	Level of the S&P's Composite Index from CRSP
Profitability	The ratio of cash flow from operations lagged total assets
Credit Rating	The numerical equivalent of S&P domestic long-term issuer credit rating from COMPUSTAT. For firms not rated by S&P, I first regress debt rating on a set of financial variables, including log of assets, ROA, leverage, dividend indicator, subordinated debt indicator and a loss indicator, with industry and year fixed effects for rated firms. Then, I use the estimated coefficients from the first regression and the firm's financial information to compute a credit rating for each firm in each year. The computed rating values are winsorized at 2 and 27 to be consistent with the range of ratings reported in COMPUSTAT. The value of Credit Rating decreases in credit quality
High Inflation	An indicator variable equal to one if the inflation over the past five years is higher than the median level during the sample period, and zero otherwise. Inflation is from Consumer Price Index from the Bureau of Labor Statistics
AOCI	Accumulated other comprehensive income scaled by total assets
Variables associated with accounting conservatism	
X	Net income before extraordinary items scaled by lagged market value of equity
RET	Twelve-month market-adjusted stock return ending the last day of fiscal year t
DR	Takes the value of one in case of negative or zero market adjusted stock returns (case of bad news) and zero otherwise (case of good news)
$\Delta S/P$	Sales change scaled by market value of equity at the beginning of the fiscal year
DS	Takes the value of one if sales decreased from the prior to the current fiscal year and zero otherwise
C_Score (*G_Score*)	Timeliness of bad (good) news obtained from the modified Khan and Watts (2009) following Banker et al. (2016)
CSCORE	Firm-year measure of conditional conservatism calculated as the three year average of *C_Score* (e.g. for year t the average consists of t, t-1, t-2).
UCONS	Firm-year measure of unconditional conservatism using Sunder et al. (2018)

Table 1.7 continued

Control variables for insider trading and additional analyses	
$Log(Size)$	Firm size, measured as the natural logarithm of market value of equity
$Leverage$	Long-term debt issue plus current liabilities scaled by total assets
B/M	Ratio of book value of equity to market value of equity (total shares outstanding times price)
$Log(1+analyst)$	Natural logarithm of the number of analysts following a firm
$Inst.Ownership$	Institutional ownership measured as the percentage of common shares outstanding owned by institutional shareholders
$Momentum$	Buy-and-hold return over three year period
Additional Analysis	
CG	Corporate governance is defined as a sum of percentage of independent directors on the board, percentage of independent directors on the compensation committee and institutional ownership.
$Litigation$	Following Kim and Skinner 2012) we construct a proxy for litigation risk based on prior year return, return skewness, return volatility, and sales turnover as proxies that make firms more vulnerable to litigation.
$Spread$	Average monthly relative bid-ask-spread estimated over a period of 60 months (min 24 months). Relative Bid-ask spread = 100 × (Ask - Bid)/(0.5× (Ask + Bid)).
$Readability$	Bog Index (readability measure) created by Bonsall et al. (2017) and obtained from https://kelley.iu.edu/bpm/activities/bogindex.html
Age	CEO age (*from Execucomp*)
$Tenure$	CEO tenure (*from Execucomp*)
$Share\,Holdings$	CEO share holdings (*from Execucomp*)
$Gender$	Takes the value of one if the CEO is a female; and zero otherwise (*from Execucomp*)
$SharpeRatio$	Estimated as firm-year insiders' profitability minus interest rate of one-year Treasure bill *(from Federal Reserve Bank)* scaled by annualized standard deviation of daily returns over the fiscal year.

Table 1.1: Descriptive statistics of Main Variables

	N	Mean	Std.dev	Q1	Median	Q3
Panel A: Descriptive statistics of *C_score* and *G_score*						
C_score	22345	0.210	0.174	0.114	0.193	0.280
G_score	22345	0.014	0.068	-0.022	0.013	0.049
Panel B: Variables related to conservatism						
X	23962	0.014	0.185	0.009	0.048	0.072
DR	23988	0.505	0.500	0.000	1.000	1.000
RET	23988	0.066	0.445	-0.188	-0.004	0.219
$RET \times DR$	23988	-0.114	0.168	-0.188	-0.004	0.000
DS	23966	0.272	0.445	0.000	0.000	1.000
$\Delta S_{i,t}/P_{i,t-1}$	23961	0.045	0.407	-0.005	0.042	0.121
$\Delta S_{i,t}/P_{i,t-1}$	23961	-0.068	0.305	-0.005	0.000	0.000
CSCORE	19255	0.222	0.144	0.142	0.199	0.287
UCONS	19016	0.020	0.210	-0.114	0.027	0.168
Panel C: Control variables for insider trading						
Log(Size)	23988	7.023	1.855	5.666	6.921	8.263
Leverage	23988	0.209	0.205	0.016	0.180	0.325
B/M	23988	0.533	0.434	0.272	0.451	0.695
Analyst	23988	8.057	7.157	3.000	6.000	11.000
Inst. Ownership	23988	0.645	0.288	0.453	0.713	0.873
Momentum	23988	0.528	1.124	-0.177	0.276	0.860
Panel D: Profitability of insiders						
Sales:						
CEO-CFO	3788	0.016	0.190	-0.092	0.005	0.111
Top-5	4608	0.016	0.189	-0.091	0.004	0.110
Insiders excluding Top-5	11869	0.008	0.169	-0.079	0.004	0.094
Purchases:						
CEO-CFO	1760	0.093	0.275	-0.065	0.073	0.222
Top-5	2001	0.090	0.273	-0.063	0.071	0.218
Insiders excluding Top-5	4561	0.068	0.234	-0.058	0.048	0.172

Panel A presents descriptive statistics of *C_score* and *G_score* as in Khan and Watts (2009). Panel B contains variables used in the Basu (1997) and Khan and Watts (2009) models. Panel C contains the variables that are used as controls for insider trading profitability. Panel D presents descriptive evidence on the profitability of different groups of insiders. All of the variables are defined in Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels.

Table 1.2: Estimation of the association between corporate insiders' profitability and conditional conservatism based on Banker et al. (2016)

	Sample	CEO-CFO		Top-5		No Top-5	
VARIABLES	Mod.Basu	Sale	Purchase	Sale	Purchase	Sale	Purchase
DR	0.009*	-0.048	-0.211	-0.052	-0.175	0.015	0.023
	(2.094)	(-0.682)	(-1.383)	(-0.798)	(-1.326)	(0.432)	(0.386)
RET	-0.018	-0.158	-0.073	-0.183*	-0.106	-0.059	-0.084
	(-1.557)	(-1.576)	(-0.660)	(-1.878)	(-1.223)	(-0.807)	(-0.815)
$DR \times RET$	0.273***	0.292	-0.431	0.486*	-0.111	0.352*	0.174
	(12.155)	(1.020)	(-1.717)	(1.948)	(-0.402)	(1.884)	(1.147)
DS	-0.028***	0.103*	-0.148	0.069	-0.165**	-0.050	-0.096*
	(-4.526)	(2.166)	(-1.594)	(1.394)	(-2.361)	(-1.046)	(-1.819)
$\Delta S_{i,t}/P_{i,t-1}$	-0.021*	0.101	-0.368	0.111	-0.383	-0.006	-0.225**
	(-1.858)	(0.597)	(-1.550)	(0.644)	(-1.795)	(-0.042)	(-2.826)
$\Delta S_{i,t}/P_{i,t-1}$	0.180***	0.657*	0.038	0.290	0.058	0.262	0.545***
	(6.344)	(1.978)	(0.089)	(1.196)	(0.143)	(1.391)	(4.492)
$Profit_{t+1}$		-0.105***	-0.122	-0.068*	-0.099	-0.072**	0.041
		(-3.601)	(-1.791)	(-2.165)	(-1.630)	(-2.438)	(1.491)
$DR \times Profit_{t+1}$		0.022	-0.087	-0.017	-0.059	-0.015	-0.042
		(0.278)	(-0.999)	(-0.233)	(-0.724)	(-0.318)	(-0.921)
$RET \times Profit_{t+1}$		0.139	0.064	0.082	-0.010	0.064	0.006
		(1.548)	(0.676)	(1.048)	(-0.157)	(1.121)	(0.091)
$\boldsymbol{DR \times RET \times Profit_{t}+1}$		**-0.418**	**-0.620***	**-0.346**	**-0.365**	**-0.395****	**-0.054**
		(-1.647)	(-2.007)	(-1.613)	(-1.491)	(-2.637)	(-0.433)
$DS \times Profit_{t+1}$		-0.095	0.045	-0.041	0.040	0.009	-0.041
		(-1.396)	(0.840)	(-0.876)	(0.687)	(0.230)	(-1.531)
$\Delta S_{i,t}/P_{i,t-1} \times Profit_{t+1}$		0.140	0.721**	0.199	0.730**	0.216	-0.220**
		(0.774)	(2.473)	(1.051)	(2.459)	(1.014)	(-2.281)
$DS_{i,t} \times \Delta S_{i,t}/P_{i,t-1} \times Profit_{t+1}$		-0.435	-0.707*	-0.214	-0.738*	-0.243	0.127
		(-1.699)	(-2.122)	(-0.899)	(-2.131)	(-1.154)	(0.876)
$Controls\ FE$	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	23,961	2,344	883	2,992	1,039	9,584	2,991
Adjusted R-squared	0.157	0.583	0.414	0.513	0.391	0.399	0.434
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes	Yes
$\boldsymbol{\beta_{10}}$ ***with Firm FE***		**-0.326**	**-0.427**	**-0.297**	**-0.296**	**-0.354****	**-0.027**
		(-1.414)	(-1.474)	(-1.480)	(-1.262)	(-2.713)	(-0.275)

This table presents the OLS regression results of augmented Banker et al. (2016) model, *Eq.*(1.3). The main coefficient of interest is $DR \times RET \times Profit_{t+1}$ that is expected to be negative and statistically significant. All the variables are as described in Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.3: Estimation of the association between corporate insiders' profitability and conditional conservatism based on Khan and Watts (2009)

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
CSCORE	**-0.254*** **	**-0.004**	**-0.209*** **	**-0.019**	**-0.212*** **	**0.136***
	(-7.226)	(-0.028)	(-5.528)	(-0.148)	(-3.835)	(2.036)
Log(Size)	-0.028***	0.007	-0.027***	0.003	-0.020***	-0.001
	(-4.248)	(0.769)	(-4.350)	(0.311)	(-6.184)	(-0.174)
Leverage	0.096**	-0.045	0.078**	-0.036	0.088**	-0.031
	(2.930)	(-0.897)	(2.517)	(-0.635)	(2.802)	(-1.054)
B/M	0.105***	-0.049*	0.088***	-0.052*	0.084***	-0.043**
	(7.082)	(-1.873)	(5.451)	(-2.119)	(5.170)	(-2.726)
Log(1+analyst)	0.033***	-0.047***	0.033***	-0.041***	0.026***	-0.019**
	(4.133)	(-3.745)	(3.559)	(-3.839)	(5.651)	(-2.417)
Ins. Ownership	0.027	-0.026	0.036	-0.030	0.023	-0.046
	(1.173)	(-0.429)	(1.633)	(-0.594)	(1.537)	(-1.396)
Momentum	-0.017***	0.015**	-0.018***	0.015**	-0.024***	0.030***
	(-7.567)	(2.418)	(-7.776)	(2.334)	(-11.750)	(8.351)
Observations	2,920	1,287	3,581	1,466	9,674	3,567
Adjusted R-squared	0.072	0.044	0.073	0.046	0.078	0.072
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
$\boldsymbol{\beta_1}$ ***with Firm FE***	**-0.191****	**-0.047**	**-0.178****	**-0.011**	**-0.221*** **	**0.145**
	(-2.644)	(-0.268)	(-2.387)	(-0.071)	(-4.537)	(1.484)

This table presents the OLS regression results of *Eq.*(1.5). The dependent variable is either insiders' profitability from sales (Sale) or purchases (Purchase). The main coefficient of interest is $CSCORE$ that is expected to be negative and statistically significant. All the variables are as described in Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.4: Estimation of the association between current changes in conditional conservatism and future changes in insiders' profitability.

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
$\Delta CSCORE$	**-0.192**	**0.374****	**-0.114**	**0.569*****	**-0.115****	**0.026**
	(-1.307)	(2.376)	(-0.901)	(3.185)	(-2.321)	(0.143)
$\Delta Log(Size)$	0.197***	-0.136***	0.183***	-0.181***	0.196***	-0.129***
	(7.234)	(-3.219)	(6.516)	(-3.900)	(10.249)	(-3.633)
$\Delta Leverage$	0.222	-0.171	0.141	-0.399*	0.036	-0.020
	(1.205)	(-0.824)	(0.987)	(-1.964)	(1.183)	(-0.147)
$\Delta B/M$	0.044	0.089**	-0.020	-0.031	0.048*	0.030
	(0.756)	(2.370)	(-0.325)	(-0.536)	(1.900)	(0.864)
$\Delta Log(1+analyst)$	-0.067*	0.043	-0.056*	0.050	-0.012	0.067
	(-2.126)	(0.616)	(-2.153)	(1.259)	(-1.085)	(1.622)
$\Delta Inst.Ownership$	0.017	0.142	0.068	-0.102	-0.086	0.084
	(0.126)	(0.636)	(0.620)	(-0.388)	(-1.710)	(1.025)
$\Delta Momentum$	0.011*	-0.008	0.001	0.001	0.003	-0.019**
	(1.863)	(-0.328)	(0.217)	(0.035)	(1.053)	(-2.281)
Observations	880	274	1,176	317	5,166	1,024
Adjusted R-squared	0.091	-0.080	0.076	-0.059	0.093	0.036
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
β_1 *with Firm FE*	**-0.113**	**1.357***	**-0.272**	**1.335***	**-0.181****	**0.264**
	(-0.458)	(2.101)	(-1.507)	(2.034)	(-2.358)	(1.084)

This table presents the OLS regression results of *Eq.*(1.7). In particular, we study the association between current changes in conservatism and future changes in insiders' profitability. The dependent variable is either insiders' profitability from sales (Sale) or purchases (Purchase), $Profit_{i,t+1}$. The main coefficient of interest is $\Delta CSCORE$ that is expected to be negative and statistically significant. All the variables are as described in Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.5: Estimation of the effect of asymmetric timeliness on insiders' profitability from sales and purchases after the SFAS-142 Provision of 2001

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
SFAS	0.173	0.541***	0.091	0.248**	0.093*	-0.064
	(1.787)	(5.568)	(1.148)	(2.557)	(1.955)	(-1.256)
Treated	0.055	0.007	0.006	-0.084	0.020	0.008
	(0.597)	(0.066)	(0.082)	(-0.865)	(0.686)	(0.137)
SFAS×Treated	**-0.230***	**-0.153**	**-0.193***	**-0.040**	**-0.092***	**0.151****
	(-2.274)	(-1.072)	(-2.153)	(-0.284)	(-1.931)	(2.400)
Log(Size)	-0.024	-0.019	-0.008	0.048	-0.015	0.014
	(-0.583)	(-0.217)	(-0.257)	(0.659)	(-1.229)	(0.535)
Leverage	-0.151	0.825**	-0.065	0.531**	-0.076	0.164
	(-0.723)	(2.655)	(-0.357)	(2.651)	(-0.794)	(1.270)
B/M	-0.061	-0.025	0.003	-0.023	-0.051	-0.007
	(-0.838)	(-0.230)	(0.039)	(-0.202)	(-1.297)	(-0.122)
Log(1+analyst)	-0.018	0.113	-0.035	0.123	0.014	-0.026
	(-0.412)	(1.029)	(-0.822)	(1.341)	(0.814)	(-0.516)
Inst.Ownership	0.037	-0.243	0.049	-0.613	0.109*	-0.209
	(0.383)	(-0.459)	(0.466)	(-1.163)	(1.962)	(-1.720)
Momentum	-0.043	0.104	-0.067**	0.016	-0.054**	-0.007
	(-1.581)	(0.495)	(-2.668)	(0.159)	(-2.431)	(-0.207)
Observations	460	117	618	160	1,380	416
Adjusted R-squared	0.047	0.011	0.119	0.035	0.106	0.105
Time FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes

This table presents the OLS regression results of *Eq.*(1.8). In particular, we study the effect of an exogenous change in conservatism (i.e. introduction of SFAS 142) on insiders' profitability from their trades. The dependent variable is either insiders' profitability from sales (Sale) or purchases (Purchase). The main coefficient of interest is SFAS×Treated that is expected to be negative and statistically significant. All the variables are as described in Appendix 1.7 (except for *Momentum* that is estimated as buy-and-hold return over 12 months, min. 6 months) and are updated on a quarterly basis. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.6: Estimation of the association between corporate insiders' profitability and unconditional conservatism based on Sunder et al. (2018)

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
UCONS	**0.198*** **	**-0.060**	**0.185*** **	**-0.057**	**0.146*** **	**-0.067** **
	(7.461)	(-1.588)	(7.773)	(-1.477)	(6.956)	(-2.640)
Log(Size)	-0.019***	0.015*	-0.021***	0.013	-0.014***	-0.004
	(-5.924)	(1.903)	(-6.187)	(1.704)	(-7.701)	(-1.310)
Leverage	0.028	0.007	0.030	0.003	0.036	0.012
	(0.915)	(0.246)	(1.106)	(0.110)	(1.696)	(0.510)
B/M	0.166***	-0.065**	0.153***	-0.072***	0.123***	-0.058***
	(8.562)	(-2.841)	(7.947)	(-3.545)	(8.213)	(-5.803)
Log(1+analyst)	0.027***	-0.061***	0.027***	-0.060***	0.028***	-0.021*
	(5.059)	(-6.064)	(4.416)	(-5.038)	(9.333)	(-1.953)
Ins. Ownership	0.002	-0.056	0.010	-0.054	0.025	-0.070*
	(0.102)	(-1.263)	(0.484)	(-1.394)	(1.485)	(-1.909)
Momentum	-0.017***	0.021***	-0.018***	0.020***	-0.023***	0.030***
	(-7.740)	(3.975)	(-8.367)	(5.405)	(-13.075)	(9.439)
Observations	3,494	1,556	4,245	1,761	10,874	4,043
Adjusted R-squared	0.077	0.065	0.081	0.065	0.078	0.073
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
$\boldsymbol{\beta_1}$ ***with Firm FE***	**0.443*** **	**-0.141**	**0.395*** **	**-0.130**	**0.343*** **	**-0.199** **
	(9.277)	(-1.155)	(7.335)	(-1.257)	(9.037)	(-3.048)

This table presents the OLS regression results of *Eq.*(1.5) substituting *CSCORE* for *UCONS*. The dependent variable is either insiders' profitability from sales (Sale) or purchases (Purchase). The main coefficient of interest is *UCONS* that is expected to be positive and statistically significant. All the variables are as described in Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.7: Estimation of the association between current changes in unconditional conservatism and future changes in insiders' profitability.

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
$\Delta UCONS$	**0.176****	**-0.418**	**0.102***	**-0.283**	**0.113**	**-0.069**
	(2.755)	(-1.290)	(2.028)	(-1.022)	(1.498)	(-0.569)
$\Delta Log(Size)$	0.209***	-0.103**	0.183***	-0.158***	0.196***	-0.161***
	(7.140)	(-2.487)	(7.257)	(-3.184)	(11.043)	(-6.110)
$\Delta Leverage$	0.016	-0.171	-0.008	-0.303	0.044	0.138
	(0.124)	(-0.858)	(-0.091)	(-1.752)	(1.171)	(1.096)
$\Delta B/M$	0.044	0.138	-0.041	-0.003	0.032	0.027
	(0.737)	(1.595)	(-0.807)	(-0.025)	(1.015)	(0.872)
$\Delta Log(1+analyst)$	-0.068*	-0.013	-0.059**	0.037	-0.012	0.041
	(-2.145)	(-0.187)	(-2.348)	(0.815)	(-1.028)	(0.911)
$\Delta Inst.Ownership$	0.039	-0.153	0.090	-0.336	-0.031	0.020
	(0.301)	(-0.852)	(0.889)	(-1.303)	(-1.171)	(0.212)
$\Delta Momentum$	0.006	0.001	0.002	0.008	0.002	-0.008
	(1.204)	(0.046)	(0.317)	(0.476)	(1.365)	(-0.956)
Observations	1,040	318	1,364	368	5,677	1,120
Adjusted R-squared	0.096	-0.028	0.093	-0.041	0.106	0.056
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
β_1 *with Firm FE*	**0.467****	**-0.268**	**0.224**	**-0.374**	**0.163***	**-0.131**
	(2.584)	(-0.487)	(1.338)	(-0.814)	(2.025)	(-0.743)

This table presents the OLS regression results of *Eq.*(1.7) substituting $CSORE$ for $UCONS$. In particular, we study the association between current changes in unconditional conservatism and future changes in insiders' profitability. The dependent variable is either insiders' profitability from sales (Sale) or purchases (Purchase), $Profit_{i,t+1}$. The main coefficient of interest is $\Delta UCONS$ that is expected to be positive and statistically significant. All the variables are as described in Appendix, Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.8: Split sample analysis

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
Panel A: Low Litigation Risk - Industry						
CSCORE	-0.409***	0.197	-0.336***	0.110	-0.331***	0.214***
	(-9.005)	(1.528)	(-9.986)	(0.809)	(-4.762)	(3.463)
Observations	1,567	742	1,922	849	5,208	1,988
Adjusted R-squared	0.120	0.059	0.112	0.052	0.109	0.076
High Litigation Risk						
CSCORE	-0.125**	-0.200	-0.112	-0.148	-0.134**	0.029
	(-2.222)	(-1.025)	(-1.547)	(-0.909)	(-2.308)	(0.358)
Observations	1,342	524	1,648	598	4,436	1,561
Adjusted R-squared	0.055	0.061	0.072	0.075	0.062	0.082
$p-value\ (Low-High)$	0.01	0.06	0.03	0.16	0.03	0.01
Panel B: Low Corporate Governance						
CSCORE	-0.033	-0.292***	-0.076	-0.210***	-0.181***	0.084
	(-0.417)	(-6.394)	(-0.766)	(-4.585)	(-3.263)	(0.979)
Observations	683	186	866	226	2,749	931
Adjusted R-squared	0.094	0.107	0.082	0.042	0.079	0.029
High Corporate Governance						
CSCORE	-0.309***	0.093	-0.230*	0.010	-0.228***	0.065
	(-4.360)	(0.664)	(-2.095)	(0.056)	(-5.476)	(0.733)
Observations	645	210	781	235	2,752	733
Adjusted R-squared	0.072	0.047	0.042	0.035	0.094	0.087
$p-value\ (Low-High)$	0.05	0.04	0.42	0.32	0.25	0.82
Panel C: Low information asymmetry						
CSCORE	-0.121*	0.220*	-0.087	0.154	-0.185***	0.053
	(-2.140)	(2.122)	(-1.639)	(1.728)	(-5.091)	(0.645)
Observations	1,405	446	1,755	515	5,597	1,612
Adjusted R-squared	0.062	0.118	0.074	0.100	0.088	0.053
High information asymmetry						
CSCORE	-0.357***	0.088	-0.311***	0.084	-0.323***	0.278***
	(-9.101)	(0.501)	(-10.108)	(0.536)	(-3.826)	(4.222)
Observations	1,512	836	1,824	947	4,076	1,952
Adjusted R-squared	0.079	0.061	0.080	0.051	0.081	0.106
$p-value\ (Low-High)$	0.00	0.49	0.00	0.68	0.09	0.05
Panel D: Good Readability						
CSCORE	-0.221***	-0.018	-0.155**	-0.035	-0.234***	0.210**
	(-3.613)	(-0.101)	(-2.903)	(-0.229)	(-3.584)	(2.417)
Observations	1,572	641	1,933	744	5,025	1,945
Adjusted R-squared	0.045	0.037	0.056	0.033	0.079	0.071
Bad Readability						
CSCORE	-0.343***	-0.007	-0.309***	-0.064	-0.190***	0.027
	(-4.222)	(-0.041)	(-4.055)	(-0.377)	(-3.675)	(0.258)
Observations	1,247	606	1,523	680	4,264	1,493
Adjusted R-squared	0.098	0.093	0.102	0.083	0.076	0.078
$p-value\ (Low-High)$	0.30	0.95	0.11	0.90	0.39	0.19

This table presents the OLS regression results of *Eq.*(1.5) on a sample of firms with high and low levels of firm-specific characteristics. Firms are classified into two samples if the observation falls above sample mean (high) and below sample mean (low). Panel A splits sample into high and low litigation risk firms based on a proxy of Kim and Skinner (2012). Panel B splits sample into high and low corporate governance (CG) firms, where CG is estimated as a sum of percentage change of independent directors on the board, percentage of independent directors on the compensation committee and institutional ownership. All the variables are as described in Appendix 1.7. The dependent variable is either insiders' profitability from sales (Sale) or purchases (Purchase). The main coefficient of interest is *CSCORE* that is expected to be negative and statistically significant. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.9: Conditional and Unconditional Conservatism and Sharpe Ratio

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
Panel A: Conditional Conservatism and Sharpe Ratio						
CSCORE	**-0.510*** **	**0.120**	**-0.209*** **	**-0.019**	**-0.212*** **	**0.136***
	(-4.213)	(0.518)	(-5.528)	(-0.148)	(-3.835)	(2.036)
Observations	2,918	1,287	3,581	1,466	9,674	3,567
Adjusted R-squared	0.075	0.053	0.073	0.046	0.078	0.072
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
β_1 ***with Firm FE***	**-0.483****	**-0.018**	**-0.178****	**-0.011**	**-0.221*** **	**0.145**
	(-2.644)	(-0.059)	(-2.387)	(-0.071)	(-4.537)	(1.484)
Panel B: Unconditional Conservatism and Sharpe Ratio						
UCONS	**0.374*** **	**-0.113**	**0.185*** **	**-0.057**	**0.146*** **	**-0.067****
	(5.727)	(-1.480)	(7.773)	(-1.477)	(6.956)	(-2.640)
Observations	3,494	1,556	4,245	1,761	10,874	4,043
Adjusted R-squared	0.080	0.062	0.081	0.065	0.078	0.073
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
β_1 ***with Firm FE***	**0.919*** **	**-0.144**	**0.397*** **	**-0.135**	**0.342*** **	**-0.198****
	(8.444)	(-0.862)	(7.374)	(-1.360)	(8.914)	(-3.079)

This table presents the OLS regression results of *Eq.*(1.5). In Panel A and B, the dependent variable is either insiders' Sharpe ratio of profitability from sales (Sale) or purchases (Purchase). Sharpe ratio is estimated as firm and year insiders' profitability minus interest rate of one-year Treasure bill scaled by annualized standard deviation of daily returns over the fiscal year. All the variables are as described in Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.10: Conditional and Unconditional Conservatism and Daily Returns

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
Panel A: Conditional Conservatism and Daily Returns						
CSCORE	**-0.352*** **	**-0.200**	**-0.291*** **	**-0.112**	**-0.231*** **	**0.125**
	(-6.053)	(-1.096)	(-4.975)	(-0.783)	(-3.482)	(1.423)
Observations	12,133	2,462	16,028	2,942	50,139	7,968
Adjusted R-squared	0.080	0.135	0.072	0.135	0.074	0.080
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
β_1 ***with Firm FE***	**-0.290*** **	**-0.182**	**-0.237** **	**-0.108**	**-0.237*** **	**0.070**
	(-3.289)	(-0.990)	(-2.629)	(-0.841)	(-4.075)	(0.686)
Panel B: Unconditional Conservatism and Daily Returns						
UCONS	**0.206*** **	**0.015**	**0.213*** **	**0.024**	**0.165*** **	**-0.077** **
	(5.812)	(0.306)	(6.912)	(0.400)	(5.968)	(-2.876)
Observations	15,394	3,160	20,137	3,778	59,513	9,112
Adjusted R-squared	0.081	0.135	0.081	0.132	0.075	0.081
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
β_1 ***with Firm FE***	**0.503*** **	**-0.121**	**0.464*** **	**-0.092**	**0.352*** **	**-0.096**
	(6.839)	(-0.920)	(7.700)	(-0.924)	(6.806)	(-1.179)

This table presents the OLS regression results of *Eq.*(1.5). In Panel A and B, the dependent variable is either insiders' profitability from sales (Sale) or purchases (Purchase) that are at daily frequency, while all the control variables are updated yearly. All the variables are as described in Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Table 1.11: Moderating effect of unconditional conservatism on the relation between of corporate insiders' profitability and conditional conservatism

	CEO-CFO		Top-5		No Top-5	
VARIABLES	Sale	Purchase	Sale	Purchase	Sale	Purchase
Low Unconditional Conservatism						
CSCORE	-0.310***	-0.014	-0.268***	-0.016	-0.285***	0.156*
	(-4.949)	(-0.090)	(-3.697)	(-0.111)	(-4.624)	(1.978)
Observations	1,148	659	1,416	750	3,831	1,558
Adjusted R-squared	0.090	0.072	0.070	0.064	0.086	0.071
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
High Unconditional Conservatism						
CSCORE	-0.207**	0.092	-0.177*	-0.000	-0.162**	0.131
	(-2.223)	(0.396)	(-2.172)	(-0.001)	(-2.534)	(1.304)
Observations	1,769	623	2,163	711	5,842	2,007
Adjusted R-squared	0.067	0.014	0.075	0.022	0.076	0.084
Year FE	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes
$p-vlaue(Low\ -High)$	0.44	0.67	0.43	0.94	0.04	0.83

This table presents the OLS regression results of *Eq.*(1.5) on a sample of firms with high and low levels of past unconditional conservatism. We set firms with high level of past unconditional conservatism equal to one if the level of unconditional conservatism over the past five years (min. three years) is higher than the median level during the sample period, and zero otherwise. All the variables are as described in Appendix 1.7. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm and year level.

Chapter 2

Accounting Conservatism and the information efficiency of stock prices

2.1 Introduction

Prior work provides overwhelming evidence on the benefits of conditional conservatism for debt holders (e.g., Beatty et al. 2008; Zhang 2008; Li2013; Haw et al. 2014; Franke and Muller 2019). However, there is limited evidence on the effects of conservatism for shareholders (e.g., Francis and Martin 2010; Garcia Lara et al. 2011; Biddle et al. 2016). We contribute to this work on the equity market benefits of conservatism. In particular, we study whether conditional conservatism ameliorates the information efficiency of stock prices.

Conditional conservatism imposes more stringent verification requirements for the recognition of economic gains than losses, which results in earnings that capture unfavourable economic events more quickly and completely than favourable ones (Basu 1997). We argue that this results in two key positive outcomes that lead to more informationally efficient prices. First, conditional conservatism offsets managerial tendency to strategically reveal good news while hiding or delaying bad news disclosure (Basu 1997; Watts 2003). As a result, bad news flows into the market more quickly than unverifiable good news, reducing the risk that bad news will be hidden (LaFond and Watts 2008;

Kim and Zhang 2016). Second, conditional conservatism enhances the confirmatory role of accounting. It sets a 'hard' benchmark against which 'softer,' unverifiable, disclosures can be compared *ex post*. This disciplines managerial voluntary disclosure of good news, increasing its credibility (Ball 2001; Garcia Osma et al. 2018). Jointly, these effects lead to full disclosure of information (Guay and Verrecchia 2007), where no information about firm value is withheld.

We build on this prior literature and argue that conditional conservatism improves overall market efficiency and has a positive impact on the functioning of equity markets. In particular, we study three capital market outcomes. First, we posit that conservatism helps to assess the company's equity underlying value, reducing the probability of equity overvaluation that arises when stock price is higher than underlying value (Jensen 2005). Importantly, we expect that conditional conservatism accelerates the reversal of overvalued equity back to underlying value, limiting the duration of sustained overvaluation. Given that unsophisticated investors are more likely to value firms over-optimistically and take accounting numbers at face value, conditional conservatism, by disciplining good news disclosure and recognition, is expected to result in rational equity prices reflecting intrinsic value. Conditional conservatism is also expected to reduce equity overvaluation through better earnings quality (e.g., Chen et al. 2007; Gao 2013) and lower information asymmetry (e.g., Suijs 2008; Garcia Lara et al. 2014).[1] Second, if conservatism decreases equity overvaluation, it should reduce short sellers interest. In particular, through timelier recognition of losses relative to gains, conservatism should promptly signal unprofitable projects and decrease bad news hoarding (Kim and Zhang 2016), decreasing the probability that firms have hidden, unrealized losses that short-sellers could uncover and benefit from. Third, taking into consideration the benefits associated with conservative reporting, we expect that equity market participants will apply a lower discount for uncertainty when valuing more conditionally conservative firms (Guay and Verrecchia 2007), leading to higher prices and lower discounts for missing

[1]The extant prior literature provides mounting evidence confirming that greater conditional conservatism leads to high quality information useful to monitor management (Beekes et al. 2004; Ahmed and Duellman 2007, 2011; GarciaLara et al. 2009; Louis et al. 2012).

earnings targets.

We test our predictions on a large sample of U.S. firms over the period 1991 to 2015. We use a modified firm-year version of Ball and Shivakumar (2005). Equity overvaluation is measured using the residual income valuation model (Peasnell 1982; Ohlson 1995) after filtering out scale and growth opportunities. Specifically, we identify firms in the highest quartile of our overvaluation proxy, and estimate sustained duration of equity overvaluation. Next, we estimate abnormal short selling interest following Karpoff and Lou (2010). Specifically, we assign firms into different portfolios based on firm-specific characteristics and use these regressors in the second-step estimation procedure. Further, we study whether firms that just beat (miss) analyst forecasts with low *versus* high levels of conservatism have differences in stock performance over mid- and short-term periods. To overcome endogeneity concerns, we use the introduction of SFAS 121 as a plausible regulatory shock that increased conditional conservatism. Finally, to corroborate our findings, we study two regulatory shocks to firms' information environment (SFAS 131) and short selling activity (Regulation SHO). We analyze whether firms pre-shock level of conservatism altered the net effect of the regulatory shocks on short selling activity and equity overvaluation.

We report the following key findings. First, we find that conservatism reduces overall and sustained duration of equity overvaluation. High conservatism results in lower likelihood of being a firm with overvalued equity. The effect is more pronounced with the increase in the number of consecutive years of equity overvaluation. This suggests that reversals of overvaluation back to underlying value accrue faster to more conditionally conservative firms, which is supported by the survival analysis. Second, we document that conservatism reduces abnormal short interest. These results are robust to an exogenous change in conditional conservatism as a result of a regulatory change induced by SFAS 121. Finally, we provide evidence of different valuation consequences of missing earnings forecasts both in the short- and mid-run for high *versus* low conservative firms that miss earnings forecasts. In particular, over the 30-day (60-day) horizon equal-weighted and value-weighted BHARs of missers with high conservatism outperform missers with low

conservatism by 2.31% and 1.56% (1.70% and 2.42%). Additionally, we show that in the short-run (from 1 to 30 days after earnings announcement date) and in the mid-run (1 to 60 days) the portfolio of long missers with high conservatism and short missers with low conservatism, on equal-weighted basis results in 12 (7) basis points per day.

To corroborate our findings, we perform a number of additional tests. First, we employ two regulatory shocks affecting 1) firms' information environment, 2) short selling activity. We predict that firms that maintained higher level of pre-shock conservatism are expected to have *ex-ante* better information environment (Suijs 2008; Garcia Lara et al. 2016) and avoid bad news hoarding that is expected to mitigate the pressure from short sellers after the SHO regulation effect on pilot firms. Our findings indicate that both regulatory shocks have a less pronounced effect on firms with higher pre-shock levels of conservatism. Second, we test whether more conservative high-tech firms had lower equity overvaluation during the Dot-Com bubble and whether they experienced lower stock price drops after the burst of the bubble. Our findings stay in line with our expectations. Finally, we ensure that our main conclusions remain for alternative proxy of conservatism and when we perform Fama and MacBeth (1973) regressions instead of clustering standard errors by firm as suggested by Conley et al. (2018).

We contribute to the prior literature by providing evidence that conditional conservatism leads to more efficient equity markets. In particular, we contribute to the literature analyzing the positive effects of conditional conservatism for shareholders (Suijs 2008; Garcia Lara et al. 2011; Kim et al. 2013; Biddle et al.2016; Kim and Zhang 2016). Additionally, we contribute to the literature analyzing the information content of conditionally conservative reporting (LaFond and Watts 2008; Suijs 2008; Garcia Lara et al. 2014) by presenting additional evidence of efficiency-increasing information that is diffused through conservative reporting.

2.2 Literature Review and Hypothesis Development

2.2.1 Conservatism and equity overvaluation

When investors (both naive and sophisticated) hold heterogeneous beliefs about firm value (Miller 1977), securities held by well-informed investors are expected to avoid undervaluation. However, if those informed investors are unwilling to short-sell there might be a case of overvaluation (Malkiel 1985). Divergence of opinions regarding the security's return is expected to worsen overvaluation (Miller 1977; Boehme et al. 2006). Jensen (2005) notes that in the presence of substantial equity overvaluation, there is a threat of organizational forces deterioration that might destroy core value of the firm. To satisfy growth expectations that are far above "true" firm value, managers may engage in short-run value-increasing activities at the expense of long-run performance.

We argue that conditional conservatism decreases the probability of equity overvaluation and importantly, that it leads to a faster reversal of overvalued stock back to underlying equity values. These benefits of conservatism accrue to equity investors at least through two channels. First, bidding up by uninformed investors who take firm disclosed information at face value may explain overvaluation. Under aggressive accounting (reporting and disclosure), unsophisticated investors are more likely to value the firm over-optimistically. In line with this view, Badertscher (2011) documents a positive association between total earnings management and the duration of firm overvaluation. In contrast, under conservative accounting, timely and complete recognition of poor realizations offsets managerial tendency to strategically disclose good news and withhold bad news,[2] and thus, the firm's market value is unlikely to be overstated, resulting in equity prices that are closer to fundamentals. Prior work supports this view that conservatism reduces information asymmetry (Suijs 2008; Garcia Lara et al. 2014), improving the firm's information environment and allowing investors to better assess firms' performance. This should result in more informed capital markets.

Second, conditional conservatism directly reduces the incentives for earnings

[2]See, for example, the work of Kothari et al. (2009) on managerial disclosure of good and bad news.

management (Basu 1997; Watts 2003; Guay and Verrecchia 2006; Chen et al. 2007; Gao 2013). This limits managerial attempts to artificially inflate earnings, improving accounting quality and therefore, the ability of outsiders to assess underlying trends in revenues and earnings growth, making over-optimism less likely. Importantly, in the presence of temporary overvaluation, which as noted in Jensen (2005) may happen for various reasons in both inefficient and semi-efficient markets, we expect that conditional conservatism leads to faster reversal to efficient prices. This is because it prevents the activation of the organizational forces that sustain overvaluation, and reduces the likelihood that managers get caught in a game of meeting expectations (see, Stein 1989). Mechanisms such as using overvalued equity to make acquisitions (Moeller et al. 2005; Shleifer and Vishny 2003) are constrained by conditional conservatism, as shown by recent research that suggests conditional conservatism reduces inefficient investment and accelerates the abandonment of poor projects (Francis and Martin 2010; Ahmed and Duellman 2011; Bushman et al. 2011; Garcia Lara et al. 2016).

Our argumentation is in line with the work of Mashruwala and Mashruwala (2018a) who find that accounting conservatism (they are using proxies for unconditional conservatism) under high shorting constraints and investors' disagreement reduces equity overvaluation. We add to their work by predicting that conditional conservatism not only reduces the likelihood of over-valuation but also, that it leads to a quicker reversal of overvaluation by imposing timely disclosure of negative realizations and disciplining good news disclosure, thereby reducing the likelihood of sustained duration of equity overvaluation. Therefore, our first hypothesis is:

> ***H1:*** *Conditional conservatism is associated with lower sustained duration of equity overvaluation*

2.2.2 Conservatism and abnormal short interest

Building on the above argumentation that more conditionally conservative firms are less likely to be overvalued, it follows that short sellers are less likely to target them. Short sellers are informed investors (Boehmer et al. 2008) who trade based on information rather

than liquidity needs (Diamond and Verrecchia 1987). Prior research shows that they are able to identify analyst downgrades, (Christophe et al. 2010) earnings restatements (Desai et al. 2006) and financial misconduct significantly before it is publicly revealed (Karpoff and Lou 2010). Overall, this literature indicates that short sellers target firms that are suspect of having hidden bad news, tracking their accounting accruals to uncover misreporting (Fang et al. 2016). In this manner, they can take positions in anticipation of stock price decreases (i.e., bad news realizations). Short sellers scrutiny is therefore associated with instances where managers withhold or delay the disclosure of negative firm information.

As noted, managers have incentives to strategically disclose good news and to delay or withhold the release of bad news (Kothari et al. 2009). This behaviour intensifies with the firms' opaqueness and complex tax planning (Hutton et al. 2009; Kim et al. 2011). Conditional conservatism offsets this behaviour, by imposing timely and complete loss recognition (Basu 1997; Watts 2003), via the lower verification requirements for the recognition of negative news (unrealized economic losses) relative to positive news. This serves as a signal that no negative information is withheld. Consistent with this view, LaFond and Watts (2008) argue that conditional conservatism mitigates concerns of managerial tendencies to delay recognition of bad news in hope of an economic condition reversal. Additionally, through timelier recognition of economic losses relative to gains, conditional conservatism ensures prompt identification and termination of unprofitable projects. Prior work relates conservatism to higher investment efficiency *ex ante* and to quicker *ex post* termination of poorly performing projects (Francis and Martin 2010; Ahmed and Duellman 2011; Bushman et al. 2011; Garcia Lara et al. 2016). This prevents bad news hoarding and lowers the probability of stock price crash risk (Kim and Zhang 2016).

Given the above discussion, our second hypothesis is as follows:

H2: *Conditional conservatism is associated with lower abnormal short interest*

Jin et al. (2018) study the related question of whether changes in short selling

restrictions affect conservatism. We view conservatism as an ex-ante managerial decision that determines the information environment of the firm, making more conservative firms less attractive to short sellers.

2.2.3 Conservatism and the valuation of earnings surprises

Prior research provides growing evidence that conditional conservatism benefits equity holders: it lowers the volatility of future stock price and results in efficient risk sharing (Suijs 2008); decreases cost of equity capital (Garcia Lara et al. 2011); results in smaller price drops at SEO announcements (Kim et al. 2013); lowers the probability of stock price crashes (Kim and Zhang 2016); and reduces bankruptcy risk (Biddle et al.2016). Additionally, Francis et al. (2013) document that more conservative firms have less negative stock returns during the recent financial crisis. Overall, this literature suggests that conservative reporting is a mechanism that protects shareholders' value. This effect is magnified for firms with poorer corporate governance and higher information asymmetry.

Given the above, we expect market participants to reward conditionally conservative firms, and apply a lower penalty in the presence of earnings disappointments. More generally, as argued in Guay and Verrecchia (2007) market participants may apply conservative firms a lower discount for uncertainty. This is because by imposing timely and complete recognition of losses, bad news are recognized in the financial statements. This coupled with managerial strategic disclosure of good news (Kothari et al. 2009) implies that all value relevant information is communicated in a timely manner. In addition, conservatism enhances the confirmatory role of accounting, acting as a 'hard' benchmark to evaluate the credibility of alternative sources of information (LaFond and Watts2008), such as unverifiable good news disclosures and management forecasts. Conservatism disciplines good news disclosure through *ex post* accountability (Ball 2001), allowing 'softer' sources of information to flourish (LaFond and Watts 2008), and lending credibility to good news disclosure, permitting attaining full disclosure, where no information about firm value is withheld (Guay and Verrecchia 2007).

It is amply accepted that capital markets punish (reward) firms for missing

(beating) analyst forecasts even by a single penny (Bhojraj et al. 2009). Unsurprisingly, managers are reluctant to miss earnings forecasts (Graham et al. 2005), and may engage in sub-optimal decision-making in an attempt to beat simple earnings targets. The earnings management literature suggests there is a greater penalty associated with earnings disappointments relative to the reward for positive earnings surprises (Skinner and Sloan 2002). A possible explanation for this imbalance is that earnings management is an equilibrium outcome (Dye 1988; Stein 1989), where markets apply a discount for earnings management, which, in turn, induces earnings management. If markets apply this discount, in the expectation that earnings will be managed and targets met, it may act as a buffer in the presence of earnings surprises, and thus, the observed rewards and penalties would differ in the absence of this discount.

Given the aforementioned benefits of conservative reporting and the fact that conservatism improves earnings quality (e.g., Chen et al. 2007; Gao 2013), decreases the deadwight losses of information asymmetry (e.g. LaFond and Watts 2008) and serves as a corporate governance mechanism (e.g. Ahmed and Duellman 2007), we expect that shareholders will apply a lower penalty to conditionally conservative firms for missing earnings forecasts. Our third hypothesis is:

> ***H3:*** *Conditional conservatism is associated with lower penalties for missing earnings forecasts*

2.3 Research Design

2.3.1 Measurement of accounting conservatism

Our measure of conditional conservatism follows Ball and Shivakumar (2005).[3] This measure is accounting-based and does not rely on market measures, which reduces concerns associated with market inefficiency and circularity in our proxies. In particular, given that we study how conditional conservatism affects market inefficiency, we avoid using

[3]In Section 2.5.4 we replicate main results estimating firm-year conservatism proxy by augmenting *Eq.*(2.1) with measures of cost stickiness following Banker et al. (2016)

market-based proxies since they assume market efficiency.

Ball and Shivakumar (2005) note that asymmetric treatment of economic gains relative to losses results in an asymmetry of accruals. The recognition of economic losses is reflected in earnings on a timely basis through accruals. In contrast, the recognition of economic gains occurs when the associated cash flows are realized as it is accounted for on a cash basis. To calculate our proxy, we augment Ball and Shivakumar (2005) following the logic of Khan and Watts (2009) to arrive at a firm-year measure of conditional conservatism. We allow for C_Score and G_Score to vary across firm-years through different firm characteristics (size, market-to-book ratio, and leverage). We estimate the following annual cross-section model:

$$\begin{aligned} Accruals_{i,t} = {} & \beta_0 + \beta_1 DCFO_{i,t} + CFO_{i,t}(\mu_0 + \mu_1 Size_{i,t-1} + \mu_2 B/M_{i,t-1} + \mu_3 Lev_{i,t-1}) \\ & + DCFO_{i,t} CFO_{i,t}(\lambda_1 Size_{i,t-1} + \lambda_2 B/M_{i,t-1} + \lambda_3 Lev_{i,t-1}) + (\sigma_1 Size_{i,t-1} \\ & + \sigma_2 B/M_{i,t-1} + \sigma_3 Lev_{i,t-1} + \sigma_4 DCFO_{i,t} Size_{i,t-1} + \sigma_5 DCFO_{i,t} B/M_{i,t-1} \\ & + \sigma_6 DCFO_{i,t} Lev_{i,t-1}) + \epsilon_{i,t}, \end{aligned} \tag{2.1}$$

where $Accruals$ is operating accruals (calculated using a balance sheet approach following Collins et al. (2014) as the change in current non-cash assets minus the change in current non-debt liability minus depreciation). CFO is operating cash flow (defined as the difference between earnings income before extraordinary items and accruals), Both $Accruals$ and CFO are scaled by average total assets. $DCFO$ is a dummy variable equal to one in the case of negative CFO and zero otherwise. We calculate the timeliness of good news (G_Score) and our main coefficient of interest: the incremental timeliness of bad news (C_Score) as follows:

$$G\_Score_{i,t} = B_3 = \mu_0 + \mu_1 Size_{i,t} + \mu_2 B/M_{i,t} + \mu_3 Lev_{i,t} \tag{2.2}$$

$$C\_Score_{i,t} = B_4 = \lambda_0 + \lambda_1 Size_{i,t} + \lambda_2 B/M_{i,t} + \lambda_3 Lev_{i,t} \tag{2.3}$$

Our firm-year measure of conditional conservatism is derived from Ball and Shivaku-

mar (2005) ($CSCORE$) is the three-year average of the sum of C_Score (e.g., for year t, $CSCORE$ is the average over years t, $t-1$, and $t-2$). A greater value of $CSCORE$ represents a higher degree of conditional conservatism. To mitigate measurement error and to reduce concerns associated with non-linearity, we take the annual decile of $CSCORE$ and denote this measure as ACT. Internet Appendix Table 3.1 validates the measure of conditional conservatism by presenting the means of selected characteristics and ACT.

2.3.2 Measurement of overvaluation

A stock is overvalued when its price is higher than its underlying value (Jensen 2005). To measure overvaluation, we follow the residual income approach (Edwards and Bell 1965; Ohlson 1995) as implemented in Frankel and Lee (1998), as follows:

$$V_{i,t} = B_{i,t} + \frac{FROE_{i,t} - r_e}{(1+r_e)} B_{i,t} + \frac{FROE_{i,t+1} - r_e}{(1+r_e)^2} B_{i,t+1} + \frac{FROE_{i,t+2} - r_e}{(1+r_e)^2 r_e} B_{i,t+2} + \epsilon_{i,t}, \quad (2.4)$$

where B is the book value of equity and $FROE$ is the future return on equity from I/B/E/S consensus earnings-per-share (EPS) estimates. To account for the dependence of year-end book value from current-year return on equity (ROE), we follow Frankel and Lee (1998) using a sequential estimation process of future ROE.[4] r_e is annualized cost of capital derived from the CAPM. V is a forward-looking measure of fundamental (i.e., "intrinsic") value derived from the residual income model of Ohlson (1995). P/V is an indicator of mispricing and better return predictor than M/B (Frankel and Lee 1998; Lee et al. 1999).[5] V filters earnings growth prospects from market price, except when such prospects are associated with misvaluation rather than just growth. The predictive

[4]For detailed explanation of the estimation procedure, please see Appendix 2.6

[5]Tobin's Q or M/B rely on a backward-looking value measure, book value, as a fundamental benchmark. Thus, such ratios reflect the ability of a firm to generate returns over its book assets that are affected by differences in industry and accounting methods. Additionally, these raios are strongly associated with other firm characteristics not related to overvaluation such as investment opportunities, managerial effectiveness, etc. The P/V measure is expected to reflect misvaluation in a more neat way by filtering out other sources of variation that are present in M/B or Tobin's Q ratio (Dong et al. 2012). Table 2.2 shows that the correlation between P/V measure and B/M is -40% presenting evidence that P/V measure captures other information that is not captured by B/M ratio.

ability of P/V is robust to the capital model used (Lee et al. 1999) and to whether the discount factor is allowed to vary across firms (D'mello and Shroff 2000). We use firms with different fiscal year-ends. Thus, to arrange firms in calendar time, we use June as the cut-off. We set a four-month gap for the accounting data to be publicly available from the fiscal year end date. In particular, calendar year t includes firms with fiscal year ends no later than February of year t, and no earlier than March of year $t-1$.

First, we analyze association between the level of conditional conservatism and the level of equity overvaluation. We estimate the following model:

$$P/V_{i,t+1} = \beta_1 ACT_{i,t} + \sum_{a=1}^{n} \gamma_{a,t} X_{a,t} + \epsilon_{i,t}, \tag{2.5}$$

where P/V is an indicator of mispricing as discussed above. ACT is annual decile of firm-year proxy of conditional conservatism following Ball and Shivakumar (2005). Under H_1 β_1 is expected to be negative and statistically significant. $X_{a,t}$ is a set of control variables. In particular, we control for the size ($Log(Size)$), leverage ($Leverage$) and book-to-market (BTM) to isolate the effect of mechanical correlation between ACT and P/V as these variable are used in construction of firm-year proxy of conditional conservatism. Additionally, we control for overall information asymmetry of a firm proxied by analyst coverage ($Log(1+analyst)$). To control for overall audit quality that is expected to reduce agency costs (Jensen and Meckling 1976; Francis and Wilson 1988; DeFond 1992) we include Big-5 auditors ($Big-5$). To measure the extent of past earnings management that ultimately inflates value of the stock price (Adams et al. 2009; Badertscher 2011), we control for the overall bloat in the balance sheet (Barton and Simko 2002) (NOA). Additionally, as a measure of overall firm-performance, we control for fiscal year buy-and-hold returns. Finally, we control for short-sale constraints (SSC) and investment disagreement that lead to stock overvaluation (Miller 1977) following Boehme et al. (2006). SSC is estimated as follows. Every month, firms are sorted independently into terciles on short interest (demand side of shares to loan) and institutional ownership (supply side of shares to lend). We then form three SSC portfolios: SSC = 2 (highest) for firms with the highest short interest and the lowest institutional ownership, SSC = 0

(lowest) for firms with the lowest short interest and the highest institutional ownership, and SSC = 1 for all other firms. To control for investment disagreement we estimate share $Turnover$, $IVOL$ and inverse of AGE. All variables are as described in Appendix 2.6. Additionally, we include firm- and year-fixed effects to control for the firm-specific contracting environment and economy-wide temporal shocks.

Second, to estimate the association between conditional conservatism and the probability of stock overvaluation for a certain consecutive duration we follow Badertscher (2011). In particular, we form annual portfolios on June 1 by ranking firms based on the P/V ratio, where firms in the highest quartile rank of P/V are considered to be overvalued. Sustained duration of overvaluation is captured by identifying the number of consecutive years that a firm has been in the top quartile of P/V from one to a maximum of three years, where our last portfolio contains firms that have had a sustained overvaluation of three years or longer. The dependent variable in $Eq.(2.5)$ is $(Overvaluation_{i,t}, \in \Phi)$ that is a benchmark (equals to 1) if a firm is in the top quartile of P/V for 1, 2 or more consecutive years and zero otherwise. Φ is one of the 3 consecutive overvaluation benchmarks discussed above. A positive (negative) coefficient on $CSCORE$ (β_1) implies that this factor increases (decreases) the probability of stock overvaluation for a certain consecutive duration. Finally, we perform a survival analysis to estimate the hazard (i.e., the rate) of exiting consecutive overvaluation period.

2.3.3 Measurement of abnormal short-selling interest

To estimate abnormal short interest we follow Karpoff and Lou (2010). Specifically, for each firm i in period t, abnormal short interest in defined as follows:

$$ABSI(j)_{i,t} = SI_{i,t} - E(SI(j)_{i,t}), j = 1, 2, 3 \tag{2.6}$$

where $SI_{i,t}$ is raw short interest and $E(SI(j)_{i,t})$ is the expected short interest based on j firm-specific characteristics. The first benchmark, $E(SI(1)_{i,t})$, controls for the firm's market capitalization, book-to-market ratio, past stock returns, and industry (Dechow

et al. 2001; Asquith et al. 2005; Duarte et al. 2006). The second benchmark, $E(SI(2)_{i,t})$, additionally controls for share turnover and institutional ownership (D'avolio 2002). Finally, the third benchmark, $E(SI(3)_{i,t})$, adds accruals and insiders' selling (Healy 1985; Dechow et al. 2011).

At the beginning of each period, each stock is assigned to 27 portfolios constructed by independently sorting stocks by size, book-to-market, and momentum (for $E(SI(1)_{i,t})$), all measured at the end of the prior period. Additionally, these 27 portfolios are partitioned into two-digit SIC industry codes. $E(SI(1)_{i,t})$ is the fitted value from a cross-sectional regression:

$$SI_{i,t} = \sum_{g=low}^{medium} s_{gt} Size_{igt} + \sum_{g=low}^{medium} b_{gt} BM_{igt} + \sum_{g=low}^{medium} m_{gt} Mom_{igt} + \sum_{k=1}^{K} \phi_{kt} Ind_{ikt} + u_{it}, \quad (2.7)$$

where the first three sets of variables are dummy variables that define 27 size-, book-to-market-, and momentum- based portfolios. The portfolio with the highest market capitalization, book-to-market ratio, and momentum for each industry are the base portfolios. The coefficients from $Eq.(2.7)$ should be interpreted as the difference between the short interest of the given portfolio in relation to the base one.

The measure of abnormal short-selling (the dependent variable) is estimated as the residual from the first-step regression of $Eq.(2.7)$. W. Chen et al. (2018) documents that when residuals from the first-step are used as dependent variable in the second-step regressions, they can generate biased coefficients and unreliable t-statistics that can lead to incorrect inferences. To avoid these biases Chen et al. (2018) suggests to include a set of interactions between industry (two-digit SIC) and a set of control variables as discussed above. All our inferences remain the same if we do not use this procedure.

To study whether there is a negative effect of conditional conservatism on abnormal short selling, our main regression under consideration is as follows:

$$SI_{i,t+1} = \beta_1 ACT_{i,t} + \sum_{a=1}^{n} \gamma_{a,t} X_{a,t} + \epsilon_{i,t+1}, \quad (2.8)$$

where SI is raw short interest rate. ACT is annual decile of firm-year proxy of

conditional conservatism following Ball and Shivakumar (2005). A positive (negative) regression coefficient of ACT implies that this factor increases (decreases) the abnormal short interest. $X_{a,t}$ is the set of control variables. In particular, we control for firm size, share turnover and dividend yield (Jain et al. 2013); buy-and-hold returns (C. Jain et al. 2012); institutional ownership (Asquith et al. 2005); stock return volatility (Diether et al. 2009a); leverage and analysts' coverage. Audit quality is proxied by the presence of Big-5 auditors (Big-5) and the level of accounting bloat in the balance is estimated following Barton and Simko (2002). Additionally, we include a set of interactions between industry (two-digit SIC) and a set of control variables that are expected to define expected-short interest as state above. As before, we include firm- and year-fixed effects to control for the firm-specific contracting environment and economy-wide temporal shocks.

2.4 Sample and Descriptive Statistics

We study U.S. firms for the period 1991 to 2015. We exclude financial firms (Standard Industrial Classification (SIC) between 6000 and 6999) and utilities (SIC between 4800 and 5000) because their accrual calculation procedures are not comparable to other firms. We follow Frankel and Lee (1998) and Badertscher (2011) and require that firms have both one- and two-year-ahead EPS forecasts from I/B/E/S. We use yearly earnings forecast issued in May to guarantee that those forecasts belong to the correct fiscal year. We restrict the sample to firms with positive book-to-market ratio and eliminate observations where return on equity and dividend payout ratio are greater than 100 percent. Additionally, we drop observations with stock price lower than \$1. Overall, we insure that the sample contains non-missing variables.

Accounting information and the data on short interest come from Compustat annual and Compustat Supplemental Short Interest File. Data on daily share prices and returns comes from CRSP. The data on Institutional ownership is from Thomson Reuters 13F Holdings database. Analyst coverage and earnings forecast data is from the I/B/E/S

database. All continuous variables are winsorized at the 99% and 1% levels. We guarantee that there are non-missing observations for the main variables under consideration.

[Insert Tables 2.1 and 2.2 about here]

Table 2.1 presents descriptive statistics of the variables used in the tests studying the effect of conditional conservatism on equity market. Overall, the evidence reported in Table 2.1 is consistent with prior research. On average, sample firms are overvalued (mean of P/V_{t+1} is 1.682), consistent with Badertscher (2011). There are around 4% of stock being shorted ($SI = 0.037$). The average firm in the sample is followed by 10 analysts and 90% of firms are audited by Big-5. Importantly, on average firms in the sample are conditionally conservative (ACT = 5.496).

Table 2.2 present correlations between main variables under interest. As seen from the table, conservatism (ACT) is negative correlated with equity overvaluation (P/V_{t+1}) and short selling activity (SI_{t+1}).

2.5 Empirical Results

2.5.1 Conditional conservatism and the duration of overvaluation

[Insert Tables 2.3 and 2.4 about here]

Tables 2.3 and 2.4 present the results of testing H_1. Under H_1, we predict that conditional conservatism is associated with lower equity overvaluation in general, and reduced duration of equity overvaluation in particular. The evidence supports the hypothesis. Table 2.3 presents the association of conditional conservatism with equity overvaluation. In all the model specification the coefficient of ACT is negative and statistically significant. Last Model (4) includes both firm- and industry-year-fixed effects. In terms of economic significance, the findings in Model (4) indicate that holding everything else constant, increasing ACT by one standard deviation (2.873) decreases P/V at t+1 by

0.092 (-0.032×2.873) from its mean of 1.682 to 1.59, or 5.5%. In terms of control variables, firms with higher amount of analyst following, with Big-5 auditors, higher size and book-to-market ratio have lower levels of equity overvaluation.

Table 2.4 present the results of the association between conditional conservatism and consecutive equity duration. As seen from the table there is negative and statistically significant association. In terms of economic significance, holding everything else constant, increasing ACT by one standard deviation (2.873) decreases consecutive equity overvaluation of one, two and more than two periods by 1% (-0.003×2.873), by 1.4% (-0.005×2.872) and by 2.3% (-0.008×2.873).

To corroborate our findings, we use survival analysis to study the occurrence and timing of the so called "event". The event of interest in our study is defined as a firm's year of exiting consecutive overvaluation period. Time to event or survival time (dependent variable) in this study is the number of years from the start year to year of last consecutive period of overvaluation. The start year is defined as the first year when the company is identified as overvalued. We estimate Cox proportional hazards model to evaluate simultaneously the effect of several time dependent factors on survival. Table 2.4, Column (4) presents the results. The coefficient of ACT is positive and statistically significant, meaning that an increase in conservatism increases the hazard (i.e., the rate) of exiting consecutive overvaluation period. The hazard ratio is equal to 1.077.[6] In other word, a one standard deviation increase in ACT (2.873) increases the hazard by 22 percent.

2.5.2 Conditional conservatism and abnormal short interest

Table 2.5 presents the results of testing H_2 that conditional conservatism is associated with a reduction in abnormal short interest. The results consistently present a negative association between short interest and conservatism. Column (1) presents estimation of $Eq.(2.8)$ without inclusion of first-stage regressors interacted with industry as control variables. Column (2) - (4) adds first-stage regressors interacted with industry, but this

[6] exp(0.074)

does not change statistically significant and negative association between conservatism and abnormal short selling. In terms of economic significance, the findings indicate that holding everything else constant, increasing ACT by one standard deviation (2.873) decreases abnormal short-selling at t+1 by 0.003 (-0.001×2.873) from its mean of 0.037 to 0.034, or 8%.

[Insert Table 2.5]

We document that certain firm characteristics affect abnormal short interest. In particular, in line with D'avolio (2002) and Asquith et al. (2005) we find that higher institutional ownership (that serves as a supplier of shares to be loaned reducing the short-sale constraints) positively affects abnormal short interest. Additionally, we document that shares turnover (stock return) increases abnormal short interest in line with Jain et al. (2012, 2013). Additionally, we find that greater leverage, analysts' coverage, dividend yield and bloat in the balance sheet are associated with greater abnormal short interest.

2.5.3 Conditional conservatism, earnings surprises and future stock performance

Under H_3, we predict that the penalties associated with earnings disappointments vary with conditional conservatism. We follow Bhojraj et al. (2009) in designing tests for H_3 estimation. Table 2.6 reports 5-day cumulative abnormal returns (CARs) surrounding the earnings announcement (from 2 days before to 2 days after), for firms with high (low) conditional conservatism. To ensure that we capture persistence in conservative reporting we rank firms according to $CSCORE$ proxy. Firms are ranked as "high" ("low") in conditional conservatism if firm-year $CSCORE$ is in the third (first) tercile among all firms.

[Insert Table 2.6]

Table 2.6 reports CARs separately for firms that narrowly meet the target by not more than one cent (+1), that just meet the target (0), or that narrowly miss the

target by not more than one cent (-1). As expected, we find significantly higher CARs when firms just beat analyst forecasts compared to firms that just miss (t-stat = 8.53). We observe a higher earnings response to firms with high conservatism at the earnings announcement date within the full sample (t-stat = 2.85). We do not find any statistical significance of 5-day CARs for firms with low *versus* high conservatism that beat earnings targets. In the superscripted diagonal cells ("a" and "b"), we see a statistically significant difference between firms that beat consensus forecast, but have low level of conservatism, and firms that miss consensus forecast, but have high level of conservatism . Firms that miss the consensus forecast despite having high level of conservatism underperform firms that beat the forecast, but have low levels of conservatism (t-stat = 3.5).

Next, we examine the future performance of firms with high (low) conditional conservatism that miss annual consensus forecast. First, we calculate portfolio-matched buy-and-hold abnormal returns (BHARs) and cumulative abnormal returns (CARs) for 15, 30, 45, and 60 days after the earnings announcement date. We calculate BHAR and CAR for each firm i as follows:

$$BHAR_i = \prod_{i=1}^{T}(1 + R_{i,t}) - \prod_{i=1}^{T}(1 + R_{benchmark_t}), \tag{2.9}$$

$$CAR_i = \sum_{i=1}^{T}(R_{i,t} - R_{benchmark_t}), \tag{2.10}$$

where $R_{benchmark_t}$ is the return to the corresponding value-weighted size/book-to-market (BM) portfolio constructed by Fama and French (1993). We match each firm to one of the 25 corresponding size/BM portfolios at the beginning of the announcement year using the size/BM breakpoints from Ken French's website. We include the delisting return and re-invest the proceeds in the matching size/BM portfolio in case a stock stops trading prior to the end of the cumulation window. We report both equal-weighted and value-weighted average BHARs for firms with high (low) quality of conservatism that miss the forecast. We obtain weights scaling firm's value of equity at the beginning of the announcement year by the CRSP value-weighted market index on this date (Mitchell

and Stafford 2000).

[Insert Table 2.7]

Table 2.7, Panel A summarizes the BHAR results. There is evidence that high conservatism missers outperform low conservatism missers throughout the whole time intervals.

We follow Fama and French (1993) and Mitchell and Stafford (2000) (as in Bhojraj et al. (2009)) and use CARs (involving summing abnormal returns) instead of BHARs as the latter can magnify a single period abnormal performance due to compounding. Additionally, there is better statistical behavior of sums compared to compounded returns, that leads to fewer inference problems. Table 2.7, Panel B summarizes the CAR results. As before, we document that missers with high level of conservatism outperform those with low level of conservatism throughout all windows under consideration, except within 15 days window on the equal-weighted basis (BHAR difference = -2.59, p-value = 0.26; CAR difference = -1.81; p-value = 0.26).

We report that there is a statistically significant difference between firms with high and low conservatism that miss earnings forecasts both in the short-run (15 to 30 days) and in the mid-run (30 to 60 days). Overall, there is a significant reward from equity markets for firms with higher conservatism.

Calendar-time regressions

Both BHARs and CARs suffer from lack of independence that might lead to biased tests as a result of any cross-correlation in event-time returns that are not accounted for by the model (Fama and French 1993; Brav 2000). We overcome this by forming portfolios in calendar time (Fama 1998) following the intuition of Bhojraj et al. (2009). The effect of cross-correlations on the variance of abnormal returns is accurately captured by the time-series variation in portfolio returns. We form portfolios every calendar day over the sample period of missers with low and high conservatism. Additionally, we construct a zero-investment hedge portfolio that goes long in missers with low conservatism and short in missers with high conservatism. The short-term (mid-term) performance differences

between beaters and missers are captured within 1 to 30 (1 to 60) days following earnings announcement.

We form both value-weighted and equal-weighted portfolios, where weights are based on market value of equity of the firm at the beginning of the announcement year. To obtain average abnormal daily returns we estimate a 3-factor Fama and French (1993) model. We require that there are at least 10 observations per day to form portfolios.

[Insert Table 2.8]

Table 2.8, Panel A presents short-term results. On an equal-weighted basis, missers with high conservatism outperform missers with low conservatism by 12 basis points per day (p-value = 0.08). On a value-weighted basis, the difference is positive, but statistically insignificant (i.e., 8 basis point per day; p-value = 0.31). In addition, Panel B presents mid-term results. As before, missers with high conservatism outperform missers with low conservatism by 7 basis points per day (p-value = 0.06). On a value-weighted basis, the difference is positive, but statistically insignificant (i.e., 2 basis point per day; p-value = 0.65).

In summary, the results present evidence that missing analysts' expectation with high level of conservatism outperforms missing analysts' expectation with low level of conservatism over a short-term window after the earnings announcement date.

2.5.4 Additional analyses

Tests to account for endogeneity

A particular concern with the findings thus far is endogeneity issue, in particular reverse causality and omitted variables. It can be argued that given some managerial discretion in setting the level of accounting conservatism (Lawrence et al. 2013), managers might respond to short sellers' pressure or equity overvaluation by changing the level of conservatism. We tackle this issue in a number of ways. In particular, we use a battery of control variables and a set of fixed-effects to account for economy-wide temporal shocks and the firm-specific contracting environment and corporate governance. However, despite these

steps, we cannot entirely rule out endogeneity concerns. A perfect experimental setting would be an exogenous shock to conservative reporting or random assignment of conservative accounting practice to some of the firms. However, due to the absence of such condition, in this section, we propose to use a regulatory change that is expected to alter the level of conservatism (Garcia Lara et al. 2019).

As an exogenous setting we take into consideration the passage of SFAS 121, which became effective for fiscal years starting from December 15, 1995. SFAS 121 led to more stringent impairment tests for long-lived assets. We expect that it led to an increase in conditional conservatism without a direct effect on short-selling and equity overvaluation. We expect that firms with lower pre-SFAS 121 level of conditional conservatism (Treated firms) should be affected more by the regulation as they are expected to be forced to increase their level of conservatism. We examine the period of 1992-1999 (four years before and after the regulation). The main regressions under consideration are as follows:

$$Y_{i,t} = \beta_1 Treated \times SFAS_{121} + \sum_{a=1}^{n} \gamma_{a,t} X_{a,t} + \epsilon_{i,t}, \tag{2.11}$$

where $Y_{i,t}$ is either equity overvaluation (P/V) or raw short interest rate (SI). $SFAS_{121}$ equals one after the passage of SFAS 121 (for fiscal years starting after December 15, 1995), zero otherwise. $Treated$ is a decile-ranked variable for average conservatism over seven years ending in 1993 to exclude potential endogenous anticipation effect of the regulation. To accommodate with the interpretation, high values of $Treated$ are set to indicate low conservatism. The main coefficient of interest is β_1 that is expected to be negative and statistically significant. This is consistent with a decrease in short interest rate and equity overvaluation for treated firms after the passage of SFAS 121. To control for firm-specific contracting environment we include firm-fixed effects (that subsumes the effect of $Treated$ control) and year fixed-effects to control for economy-wide temporal shocks (that subsumes the effect of $SFAS_{121}$ control).

First, we start with the graphical representation of the difference in conditional conservatism for treated *versus* control groups, before and after the SFAS 121. Figure 2.1

present evidence after the passage of SFAS 121 there is a significant decrease in the difference between High and Low groups. This decrease is in line with our expectation that firms with lower pre-SFAS 121 level of conditional conservatism (Treated firms) were affected more by the regulation to increase the level of conservatism. Overall, this evidence sheds support on the parallel trends assumption. This is in line with the findings in Garcia Lara et al. (2019). Second, we directly test whether SFAS 121 led to an increase in conditional conservatism. Table 2.9 presents the results. In the second column, we regress firm-year proxy of conservatism, C_score, on a dummy variable $SFAS_{121}$ (equal to one for fiscal years starting after December 15, 1995 and zero otherwise) and a set of control variables. The coefficient of $SFAS_{121}$ is positive and statistically significant. In the fourth column, we estimate a standard Basu (1997) model interacted with $SFAS_{121}$ and lagged market-to-book ratio (to control for the accumulation of conservatism in the previous periods). The coefficient of $D \times RET \times SFAS_{121}$ is positive and statistically significant. These results indicate that SFAS 121 led to an increase in conditional conservatism justifying the setting of exogenous variation in conditional conservatism.

[Insert Table 2.9 and Table 2.10]

Table 2.10 reports the results of the estimation of $Eq.(2.11)$. As we can see, the coefficient of $Treated \times SFAS_{121}$ (the effect of SFAS 121 on treated firms) is negative and statistically significant for the proxy of equity overvaluation (short interest) in Column 1 (2) (-0.025, t-stat = -2.441; -0.001, t-stat = -2.656). Next, we examine trends in the equity overvaluation and short selling activity surrounding the year of the effective year of SFAS-121 (1995). We interact $Treated$ with every year from 1993 to 1999 using year 1992 as a benchmark. The results of the regression coefficients are illustrated in Figure 2.2. The figure shows the differences in equity overvaluation and short selling activity between treated and control groups after SFAS-121 became effective. Importantly, there is appear to be no significant difference in equity overvaluation and short selling between the treatment and control groups in the period before the effective date of SFAS-121, consistent with the parallel trends assumption.

Regulatory shocks on short selling activity and information environment

To corroborate our findings, in this section we study two regulatory shocks to firms' information environment and short selling activity. In vein with Garcia Lara et al. (2019), we examine 1) the Securities and Exchange Commission (SEC) Regulation SHO, which exempted pilot firms (Rule 202T pilot program) from short-sale price tests and 2) the passage of SFAS 131 *Disclosures about segments of an enterprise and related information* that became effective in 1998.

Regulation SHO (Rule 202T)

In July 2004, the SEC initiated a pilot program (Rule 202T of Regulation SHO), where every third stock in the Russell 3000 index ranked by trading volume within each exchange was set as a pilot stock. These pilot firms were exempted from short-sale price tests over May 2, 2005 to August 6, 2007. As a result, firms in the pilot sample experienced an increase in short-selling activity (Diether et al. 2009b). Additionally, provided that firms with higher short-sale constraints have lower price efficiency (Saffi and Sigurdsson 2011), Fang et al. (2016) document that pilot firms exhibited improvement in price efficiency. As before, we expect SHO Regulation to have more pronounced effect on firms that entered the regulation period with less conservatism. This is based on less timely recognition of economic losses that is expected to deter the incorporation of unfavorable information into prices. Thus, our main prediction is that pilot firms that entered SHO Regulation with higher pre-regulation conservatism exhibited lower pressure from short sellers during the pilot program as their prices were closer to underlying value of equity through timelier recognition of unfavorable information. Additionally, we expect lower effect on price efficiency of these firms and thus, lower effect on equity overvaluation. To test these hypotheses we estimate the following models:

$$\begin{aligned} SI_{i,t} = {} & \beta_1 CONS\_P_i + \beta_2 During\_CONS\_P_{i,t} + \beta_3 During\_P_t + \gamma_1 CONS\_NP_i \\ & + \gamma_2 During\_CONS\_NP_{i,t} + \gamma_3 During\_NP_t + \sum_{a=1}^{n} \omega_{a,t} X_{a,t} + \epsilon_{i,t}, \end{aligned} \tag{2.12}$$

$$P/V_{i,t} = \beta_1 CONS\_P_i + \beta_2 During\_CONS\_P_{i,t} + \beta_3 During\_P_t + \gamma_1 CONS\_NP_i + \gamma_2 During\_CONS\_NP_{i,t} + \gamma_3 During\_NP_t + \sum_{a=1}^{n} \omega_{a,t} X\prime_{a,t} + \epsilon_{i,t}, \quad (2.13)$$

where $CONS$ is a decile-ranked variable of average conservatism over seven years ending in 2003 that excludes potential endogenous anticipation effect of the SEC's short selling regulation conducted during 2005-2007. *Pilot* firms are the ones that are listed in the SEC's randomized experiment.[7] *During* is an indicator variable that equals one if the year is within 2005 to 2007 and zero otherwise. X and $X\prime$ are a set of control variables. $CONS\_P$ ($CONS\_NP$) is equal to $CONS$ if the firm is (is not) in the pilot program and zero otherwise. $During\_P$ ($During\_NP$) equals *During* if a firm is (is not) in the pilot program and zero otherwise. First, if conservatism negatively affects both short selling activity and equity overvaluation, we expect a negative β_1 and γ_1 in $Eq.(2.12)$ and $Eq.(2.13)$. Second, we expect a positive (negative) β_3 in $Eq.(2.12)$ ($Eq.(2.13)$) in line with the idea that Regulation SHO resulted in higher short selling activity (resulted in short selling pressure on overvalued stocks driving equities to underlying value). Third, the main coefficient of interest is β_2. Given our prediction, we expect that the effects of Regulation SHO is less pronounced for firms that entered the shock with higher level of conservatism. This implies a negative (positive) β_2 in $Eq.(2.12)$ ($Eq.(2.13)$). Finally, we expect the effect on the non-pilot firms (γ_3) to be insignificant.

[Insert Table 2.11 about here]

Table 2.11 presents the results. Column (1) (Column (2)) documents the results of the SHO pilot program on equity overvaluation (short selling activity). As expected the coefficient on β_1 and γ_1 is negative and statistically significant. The coefficient on β_3 presents evidence that during the pilot program short selling activity increased (0.013, t-stat = 2.930), but no effect on equity overvaluation. Importantly, we document that β_2

[7] The full list contains 986 stocks that traded without being subject to price tests is available on the SEC website (http://www.sec.gov/rules/other/34-50104.htm). It was published on July 28, 2004 (SEC Act Release No. 50104).

is negative and statistically significant for short selling activity that signifies that stocks with higher pre-SHO pilot program experienced lower short-sellers' pressure during the program period. The net effect of SHO regulation and the level of pre-SHO conservatism is (is not) statistically different from zero for the short selling (equity overvaluation) ($p-value = 0.00$). Surprisingly, we document that non-pilot stocks experienced a decline in equity overvaluation during the pilot program (γ_3). Overall, we present corroborating evidence that higher levels of conservatism are negatively associated with short sellers activity. Next, we study the passage of SFAS 131.

SFAS 131

SFAS 131 Statement establishes standards on the disclosure of operating segments and about products and services, geographic areas, and major customers. Additionally, the statement requires provision of segment profit or loss, certain specific revenue and expense items, and segment assets. Berger and Hann (2003) documents that SFAS 131 induced firms to reveal "hidden" information about their diversification strategies. This affected market valuation and changed firms' behavior in line with the improved monitoring imposed by the new regulatory standard. Thus, we hypothesize that the implementation of SFAS 131 is expected to improve firms information environment that should lead to the improvement of equity valuation. We do not make any assumptions on short selling activity as short sellers are treated as sophisticated investors that posses superior information to beat the market (Dechow et al. 2001; Asquith et al. 2005; Drake et al. 2011; Engelberg et al. 2012). On the one hand, SFAS 131 is expected to improve information environment of a firm (Berger and Hann 2003), on the other hand, to what extent SFAS 131 led to the release of a "hidden" information that short-sellers were trading on is *ex-ante* unclear. As before, we hypothesize that SFAS 131 should affect firms differently based on pre-SFAS 131 level of conservatism. In particular, firms with higher pre-SFAS 131 levels of conservatism are expected to have lower information asymmetry (Suijs 2008; Garcia Lara et al. 2014). Thus, after the regulation became effective *ex-ante* conservative firms are expected to have lower effect on information environment. The pre-SFAS 131 level of conservatism is estimated as the average level of conservatism

over seven years measured two years before the regulation became effective (to avoid endogenous anticipation effect of the regulation). The models that we use are as follows:

$$SI_{i,t} = \beta_1 SFAS\_131_t + \beta_2 CONS\_96_i + \beta_3 SFAS_131 \times CONS\_96_i + \sum_{a=1}^{n} \omega_{a,t} X_{a,t} + \epsilon_{i,t}, \tag{2.14}$$

$$P/V_{i,t} = \beta_1 SFAS\_131_t + \beta_2 CONS\_96_i + \beta_3 SFAS_131 \times CONS\_96_i + \sum_{a=1}^{n} \omega_{a,t} X\prime_{a,t} + \epsilon_{i,t}, \tag{2.15}$$

where $SFAS\_131$ is a dummy variable equal to 1 for the years equal or greater than 1998 and zero otherwise. $CONS\_96$ is a decile-ranked variable of average conservatism over seven years ending in 1996. X and $X\prime$ are a set of control variables. If SFAS 131 led to improvement in information environment and monitoring (Berger and Hann 2003; Botosan and Stanford 2005), we expect β_1 to be negative. Additionally, we expect β_2 to negative. The main coefficient under interest is β_3. We hypothesize that firms with higher pre-SFAS 131 level of conditional conservatism had better information environment reducing both short selling activity and equity overvaluation. Given this prediction, the effect of SFAS 131 should be less pronounced for firms with higher pre-SFAS 131 level of conservatism. Thus, β_3 is expected to be positive.

Table 2.11, Column (3) and (4) present the results. The coefficient on $SFAS\_131$ is negative and statistically significant in Column (3), but not in Column (4). This signifies that SFAS 131 had a negative impact on equity overvaluation, but not on short sellers activity (as is hypothesized). The coefficient on pre-SFAS 131 level of conservatism is negative for equity overvaluation and (surprisingly) positive for short selling activity. Importantly, we document that firms with higher levels of pre-SFAS 131 conservatism had lower effect on equity overvaluation (but not on short selling activity) after the passage of SFAS 131 ($SFAS\_131 \times CONS\_96 = 0.075$, t-stat $= 4.762$). The net effect of SFAS 131 and the level of pre-SFAS 131 conservatism is (is not) statistically different from zero

for the equity overvaluation (short selling) ($p - value = 0.00$).

Dot-Com bubble and conditional conservatism

In this section we analyze the setting of Dot-Com bubble and whether firms with higher conditional conservatism experienced better stock performance after the burst of the bubble. In particular, the stock market run-up that occurred during the mid to late 1990s showed unprecedented boom in the last 140 years of U.S. history (Shiller 2000). Prices of stocks were at record multiples of earnings. There were some companies that during the latter half of the 1990s experienced an increase in the stock prices with no earnings at all (Morris and Alam 2012). Given that we hypothesize that conditional conservatism should alleviate the problem of equity overvaluation, we expect that firms with higher Dot-com bubble period (1995-1999) level of conservatism should enter the burst of the bubble with less overvalued stocks and thus, experience lower stock return drops during the crisis (March 2000 to October 2002). Overall, the burst of the bubble resulted in a loss of $428 billion of U.S. publicly traded Internet firms during the March-December 2000 period (Bharath and Viswanathan 2006). We define internet companies following Ljungqvist and Wilhelm (2003) and Loughran and Ritter (2004).[8]

[Insert Table 2.12 about here]

Table 2.12, Panel A presents average values of overvaluation measure (P/V) for firms within different levels of conservatism over the Dot-Com bubble period (1995 to 1999).[9] The results indicate that stock overvaluation proxy (P/V) declines with the quintile of conservatism. Additionally, the difference in mean values of P/V between corresponding quintiles of conservatism is statistically significant (except the difference between the 3rd and 4th quintiles). Overall, univariate results in Table 2.12, Panel A indicate that firms with higher levels of conservatism during the Dot-Com bubble had lower levels of stock overvaluation.

[8]High-tech companies are active in SIC codes 3571, 3572, 3575, 3577, 3578 (computer hardware), 3661, 3663, 3669 (communications equipment), 3674 (electronics), 3812 (navigation equipment), 3823, 3825, 3826, 3827, 3829 (measuring and controlling devices), 4899 (communication services), and 7370, 7371, 7372, 7373, 7374, 7375, 7378, and 7379

[9]We sort firms into quintiles each year based on CSCORE measure.

Table 2.12, Panel B presents main results with different model specifications. The results are consistent with our expectations. Firms with higher level of conservatism during the Dot-Com bubble (average of C_score over 1995-1999) experienced better stock performance after the burst of the crisis (March 2000 to October 2002) ($ACT \times DOT\_COM = 0.007$). On average, tech-firms experienced stock price declines during the burst of the bubble (DOT_COM = -0.115 and -0.116).[10] Overall, we document that tech-firms with higher pre-bubble burst level of conservatism experienced lower decline in stock prices.

Additional robustness tests

In this section, we perform additional analysis to corroborate our findings. First, we study whether the results above do hold for alternative proxy of conservatism. We follow Banker et al. (2016) and augment *Eq.*(2.1) with the measures controlling for cost stickiness as in Eq. (7) in Banker et al. (2016).

[Insert Table 2.13 about here]

Table 2.13 presents the results. As shown in Columns (1) and (2) the coefficient on ACT_Banker (which is annual decile of conservatism estimated following Banker et al. (2016)) is negative and statistically significant both for equity overvaluation (Column (1)) and short selling activity (Column (2)).

Next, we perform Fama and MacBeth (1973) regressions. In our main regression specifications, we cluster standard errors by firm. However, in clustering standard errors the homogeneity assumption comes into the first place, which might be difficult to achieve given small number of clusters (Conley et al. 2018). We follow the suggestions of Conley et al. (2018) and draw inferences using Fama and MacBeth (1973) procedure as a robustness

[10]We include a set of control variables that might drive high-conservatism firms' overperformance during the Dot-Com burst period. Specifically, we control for firm's financial health before the crisis by controlling for cash holdings (Cash), both short (ST)- and long-term (LT) debt and profitability. Additionally, we control for momentum (the firm's raw buy-and-hold return measured over one year prior to the onset of the crisis), size, book-to-market ratio, idiosyncratic risk and a dummy variable indicating whether book-to-market ratio is negative. Factor loadings are estimated each month over the previous 60 months (min 24) data using Fama-French three-factor model plus the momentum factor.

check. Table 2.13, Columns (3) and (4) present the results. As before, the coefficient on *ACT* is negative and statistically significant.

2.6 Summary and Conclusion

We predict that accounting conservatism improves market efficiency. We test whether high conditional conservatism is associated with lower equity overvaluation and whether it reduces sustained duration of equity overvaluation. Next, we examine whether better information quality and corporate governance mechanisms that are associated with conservatism reduce abnormal short interest. Finally, we check whether equity market participants value conditionally conservative firms.

We find strong statistical support to our hypotheses. In particular, we document that firms with high conditional conservatism are negatively associated with equity overvaluation. Additionally, we document that conditional conservatism reduces the probability of consecutive duration of equity overvaluation. Moreover, we find that conditionally conservative firms are less likely to be targets of abnormal short sellers. Finally, we find that equity markets reward firms for being conservative. Overall, our results shed additional light on a positive effect of conditional conservatism to equity market. To overcome endogeneity concern, we exploit regulatory change set by SFAS 121 that increased the level of conditional conservatism.

Our findings provide additional evidence on the positive effect of conditional conservatism for shareholders. Additionally, we shed corroborating evidence on the efficiency-increasing informational channel of conservative reporting. Overall, these findings may be of particular interest for regulators, given the ongoing debate on the desirable properties of accounting information.

Appendix 1: Variable Definitions

Variable	Definition of main variables
Panel A: Main Dependent and Independent Variables	
$CSCORE$	A firm-year measure of conditional conservatism following Ball and Shivakumar (2005). To mitigate the measurement error a three year average of C_Score is considered (e.g. for year t the average consists of t, t-1, t-2)
ACT	Annual decile of $CSCORE$
P/V	Price (P) to fundamental value (V) ratio, where V is a proxy for fundamental value estimated from the residual income approach (Edwards and Bell 1965; Ohlson 1995) as implemented in Frankel and Lee (1998)
SI	Raw short interest defined as the number of shares hold short over the total shares outstanding. Missing values are set equal to zero
Panel B: Main Control Variables	
$Log(Size)$	A firm size measured as natural logarithm of total assets
$Leverage$	Long-term debt issue plus current liabilities scaled by total assets
B/M	Book-to-market ratio estimated as the ratio of shareholders' equity over the market value of equity
IO	Institutional ownership represented as the percentage of common shares outstanding owned by institutional shareholders
NOA	Net Operating Assets. Net operating assets is the sum of two cumulative differences between accounting and cash value added: (Operating Income Before Depreciation - Operating Cash Flow), and (Investment - Depreciation)
$Big-5$	Is a dummy variable equal to one if a firm is audited by one of the Big-5 auditors
$Log(1+analyst)$	Natural logarithm of the number of analysts following a firm
$Return$	24-month cumulative returns
$IVOL$	The residual variance of the market model estimated over five-year period with the minimum of two-years of data
$Turnover$	Average number of shares traded over the 100 trading days ending one month prior to the portfolio formation month, divided by shares outstanding on the last day. Following Gao and Ritter (2010), we adjust turnover for NASDAQ firms as follows: Prior to February 1, 2001, we divide NASDAQ volume by 2. For February 1, 2001, to December 31, 2001, we divide NASDAQ volume by 1.8. For 2002 and 2003, we divide NASDAQ volume by 1.6. For 2004 and beyond, we do not adjust NASDAQ volume
SSC	Short sales constraints proxy. Every month, firms are sorted independently into terciles on short interest (SI) and institutional ownership (IO). We then form three SSC portfolios: SSC = 2 (highest) for firms with the highest short interest and the lowest institutional ownership, SSC = 0 (lowest) for firms with the lowest short interest and the highest institutional ownership, and SSC = 1 for all other firms

Table 1: Table 2.6 - Continued

Variable	Definition of main variables
$Dividend\,yield$	Dividend per share divided by price per share
$Return\,volatility$	Annual return volatility of a stock
ROA	Income before extraordinary items scaled by book value of assets
$Bid-Ask\,Spread$	Average daily bid-ask spread over the fiscal year
$\Delta Sale$	Percentage change in sales
$Oper.Cycle$	Log of days of receivables plus the days of inventories less the days of payable
M/B	Market-to-book ratio estimated as the ratio of market value of equity to shareholders' equity
$Altman-Z$	Altman-Z Score of firms' distress level

Appendix 2: Using I/B/E/S forecasts to derive future ROE estimates

We follow Frankel and Lee (1998) and estimate three future ROE forecast ($FROE_t$, $FROE_{t+1}$, $FROE_{t+2}$) and B_t using sequential process.

To estimate $FROE_t$ and B_t, we require a one-year-ahead I/B/E/S consensus EPS forecast [FY1] and dividend payout ratio (k):

$$FROE_t = FY1/[(B_{t-1} + B_{t-2})/2],$$
$$B_t = B_{t-1}[1 + FROE_t(1 - k)]$$

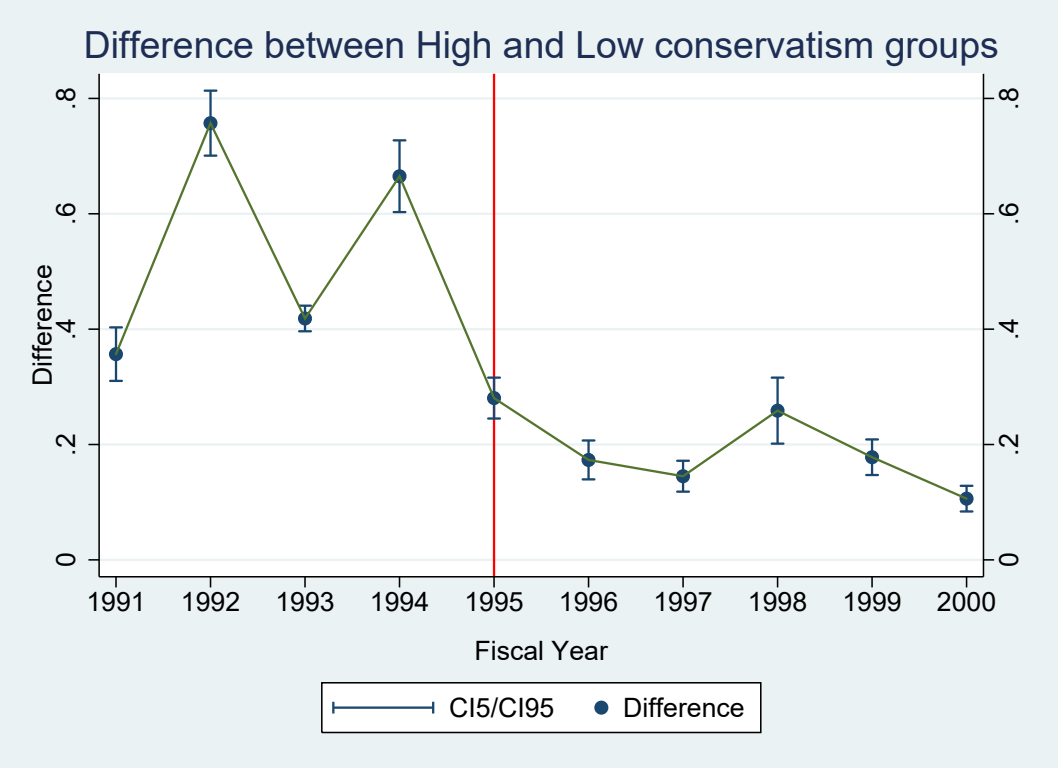
To estimate $FROE_{t+1}$ and B_{t+1}, we require a one-year-ahead I/B/E/S consensus EPS forecast [FY2] and dividend payout ratio (k):

$$FROE_{t+1} = FY2/[(B_t + B_{t-1})/2],$$
$$B_{t+1} = B_t[1 + FROE_{t+2}(1 - k)]$$

To estimate $FROE_{t+2}$ and B_{t+2} we require a long-term I/B/E/S growth estimate [Ltg] and dividend payout ratio (k):

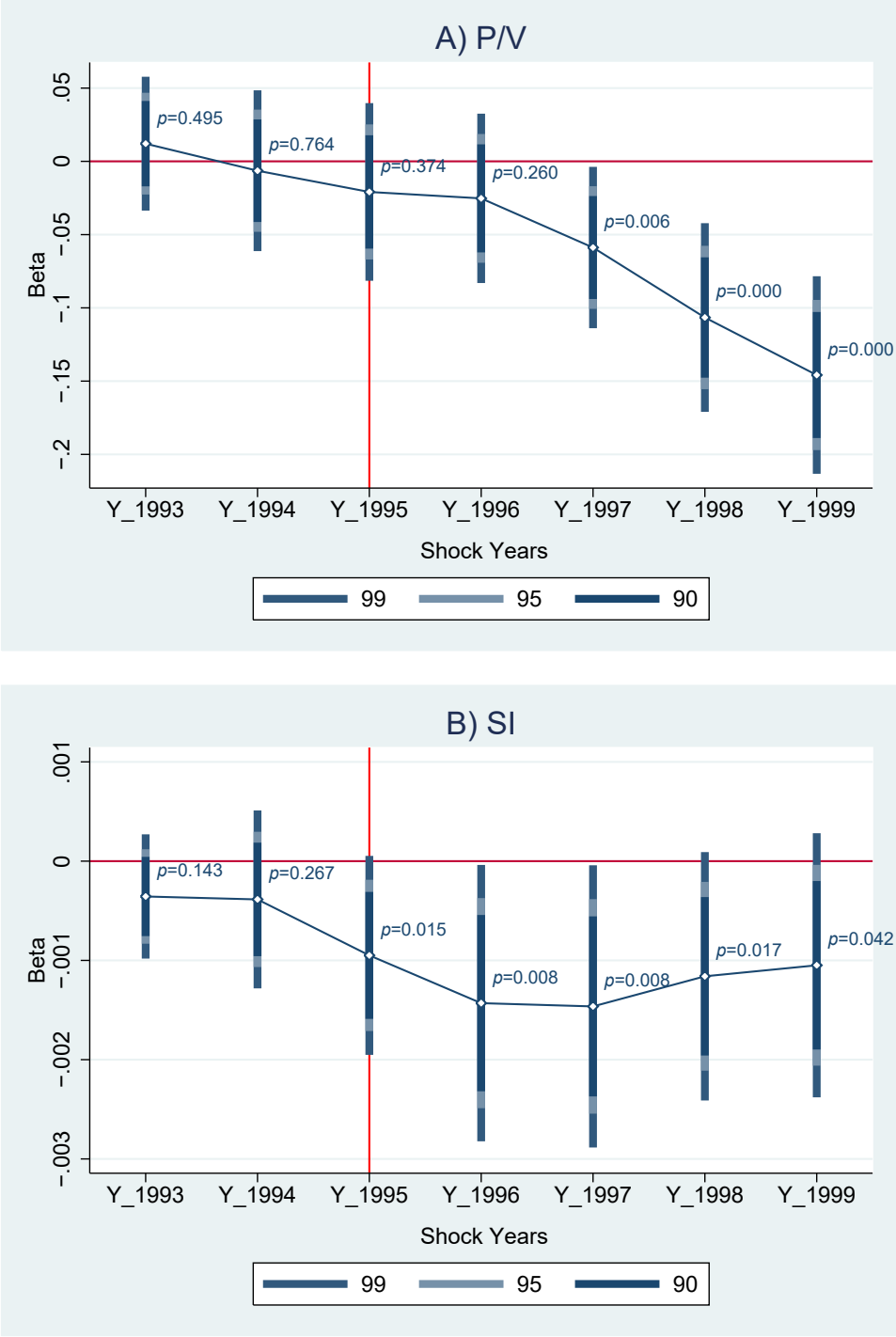
$$FROE_{t+2} = [FY2(1 + Ltg)]/[(B_{t+1} + B_t)/2],$$
$$B_{t+2} = B_{t+1}[1 + FROE_{t+1}(1 - k)]$$

Figure 2.1: Difference between High and Low conservatism groups before and after SFAS-121



This figure presents the difference between High and Low groups of conservatism before and after the passage of SFAS 121 (for firms with fiscal year start after December 15, 1995). High (Low) groups are the Treated (Control) firms. The groups are identified as the reverse decile ranking of average conservatism (C_score) over the seven years ending in 1993. High (Low) groups means being in top (bottom) two deciles of the reverse ranking.

Figure 2.2: Trends in the equity overvaluation (P/V) and short-selling activity (SI) around SFAS-121



This figure plots trends in the equity overvaluation (A) P/V and short-selling activity (B) SI around SFAS-121. Specifically, this figure presents the difference-in-differences estimation of *Eq.*(2.11), where the coefficient in the figure are related to dummy variables of every fiscal year relative 1992 (the benchmark). The bars represent 90%, 95% and 99% confidence intervals. p is the p-value of the betas. All variables are defined in Table 2.6.

Table 2.1: Descriptive statistics of main variables

	N	Mean	Std.dev	Q1	Median	Q3
P/V_{t+1}	19013	1.682	1.193	0.969	1.363	1.980
ACT	19013	5.496	2.873	3.000	5.000	8.000
CSCORE	19013	0.154	0.150	0.048	0.125	0.220
SI_{t+1}	19013	0.037	0.047	0.002	0.020	0.050
Leverage	19013	0.186	0.166	0.018	0.168	0.300
Size	19013	5947.154	15738.293	294.481	952.971	3473.617
B/M	19013	0.522	0.383	0.272	0.426	0.654
Analyst	19013	9.564	7.418	4.000	7.000	13.000
Return	19013	0.370	0.867	-0.174	0.196	0.658
SSC	19013	0.462	0.244	0.250	0.500	0.500
IVOL	19013	0.016	0.015	0.006	0.011	0.020
NOA	19013	0.104	0.267	-0.075	0.126	0.296
Big-5	19013	0.898	0.302	1.000	1.000	1.000
IO	19013	0.635	0.260	0.458	0.679	0.849
Turnover	19013	0.178	0.157	0.063	0.136	0.241
Dividend yield	19013	0.007	0.012	0.000	0.000	0.012
Return volatility	19013	0.405	0.198	0.258	0.361	0.508

This table presents descriptive statistics of variables used in the main analysis. The sample comprises 19013 firm-year observations with 3480 unique firms within the period of 1991-2015. All continuous variables are winsorized at the 99% and 1% levels. Definition of all variables is in Table 2.6.

Table 2.2: Correlation Matrix

	ACT	CSCORE	P/V_{t+1}	SI_{t+1}	Leverage	Size	B/M	Analyst	Return	SSC	IVOL	NOA	Big-5	IO	Turnover	Dividend yield	Return volatility
ACT	1.00																
CSCORE	0.63***	1.00															
	(0.00)																
P/V_{t+1}	-0.29***	-0.18***	1.00														
	(0.00)	(0.00)															
SI_{t+1}	-0.03***	-0.29***	-0.03***	1.00													
	(0.00)	(0.00)	(0.00)														
Leverage	0.62***	0.41***	-0.11***	0.03***	1.00												
	(0.00)	(0.00)	(0.00)	(0.00)													
Size	-0.11***	-0.19***	0.13***	-0.09***	0.03***	1.00											
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)												
B/M	0.43***	0.42***	-0.40***	-0.04***	0.15***	-0.16***	1.00										
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)											
Analyst	-0.18***	-0.22***	0.18***	0.06***	0.03***	0.40***	-0.19***	1.00									
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)										
Return	-0.09***	-0.07***	0.22***	-0.01**	-0.09***	0.04***	-0.41***	-0.03***	1.00								
	(0.00)	(0.00)	(0.00)	(0.05)	(0.00)	(0.00)	(0.00)	(0.00)									
SSC	0.04***	-0.01	-0.03***	0.29***	0.09***	0.03***	0.07***	-0.04***	-0.08***	1.00							
	(0.00)	(0.14)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)								
IVOL	-0.05***	0.03***	-0.11***	0.04***	-0.16***	-0.23***	0.07***	-0.23***	0.05***	0.03***	1.00						
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)							
NOA	0.56***	0.41***	-0.12***	-0.07***	0.82***	0.01	0.18***	-0.04***	-0.11***	0.12***	-0.18***	1.00					
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.45)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)						
Big-5	0.02***	-0.01	0.04***	0.01	0.08***	0.09***	-0.05***	0.13***	0.00	-0.07***	-0.05***	0.03***	1.00				
	(0.00)	(0.12)	(0.00)	(0.20)	(0.00)	(0.00)	(0.00)	(0.00)	(0.83)	(0.00)	(0.00)	(0.00)					
IO	-0.05***	-0.34***	0.01	0.41***	0.01	-0.10***	-0.13***	0.27***	0.05***	-0.36***	-0.16***	-0.11***	0.12***	1.00			
	(0.00)	(0.00)	(0.12)	(0.00)	(0.38)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)				
Turnover	-0.14***	-0.27***	-0.02**	0.45***	-0.11***	0.00	-0.07***	0.19***	0.09***	-0.07***	0.28***	-0.28***	0.06***	0.30***	1.00		
	(0.00)	(0.00)	(0.02)	(0.00)	(0.00)	(0.50)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)			
Dividend yield	0.06***	0.03***	0.04***	-0.08***	0.15***	0.29***	0.04***	0.13***	-0.11***	0.11***	-0.36***	0.17***	0.06***	-0.13***	-0.17***	1.00	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
Return volatility	-0.01	0.16***	-0.11***	0.00	-0.08***	-0.24***	0.19***	-0.21***	-0.03***	-0.03***	0.64***	-0.11***	-0.03***	-0.14***	0.34***	-0.32***	1.00
	(0.30)	(0.00)	(0.00)	(0.94)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	

This table presents correlation matrix between primary variables of interest. All continuous variables are winsorized at the 99% and 1% levels. All the variables are as described in Table 2.6.

Table 2.3: The role of conditional conservatism in the reduction of equity overvaluation

VARIABLES	(1) Model-1	(2) Model-2	(3) Model-3	(4) Model-4
ACT	**-0.117*** **	**-0.055*** **	**-0.030*** **	**-0.032*** **
	(-17.737)	(-9.178)	(-6.297)	(-6.282)
Leverage		0.059	0.170	0.153
		(0.340)	(0.943)	(0.824)
Log(Size)		0.100***	-0.240***	-0.253***
		(7.042)	(-6.545)	(-6.219)
B/M		-0.663***	-0.488***	-0.472***
		(-16.282)	(-10.016)	(-9.038)
Log(1+analyst)		0.050*	-0.032	-0.019
		(1.652)	(-0.938)	(-0.532)
Return		0.156	0.226***	0.229***
		(8.44)	(13.026)	(12.309)
SSC		0.143**	-0.106*	-0.124**
		(2.393)	(-1.763)	(-2.057)
IVOL		-5.351***	-2.308*	-3.923**
		(-4.977)	(-1.702)	(-2.531)
NOA		-0.062	-0.225*	-0.210
		(-0.532)	(-1.783)	(-1.637)
Big-5		0.005	-0.152**	-0.193***
		(0.131)	(-2.485)	(-3.008)
Observations	19,012	19,012	18,246	18,083
Adjusted R-squared	0.139	0.256	0.575	0.582
Year FE	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	No	No
Firm FE	No	No	Yes	Yes
Industry x Year FE	No	No	No	Yes

This table reports the results for the estimation of *Eq.*(2.5). The dependent variable is a proxy of equity overvaluation (P/V). All the other variables are as described in Table 2.6. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 2.4: The role of conditional conservatism in the reduction of sustained duration of equity overvaluation

VARIABLES	(1) Overvaluation (1)	(2) Overvaluation (2)	(3) Overvaluation (>2)	(4) Hazard Model
ACT	**-0.003****	**-0.005*****	**-0.008*****	**0.074*****
	(-2.428)	(-5.735)	(-5.081)	(5.878)
Leverage	0.076*	0.074**	0.001	0.375
	(1.749)	(2.497)	(0.013)	(1.265)
Log(Size)	-0.020***	-0.017***	0.032***	-0.092***
	(-3.145)	(-3.777)	(3.385)	(-3.368)
B/M	-0.043***	-0.022***	0.012	0.706***
	(-4.068)	(-3.644)	(1.006)	(5.975)
Log(1+analyst)	-0.040***	-0.006	0.020**	-0.197***
	(-4.926)	(-1.137)	(2.139)	(-3.285)
Return	0.027***	0.009***	0.004	0.006
	(6.414)	(3.054)	(1.188)	(0.214)
SSC	-0.003	-0.019*	0.007	0.158
	(-0.195)	(-1.837)	(0.389)	(1.350)
IVOL	0.910***	0.205	-0.574*	13.176***
	(2.790)	(1.070)	(-1.774)	(6.548)
NOA	-0.031	-0.057***	0.032	-0.319*
	(-1.040)	(-2.961)	(0.880)	(-1.787)
Big-5	-0.026*	-0.014	-0.011	-0.019
	(-1.752)	(-1.603)	(-0.713)	(-0.179)
Observations	18,246	18,246	18,246	4,604
Adjusted R-squared	0.018	-0.008	0.406	
Year FE	Yes	Yes	Yes	No
Firm FE	Yes	Yes	Yes	No
Industry FE	No	No	No	Yes

This table reports the results for the estimation of *Eq.*(2.5). The dependent variables are dummy variables representing the number of consecutive years that a firm has been in the top quartile of P/V from one to a maximum of three years (or more). All the other variables are as described in Table 2.6. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 2.5: The role of conditional conservatism in the reduction of abnormal short interest

VARIABLES	Model-1	Model-2	Model-3	Model-4
ACT	**-0.001*** **	**-0.001*** **	**-0.001*** **	**-0.001*** **
	(-4.990)	(-4.368)	(-4.499)	(-3.741)
Leverage	0.025***	0.025***	0.032***	0.029***
	(4.291)	(4.291)	(5.717)	(4.276)
Dividend yield	0.234***	0.227***	0.216***	0.271***
	(4.165)	(4.164)	(3.834)	(3.698)
Return volatility	-0.008***	-0.008***	-0.002	-0.003
	(-3.361)	(-3.578)	(-0.966)	(-1.139)
Log(1+analyst)	0.004***	0.003**	0.003***	0.004***
	(3.579)	(2.529)	(3.234)	(3.057)
NOA	0.011***	0.011***	0.005	0.006
	(2.654)	(2.890)	(1.144)	(1.102)
Big-5	-0.002	-0.002	-0.002	-0.003
	(-0.981)	(-0.974)	(-1.085)	(-0.902)
IO	0.072***	0.069***		
	(15.641)	(15.701)		
Turnover	0.075***	0.072***		
	(13.618)	(13.559)		
Log(Size)	-0.005***			
	(-4.174)			
B/M	-0.001			
	(-0.639)			
Return	-0.001			
	(-1.332)			
Observations	18,246	18,246	18,246	11,835
Adjusted R-squared	0.677	0.689	0.685	0.692
Year FE	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
First-step regressors	No	Yes	Yes	Yes

This table reports the results for the estimation of *Eq.*(2.8). The dependent variable is raw short interest. Column (1) does not include first-step regressors *Eq.*(2.6). Column (2) includes first-step regressors (i.e., size, book-to-market and momentum) interacted with two-digit SIC industry. Column (3) includes first-step regressors (i.e., size, book-to-market, momentum, turnover and institutional ownership) interacted with two-digit SIC industry. Column (4) includes first-step regressors (i.e., size, book-to-market, momentum, turnover and institutional ownership, accruals and insiders selling) interacted with two-digit SIC industry. All the variables are as described in Table 2.6. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 2.6: Five-day cumulative abnormal return surrounding earnings announcement

	Earnings Surprise				
VARIABLES	-1	0	1	t-Stat 1 minus (-1)	All firms
Low Conservatism	-0.012	-0.008	0.009^{a}	6.89***	0.005
High Conservatism	-0.004^{b}	0.006	0.005	2.40**	0.008
Total	-0.009	-0.003	0.008	8.53***	
t-stat High - low	2.05**		-1.17		2.85***
t-stat a - b	3.5***				

Table values are cumulative abnormal returns for firms with high or low conditional conservatism. Firms are ranked as "high" ("low") in conditional conservatism if firm-year $CSCORE$ is in the third (first) tercile among all firms. Earnings surprises are defined as those that narrowly miss the target by not more than one cent (-1); that just meet the target (0) or narrowly meet the target by not more than one cent (1). CARs are 5-day cumulative returns surrounding the earnings announcement date estimated using market-adjusted model. ***, **, * denote statistical significance at 1%, 5% and 10% levels.

Table 2.7: Future Stock performance for missers with high and low conditional conservatism

Panel A: Buy-and-Hold Abnormal Returns (BHARs)

		Equal-Weighted		Value-Weighted	
Days		BHAR	Standard p-value	BHAR	Standard p-value
15	Low	-1.60	0.46	-5.06	0.00
	High	0.99	0.20	-0.48	0.46
	Difference	-2.59	0.26	-4.58	0.00
30	Low	-1.95	0.08	-2.63	0.00
	High	0.36	0.53	-1.07	0.02
	Difference	-2.31	0.07	-1.56	0.06
45	Low	-5.01	0.00	-3.68	0.00
	High	-1.21	0.08	-1.77	0.00
	Difference	-3.81	0.00	-1.91	0.03
60	Low	-5.88	0.00	-4.25	0.00
	High	-1.93	0.01	0.62	0.32
	Difference	-3.96	0.00	-4.86	0.00

Panel B: Cumulative Abnormal Returns (CARs)

		Equal-Weighted		Value-Weighted	
Days		CAR	Standard p-value	CAR	Standard p-value
15	Low	-1.21	0.42	-3.70	0.00
	High	0.60	0.32	0.55	0.38
	Difference	-1.81	0.26	-4.25	0.00
30	Low	-1.71	0.03	-3.28	0.00
	High	-0.01	0.98	-0.86	0.07
	Difference	-1.70	0.07	-2.42	0.00
45	Low	-4.11	0.00	-4.12	0.00
	High	-1.53	0.01	-1.68	0.00
	Difference	-2.58	0.01	-2.44	0.00
60	Low	-4.48	0.00	-4.52	0.00
	High	-2.44	0.00	-0.39	0.48
	Difference	-2.04	0.04	-4.14	0.00

This table reports buy-and-hold (BHAR) and cumulative abnormal returns (CAR) (both in percentage points) for firms with high and low levels of conditional conservatism that miss consensus forecast by as much as one penny. Firms are ranked as "high" ("low") in conditional conservatism if firm-year $CSCORE$ is in the third (first) tercile among all firms. Missers are defined as those that narrowly miss the target by not more than one cent (-1). Returns are compounded 15, 30, 45 and 60 days after the announcement of earnings. ***, **, * denote statistical significance at 1%, 5% and 10% levels.

Table 2.8: Calendar-Time Regressions of Portfolios Formed on firms with high and low conservatism that miss analysts' consensus forecast

	Low Cons.		High Cons.		Hedge	
	Estimate	*p*-Value	Estimate	*p*-Value	Estimate	*p*-Value
Panel A: Calender-Time Regressions - Days 1 through 30						
			Equal-Weighted			
Alpha	-0.03	0.43	0.09	0.09	-0.12	0.08
Mktret	0.94	0.00	1.05	0.00	-0.11	0.14
Smb	0.55	0.00	0.65	0.00	-0.10	0.46
Hml	-0.07	0.49	0.25	0.18	-0.33	0.13
$Adj.R^2$	0.52		0.53			0.01
			Value-Weighted			
Alpha	0.02	0.67	0.10	0.06	-0.08	0.31
Mktret	0.97	0.00	0.98	0.00	-0.01	0.92
Smb	0.29	0.02	0.31	0.02	-0.01	0.94
Hml	-0.24	0.19	0.25	0.18	-0.49	0.04
$Adj.R^2$	0.67		0.59			0.01
Panel B: Calender-Time Regressions - Days 1 through 60						
			Equal-Weighted			
Alpha	0.01	0.55	0.08	0.01	-0.07	0.06
Mktret	1.00	0.00	0.92	0.00	0.08	0.07
Smb	0.44	0.00	0.62	0.00	-0.18	0.03
Hml	0.03	0.57	0.42	0.00	-0.39	0.00
$Adj.R^2$	0.59		0.53			0.07
			Value-Weighted			
Alpha	0.05	0.10	0.07	0.02	-0.02	0.65
Mktret	0.97	0.00	0.88	0.00	0.09	0.10
Smb	0.02	0.73	0.44	0.00	-0.42	0.00
Hml	-0.25	0.00	0.29	0.00	-0.54	0.00
$Adj.R^2$	0.76		0.63			0.05

This table reports calendar-time regressions of portfolios formed on firms with high and low levels of conditional conservatism that miss analysts' consensus forecasts. Firms are ranked as "high" ("low") in conditional conservatism if firm-year $CSCORE$ is in the third (first) tercile among all firms. Missers are defined as those that narrowly miss the target by not more than one cent (-1). The performance differences are between missers that is captured within 1 to 30 an 1 to 60 days following earnings announcement. *p*-values are reported using White (1980)-adjusted standard errors.

Table 2.9: Conditional conservatism surrounding the introduction of SFAS 121

VARIABLES	C_Score	Basu Model	Earnings/P
$\boldsymbol{SFAS_{121}}$	**0.020*****	D	0.007
	(3.528)		(1.163)
Leverage	0.413***	RET	0.057***
	(10.592)		(7.923)
Log(Size)	-0.010	$\boldsymbol{D \times RET}$	**0.115*****
	(-1.368)		(5.608)
B/M	0.427***	SFAS	0.001
	(20.720)		(0.291)
Log(1+analyst)	0.018**	$D \times SFAS_{121}$	0.009*
	(2.295)		(1.686)
Bid-Ask Spread	0.002	$RET \times SFAS_{121}$	-0.017**
	(0.791)		(-2.409)
ROA	0.019	$\boldsymbol{D \times RET \times SFAS_{121}}$	**0.054*****
	(0.436)		(2.793)
$\Delta Sale$	0.018**	M/B_{t-1}	0.004***
	(2.197)		(4.371)
Oper.Cycle	0.009	$D \times M/B_{t-1}$	-0.001
	(0.800)		(-1.146)
NOA	-0.005	$RET \times M/B_{t-1}$	-0.002
	(-0.208)		(-1.574)
Big-5	0.003	$\boldsymbol{D \times RET \times M/B_{t-1}}$	**-0.017*****
	(0.405)		(-5.207)
IO	-0.074***		
	(-2.982)		
Altman-Z	0.002**		
	(2.351)		
Observations	4,352	Observations	11,152
Adjusted R-squared	0.724	Adjusted R-squared	0.322
Firm FE	Yes	Firm FE	Yes

This table reports the results for the estimation of the SFAS-121 effect on the level of conditional conservatism. The sample is restricted to 1992 - 1999 window. C_score is the Ball and Shivakumar 2005 firm-year proxy of conditional conservatism as estimated in $Eq.$(2.2). $Earnings/P$ is income before extraordinary items scaled by lagged market value of equity. $SFAS_{121}$ is equal to one for fiscal years starting after December 15, 1995, zero otherwise. D is an indicator variable equal to one if RET is negative, zero otherwise. RET is market-adjusted buy-and-hold return over the fiscal year. All the variables are as described in Table 2.6. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 2.10: Effect of the exogenous increase in conditional conservatism on equity overvaluation and short interest

VARIABLES	(1) P/V	(2) SI
$\boldsymbol{Treated \times SFAS_{121}}$	**-0.025****	**-0.001*****
	(-2.441)	(-2.656)
Log(Size)	0.046	0.000
	(0.579)	(0.299)
Leverage	0.088	0.016***
	(0.215)	(2.604)
B/M	-0.189*	-0.000
	(-1.811)	(-0.222)
Return	0.050	-0.001**
	(1.386)	(-2.184)
Log(1+analyst)	-0.135**	0.002
	(-1.966)	(1.353)
NOA	0.041	-0.005
	(0.113)	(-1.195)
Big-5	-0.015	0.003
	(-0.157)	(1.152)
SSC	-0.127	
	(-0.940)	
IVOL	-2.416	
	(-0.596)	
Dividend yield		-0.085
		(-0.734)
Turnover		0.005
		(0.500)
IO		0.019***
		(3.094)
Return volatility		0.005
		(1.624)
Observations	3,932	4,055
Adjusted R-squared	0.697	0.620
Year FE	Yes	Yes
Firm FE	Yes	Yes

This table reports the results for the estimation of *Eq.*(2.11). All the variables are as described in Table 2.6. Columns (1) and (2) present estimation of *Eq.*(2.11) for actual realization date of SFAS - 121 (December 15, 1995). All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 2.11: The role of conditional conservatism in the reduction of equity overvaluation and short selling activity during SHO Regulation and SFAS 131

VARIABLES	(1) P/V	(2) SI	(3) P/V	(4) SI
CO_P	-0.042***	-0.001*		
	(-2.849)	(-1.665)		
DURING_CONS_P	**-0.001**	**-0.001***		
	(-0.029)	(-1.947)		
DURING_P	-0.156	0.013***		
	(-1.297)	(2.930)		
CO_NP	-0.038***	-0.001**		
	(-2.877)	(-2.151)		
DURING_CONS_NP	0.009	0.001**		
	(0.657)	(2.159)		
DURING_NP	-0.192**	-0.002		
	(-2.206)	(-0.567)		
SFAS_131			-0.611***	-0.001
			(-5.485)	(-0.688)
CONS_96			-0.140***	0.001**
			(-8.648)	(2.488)
SFAS_131 × CONS_96			**0.075*** **	**0.000**
			(4.762)	(0.233)
Leverage	-0.315	0.037***	0.251	0.010*
	(-1.225)	(2.811)	(0.695)	(1.944)
Log(Size)	0.089***	-0.011***	0.344***	0.002***
	(3.102)	(-9.071)	(11.154)	(5.985)
B/M	-0.910***	-0.013***	-0.391***	0.004**
	(-8.863)	(-3.000)	(-5.235)	(2.432)
Log(1+analyst)	-0.042	0.010***	-0.154***	0.002**
	(-0.742)	(4.217)	(-2.689)	(2.305)
NOA	0.164	-0.017**	-0.349	0.008***
	(0.923)	(-2.133)	(-1.347)	(2.765)
Big-5	0.023	-0.010**	0.054	0.000
	(0.229)	(-2.121)	(0.636)	(0.210)
Return	-0.092		-0.099***	
	(-1.402)		(-2.691)	
SSC	0.436***		-0.242**	
	(3.023)		(-2.119)	
IVOL	-6.489***		-5.578**	
	(-3.309)		(-2.473)	
IO		0.121***		0.010***
		(16.601)		(3.552)
Dividend yield		0.084		-0.042
		(0.721)		(-0.839)
Return volatility		0.082***		0.004*
		(11.512)		(1.664)
$p-val.$ DURING_P+DURING_CONS_P	0.13	0.00		
$p-val.$ SFAS_131 + $SFAS\_131 \times CONS\_96$			0.00	0.45
Observations	3,130	3,182	5,047	5,199
Adjusted R-squared	0.167	0.373	0.326	0.126
Industry FE	Yes	Yes	Yes	Yes

This table reports the results for the estimation of *Eq.*(2.12), (2.13), (2.14), (2.15). The dependent variable is a proxy of equity overvaluation (P/V) and short-selling activity. All the other variables are as described in Table 2.6 and in Section 2.5.4. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 2.12: Stock returns during the burst of the Dot-Com bubble and conditional conservatism

Panel A: Average P/V within quintiles of C_score measure

Quintile - CSCORE	1	2	3	4	5
Mean	2.658	1.923	1.625	1.480	1.020
Difference	0.736	0.298	0.144	0.461	
p-value	0.00	0.03	0.19	0.00	

Panel B: Pre-crisis level of conservatism and stock returns

	Model-1	Model-2	Model-3
DOT_COM	**-0.115*** **	**-0.116*** **	**-0.115*** **
	(-21.515)	(-15.272)	(-15.101)
ACT_5 × DOT_COM	**0.007*** **	**0.007*** **	**0.007*** **
	(8.884)	(5.798)	(5.530)
Log(Size)		-0.048***	-0.048***
		(-16.097)	(-15.946)
LT Debt		0.020	0.021
		(0.922)	(0.992)
ST Debt		0.021	0.017
		(0.630)	(0.525)
Profitability		0.147***	0.147***
		(5.324)	(5.339)
B/M		0.053***	0.054***
		(8.843)	(9.142)
Cash		0.033**	0.034**
		(2.297)	(2.421)
Negative B/M		0.019	0.021
		(1.323)	(1.442)
Momentum		0.011***	0.010***
		(6.998)	(6.275)
IVOL		-0.216***	-0.095
		(-2.630)	(-1.080)
Constant	0.044***	0.266***	0.292***
	(39.463)	(15.186)	(15.956)
Observations	48,638	36,210	36,210
Adjusted R-squared	0.017	0.048	0.050
Four-factor loadings	No	No	Yes
Firm FE	Yes	Yes	Yes

This table reports the results for the estimation of the effect of conditional conservatism on high-tech firms' stock performance during the Dot-Com bubble. Panel A presents univariate analysis of the means of P/V proxy within quintile s of average conservatism over Dot-Com bubble period (1995-1999). Panel B presents the results of the following regression:

$$Return_{i,t} = \beta_1 DOT\_COM_{i,t} + \beta_2 ACT\_5_i \times DOT\_COM_{i,t} + \beta_3 Controls_{i,t-1} + \epsilon_{i,t},$$

where *Return* is monthly stock return. *DOT_COM* is an indicator variable equal to one for months between March 2000 and October 2002, zero otherwise. *ACT_5* is a decile of five year average of C_score (over 1995-1999) estimated in the last fiscal year before the beginning of the Dot-Com bubble (1999). *Controls* is a set of control variables that are updated on a quarterly basis and are lagged one quarter. The model is estimated from August 1997 till October 2002. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 2.13: The role of conditional conservatism in the reduction of equity overvaluation and short selling

VARIABLES	(1) P/V	(2) SI	(3) P/V	(4) SI
ACT_Banker	-0.023***	-0.001***		
	(-4.611)	(-4.190)		
ACT			-0.097***	-0.001**
			(-4.609)	(-2.692)
Firm Characteristics	Yes	Yes	Yes	Yes
Observations	13,774	13,774	19,013	19,013
Adjusted R-squared	0.608	0.689	0.260	0.279
Year FE	Yes	Yes	No	No
Firm FE	Yes	Yes	No	No

This table reports the results for the estimation of *Eq.*(2.5). The dependent variable is a proxy of equity overvaluation (P/V). In Column (1) and (2) ACT_Banker is estimated as in *Eq.*(2.1) augmented with cost stickiness measures as in Banker et al. (2016). The proxy is an annual decile of Banker et al. (2016). Column (3) and (4) present average estimates of *Eq.*(2.5) using Fama and MacBeth (1973) regression slopes. The standard errors are Newey-West-adjusted with one annual lag. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Internet Appendix

Table 2.1: Means of selected characteristics of CSCORE deciles (ACT)

ACT	CSCORE	ROA	M/B	Log(Size)	Leverage	Bid-Ask Spread
1	0.01	0.09	5.43	7.84	0.05	0.57
2	0.05	0.07	3.95	7.24	0.07	0.69
3	0.08	0.06	3.43	7.12	0.09	0.77
4	0.10	0.06	3.14	7.03	0.12	0.82
5	0.13	0.05	2.93	7.05	0.15	0.87
6	0.15	0.04	2.79	7.05	0.19	0.93
7	0.18	0.04	2.53	7.04	0.23	0.96
8	0.21	0.03	2.24	6.91	0.26	1.05
9	0.26	0.02	2.20	6.65	0.30	1.21
10	0.36	0.00	1.96	6.03	0.39	1.59
Rank Correlation	0.65	-0.39	-0.46	-0.19	0.63	0.12
Predicted Sign	(+)	(-)	(-)	(-)	(+)	(+)

This table shows means of selected characteristics of CSCORE deciles (ACT). All the variables are as described in Table 2.6. All continuous variables are winsorized at the 99% and 1% levels. ***, **, * denote statistical significance at 1%, 5% and 10% levels.

Chapter 3

The Benefits of Balance Sheet Conservatism: Evidence form the Financial Crisis

3.1 Introduction

Firms' balance sheet plays a crucial role in the dissemination of business cycle shocks (e.g. Bernanke and Gertler 1989; Kiyotaki and Moore 1997) and balance-sheet asset-informativeness is beneficial for financial statement users (Chen et al. 2019). In times of crisis, investors are more likely to spot weaknesses in accounting quality compared to good times when there are more investment opportunities (Mitton 2002). This is especially relevant as market prices are affected by limited investors' attention and processing power (e.g. Daniel et al. 2002; Hirshleifer and Teoh 2003; Hirshleifer et al. 2004). As such, investors with limited attention tend to overvalue firms with "bloated" balance sheets (Hirshleifer et al. 2004). However, preserving positive firms' performance through biased earnings might be especially problematic when balance sheets are bloated (Barton and Simko 2002). Given this, reducing accounting bloat (i.e., having higher balance sheet conservatism) might be beneficial during periods of increased demand for reliable lower-bound estimates of net assets and increased investors' attention. Thus, to study

the importance of firms' balance sheet conservatism (here and after, BSC), I analyze the setting of the recent financial crisis. This period is particularly interesting as it characterized by a significant credit crunch (e.g.Duchin et al. (2010) and Ivashina and Scharfstein (2010)) and overall decline in trust (Tonkiss 2009; Sapienza and Zingales 2012) that translated into increased investors' attention (Plantin et al. 2008; Goh et al. 2015). Overall, this study aims to answer two questions. First, analyze what kind of BSC-properties helped firms to benefit during the crisis. Second, study whether firms with higher pre-crisis BSC experienced lower stock price declines and better real economic performance during the crisis.

BSC represents a cumulative effect of past conservative accounting choices. In particular, it results from both conditional and unconditional conservatism. Unconditional (conditional) conservatism refers to persistent (i.e., news independent) understatement of net assets (timely recognition of negative information) that creates unrecognized goodwill. Jointly, this results in net assets that proxy for liquidation values (Beaver and Ryan 2005) and reduced amount of funds distributable to contracting parties. BSC has been largely critiqued in light of its reporting properties, mainly arising from uconditional conservatism. In particular, given its understatement of net assets, it is regarded as an accumulation of hidden reserves (Penman and Zhang 2002) that fosters opportunistic managerial endeavor (Basu 2005a), a bias of unknown magnitude in the financial statement (Ball and Shivakumar 2005), and an income increasing mechanism (Ball et al. 2000; Jackson and Liu 2010). Overall, balance sheet conservatism credibly signals lower bound estimates in net asset values. This stays in contrast to the tendency of a delay in bad news recognition that might lead to accumulation of overstated net assets, due to lack of timely impairments and write-offs. Given the aforementioned properties of BSC, I propose two main roles of BSC - informational and cushioning, that helped firms to benefit from BSC during the financial crisis.

The informational role of BSC refers to the relative importance of hard information to market participants. Given increased vulnerability of firms' and investors' attention on accounting quality during the crisis, market participants are more likely to

require hard information. Provided that BSC-firms transmit reliable information on lower bound estimates of net asset values (i.e., collateral value of the assets), BSC is expected to serve as a bonding mechanism to lenders by providing contractual information (Sunder et al. 2018). Thus, lenders would be less reluctant to provide favorable financing terms (i.e., lower cost of debt) to BSC-firms (Sunder et al. 2018). This is in line with Duffie and Lando (2001) who document that under periodic and imperfect accounting reports there is higher uncertainty of debt issuers' net asset values that increases transparency spread and risk assessments of credit rating agencies. Therefore, maintaining more reliable lower bound estimates through BSC resolves uncertainty and reduces net assets bloat. Overall, BSC is expected to facilitate access to capital and debt renegotiation that helps firms to overcome liquidity needs and prevents bankruptcy filings (Giammarino 1989). This is especially important since the crisis was accompanied by a significant credit crunch (Ivashina and Scharfstein 2010).

On the cushioning side,[1] BSC promotes the accumulation of "reserves" during good times that can be released in bad times (i.e., Jackson and Liu 2010). In particular, BSC creates a buffer that limits subsequent recording of losses (Roychowdhury and Watts 2007). This feature might be especially beneficial in crisis times (that is characterized by a significant fall in profits (e.g. Kim and Yi 2006), since it allows to use accumulated buffer to smooth earnings shocks, avoid covenant violations and retain higher investors' valuation. Additionally, by providing reliable lower bound estimates of accounting numbers, BSC-firms enter unfavorable economic periods with *ex-ante* impaired assets and lower likelihood of equity overvaluation (Mashruwala and Mashruwala 2018b).[2] This is associated with lower probability of assets write-downs and subsequent stock price declines.

Overall, given the informational and cushioning roles of BSC, I hypothesize that BSC-firms experienced lower stock declines during the financial crisis. The main

[1]This is also refereed to as creation of 'cookie jar' reserves. These reserves provide opportunities for earnings management that can be used to artificially increase earnings when past understatements reverse (Ball et al. 2000; Jackson and Liu 2010).

[2]Penman and Zhang (2002) documents that investors undervalue firms with conservative accounting (Q-score)

mechanisms underpinning better performance are i) access to lower cost of debt financing, ii) lower likelihood of significant assets write-downs, iii) lower earnings volatility, and iv) lower likelihood of covenant violation.

I test these predictions on a large sample of U.S. firms. Overall, the results suggest that BSC plays a crucial role in the transmission of negative consequences attributable to credit supply shock and a decline in overall trust during financial crises. The main model under consideration controls for firm fixed effects and captures the difference in performance before, during and after the crisis where BSC and all the controls are measured at the onset of the crisis. I estimate BSC by extracting accounting bloat from book-to-market ratio and as a robustness provide additional proxies of BSC. First, I start with the analyses of informational and cushioning roles of BSC. On the informational side, I document that firms with higher pre-crisis BSC had lower cost of debt financing during the crisis both from bank loans and from primary bond market. Additionally, these firms issued more debt, but not equity. On the cushioning side, I document that BSC-firms had lower probability of experiencing significant assets write-downs (i.e., taking a "bath"). Additionally, I document that BSC-firms were able to reduce earnings volatility and had lower probability of covenant violation. Second, I estimate whether firms benefited from BSC during the crisis (i.e., experienced lower stock price drops and had better real economic outcomes). Regression estimates indicate that BSC firms experienced lower stock price drops. To get a better sense of the economic magnitude of pre-crisis BSC on firm performance, firms in the fourth quartile of BSC outperformed firms in the lowest quartile of BSC by 6.3 (14.1) percentage points in raw (abnormal) returns. This result is not driven by time-invariant unobservable firm characteristics. I proxy for firm-performance using both market- and accounting-based performance measures. Given the divergence in returns between high- and low-BSC firms, it may be concluded that the crisis was largely unanticipated. Additionally, a hedge portfolio of going long on high BSC-firms and shorting low BSC-firms earns excess returns of 112 basis points per month. Finally, I study the setting of the Great Depression and document that firms with higher balance sheet conservatism performed better within the first two years of the crisis.

Next, I explore the causes behind the outperformance of firms with high BSC. Given that financial constraints impair firm's ability to gain access to financing, firms are faced with a trade-off - long-term optimization (cut on investment, restructuring of employment contracts, etc.) and short-term liquidity needs. As discussed above, high BSC firms are expected to be less financially constrained and more able to raise debt during the liquidity shock of the crisis. To test this, I analyze actions taken by firms related to investment, labor practices and productivity. On the investment side, I document that low BSC-firms cut more on investment during the crisis. Further, I analyze whether high BSC-firms' better performance is not driven by labor cost reductions. The results indicate that high BSC-firms experienced higher employment. In addition, high BSC-firms maintained higher productivity. Next, I test whether pre-crisis level of BSC translated into lower riskiness during the crisis. I report that high BSC-firms had less volatile stock returns, higher credit rating and lower distance to default. This is particularly important in light of the financial crisis, where the issue of bankruptcy along supply chains and industries was prevalent.

Finally, I ensure that the results hold for alternative proxies of BSC. First, I follow Beaver and Ryan (2000, 2005). Second, I construct an index of firms' conservative reporting of asset values, conditional and unconditional conservatism using principal component analysis. The results stay in line with the main findings. Additionally, I control for the pre-crisis level of financial reporting quality (FRQ). I document that FRQ is also positively associated with firm performance during the crisis.

Overall, I assume that the financial crisis occurred exogenously (at least with regards to any particular firm) (e.g. Almeida et al. 2012; Campello et al. 2010; Duchin et al. 2010; Chodorow-Reich 2014) and use this setting to study corporate performance given firms' heterogeneity in pre-crisis balance sheet quality (i.e., BSC). The exogenous shock is expected to alter the equilibrium in the market, while BSC is kept constant over the period under consideration. Particularly, to overcome the inferences that BSC is endogenous to unobserved variation in firm performance, I employ the following research design. First, I measure BSC prior to the beginning of the crisis, while all the control

variables are measured at the fourth quarter of 2006. This allows to treat BSC as an instrumental variable with the assumption that pre-crisis BSC is not correlated with unobservable firm performance measures during the financial crisis. Second, I use placebo crisis periods to ensure that the results hold only during the crisis. Third, I use both accounting- and market-based performance measures. Fourth, the main results continue to hold when I measure BSC in 2005, 2004 and 2003. Fifth, I use propensity score matching to ensure balanced distribution of covariates in treated and control groups. Finally, I control for firms past productivity, investment and profitability to ensure that the results are not driven by BSC-firms' heterogeneity besides financial reporting quality.

Collectively, the results of the study make several contributions to the literature. First, I add to the literature analyzing the real effect of the crisis on the corporate sector (e.g. Tong and Wei 2008; Campello et al. 2010; Duchin et al. 2010; Almeida et al. 2012; Chodorow-Reich 2014). I present a possible mechanism (i.e., BSC) that helped firms to limit the negative consequences of the crisis. Second, I add to the literature studying the role of financial reporting (FR) (particularly conservatism) during the financial crisis (Francis et al. 2013; Balakrishnan et al. 2016) and its role in mitigating negative effects of crises (Mitton 2002; Barton and Waymire 2004; Hilary 2008). I present a cumulative effect of past conservative practices on balance sheet and its main mechanisms through which firms benefited during the crisis. Third, I add to the literature that focuses on the negative side of BSC (Ball et al. 2000; Ball and Shivakumar 2005; Basu 2005a; Jackson and Liu 2010), by presenting unexplored benefits of BSC that help to ameliorate negative consequences of the crisis. Fourth, I document an opposing view to the litature showing that BSC is contracting neutral (Basu 2005b), is unrelated to debt market, has no role in creditor protection (Ball et al. 2008) and can reduce contracting efficiency (Ball and Shivakumar 2005; Guay and Verrecchia 2007; Gigler et al. 2009). I present that lenders view BSC as contracting efficient (in line with Sunder et al. 2018) and that under the credit crunch conditions, BSC benefits both debt- and shareholders. Finally, I propose an additional proxy for measuring BSC (Beaver and Ryan 2000, 2005; Sunder et al. 2018). Overall, BSC might be regarded as a useful accounting tool for both shareholders and

debtholders under the times of a severe financial turmoil.

The remainder of the paper is organized as follows. Section 2 outlines literature review. Section 3 presents research design and describes the data used. Sections 4 presents main results. Sections 5 presents real economic performance of BSC firms. Finally, section 6 provides additional robustness tests and section 7 concludes.

3.2 Literature Review and Hypotheses Development

3.2.1 Properties of Balance Sheet Conservatism

Balance sheet conservatism reflects the cumulative effect of two types of conservatism (i.e., conditional (CCONS) and unconditional (UCONS)) that results in the understatement of net asset values. It captures the difference between market and book value of recorded assets, where the later is expected to proxy for liquidation values. BSC can result from conservative reporting of assets relative to market value of assets; faster expensing (i.e., UCONS) or assets write-downs due to bad news (that can not be reversed in case of good news).[3]

By understating net assets, BSC creates accounting slack that reduces assets write-downs in case of bad news. For instance, consider a firm with low book value of assets compared to economic value (i.e., BSC-firm). Under the negative shock the firm will not recognize bad news in earnings unless the shock causes the economic value of assets to drop below book value of assets. The opposite is true for a firm with "accounting bloat" (i.e., with book value of assets higher than economic value). This firm will need to recognize assets write-downs that will cause declines in earnings. Moreover, even if BSC-firms suffer a shock that triggers assets write-downs, the magnitude of the write-down would be smaller than for a firm with low BSC (i.e., less accounting slack). An additional property of BSC is that by understating net asset values it improves the quality of the balance sheet by presenting reliable lower bound estimates of accounting numbers.

[3]As one of the examples consider expensing of R&D outlays independent of whether they represent successful innovations or not. Another example is accounting for acquisitions following the pooling of interest method.

Given these reporting properties, a number of scholars critiqued BSC, especially due to unconditional conservatism. Basu (2005b) states that UCONS largely exists to circumvent taxes and regulation and relates it to opportunistic managerial endeavors. Ball and Shivakumar (2005) views UCONS as introducing a bias of unknown magnitude into financial statements that garbles the earnings signal and increases information asymmetry. Additionally, they view it at best as contracting neutral (if the bias is known) and possibly inefficient (if the bias in unknown). Additionally, UCONS leads to potential over-reporting of losses which may never be realized. Penman and Zhang (2002) argue that UCONS leads to hidden reserves that can be released back into earnings in future times that might create incentives for earnings management (Jackson and Liu 2010). I claim that these features might be beneficial during the times of increased distress as UCONS creates a buffer that can be used to increase earnings when past understatements reverse (Ball et al. 2000; Jackson and Liu 2010) and reduces the likelihood of assets write-downs.

3.2.2 The Role of Balance Sheet Conservatism during the Crisis

In good times investors are more likely to pay less attention to the accounting quality of information since there are more investment opportunities (Mitton 2002). In times of crisis investors are more likely to spot weaknesses in accounting quality that might result in a "flight to quality" syndrome (Goh et al. 2015). In other words, investors might either leave the stock market, or move their assets to high-quality firms. This, in turn, results in excessive volatility that does not reflect the true value of underlying assets, which forces investors to downward valuation of such assets (Plantin et al. 2008; Goh et al. 2015). In contrast, firms that preserve balance sheet conservatism signal to investors that the accounting information is reliable and of high quality. Thus, the quality of the balance sheet is expected to be especially important during the crisis time. In a survey study, Cascino et al. (2016) stress on the importance of the balance sheet during crisis times:

> *.... a lot of people don't actually place that much emphasis on these types of numbers, balance sheet numbers, because they are so concerned about profit margins, EBITDA margins, is top line growth still there, and that is the focus.*

> *And then you will look at the cash flow numbers ...* ***[It] is only at extreme times of stress in the market where the balance sheets become important.*** *(Fund manager, UK)*

The main theoretical underpinning of the paper is that BSC helps firms mitigate the negative effect of the financial crisis given its property to reduce accounting bloat in net asset values. Following Biddle et al. (2016), I define two main mechanisms of BSC: informational (i.e., higher contracting efficiency) and cushioning (i.e., accounting slack).

The informational mechanism of BSC is attributable to contracting efficiency. Traditionally, lenders view balance sheet as one of the main sources of financial information. Benston (1969, 1973) state that early U.S. bondholders did not even require the data on earnings or sales. Provided that lenders are more concerned with lower end distribution of the borrower's net assets and that they have asymmetric payoff function of firm value (Townsend 1979; Watts 2003), BSC is expected to act as a bonding mechanism. Göx and Wagenhofer (2009) motivate the use of conservatism under moral hazard problem that arise due to financing needs and a given project's incentives for hidden effort. Considered that BSC signals a lower bound of the collateral value of assets, it results in more credible book values and reduces lenders uncertainty regarding the liquidation value of assets (A. Ahmed et al. 2002; Göx and Wagenhofer 2009). This is more pronounced in the presence of information asymmetry that helps to ameliorate shareholder-debtholder conflicts of interest. This property of BSC serves as ex-ante screening mechanism of borrowers' ability to pay during the life of the loan. Thus, BSC serves as a bonding mechanism to lenders by providing more contractable hard information and by reducing the probability of debtholders' exploitation through paying excessive dividend to shareholders.[4] Moreover, BSC results in timely reporting of bad news in earnings that is valued by lenders. This notion is supported by bond prices quicker reaction to bad news in earnings rather than stock prices (Defond and Zhang 2014). Additionally, BSC benefits debtholders even in case of firm-default. In particular, creditors of firms with higher pre-default level of conservatism have higher recovery rates (Donovan et al. 2015). Overall, consistent con-

[4] "the emergence of the conservatism principle and the preparation of audited financial statements can be ascribed to managerial attempts to bond against exploiting their asymmetrically informed position relative to other claimholders" (Basu 1997)

servative balance sheet reporting might serve as a signal of credible hard information to creditors. In turn, this is expected to reduce the need for costly monitoring that leads to lower cost of debt, less strict covenants, higher covenant slack (Sunder et al. 2018) and higher likelihood of obtaining financing (Gök and Wagenhofer 2009).

The cushioning mechanism is attributable to preservation of cash and other assets through understatement of net income and net assets. In particular, by persistently understating net assets, BSC reduces funds distributable to contracting parties that leads to higher amount of cash retained in the firm. For example, firms that face higher regulatory and political costs might keep their balance sheets more conservative for cost reduction and subsequent cash preservation (Basu 2005b; Qiang 2007a). In this sense, BSC might be considered as income smoothing mechanism that accumulates "reserves" during good times and releases this cushion in bad times (e.g. Levitt 1998; Jackson and Liu 2010).

Additionally, by providing reliable lower bound estimates of accounting numbers, BSC-firms enter unfavorable economic periods with *ex-ante* impaired assets that minimizes the likelihood of assets write-downs that subsequently affect earnings (Roychowdhury and Watts 2007). This is especially important during the crisis times as unfavorable economic conditions lead to stricter impairment rule and are associated with an increase in asset write-offs as the expected profits fall (Johnson et al. 2000, Kim and Yi 2006). For instance, during the crisis both Level 2 and Level 3 fair value accounting involves manipulation by managers that deviates from the true value of assets that results in downward valuation of such assets by investors (Plantin et al. 2008; Goh et al. 2015). Downward valuation of investors might be as a result of equity overvaluation. Given that during the crisis firms are under pressure to report more precise information (Gök and Wagenhofer 2009), mispricing is expected to be corrected causing a fall in price for overvalued equities. BSC diminishes equity overvaluation (Mashruwala and Mashruwala 2018b) and is expected to reduce bad news hoarding that increases equity crash risk (Hutton et al. 2009). Thus, BSC-firms are expected to have lower price drops during the crisis. Overall, given BSC-firms' ability to smooth earnings (i.e., through accumulation of

"buffer") and have lower likelihood of forced asset-impairment, it might be expected that BSC-firms experienced lower stock price drops during the crisis. Particularly, shareholders may place a valuation premium over firms with higher BSC when there is a decline in overall trust in the economy (e.g. Guiso et al. 2008) as was the case during the crisis.

3.2.3 Main Hypotheses

The first hypothesis is based on the properties of BSC. In particular, I identify three main mechanism through with BSC-firms might ameliorate negative consequences of the crisis. First, given that creditors have an asymmetric payoff function of firm value and that they focus on the lower end distribution of the borrower's net assets (Townsend 1979; Watts 2003), BSC is expected to serve as a bonding mechanism providing access to financing during the credit crunch. Second, by accumulating reserves in good times, BSC might let firms to release this cushion in bad times resulting in lower earings volatility (Levitt 1998; Jackson and Liu 2010). Third, the recent recession was accompanied by highly publicized assets write-downs (Spear and Taylor 2011).[5] Given that BSC understates net assets, it creates accounting slack that reduces assets write-downs unless the economic value drops below the book value of assets. In contrast, managers of firms with bloated balance sheets might be forced to write-down assets affecting earnings (Barton and Simko 2002; Haggard et al. 2015). Prakash (2010) documents that firms with bloated balance-sheets are twice more likely to write down assets during recessions compared to expansions. Thus, I expect that firms with less accounting bloat (i.e., higher BSC) are less likely to write-down assets and avoid the associated negative investors' reaction (Francis et al. 1996). Finally, by reducing the probability of assets write-downs and by creation of accounting slack, firms with higher BSC are expected to have lower likelihood of covenant violation. Thus, I test the above mechanisms stated in one hypothesis:

> ***H1:*** *Firms with higher pre-crisis BSC had access to i) lower cost of debt-financing, ii) were able to lower earnings volatility, iii) avoided significant*

[5] In a survey of asset write downs conducted within 32 countries, Ernst&Young (Young 2010) reports that asset write-down charges constituted 9% of net assets of a firm in 2008, compared to 2% in the previous year.

assets write-downs and, iv) were less likely to violate covenants during the crisis

BSC improves the quality of the balance sheet by reliably reflecting lower bound estimates and through the reduction of accounting bloat in net asset values. As was stated above, by presenting lower bound estimates of net assets, BSC prevents wealth transfer from debtholders to shareholders, helps in assessing value of collateral, restricts managers' ability to reduce net asset values and hoard bad news. Additionally, by creating accounting slack BSC is expected to reduce the likelihood of covenant violation and result in *ex-ante* higher covenant slack at the loan inception. This is especially important during crisis times as Chodorow-Reich and Falato (2017) document that borrowers of less healthy banks who violated covenants during the crisis experienced a reduction of loan supply by 11%. This was accompanied by a reduction in employment and investment. Additionally, BSC is expected to decrease equity overvaluation reducing the noise in fundamental values. Thus, BSC is expected to lessen the extent to which stock prices are subject to large declines followed by a market crash. Given these, I expect that BSC-firms experienced lower price drops. The main hypothesis of the study is as follows:

H2: *Firms' pre-crisis level of BSC is positively associated with better stock return performance during the crisis.*

3.3 Research Design and Sample Description

3.3.1 Balance sheet conservatism

To proxy the balance sheet conservatism I start with Sunder et al. (2018) as the main measure.[6] It is measured by the persistent downward bias in book value of equity. In particular, BSC is proxied by the amount of book equity that is equivalent to the economic value. Raw book-to-market (BTM) is a noisy measure of balance sheet conservatism

[6] As a robustness test, I propose two additional measures. First, I construct a proxy for firms' conservative reporting of asset values, unconditional and conditional conservatism. Second, I follow Beaver and Ryan 2000, 2005. The results stay in line with the main findings.

since there are several factors that are likely to affect both book and market value of equity. For instance, market value of equity also captures the value of economic rents and the value of growth options. Hence, there is a need to extract other sources of variation in BTM. In particular, I control for long-term growth forecast and sales growth to account for the expected growth. Industry concentration is expected to capture higher rents that are associated with industry concentration that, in turn, exhibit lower BTM. Market sentiment may result in over- or under-investment of market capitalization in the denominator of BTM. Thus, I control for consumer sentiment (Qui and Welch 2006) and S&P index as a proxy for general level of market prices, given that investors' sentiment is tied to overall market conditions (Rosen 2006). Firm profitability, credit rating and return volatility are used to control for distress. Given that even without conservatism inflation can decrease BTM (Basu 1997), there is a control for the presence of high inflation. Finally, to proxy for the extent of fair value accounting, accumulated other comprehensive income is included.[7] All the variables are estimated given firms' fiscal year end. The main model under consideration is as follows:

$$\begin{aligned} BTM_{i,t} = \alpha &+ \beta_2 LT\ Growth\ Forecast_{i,t} + \beta_2 Sales\ Growth_{i,t} + \beta_3 Industry\ Concentration_{i,t} \\ &+ \beta_4 1/Consumer\ Sentiment\ Index_{i,t} + \beta_5 1/S\&P\ Index_{i,t} + \beta_6 Profitability_{i,t} \\ &+ \beta_7 Credit\ Rating_{i,t} + \beta_8 Return\ Volatility_{i,t} + \beta_9 High\ Inflation_{i,t} + \beta_{10} AOCI_{i,t} \\ &+ \epsilon_{i,t}, \end{aligned} \tag{3.1}$$

where BTM is the book value of assets divided by the market value of equity plus the book value of debt. Long-term growth forecast and sales growth proxy for the expected growth of a firm. Industry concentration controls for the effect of a high rent that results in a lower BTM. $1/Consumer\ SentimentIndex$ is a proxy for market sentiment and $1/S\&P$ accounts for general level of prices that is expected to affect investors' sentiments. $Profitability$, $Credit\ Rating$ and $Return\ Volatility$ are used to control for a distress. $High\ Inflation$ is an indicator variable that controls for inflation. $AOCI$ is calculated as accumulated other comprehensive income scaled by total assets to proxy for the extent

[7] For detailed explanation of variables construction and estimation procedure, please refer to Sunder et al. (2018).

of fair value accounting. *Eq.*(3.1) is estimated with year and industry fixed effects (2-digit SIC). The residual term from *Eq.*(3.1) is the measure of balance sheet conservatism (BSC). To assist in interpretation of results I multiply BSC by -1, so that the higher BSC, the higher is the firm's balance sheet conservatism. Regression results of *Eq.*(3.1) are reported in Internet Appendix Table 3.1.

3.3.2 Research Design

To establish a link between balance sheet conservatism and firms' performance during the financial crisis I estimate variants of the following regression:

$$Y_{i,crisis} = \beta_1 BSC_{i,pre-crisis} + \psi\prime X_{i,pre-crisis} + \omega\prime FE_i + \epsilon_i, \tag{3.2}$$

where subscript i denotes firm. The dependent variable $Y_{i,crisis}$ is one of the variables related to hypotheses testing. For the H_2, $Y_{i,crisis}$ is bank-loans and primary bond issuance spread (I include all banks loans and primary bonds issued within this period), average earnings volatility, probability of covenant violation and experiencing a significant assets write-down (both are dummy variables) during the crisis (July 2007 to March 2009). For the H_1, $Y_{i,crisis}$ is crisis-period buy and hold raw ($RawReturn$) and four-factor model adjusted abnormal ($AbnormalReturn$) returns measured over the period July 2007 to March 2009. $BSC_{i,pre-crisis}$ stands for the measure of balance sheet conservatism that is measured in 2006. $X_{i,pre-crisis}$ is a vector of firm-specific control variables that are measured the last calendar quarter before the year of the beginning of the crisis (2006 Q4). In different model specifications I control for different set of control variables that are discussed below.

3.3.3 Data Sample and Descriptive Statistics

The beginning of the crisis is defined as July 1, 2007 to March 31, 2009 (e.g. Duchin et al. 2010, Ivashina and Scharfstein 2010). Similar to prior literature I exclude financial (SIC 6000-6999) and utility firms (SIC 4900-4999). Accounting information

comes from Compustat quarterly or annual (depending on the research setting). Data on share returns comes from CRSP. Compustat and CRSP datasets are merged using CRSP/Compustat linking table. Information related to private loan issuance is from the Loan Pricing Corporation's (DealScan) database. The data on primary market corporate bonds is from Mergent Fixed Income Securities Database (FISD). I require that firms have non-missing data for BSC and main control variables related to the stock performance during the crisis. However, I do not impose this restriction on the remaining variables to preserve sample size. This results in 1643 firms.

Table 3.1 presents descriptive statistics of primary variables of interest. All the accounting information is measured in the fourth quarter of 2006. The mean of BSC is positive (0.003). Average raw (abnormal return) is -0.51 (0.029) and still strongly negative (positive) for the top sample quartile (quite in line with Lins et al. 2013; Lins et al. 2017). On average, this suggests the negative consequence of the financial crisis. Firms entered a crisis being not highly levered with the mean of $Long-Term\ Debt$ ($Short-Term\ Debt$) equal to 16.4%(2.7%). The average cash-to-assets ratio is around 19% with average gross profitability is 10.2%. The average spread on bank-loans issued during the crisis is around 2% with average total cost of borrowing (TCB) of 1.4%. The average spread on primary bond issuance during the crisis is around 6%. Additionally, more than half of the sample experienced a significant asset write-down (Bath Firm = 51.5%).

Table 3.2 presents the correlation matrix. It is important to note that BSC is positively correlated with crisis-period raw returns (0.17) and abnormal returns (0.9). Additionally, BSC-firms entered the crisis as firms with more cash, higher profitability, lower short-term debt and retained earnings. Further, pre-crisis BSC is negatively correlated with bank-loan spread and total cost of borrowing (AISD = -0.19, TCB = -0.15) and primary bond issuance spread (Offering yield = -0.13). Moreover, the correlation between having experienced a significant asset write-down (Bath firm) and covenant violation during the crisis and pre-crisis BSC is negative and statistically significant, while positive with earnings smoothing proxy. In Section 3.6.1 I perform propensity score matching to

ensure balanced distribution of covariates.

3.4 Empirical Results

3.4.1 Possible Mechanism

In this section, I present the results for the analysis of the main properties of balance sheet conservatism - informational and cushioning.

Informational Role

First, I start with the test of informational side of BSC. In particular, I test whether BSC has contracting and economic relevance in the corporate debt market. In particular, I test whether debt pricing is negatively associated with BSC. I add to the findings of Sunder et al. (2018) by analyzing the period of financial crisis and by studying the relationship between BSC and primary bond issuance spreads.

First, I start with the universe of bank-loan initiations from the DealScan database. Consistent with prior studies, I require dollar-denominated loans borrowed by U.S. firms with the information on spread, maturity, covenant and loan amount. As a measure for the cost of borrowing, I use two measures. First, AISD - all-in-drawn spread that is a payment in basis points over LIBOR (e.g. Anantharaman et al. 2013; Sunder et al. 2018).[8] Second, I use the measure of Berg et al. (2016), total cost of borrowing (TCB), that incorporates different loan-specific options (i.e., a variety of fees that are embedded in loan-specific options) and the likelihood that these options are going to be exercised.[9]

All the regression models include a set of loan and borrowing characteristics

[8]During the crisis period, 656 firms were granted a bank loan. 362 firms were granted only 1 bank loan, while maximum amount of loans that was taken by a firm is 11. It is important to note, that the number of observations in the regression sample is lower than the number of bank loans outstanding as a result of missing observations in the control variables used in the model.

[9]During the crisis period, 150 firms were issued a loan in the primary bond market. 60 firms issued only 1 loan, while maximum amount of loans issued by a firm is 10. It is important to note, that the number of observations in the regression sample is lower than the number of primary loans issued as a result of missing observations in the control variables used in the model.

that are expected to affect cost of borrowing. Following the literature, the loan-level controls include size, maturity, whether the loan has a collateral, has financial covenant, prime base rate, or performance pricing and rating. Borrower-specific controls include size, leverage, profitability, tangibility, current ratio, cash all measured one quarter before the initiation of the loan. Additionally, a vector of fixed effects includes loan type, loan purpose, industry and year dummies. Given that loans to the same borrower might be correlated with each other, standard errors are clustered by firms. All the borrowing-specific controls are lagged to ensure that all the accounting information is captured prior to the loan origination. The regression model for the cost of loan is estimated at facility level.

[Insert Table 3.3 about here]

Table 3.3 presents the coefficient estimates for the cost of borrowing surrounding the financial crisis for firms with high/low BSC. Column (1) and (2) reports regression estimates with the dependent variable equal to AISD and TCB. In both columns the coefficient of BSC is negative and statistically significant (-0.014, t-stat=-2.692 and -0.11, t-stat=-2.513). Regarding the economic significance, a one standard deviation increase in pre-crisis BSC (0.196) is associated with 0.27 (0.22) percentage points decrease in bank-loan spread (total cost of borrowing) - AISD (TCB) during the crisis. Overall, the results indicate that firms that entered the crisis with high BSC had lower cost of borrowing from banks during the crisis period.

Next, I study a subset of primary market corporate bonds from Mergent Fixed Income Securities Database (FISD). Consistent with Chava et al. (2010), I consider bonds that are corporate debenture with issuance, offering date, and covenant information and that are issued during the crisis period. Additionally, I drop Yankee, Canadian, foreign currency and privately placed bonds. As before, I include the same set of firm-specific accounting information. Bond-specific characteristics include the face value of bond, time-to-maturity, indicators for callable ($Redeemable$), interchangeable (Fungible), seniority indicator ($Security$) and whether it has covenant or not ($Log(1 + covenant)$). credit

rating[10] and whether the bond includes covenants or not. Cost of debt is proxied as bonds offering yield.

Table 3.3, Column (3) presents the results. The results are consistent with the prediction and show that there is a strong negative relation between BSC and cost of corporate primary market debt (-0.027, t-stat=-2.642). Regarding the economic significance, a one standard deviation increase in pre-crisis BSC (0.196) is associated with 0.53 percentage points decrease in corporate debt spread during the crisis.

3.4.2 Cushioning Role

[Insert Table 3.4 about here]

On the cushioning role of BSC, I examine whether firms had lower volatility of earnings during the crisis; experienced lower probability of assets write-downs and had lower probability of covenant violation.

In line with the idea that BSC accumulates reserves in bad times and releases them in good times, it might be the case that BSC-firms experienced lower price drops due to the use of pre-crisis accumulated buffer (Ball et al. 2000; Jackson and Liu 2010) and subsequent release during the crisis. The main empirical challenge is to segregate earnings smoothness into its fundamental and discretionary components. I follow Lang and Maffett (2011) and Lang et al. (2012) in estimation of earnings smoothing proxy. In particular, for each firm-quarter pair I estimate measures of overall earnings smoothness ($SMTH1$ and $SMTH2$) over two-digit SIC industry. Second, $SMTH1$ ($SMTH2$) is regressed on a set of determinants of earnings smoothness, where discretionary smoothing is defined as the residual term equal to $DSMTH1$ ($DSMTH2$). Finally, firm-quarter measure of earnings smoothing is defined as the average of percentile rank values of $DSMTH1$ and $DSMTH2$ defined as $DSMTH$.[11] Final measure of earnings smoothing is average $DSMTH$ over the crisis period. The set of control variables include Tobin's Q, firms' size, long- and short-term leverage, cash, profitability and sales growth, indicator

[10] S&P rating is of the first choice. If it is missing I rely on Moody's and then Fitch rating, subsequently.

[11] For detailed description of all variables under consideration, please refer to Lang and Maffett (2011) and Lang et al. (2012).

variable of whether a firm is audited by one of the Big-4 auditors and standard deviation of pre-crisis returns.

Table 3.4, Panel A presents the results. The results are positive and statistically significant. Column (1) includes only BSC (0.029, t-stat = 2.387). Column (2) includes a set of control variables, BSC is positive and statistically significant (0.039, t-stat=3.006). Column (3) includes past level of earnings smoothing ($Previous\, DIS\_SMTH$ - measured as average over 7 quarters before the crisis). Results remain positive and statistically significant (0.026, t-stat = 2.330). In terms of economic significance, a one standard deviation increase in pre-crisis BSC (0.196)is associated with 0.005 increase in earnings smoothing during the crisis.

Next, I examine whether BSC decreases the probability of a significant asset write-down. I follow Elliott and Shaw (1988) and determine a significant asset write-off (i.e., "bath") as any quarter where Special Items (SPI) from Compustat is negative and exceeds one percent of lagged firm total assets (during the crisis period).[12] Following Francis et al. 1996; Haggard et al. (2015) I control for factors preceding the bath such as negative firm performance, negative stock returns, low/negative income, increasing book-to-market and proxies for firm equity liquidity. Table 3.4, Panel B presents the results. The dependent variable in Column (1) is equal to 1 if a firm experienced a bath during the crisis, zero otherwise. A one standard deviation increase in pre-crisis level of BSC (0.196) is associated with 7.8 percentage lower likelihood of experiencing a bath. In Column (2) the dependent variable is a total number of "baths" experienced by firms during the crisis period. Given that the dependent variable is count, I employ poisson regression. A one standard deviation increase in pre-crisis level of BSC is associated with a decrease is the amount of baths by 0.84.[13] The discretion of firms with regards to taking a bath or not is not uniform. Some managers will try to hoard bad news until the amount of negative information is significant so that it is impossible to withheld it. In contrast, other managers will release such information as early as possible. In line with Haggard

[12]There are 52% of firms that experienced at least one bath. Additionally, the highest amount of baths is 7.

[13]exp(-0.889*0.196) = 0.84

et al. (2015) I classify former as forced baths, while the later as voluntary baths. I follow Barton and Simko (2002) who document that managers are limited in biasing earnings by the amount of net operating assets overvaluation relative to neutral GAAP application. This is the proxy for balance sheet constraint that limits managers flexibility in their financial reporting. Baths in firms with more (less) constrained balance sheets are more likely to represent forced baths. I set forced firms equal to 1 (0) if pre-crisis level of net operating assets is in the top (bottom) tertile. Column (3) and (4) present the results. The coefficient on BSC is negative and statistically significant only in forced-bath sample (the difference between forced and voluntary BSC is significant - $p\text{-}value = 0.02$). These results support the fact that BSC-firms were less likely to be forced to write-down an asset.

Finally, I estimate actual covenant violation probability. Chodorow-Reich and Falato (2017) document that borrowers of less healthy banks who violated covenants during the crisis experienced lower investment intensity, decrease in employment and a reduction of loan supply. Covenant violation might partially explain worse performance during the crisis. I obtain the data for covenant violation from Nini et al. (2012) and Roberts and Sufi (2009). There 111 firms that violated covenants within the crisis period. Table 3.4, Panel C presents the results. In all the regression specifications firms with higher pre-crisis level of BSC had lower probability to violate covenants. A one standard deviation increase in BSC (0.196) decreases the probability of covenant violation by 1.7 percentage points, ceteris paribus (Column (3)).

Summarizing both informational and cushioning roles of BSC, the results indicate that BSC-firms attracted lower cost of debt, smoothed earnings, had lower probability of experiencing a significant asset write-down and covenant violation.

3.4.3 Stock returns surrounding the financial crisis and BSC

[Insert Table 3.5 about here]

To test the performance of firms during the financial crisis with different pre-crisis levels of BSC, I estimate various regressions of stock returns (both raw and four-factor

model adjusted) as a function of BSC and a set of control variables. The set of control variables includes firm's financial health before the crisis. I include cash holdings, both short- and long-term debt and profitability. Firms that entered the crisis with healthier balance sheets were less affected by the economic downturn (see Almeida et al. 2012; Harford et al. 2014). Additionally, I control for momentum (the firm's raw buy-and-hold return measured over one year prior to the onset of the crisis), size and idiosyncratic risk (Lins et al. 2017) and sales growth . Ball et al. (2020) decompose that book value of equity into retained earnings and contributed capital. They document that only retained earnings-to-market predicts the cross section of average returns. Thus, I include retained earnings component. Additionally, Novy-Marx (2013) document that profitability, measured by gross profits-to-assets, has roughly the same power as book-to-market predicting the cross section of average returns. I follow his recommendations and control for gross profitability. All the variables are defined in Appendix 3.7. FE is industry dummies that are set at two-digit SIC code. By design, $Eq.(3.2)$ controls for firm-fixed effects. Additionally, I control for Fama-French three-factor model plus the momentum loadings that are estimated based on the previous 60 months data ending on June 2007. ϵ_i is heteroscedasticity-robust standard errors clustered by two-digit SIC industry.

Panel A of Table 3.5 presents results for the baseline estimations. The variable under interest is BSC. All models include industry fixed effects. Columns (1) and (2) present that firms with higher BSC earned higher returns during the crisis excluding control variables. The results are positive and statistically significant.[14] To overcome a concern associated with omitted variables, columns (3) and (4) include a set of firm-specific characteristics. As before, high-BSC firms had better stock performance compared to low-BSC firms. Overall, the results remain positive and economically significant. Holding everything else constant, one standard deviation increase in BSC (0.196) is associated with 3.3 percentage points increase in raw returns and 6.5 percentage points increase in four-factor model adjusted abnormal returns during the crisis. The effect of control vari-

[14] A one standard deviation increase in BSC (0.196) is associated with 4.6 percentage points increase in raw returns and 9.5 percentage points increase in four-factor model adjusted abnormal returns during the crisis.

ables is as expected. For example, firms that entered the crisis with "healthier" balance sheets (higher cash holdings and lower leverage) experienced higher returns during the crisis. Additionally, firms that were bigger in size, lower sales growth and less risky showed better stock performance during the crisis.

Panel B of Table 3.5 presents the re-estimation of all the previous models, but instead of including a linear measure of BSC, I assign BSC into quartiles. The first quartile is set as a benchmark. The results indicate that high BSC-firms (BSC4) outperformed firms with the lowest BSC (BSC1). Column (3) and (4) present results including full set of control variables. As before, the results stay in line with the previous findings. High BSC-firms (BSC4) outperformed firms with the lowest BSC (BSC1) by 9.2 (14.1) percentage points in raw (abnormal) returns. Overall, the impact of BSC is monotonic, but not entirely linear.

Panel C ensures that the results are robust to the inclusion of controls for measures of corporate governance that led to better performance of firms during the crisis (Nguyen et al. 2015). The results indicate that the impact of BSC is still positive and statistically significant. Additionally, there is some evidence that better governed firms performed better during the crisis. In particular, performance of firms with more entrenched managers (independent compensation committee) was worse (better) during the crisis. These results stay in line with Nguyen et al. (2015) who document the importance of pre-crisis level corporate governance for the firms' performance during the crisis.

Finally, Panel D sheds light whether the positive relation between BSC and stock performance during the crisis is unique to this period or is common to other periods that might be due to omitted risk factors that are correlated with BSC. I estimate Fama and MacBeth (1973) regressions. The data on stock returns is at monthly frequency,

while BSC is measured in 2006 and all the control variables are updated quarterly:[15]

$$y_{i,t} = \beta_1 BSC_{2006,i} \times Crisis_t + \beta_2 BSC_{2006,i} \times Post - Crisis_t + \psi\prime X_{l,i,t-1} + \omega\prime FE_{i,t} + \epsilon_{i,t}, \tag{3.3}$$

where y is either monthly raw return or four-factor model adjusted returns. BSC_{2006} stands for the measure of balance sheet conservatism at the end of 2006. $Crisis$ is a dummy variable set to one in the period July 2007 to March 2009, while $Post - Crisis$ stands for the period April 2009 to December 2013. $X_{i,t-1}$ is a vector of firm-specific control variables that are updated every quarter.

Table 3.5, Panel D presents the results for both raw and four-factor model-adjusted returns. Columns (1) and (2) do not control for firm-specific characteristics. In both specifications, high-BSC firms outperformed low-BSC firms during the crisis.[16] Columns (3) and (4) include additional control variables. As before, the results are positive and statistically significant. Additionally, there is a reversal of returns in post-crisis period, where the coefficient on $BSC_{2006,i} \times Post - Crisis_t$ is negative and statistically significant.

Overall, the results present evidence that pre-crisis balance sheet conservatism is positively associated with firm performance during the crisis. In particular, high-BSC firms outperformed low-BSC firms. This result is persistent only during the crisis time.

3.4.4 Robustness tests

In this section, I present additional analyses to ensure the robustness of baseline specifications. First, there is a possibility that the measure of BSC in 2006 may be correlated with the anticipation of the crisis. Even though the regression models include controls that might affect crisis period stock returns, the possibility that BSC in 2006 is correlated with unobservable measure of crisis anticipation might confound main findings.

[15]The regression is run over 2007 to 2013 as BSC is measured in 2006 to reduce the likelihood that BSC is jointly determined with the firm performance.

[16]In terms of economic significance, one standard deviation increase in BSC (0.196) in 2006 is associated with 0.1 (0.2) percentage points higher monthly raw (abnormal) returns during the crisis.

To address this concern, I replicate the estimations of Table 3.5, Panel A and test whether crisis-period returns are positively affected by BSC measured in 2005, 2004 and 2003. Table 3.6, Panel A presents the results of *Eq.*(3.2) substituting *BSC* measured during different years. In all the models the coefficient on *BSC* is positive and statistically significant. Overall, baseline findings are not sensitive to the time period when BSC is measured. One of the explanations for these findings is overall persistence of firms commitment to conservative balance sheet reporting. BSC reflects an accumulation of past accounting choices of the firm. Under U.S. GAAP past conservative write-offs of assets can not be easily reversed. Thus, BSC is considered as a sticky measure.[17]

Next, to address the issue that base line results maybe biased by time varying heterogeneity not explained by the control variables I use placebo (i.e., non-existent) years of financial crisis. In particular, I set crisis in July 2004, in July 2003 and in July 2002 (columns (1) to (4) Table 3.6, Panel B). The crisis period lasts 21 months. Table 3.6, Panel B presents the results. For none of the placebo crisis years the effect of BSC on returns is positive and statistically significant. Importantly, the results are negative. This stays in line with Penman and Zhang (2002), who document that investors undervalue firms with conservative accounting (Q-score. Additionally, Figure 3.1 presents alpha (i.e., abnormal return) of calendar-time regression of a zero-investment (equal-weighted) hedge portfolio that goes long firms with high (4th quartile) and short firms with low (1st quartile) levels of pre-crisis BSC. Placebo crisis years are set from 1991 till 2016. Firms are sorted into quartiles based on pre-crisis level of BSC. Each crisis period starts in July and lasts for 21 months. The only period when hedge portfolio obtains positive and statistically significant alpha is during the crisis time (112 b.p.; p-value=0.049). In alternative periods alphas are statistically insignificant. Moreover, in 1995 alpha is negative and statistically significant.

Finally, I examine whether better performance of high BSC-firms was present during other crisis times that were not accompanied by the credit crunch. I study the dot.com bubble burst (2000 Q1 to 2002 Q3), September 11 terrorist attack (2001 Q3-Q4)

[17]In particular, the correlation between BSC measure in 2006 and 2005 is 78%; 2006 and 2004 is 66%; 2006 and 2003 is 52%.

and Russian debt crisis separately. After the burst of the bubble there was a slowdown of the US economy accompanied by a decline in investments. Additionally, after the terrorist attack there was an overall decline in investors' sentiment causing a demand rather than a supply shock (Tong and Wei 2008). The Russian debt crisis; led to a collapse of Long-Term Capital Management (LTCM) hedge fund. To bail out major creditors of LTCM that had to write-off losses on their investment, the Federal Reserve Bank of New York organized a $3.5 billion support. It is important to note, that these crises periods are not comparable to the recent financial crisis and do not have the characteristics (i.e., credit crunch, significant decline in trust, etc.). Panel C of Table 3.6 presents the results. The coefficient of BSC for both raw and four-factor model adjusted returns is statistically insignificant.

The results presented thus far indicate that firms with higher BSC performed better just during the financial crisis of 2007-2009 the main feature of which was a significant credit crunch.

3.4.5 Stock returns surrounding Great Depression and BSC

To shed more evidence on the positive side of BSC during the crisis times that are accompanied by the credit crunch, decline in trust and increased investors' attention, I perform an out-of-sample analysis of firms' performance during the Great Depression. This crisis is the closest one in terms of its' magnitude and features to the recent financial crisis. As before, I study firm performance given the level of BSC at the beginning of the crisis.

Great Depression resulted in a significant financial turmoil that led to a decline (increase) in Gross National Product (unemployment) from $190.9 billion (4.2%) in 1928 to $131.5 billion (25%) in 1933. This was accompanied by a significant decline in the stock market through out 1929 to 1932, with an average decline in value of common stock on the NYSE from $60 billion in December 1928 to $20 billion in December 1932. The Dow Jones Industrial Average (Moody's Commodity Index) declined from 300 (223.5) in December 1928 to 59.93 (79.8) in December 1932. As in the case of financial crisis

(2008-9) there was a significant negative impact on corporate sector. Both equity and debt issuance fell dramatically from 1929 to 1933. Additionally, there was a decline in manufacturing production and financial distress that was accompanied by a decline in percentage of firms with positive net income from 61% in 1928 to 18% in 1932 (Graham et al. 2011).

I replicate estimation similar to Table 3.5, Panel A. The firm-specific accounting information is collected from Moody's Investment Manual for Industrial Securities, while stock returns are from CRSP. Due to data limitations I can not proceed with the (Sunder et al. 2018) proxy for BSC, thus I follow Beaver and Ryan (2000) and estimate a proxy of unconditional conservatism and use it as a proxy for BSC.[18] I require that there is stock return information both in period t and $t-1$.[19] All the control variables and BSC are measured in 1928.[20] As before, I exclude financial and utility firms.

[Insert Table 3.7]

Table 3.7 presents the results on the association between BSC and firm-performance during the Great Depression. The results indicate that firms that entered Great Depression with higher pre-crisis level of BSC had better stock performance during the crisis over first two years (columns (1) to (4)). The results for the raw and abnormal return that are estimated over October 1929 to December 1932 are positive, but statistically insignificant. In terms of economic significance, one standard deviation (0.131) increase in pre-depression BSC results in 7.9 (5.9) percentage points increase in raw (abnormal) returns estimated over October 1929 to December 1930 (1931) (holding all other control variables fixed). Overall, the results above provide additional support to the previous findings that firms with higher pre-crisis BSC performed better during the crisis that was

[18] In robustness check I replicate Table 3.5, Panel A for the main sample using Beaver and Ryan (2000), see Section 3.6.2.

[19] This is done to preserve the sample size as CRSP coverage starts in December 1925, while Fama-French factors are available from July 1926.

[20] A vector of control variables includes size (natural logarithm of market value of assets (average of monthly stock price times average shares outstanding, both variables are from CRSP and estimated over the fiscal year), leverage (total debt to total assets), cash holdings (cash to total assets), profitability (ebit to total assets), momentum (12 months buy-and-hold stock return measured at the end of September 1929), idiosyncratic volatility (the residual variance of the market model estimated over 39 months (minimum 18 months) prior to the beginning of the Depression (October 1929)).

accompanied by a credit crunch.

3.5 Real economic performance of firms surrounding financial crisis and BSC

Thus far, I present evidence that firms, which entered the crisis with higher BSC had better stock performance. In this section, I study operating performance of firms surrounding the crisis period as a function of BSC in 2006 and a set of control variables. The main empirical setup is a differences-in-differences setting that compares the difference in real economic performance between firms with high versus low pre-crisis level of BSC, after (2009) versus before (2006) the financial crisis. This setup is similar to the one used in Giroud and Mueller (2016) and Duval et al. (2017). All the control variables are measured in 2006. Additionally, I include two-digit SIC industry fixed effects and cluster standard errors at the two-digit SIC industry. Finally, to account for the trend I include change in the dependent variable over 2004 to 2006.

[Insert Table 3.8 about here]

First, I analyze accounting-based performance measures. Accounting measures reflect both past and short-term financial performance, while market-based measures reflect future and long-term financial performance (e.g. Hoskisson et al. 1994). I use three measures of accounting performance: return on assets (ROA), return on equity (ROE) and return on sales (ROS) that are measured as cumulative returns over 2007 to 2009. To account for the fact that high-BSC firms performed better before the crisis I estimate cumulative ROA, ROE and ROS over pre-crisis years - 2004 to 2006. Table 3.8, Panel A presents the results. The main coefficient under interest is BSC, which is both positive and statistically significant for all profitability measures. A one standard deviation increase in pre-crisis BSC (0.196) is associated with 2.9, 6.4 and 4.1 percentage points increase in ROA, ROE and ROS, respectively.

Second, consistent with the idea that during periods of high liquidity constraints incremental investments have high payoffs, I study the effect on investment during the

crisis. Recent studies demonstrate that firms experienced underinvestment that was dictated by drying-up liquidity (e.g. Campello et al. 2010; Duchin et al. 2010). Additionally, firms which cut more investments during the financial crisis experienced lower stock performance (Lins et al. 2013). Given that BSC-firms had better borrowing capacity, I study whether this translated into higher value-creation through investment. I define investment intensity as capital expenditures over total sales.[21] Table 3.8, Panel B presents the results. Specifically, in Column (1) coefficient on BSC is positive and statistically significant. In terms of economic significance: one standard deviation increase in pre-crisis BSC (0.196) is associated with 6.1 percentage points higher increase in investment output change during the crisis. Next, I test whether firms with BSC were able to shield their employees from unemployment risk. In particular, better stock performance might be explained by higher labor cost reductions. Thus, I study whether firms maintained implicit contracts with their employees. Panel B, Column (2) demonstrates the results. The coefficient on BSC is positive and statistically significant. In terms of economic significance: one standard deviation increase in pre-crisis BSC (0.196) is associated with the 6.3 percentage points higher increase in crisis employment change. Additionally, I study how firms' productivity changed depending on pre-crisis BSC. Duval et al. (2017) document that firms with weaker pre-crisis balance sheets experienced a decline in post-crisis total factor productivity (TFP) growth relative to their less vulnerable counterparts. I estimate TFP semiparametric method initiated by Olley and Pakes (1996). Panel B, Column (3) presents the results. The coefficient on BSC is positive and statistically significant. In terms of economic significance: one standard deviation increase in pre-crisis BSC (0.196) is associated with 4.5 percentage points higher increase in crisis TFP change.

Third, I test whether firms with higher BSC were less risky during the crisis. Given that BSC-firms had better access to debt-financing and had an ability to reduce the volatility of earnings, this should lead to lower riskiness of a firm. Specifically, firms with sufficient cash or access to external funding and less volatile earnings are able to meet debt service obligations. These, in turn, should result in lower bankruptcy risk (Uhrig-

[21] I use sales instead of assets in the denominator to avoid introducing a mechanical association: a high level of BSC results in lower assets

Homburg 2005). I test whether BSC-firms had lower monthly volatility of stock returns, better credit rating (the higher the score, the lower is the rating) and lower distance to default (Bharath and Shumway 2008). All the variables are estimated as an average over the crisis-period. Table 3.8, Panel C presents the results. In all model specifications high-BSC firms were less risky during the crisis: exhibited lower stock return volatility, higher ratings and lower distance to default (-0.115, t-stat=-4.098; -0.207, t-stat=-4.422; -2.282, t-stat=-2.929). In terms of economic significance, a one standard deviation increase in pre-crisis BSC (0.196) is associated with -0.022 lower standard deviation of stock returns, 4.1% lower probability of default and -0.45 higher rating (the lower the score the higher is the rating).

Finally, I estimate whether BSC-firms were able to raise more capital during the crisis. Debt issuance is defined as long-term debt issuance minus long-term debt reduction plus current debt changes scaled by total sales. The equity issuance is defined as sale of common and preferred stock minus purchase of common and preferred stock scaled by total sales. The dependent variables is the cumulative change in debt and equity issuance over the crisis period. Table 3.8, Panel D presents the results. As illustrated in column (1) firms with higher BSC raised more debt during the crisis (0.046, t-stat=3.040). In contrast, there is no effect on equity issuance that is represented in column (2) (0.005, t-stat=0.226). These results support the evidence that BSC is especially valued by debtholders since it reduces lenders' uncertainty regarding the liquidation value of assets. Thus, BSC-firms were more kin to issue debt during the crisis.

3.6 Additional Robustness Tests

So far the results document a strong evidence that BSC is positively related to firm performance during the crisis. In this section, I introduce further tests to ensure the robustness of my main results. First, I use propensity score matching to ensure similarity of covariates distribution between treated and control groups. Second, I introduce alternative proxies for BSC. Finally, I analyze whether the results do hold once I control for

pre-crisis level of financial reporting quality.

3.6.1 Propensity Score Matching

[Insert Table 3.9 about here]

Having a set of observational (i.e., nonrandomized) data requires the assumption of balanced distribution of covariates in treated and control groups for drawing causal effects. One possible way to replicate randomized experiment is to obtain treated and control groups with similar covariate distributions (Stuart 2010). Given that I do not have exogenous variation to assign treated and control samples, I make an inference on these two groups based on quintiles of pre-crisis BSC. I assign treated (control) sample as those firms that are in the fifth (first) quintile of the pre-crisis BSC. I use logistic model and 1:1 nearest neighbor matching with caliper of 5% and no replacement that produces the balanced sample after the matching procedure. I match on all covariates as in Table 3.5, Panel A.

Table 3.9, Panel A provides comparison of treated and control groups before and after the matching. Before the matching, there are 328 control and 328 treated firms. Treatment group is bigger in size, with smaller short-term debt and book-to-market ratio, higher cash, profitability and momentum. After the matching there are 144 one-to-one matched firms. Notably, there are no statistically significant differences in the mean values of the covariates across treated and control samples. Panel B presents regression results of *Eq.*(3.2) over the matched sample. As before, the results are positive and statistically significant, both for raw (0.232, t-stat=2.663) and abnormal returns (0.460, t-stat=2.342).

3.6.2 Alternative proxies for BSC

[Insert Table 3.10 about here]

As an alternative proxy for BSC I propose two measures. First is an index of BSC constructed using principal component analysis. Second proxy follows Beaver and Ryan

(2000, 2005). I discuss them below.

First, I construct a proxy for BSC based on measures that proxy for firms' conservative reporting of asset values, unconditional and conditional conservatism. Specifically, I control for depreciation (whether firms use accelerated depreciation or not), hidden reserves accumulated through advertising and R&D (measures the extent of "hidden" reserves that are not on the balance sheet due to conservatism (Penman and Zhang 2002)), goodwill (the presence of goodwill reflects recording of assets on the books at nonconservative values), acquisition (whether the acquisition is accounted following pooling of interest method), cumulative total accruals (asymmetric treatment of gains and losses (i.e., conservatism) produces an asymmetry in accruals that will result in cumulative negative accruals over time (Givoly and Hayn 2000)). Combining these BSC-related measures (within the sample spanning from 1990 to 2015) using first component from principal component analysis I construct BSC-index (measured in 2006). Internet Appendix, Table 3.2 presents the correlation of BSC-index with BSC characteristics. The correlation between BSC characteristics and BSC-index are of expected direction, suggesting that these factors capture a common underlying economic construct.

Table 3.10, Panel A provides the results from the estimation of *Eq.*(3.1) replacing *BSC* with the *BSC-index*. The results confirm the previous finding - pre-crisis level of BSC is positively associated (0.037, t-stat = 1.927; 0.106, t-stat = 2.546) with firms' stock performance during the crisis.

Second, I estimate BSC using alternative proxy following Beaver and Ryan (2000, 2005) as in Section3.4.5, but with six time period lags of the independent variables (as the data availability allows me to expand the time span). This proxy captures net effect of unconditional conservatism. However, given that balance sheet conservatism mostly arises from unconditional conservatism (correlation between Sunder et al. (2018) and Beaver and Ryan (2000, 2005) is 84%), I add this as an alternative measure. The proxy for the incorporation of information in book value is the coefficient of lagged returns on equity. By introducing the Basu (1997) framework, allows to avoid the bias in the firm-specific intercept that captures both unconditional and conditional bias and permits

isolating the level of unconditional conservatism.

Table 3.10, Panel B provides the results from the estimation of *Eq.*(3.1) replacing *BSC* with the BSC_{Beaver}. As before, the results are positive and statistically significant (0.229, t-stat = 4.816; 0.323, t-stat = 3.867).

3.6.3 Financial Reporting Quality

Effective financial reporting quality results in lower information asymmetry (Graham et al. 2005). As a consequence, it leads to lower political and regulatory costs, higher managerial efforts, lower cost of debt and lower (higher) information risk (stock returns) (Farraghe et al. 1994; Francis et al. Francis et al. 2005; Agarwal et al. 2008; G. Biddle et al. 2009; Bushee and Miller 2012).

It is documented that financial reporting quality mitigates negative effects of financial crises followed by a market crash (Mitton 2002; Barton and Waymire 2004; Hilary 2008). For exmaple, Mitton (2002) documents a positive relation between accounting quality and firms' returns during the East Asia crisis. In addition, Barton and Waymire (2004) documents that the Great Depression firms had lower stock declines given higher quality of financial reporting. In this regard, I control for financial reporting quality to make sure that the effect of BSC is not subsumed. I proxy for financial reporting quality (FRQ) based on discretionary accruals model following (e.g. Dechow and Dichev 2002; Francis et al. 2005; Biddle et al. 2009). The main premise of the measure is that the prediction of earnings is more precise when there is a lower error embedded in accruals. The discretionary accruals model is estimated following Dechow and Dichev (2002) and additionally augmented by the fundamental variables from Jones (1991), namely PPE and change in revenues as suggested by McNichols 2002.[22]

Table 3.10, Panel C provides the results from the estimation of *Eq.*(3.1) adding

[22]The main model is a regression of working capital accruals on lagged, current, and future cash flows adding the change in revenue and PPE. Following Francis et al. (2005); the model is estimated cross-sectionally for each industry with at least 20 observations in a given year based on the Fama and French (1997) 48-industry classification. AQ is defined as the standard deviation of the firm-level residuals calculated over the years t-4 to t. Higher values of standard deviations of residuals indicate poorer accruals quality. This signifies that accruals lack predictability and should be a reason for priced uncertainty. I multiply the obtained measure for FRQ by negative one so that it is increasing in financial reporting quality and measure the proxy in 2006.

FRQ as an additional control variable. Controlling for pre-crisis level of financial reporting quality does not subsumes the positive effect of BSC. The results remain positive and statistically significant (0.170, t-stat = 4.216; 0.329, t-stat = 3.812). Additionally, firms that entered the crisis with better financial reporting quality had better stock performance (0.412, t-stat = 2.278; 1.259, t-stat = 3.124).

3.7 Summary and Conclusion

Using financial crisis as a natural experiment, I test to what extent the quality of pre-crisis balance sheet (proxied by balance sheet conservatism) affected share- and debtholders' value during the recent financial crisis. This paper provides evidence that BSC is value-enhancing mechanism to share- and debtholders when the level of liquidity problem in the economy increases.

First, I find that firms with higher BSC outperformed firms with lower BSC during the crisis by around 6.8 percentage points in raw stock returns. Second, I document that BSC-firms invested more during the crisis, were more productive and maintained higher employment rates. Third, I find that BSC-firms were less risky during the crisis that is represented by lower stock return volatility, distance to default and higher credit ratings. Fourth, I find that BSC-firms raised more debt with lower cost of debt and lower probability of covenant violation. Finally, I present an evidence that the positive effect of BSC is more pronounced for firms that entered the crisis as financially constrained or informationally opaque. These findings play in favor of causality rather then association of the main findings.

The study presents an evidence on the positive side of BSC to share- and debtholders during the crisis times. Financial constraints impair firms' ability to engage in long-term efficiency increasing investments. That is, firms with higher balance sheet conservatism are more protected against financial frictions. Collectively, these results present the importance of BSC predominately in periods of high vulnerability and low market liquidity. During the normal times the level of firms' BSC is already embedded in

the stock price. Given the rare frequency and predictability of such an event as financial crisis, I stay away from suggesting the optimal level of balance sheet conservatism that managers should target.

The results of the paper should be considered within certain limitations. First, measurement error of balance sheet conservatism. Although, I tried to incorporate different proxies, I can not rule out the measurement problem. Second, there are several mechanisms through which BSC is supposed to ameliorate negative consequences of the crisis. Although, there is no explicit findings on the factors that drive the results, I find an evidence in support of informational and cushioning roles of BSC. Third, a lack of proper evidence for the first stage (i.e., the choice of having BSC) limits the aforementioned conclusion to be causal. Fourth, the results might be biased to the extent that the setting is missing correlated omitted variables. Finally, all the main conclusions are limited to the crisis times and should be regarded with caution during alternative time spans.

Appendix: Variable Definitions

Variable	Definition of main variables
Panel A: Variables used in construction of BSC following Sunder et al. (2018)	
BTM	The book-to-market ration, computed as the ratio of the book value of total assets (at) to the market value of equity (prcc_f × csho) plus the book value of debt (at-ceq)
LT Growth Forecast	The median of long-term growth estimates by analysts (I/B/E/S data). Missing values of firms that have at least one non-missing observation within the sample period are replaced by the closest non-missing value to preserve the sample size.
Sales	Ratio of sales (sale) to lagged sales
Industry Concentration	Herfindahl index.
Consumer Sentiment Index	Published by the University of Michigan, available at http://www.sca.isr.umich.edu/tables.html
S&P	Level of the S&P's Composite Index from CRSP
Profitability	The ration of cash flow from operations (oancf) lagged total assets (at)
Credit Rating	The numerical equivalent of S&P domestic long-term issuer credit rating (splticrm) from COMPUSTAT. For firms not rated by S&P, I first regress debt rating on a set of financial variables, including log of assets (at), ROA (ib/at), leverage, dividend (dvc) indicator, subordinated debt (ds) indicator and a loss indicator, with industry and year fixed effects for rated firms. Then, I use the estimated coefficients from the first regression and the firm's financial information to compute a credit rating for each firm in each year. The computed rating values are winsorized at 2 and 27 to be consistent with the range of ratings reported in COMPUSTAT. The value of Credit Rating decreases in credit quality
High Inflation	An indicator variable equal to one if the inflation over the past five years is higher than the median level during the sample period, and zero otherwise. Inflation is from Consumer Price Index from the Bureau of Labor Statistics
AOCI	Accumulated other comprehensive income (acominc) scaled by total assets (at)
Panel B: Main Variables	
BSC	A measure of balance sheet conservatism following Sunder et al. (2018)
Raw Raturn	Raw return computed over the period July 2007 to March 2009, winsorized within the range of -1 and 1
Abnormal Return	4-factor Market model-adjusted return over the period July 2007 to March 2009. Market model parameters are estimated over the five-year period ending in June 2007 using the CRSP value-weighted index as the market proxy, winsorized within the range of -1 and 1
Market Cap.	Market value of assets estimated as share price (prccq) times the number of shares outstanding (cshoq)
Long-Term Debt	Long-term debt (dlttq) divided by total assets (atq)
Short-Term Debt	Short-term debt (dlcq) divided by total assets (atq)
Sales Growth	Growth of sales (saleq) from the last quarter
RE	Retained Earnings (req) - accumulated other comprehensive income (acomincq) scaled by market value of equity (prccq*cshoq)

Table 3.7 continued

Variable	Definition of main variables
Gross Profitability	Revenues (revtq) - cost of goods sold (cogsq) scaled by total assets (atq)
Cash	Cash and short-term investments (cheq) divided by total assets (atq).
Idiosyncratic Risk	The residual variance of the 4-factor market model estimated over five-year period ending in June 2007 (monthly CRSP data)
Momentum	One year buy-and-hold return preceding the crisis
Panel C: Additional Control Variables	
E-Index	The sum of six dummies reflecting antitakeover provisions (Bebchuk et al. 2009) http://www.law.harvard.edu/faculty/bebchuk/data.shtml
Board Independence	Percentage of independent directors sitting on the board
Compensation Committee Independence	Percentage of independent directors in the compensation committee
ROA	Net income (ib) over the total assets (at)
ROE	Net income (ib) over the shareholders' equity (ceq)
ROS	Net income (ib) over the net sale(at)
Investment	Capital expenditure (capxy) scaled by total assets (sale)
Employment	The number of people employed by the company (emp)
TFP	Total Factor Productivity following Olley and Pakes (1996)
Standard Dev.	Monthly standard deviation of daily stock returns (ret)
Rating	The numerical equivalent of S&P domestic long-term issuer credit rating (splticrm) that decreases in credit quality
Default Prob.	Monthly monthly distances to default following Bhattacharya et al. (2003)
Debt Issuance	Ratio of long-term debt (dltis) minus the reduction in long-term debt (dltr) plus current debt changes (dlcch) scaled by total sales (sale)
Equity Issuance	Ratio of sale of common and preferred stock (sstk) minus purchase of common and preferred stock (prstkc) scaled by total sales (sale)
AISD	$All-in-drawn\ spread$, expressed in decimals
TCB	$totalcostofdebt$ as in Berg et al. (2016)
Offering yield	Yield to maturity at the time of issuance, based on the coupon and any discount or premium to par value at the time of sale, expressed in decimals
Amount	Facility amount (Dealscan)
Maturity	Facility maturity in months (Dealscan)
Collateral	Number of covenants (Dealscan)
Covenant	Is the number of covenants that are included in a loan (Dealscan)
Covenant_dummy	Dummy variable equal to one if a loan has covenant and zero otherwise (Mergent FISD)
Prime Base Rate	Dummy variable equal to one if the base rate is prime and zero otherwise (Dealscan)
Fungible	Dummy variable equal to one if bonds are by virtue of their terms, equivalent, interchangeable, or substitutable, and zero otherwise (Mergent FISD)
Security	Rank variable that takes the value of one to four for unsecured, subordinated, senior, and senior secured bonds, respectively (Mergent FISD)
Redeemable	Dummy variable equal to one if a bond can be redeemed under certain conditions, and zero otherwise(Mergent FISD)
Performance Pricing	Dummy variable equal to one if the loan has performance pricing and zero otherwise (Dealscan)
Total Assets	Total assets (atq)
Tangibility	Ratio of property, plant, and equipment (ppentq) to total assets (atq)

Table 3.7 continued

Variable	Definition of main variables
Current Ratio	Ratio of current assets (acoq) to current liabilities (lcoq)
Leverage	Ratio of long-term debt (dlttq) and short-term debt (dlcq) to total assets (atq)
Tangibility	Property plant and equipment (ppentq) to total assets (atq)
Big-4	Dummy variable equal to to one if a firm is audited by one of the Big-4 auditors, and zero otherwise
Std. Returns	Standard deviation of returns estimated over 36 months (minimum 12 months)
Info. Asymmetry	Relative Bid-ask spread = 100 × (Ask - Bid)/(0.5× (Ask + Bid)) estimated over 36 months (minimum 12 months)
DSMTH	Earnings smoothing proxy following Lang and Maffett (2011) and Lang et al. (2012)
FRQ	Discretionary accruals model following Dechow and Dichev (2002) augmented by the fundamental variables (PPE and change in revenues) following McNichols 2002
BSC˙Beaver	Beaver and Ryan (2000) measure of balance sheet conservatism

Figure 3.1: Calendar-Time Regressions of Hedge Portfolios

This figure presents calendar-time regression of a zero-investment (equal-weighted) hedge portfolio that goes long firms with high (4th quartile) and short firms with low (1st quartile) levels of pre-crisis BSC. Placebo crisis years are set from 1991 till 2016. Firms are sorted into quartiles based on pre-crisis level of BSC. Each crisis period starts in July and lasts for 21 months. Numbers in green are p-values of *alpha* from the 2-factor Fama and French model.

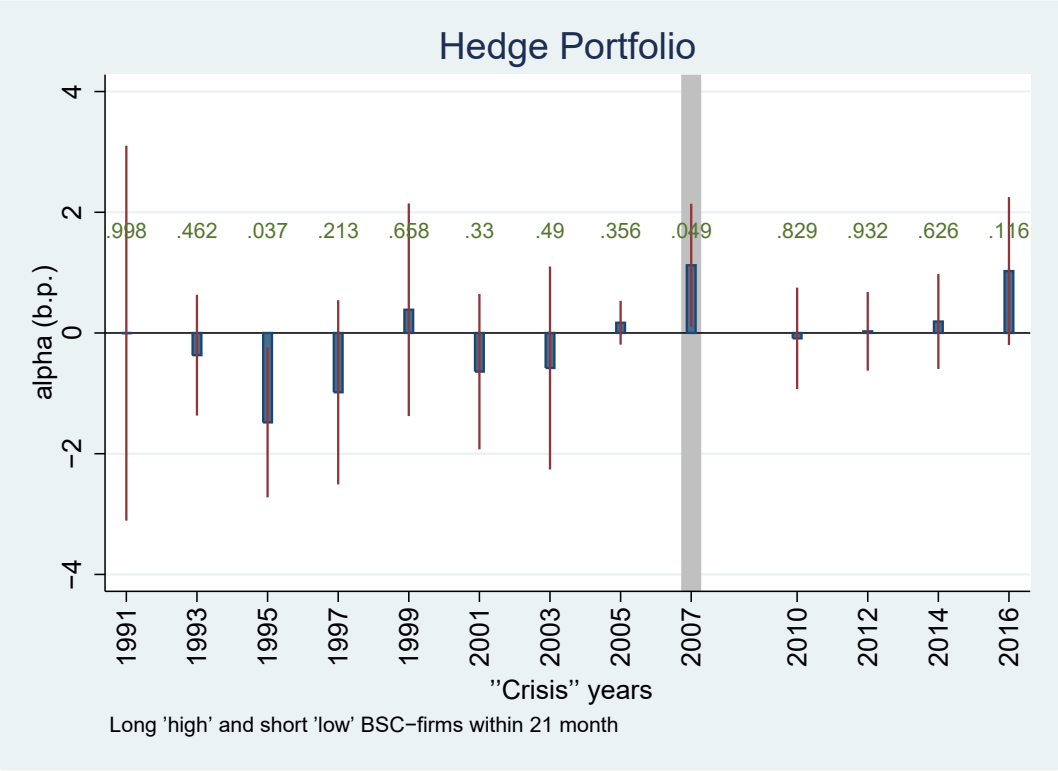


Table 3.1: Descriptive statistics of Main Variables

	N	Mean	Std.dev	Q1	Median	Q3
BSC	1643	0.003	0.196	-0.125	0.015	0.142
Raw Return	1643	-0.507	0.295	-0.741	-0.533	-0.317
Abnormal Return	1643	0.029	0.747	-0.498	-0.088	0.337
Market Cap.	1643	7637.001	19704.539	479.588	1353.867	4531.230
Long-Term Debt	1643	0.164	0.174	0.000	0.126	0.261
Short-Term Debt	1643	0.027	0.052	0.000	0.004	0.030
Cash	1643	0.187	0.193	0.035	0.109	0.285
Sales Growth	1643	0.070	0.215	-0.032	0.038	0.127
RE	1643	0.022	0.624	-0.007	0.151	0.300
Gross Profitability	1643	0.102	0.064	0.058	0.089	0.129
Idiosyncratic Risk	1643	0.012	0.011	0.005	0.009	0.016
Momentum	1643	0.214	0.364	-0.019	0.176	0.386
AISD	1040	0.019	0.015	0.007	0.018	0.027
TCB	690	0.014	0.013	0.005	0.009	0.018
Offering yield	317	0.064	0.015	0.055	0.062	0.069
DSMTH	1382	0.590	0.079	0.541	0.601	0.647
Bath Firm	1636	0.515	0.500	0.000	1.000	1.000
Covenant Violation	1643	0.068	0.251	0.000	0.000	0.000

This table presents descriptive statistics of primary variables of interest. All of the variables are defined in Table 3.7.

Table 3.2: Correlation Matrix

	BSC	Raw Return	Abnormal Return	Market Cap.	Long-Term Debt	short_debt06_w	Short-Term Debt	Sales Growth	RE	Gross Profitability	Idiosyncratic Volatility	Momentum	AISD	TCB	Offering yield	DSMTH	Bath Firm	Covenant Violation
BSC	1.00																	
Raw Return	0.17***	1.00																
	(0.00)																	
Abnormal Return	0.09***	0.65***	1.00															
	(0.00)	(0.00)																
Market Cap.	-0.00	0.21***	0.08***	1.00														
	(0.84)	(0.00)	(0.00)															
Long-Term Debt	-0.09***	-0.16***	-0.10***	-0.05**	1.00													
	(0.00)	(0.00)	(0.00)	(0.02)														
Short-Term Debt	-0.04**	0.02	-0.03	0.12***	0.04**	1.00												
	(0.03)	(0.36)	(0.23)	(0.00)	(0.04)													
Cash	0.16***	0.04*	0.10***	-0.13***	-0.39***	-0.19***	1.00											
	(0.00)	(0.07)	(0.00)	(0.00)	(0.00)	(0.00)												
Sales Growth	-0.00	-0.01	-0.01	-0.01	-0.03	0.00	0.04**	1.00										
	(0.87)	(0.54)	(0.77)	(0.60)	(0.13)	(0.85)	(0.05)											
RE	-0.06***	0.13***	0.01	0.11***	-0.10***	0.07***	-0.27***	-0.01	1.00									
	(0.01)	(0.00)	(0.75)	(0.00)	(0.00)	(0.00)	(0.00)	(0.58)										
Gross Profitability	0.32***	0.09***	0.04**	-0.06***	-0.26***	-0.06***	0.14***	0.26***	-0.03*	1.00								
	(0.00)	(0.00)	(0.04)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.10)									
Idiosyncratic Risk	0.07***	-0.20***	0.02	-0.25***	-0.07***	-0.12***	0.42***	0.07***	-0.52***	0.08***	1.00							
	(0.00)	(0.00)	(0.40)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)								
Momentum	0.13***	0.06***	0.12***	0.03	0.11***	0.01	-0.07***	0.06***	0.00	0.05**	-0.01	1.00						
	(0.00)	(0.01)	(0.00)	(0.14)	(0.00)	(0.65)	(0.00)	(0.00)	(0.94)	(0.02)	(0.73)							
AISD	-0.19***	-0.25***	-0.08***	-0.19***	0.17***	-0.15***	0.01	0.06**	-0.17***	-0.03	0.27***	-0.02	1.00					
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.84)	(0.04)	(0.00)	(0.38)	(0.00)	(0.42)						
TCB	-0.15***	-0.22***	-0.05	-0.20***	0.20***	-0.11***	0.02	0.14***	-0.19***	-0.01	0.26***	-0.02	0.84***	1.00				
	(0.00)	(0.00)	(0.16)	(0.00)	(0.00)	(0.00)	(0.58)	(0.00)	(0.00)	(0.84)	(0.00)	(0.66)	(0.00)						
Offering yield	-0.13**	-0.37***	-0.23***	-0.20***	0.20***	-0.06	-0.04	-0.19***	0.03	-0.17***	0.31***	-0.01	0.33***	0.38***	1.00			
	(0.01)	(0.00)	(0.00)	(0.00)	(0.00)	(0.26)	(0.44)	(0.00)	(0.58)	(0.00)	(0.00)	(0.92)	(0.00)	(0.00)				
DSMTHC	0.09***	0.13***	0.11***	0.00	-0.01	0.10***	-0.12***	0.04*	0.13***	0.02	-0.15***	0.10***	-0.02	-0.05	-0.18***	1.00		
	(0.00)	(0.00)	(0.00)	(0.99)	(0.58)	(0.00)	(0.00)	(0.10)	(0.00)	(0.48)	(0.00)	(0.00)	(0.57)	(0.18)	(0.00)			
Bath Firm	-0.21***	-0.37***	-0.24***	-0.12***	0.09***	-0.04**	0.05**	0.01	-0.15***	-0.07***	0.16***	-0.10***	0.17***	0.19***	0.15***	-0.23***	1.00	
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.03)	(0.01)	(0.64)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)		
Covenant Violation	-0.10***	-0.17***	-0.11***	-0.08***	-0.00	0.07***	-0.06***	0.03	-0.03	-0.03	0.08***	-0.11***	0.08***	0.07**	0.01	-0.00	0.12***	1.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.92)	(0.00)	(0.00)	(0.22)	(0.15)	(0.14)	(0.00)	(0.00)	(0.01)	(0.04)	(0.88)	(0.91)	(0.00)	

This table presents correlation matrix between primary variables of interest. All continuous variables are winsorized at the 99% and 1% levels. All the variables are as described in Table 3.7.

Table 3.3: The informational role of BSC

	Bank Loans		Bond Market
	(1)	(2)	(3)
VARIABLES	AISD	TCB	Offering yield
BSC	**-0.014*** **	**-0.011** **	**-0.027*** **
	(-2.692)	(-2.513)	(-2.642)
Log(Amount)	-0.001**	-0.000	0.006***
	(-2.058)	(-0.428)	(3.020)
Log(Maturity)	-0.001	-0.001	0.000***
	(-0.495)	(-0.881)	(8.605)
Log(1+covenant)	0.005***	0.002*	
	(3.263)	(1.861)	
Covenant_dummy			0.006**
			(2.284)
Prime Base Rate	-0.003	-0.007**	
	(-1.097)	(-2.104)	
Performance Pricing	-0.000	-0.002	
	(-0.173)	(-1.491)	
Collateral	0.005***	0.005***	
	(2.965)	(3.473)	
Redeemable			-0.004
			(-0.734)
Fungible			-0.006
			(-1.221)
Security			0.009
			(1.224)
Log(Total Assets)	-0.000	-0.001	-0.006***
	(-0.496)	(-1.568)	(-3.774)
Profitability	-0.010	-0.006	-0.003
	(-0.950)	(-0.721)	(-0.139)
Cash	0.014	(0.016)	-0.005
	(1.41)	(2.33)	(-0.349)
Tangibility	0.005	-0.001	0.005
	(0.967)	(-0.379)	(0.695)
Current Ratio	0.001	0.000	-0.004***
	(0.633)	(0.138)	(-2.973)
Leverage	0.001	0.011**	0.005
	(0.227)	(2.418)	(0.473)
Log(Rating)	0.008**	-0.001	0.006*
	(2.12)	(-0.24)	(1.723)
Observations	334	266	316
Adjusted R-squared	0.673	0.761	0.436
Year FE	Yes	Yes	Yes
Loan Type FE	Yes	Yes	No
Loan Purpose FE	Yes	Yes	No
Industry FE	Yes	Yes	Yes

This table presents results of *Eq.*(3.2) for the estimation of the informational role of BSC. The dependent variable is all-in-drawn spread (AISD), total cost of borrowing (TCB) developed by Berg et al. 2016 and the spread of primary corporate bonds (Offering yield), all are expressed in decimals. The set of bank loans and primary corporate debt issuance covers the period of the crisis (2007 July - 2009 March). I include all the debt contracts within the crisis period with non-missing observations. All of the other variables are as described in Table 3.7. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 3.4: The Cushioning role of BSC

Panel A: Earnings Smoothing			
	(1)	(2)	(3)
VARIABLES	Model-1	Model-2	Model-3
BSC	**0.029****	**0.039*****	**0.026****
	(2.387)	(3.006)	(2.330)
Log(Total Assets)		-0.008***	-0.004***
		(-4.698)	(-3.067)
Long-Term Debt		-0.012	-0.007
		(-0.611)	(-0.739)
Short-Term Debt		0.094*	0.065*
		(1.869)	(1.865)
Cash		-0.058***	-0.012
		(-2.931)	(-1.287)
Profitability		0.013	0.017
		(0.191)	(0.459)
Sales Growth		0.017*	0.011
		(1.693)	(1.461)
Big-4		0.003	0.005
		(0.513)	(1.458)
Std. Returns		-0.451***	-0.152***
		(-6.309)	(-3.224)
Previous DIS_SMTH			0.652***
			(25.404)
Constant	0.590***	0.699***	0.247***
	(19,062.975)	(31.250)	(11.579)
Observations	1,379	1,379	1,277
Adjusted R-squared	-0.006	0.044	0.522
Firm Characteristics	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes

This table presents results of *Eq.*(3.2) for the estimation of the cushioning role of BSC. In Panel A, the dependent variable is a proxy for earnings smoothing (DSMTH) (following Lang and Maffett (2011) and Lang et al. (2012)) that is estimated as an average DSMTH over the crisis period. In Panel B, the dependent variable equal to one for firms taking 'baths' (Column (1,3,4)) and total number of 'baths' (following Elliott and Shaw (1988)) during the crisis period (Column (2)). In Panel C, the dependent variable is equal to 1 if a firm violated a covenant during the crisis period and zero otherwise. All of the other variables are as described in Table 3.7. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on robust standard errors clustered at the firm level.

Table 3.4 - *Continued*

Panel B: Assets write-downs

VARIABLES	(1) Whole Sample	(2) Whole Sample	(3) Forced Sample	(4) Voluntary Sample
BSC	**-0.399*** **	**-0.889*** **	**-0.398*** **	**-0.026**
	(-4.942)	(-4.473)	(-3.230)	(-0.156)
Log(Total Assets)	0.017	0.040	-0.017	0.042***
	(1.620)	(1.323)	(-0.823)	(3.106)
B/M	-0.003	0.026	-0.049	0.385**
	(-0.077)	(0.333)	(-1.149)	(2.343)
Profitability	-0.802**	-1.809	-1.327**	-0.522
	(-2.286)	(-1.599)	(-2.439)	(-0.752)
ROA	-1.759***	-5.579***	-1.288	-1.226
	(-2.902)	(-5.845)	(-1.575)	(-1.066)
Turnover	0.006	0.028	0.009	0.009
	(0.663)	(1.174)	(0.612)	(0.888)
Volatility	0.714***	1.428***	0.533	0.592**
	(4.435)	(4.076)	(1.648)	(2.547)
Info. asymmetry	-0.000	-0.000	-0.000	0.000
	(-0.449)	(-0.803)	(-0.661)	(0.026)
Momentum	-0.075**	-0.239***	-0.097	-0.109**
	(-2.225)	(-4.176)	(-1.502)	(-2.064)
Constant	0.213*	-0.891***	0.562***	-0.091
	(1.972)	(-2.841)	(2.731)	(-0.700)
Observations	1,629	1,629	667	667
$p-value\ BSC$			0.06	
Adjusted R-squared	0.131		0.129	0.113
Firm Characteristics	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Pseudo R2		0.10		

Table 3.4 - *Continued*

Panel C: Covenant Violation			
	(1)	(2)	(3)
VARIABLES	Violation	Violation	Violation
BSC	**-0.108****	**-0.112****	**-0.087***
	(-2.603)	(-2.577)	(-1.930)
Log(Total Assets)			-0.018***
			(-4.034)
Long-Term Debt			-0.037
			(-1.089)
Short-Term Debt			0.401**
			(2.561)
Cash			-0.165***
			(-4.527)
Profitability			-0.404**
			(-2.035)
Sales Growth			0.051
			(1.550)
Idiosyncratic Risk			1.311*
			(1.708)
Constant	0.068***	0.068***	0.218***
	(8.613)	(532.193)	(6.278)
Observations	1,640	1,640	1,640
Adjusted R-squared	0.007	0.044	0.077
Industry F.E.	No	Yes	Yes

Table 3.5: Crisis period returns and BSC

Panel A: Pre-Crisis BSC and stock returns

	(1)	(2)	(3)	(4)
VARIABLES	Raw return	Abnormal return	Raw return	Abnormal return
BSC	**0.236*** **	**0.483*** **	**0.170*** **	**0.331*** **
	(6.738)	(6.454)	(5.291)	(4.036)
Ln(Market Cap.)			0.022***	0.035**
			(3.687)	(2.564)
Long-Term Debt			-0.141**	-0.162
			(-2.425)	(-1.079)
Short-Term Debt			-0.021	-0.216
			(-0.144)	(-0.712)
Cash			0.113***	0.257**
			(2.866)	(2.460)
Sales Growth			-0.074**	-0.164**
			(-2.504)	(-2.092)
RE			0.015	0.028
			(1.493)	(0.877)
Gross Profitability			0.054	0.341
			(0.343)	(0.727)
Idiosyncratic Risk			-2.990***	-4.504*
			(-3.750)	(-1.827)
Momentum			0.064***	0.129**
			(3.731)	(2.501)
Constant	-0.407***	-0.430***	-0.579***	-0.749***
	(-26.125)	(-12.201)	(-9.828)	(-5.936)
Observations	1,640	1,640	1,640	1,640
Adjusted R-squared	0.167	0.345	0.208	0.361
Four-factor loadings	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes

This table presents results of the relationship between crisis returns and BSC estimating *Eq.*(3.2). Crisis-period returns are measured over the period from July 2007 to March 2009. In Panel B, BSC is segregated into quartiles, where each variable is set as a dummy variable that corresponds to a specific quartile (the intercept captures the effect of quartile 1). For example, BSC2 is set to one if a firm is in the second quartile of BSC measured in 2006 and zero otherwise. Panel C, uses linear measure of BSC and includes additional controls for corporate governance. When the measure of the governance metrics is missing, I set it equal to zero and introduce a dummy variable set to one if there is a missing value of the governance metrics. All models include these dummies, but the coefficients are not reported in the table. Panel D presents Fama and MacBeth (1973) regressions of *Eq.*(3.3) with four-factor loadings that are updated on a monthly level. All the variables are as described in Table 3.7. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on heteroskedasticity-consistent standard errors clustered by firm.

Table 3.5 - *Continued*

Panel B: Quintile Dummies of BSC				
	(1)	(2)	(3)	(4)
VARIABLES	Raw return	Abnormal return	Raw return	Abnormal return
BSC2	0.057***	0.121***	0.036**	0.078**
	(3.497)	(3.265)	(2.562)	(2.302)
BSC3	0.111***	0.200***	0.077***	0.124***
	(5.882)	(4.522)	(4.388)	(2.792)
BSC4	0.125***	0.226***	0.092***	0.141***
	(7.296)	(6.112)	(5.188)	(3.361)
Constant	-0.479***	-0.565***	-0.629***	-0.867***
	(-22.666)	(-12.036)	(-10.837)	(-7.103)
Firm Characteristics	No	No	Yes	Yes
Observations	1,640	1,640	1,640	1,640
Adjusted R-squared	0.169	0.342	0.209	0.359
Four-factor loadings	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Panel C: Control for Corporate Governance Proxies				
BSC	**0.226*** **	**0.467*** **	**0.166*** **	**0.324*** **
	(6.462)	(6.028)	(5.208)	(3.931)
E-Index	-0.016**	-0.038**	-0.011	-0.028*
	(-2.042)	(-2.419)	(-1.311)	(-1.773)
Compensation Committee Independence	0.062*	-0.008	0.056	-0.012
	(1.735)	(-0.085)	(1.536)	(-0.117)
Board Independence	-0.041	-0.037	-0.067	-0.088
	(-0.642)	(-0.260)	(-1.120)	(-0.654)
Constant	-0.356***	-0.247*	-0.515***	-0.542**
	(-7.338)	(-1.754)	(-6.257)	(-2.438)
Firm Characteristics	No	No	Yes	Yes
Observations	1,640	1,640	1,640	1,640
Adjusted R-squared	0.184	0.352	0.214	0.365
Firm Characteristics	No	No	Yes	Yes
Four-factor loadings	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes
Panel D: Stock returns surrounding the crisis and BSC				
	(1)	(2)	(3)	(4)
VARIABLES	Raw return	Abnormal return	Raw return	Abnormal return
BSC* × *Crisis	**0.006*** **	**0.007*** **	**0.004** **	**0.004** **
	(3.060)	(3.212)	(2.349)	(2.595)
$BSC \times Post - Crisis$	-0.005**	-0.005**	-0.004**	-0.005**
	(-2.122)	(-2.223)	(-2.465)	(-2.515)
Constant	0.006	0.004	0.006	0.002
	(1.452)	(1.091)	(0.888)	(0.384)
Firm Characteristics	No	No	Yes	Yes
Observations	126,610	126,610	118,353	118,353
Average R-square	0.039	0.103	0.074	0.137
Number of groups	84	84	84	84
Four-factor loadings	Yes	Yes	Yes	Yes

Table 3.6: Stock returns surrounding the Crisis and BSC: Robustness Test

Panel A: Persistence of BSC proxy

	BSC_{2005}		BSC_{2004}		BSC_{2003}	
VARIABLES	Raw return (1)	Abnormal return (2)	Raw return (3)	Abnormal return (4)	Raw return (5)	Abnormal return (6)
BSC	**0.089****	**0.195*****	**0.094****	**0.183*****	**0.119*****	**0.188*****
	(2.095)	(3.230)	(2.544)	(3.174)	(3.735)	(3.083)
Constant	-0.560***	-0.622***	-0.538***	-0.580***	-0.503***	-0.524***
	(-12.572)	(-7.934)	(-10.293)	(-6.416)	(-9.706)	(-5.569)
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,979	1,979	1,905	1,905	1,831	1,831
Adjusted R-squared	0.164	0.378	0.168	0.362	0.169	0.351
Four-factor loadings	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes

Panel B: Placebo years

	2004		2003		2002	
VARIABLES	Raw return (1)	Abnormal return (2)	Raw return (3)	Abnormal return (4)	Raw return (5)	Abnormal return (6)
BSC	**-0.249****	**-0.181****	**-0.365*****	**-0.259*****	**-0.796*****	**-0.551*****
	(-2.282)	(-2.355)	(-2.830)	(-2.806)	(-5.260)	(-4.894)
Constant	0.347**	0.303**	1.194***	0.835***	1.487***	1.175***
	(2.261)	(2.266)	(8.542)	(7.071)	(8.664)	(8.440)
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,201	1,201	1,126	1,126	1,207	1,207
Adjusted R-squared	0.178	0.276	0.190	0.303	0.293	0.292
Four-factor loadings	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

Panel C: Alternative Crisis Periods

	Dot.com		9/11 Demand		LTCM	
VARIABLES	Raw return (1)	Abnormal return (2)	Raw return (3)	Abnormal return (4)	Raw return (5)	Abnormal (6)
BSC	**-0.076**	**-0.519**	**-0.013**	**-0.006**	**-0.011**	**0.016**
	(-0.521)	(-1.643)	(-0.345)	(-0.141)	(-0.075)	(0.104)
Constant	1.368***	2.483***	0.100	0.073	-0.335***	-0.330***
	(6.161)	(5.311)	(1.590)	(0.989)	(-4.265)	(-2.933)
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Observations	935	935	1,031	1,031	753	753
Adjusted R-squared	0.352	0.430	0.103	0.077	0.148	0.130
Four-factor loadings	Yes	Yes	Yes	Yes	Yes	Yes
Industry FE	Yes	Yes	Yes	Yes	Yes	Yes

This table presents results of the relationship between BSC and stock returns estimating *Eq.*(3.2). In Panel A, *BSC* is measured in 2005, 2004 and 2003. In Panel B, I introduce placebo crisis years and estimate *Eq.*(3.2). As before, placebo crisis period return is estimated over 21 month starting from July of the placebo year. Panel C, estimates *Eq.*(3.2) over alternative crisis periods - Dot.com bubble (2000 Q1 to 2002 Q3), September 11 terrorist attack (2001 Q3-Q4) and Russian debt crisis that led to a collapse of Long-Term Capital Management (LTCM) hedge fun. All the variables are as described in Table 3.7. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on heteroskedasticity-consistent standard errors clustered by two-digit SIC industry.

Table 3.7: Crisis period returns and BSC

	October 1929 to December 1930		October 1929 to December 1931		October 1929 to December 1932	
VARIABLES	Raw return	Abnormal return	Raw return	Abnormal return	Raw return	Abnormal return
	(1)	(2)	(3)	(4)	(5)	(6)
BSC_{Beaver}	**0.608*** **	**1.064*** **	**0.449** **	**2.032*** **	**0.230**	**0.558**
	(4.502)	(3.826)	(2.609)	(4.351)	(1.118)	(0.836)
Constant	-0.352***	-0.300**	-0.623***	-0.674**	-0.788***	-0.649
	(-4.721)	(-2.095)	(-9.372)	(-2.366)	(-7.962)	(-1.258)
Observations	104	104	97	97	92	92
Adjusted R-squared	0.059	0.338	0.049	0.539	0.228	0.402
Firm Characteristics	Yes	Yes	Yes	Yes	Yes	Yes
Four-factor loadings	Yes	Yes	Yes	Yes	Yes	Yes
Industry F.E.	Yes	Yes	Yes	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes	Yes	Yes	Yes

This table presents results of the relationship between Great Depression (1929-1932) returns and BSC. The beginning of the crisis is set as of October 1929. Crisis-period returns are measured over three periods: (1) from October 1929 to December 1930; (2) from October 1929 to December 1931; (3) from October 1929 to December 1932. The regression model under consideration is as in Table 3.5. To measure BSC I follow the modified model of Beaver and Ryan (2000) (I reduce number of lagged observation to one time period to preserve the sample size). The model is as follows:

$$BTM_{i,t} = \alpha_i + \alpha_t + \sum_{j=0}^{1}[\beta_1 D_{i,t-j} + \beta_2 R_{i,t-j} + \beta_3 D_{i,t-j} R_{i,t-j}] + \epsilon_{i,t},$$

where BTM is the book-to-market value of equity measured at the end of the fiscal period. α_t is a time intercept and α_i is firm-specific measure of unconditional conservatism. This measure is referred as BSC_{Beaver}. Factor loadings and idiosyncratic risk are estimated each month based on the previous 39 months' data (min 18 months). ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on clustered standard errors at the industry level.

Table 3.8: Operating performance surrounding the Crisis and BSC

Panel A: Alternative profitability measures

VARIABLES	(1) ROA	(2) ROE	(3) ROS
BSC	**0.148*** **	**0.326*** **	**0.209*** **
	(8.557)	(5.569)	(3.365)
Observations	1,550	1,550	1,549
Adjusted R-squared	0.471	0.281	0.369
Industry F.E.	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes

Panel B: Investment, Employment, TFP

VARIABLES	(1) CAPEX	(2) EMPL	(3) TFP
BSC	**0.312** **	**0.322*** **	**0.228*** **
	(2.437)	(5.476)	(3.745)
Observations	1,547	1,532	1,198
Adjusted R-squared	0.142	0.232	0.135
Industry F.E.	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes

This table presents results of the relationship between operating performance surrounding the crisis and BSC. Main regression under consideration is as follows:

$$Y_{i,2009-2007} = \beta_0 + \beta_1 BSC_{i,2006} + \psi\prime X_{i,2006} + Y_{i,2006-2004} + \omega\prime FE_i + \epsilon_i,$$

where subscript i denotes firm. For Panel A, C and D the dependent variable $Y_{i,2009-2007}$ is cumulative crisis-period firm performance, firm risk and capital raising. In Panel B, $Y_{i,2009-2007}$ is the log difference of investment, employment and TFP. BSC stands for the measure of balance sheet conservatism that is measured in 2006. $X_{i,2006}$ is a vector of firm-specific control variables that are measured in 2006. Specifically, I control for firm's financial health before the crisis. I include cash holdings, both short- and long-term debt, profitability, Tobin's Q and change in y within 2004 to 2006. FE is two-digit fixed effects. All the variables are as described in Table 3.7. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on clustered standard errors at the two-digit SIC industry level.

Table 3.8 - *Continued*

Panel C: Firm risk			
	(1)	(2)	(3)
VARIABLES	STD	Default Prob.	Rating
BSC	**-0.115*** **	**-0.207*** **	**-2.282*** **
	(-4.098)	(-4.422)	(-2.929)
Observations	1,633	1,155	665
Adjusted R-squared	0.331	0.334	0.747
Industry F.E.	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes

Panel D: Capital raising		
	(1)	(2)
VARIABLES	Debt Issuance	Equity Issuance
BSC	**0.046*** **	**0.005**
	(3.040)	(0.226)
Observations	1,565	1,565
Adjusted R-squared	0.130	0.231
Industry F.E.	Yes	Yes
Clustered St. Errors	Yes	Yes

Table 3.9: Stock returns surrounding the Crisis and BSC: PSM

Panel C: Firm risk			
	(1)	(2)	(3)
VARIABLES	STD	Default Prob.	Rating
BSC	**-0.115*** **	**-0.207*** **	**-2.282*** **
	(-4.098)	(-4.422)	(-2.929)
Observations	1,633	1,155	665
Adjusted R-squared	0.331	0.334	0.747
Industry F.E.	Yes	Yes	Yes
Clustered St. Errors	Yes	Yes	Yes

Table 3.10: Stock returns surrounding the Crisis and BSC: PSM

Panel A: Index of BSC characteristics		
VARIABLES	Raw return	Abnormal return
BSC-index	**0.037***	**0.106****
	(1.927)	(2.546)
Constant	-0.676***	-0.882***
	(-11.547)	(-6.314)
Observations	844	844
Firm Characteristics	Yes	Yes
Adjusted R-squared	0.173	0.367
Four-factor loadings	Yes	Yes
Industry F.E.	Yes	Yes
Panel B: BSC following Beaver and Ryan (2000, 2005)		
$\boldsymbol{BSC_{Beaver}}$	**0.229*****	**0.323*****
	(4.816)	(3.867)
Constant	-0.455***	-0.646***
	(-5.282)	(-4.200)
Observations	1,256	1,256
Adjusted R-squared	0.239	0.351
Firm Characteristics	Yes	Yes
Four-factor loadings	Yes	Yes
Industry FE	Yes	Yes
Panel C: FRQ following McNichols (2002)		
BSC	**0.170*****	**0.329*****
	(4.216)	(3.812)
FRQ	**0.412****	**1.259*****
	(2.278)	(3.124)
Constant	-0.528***	-0.598***
	(-6.999)	(-3.804)
Observations	1,297	1,297
Adjusted R-squared	0.215	0.360
Firm Characteristics	Yes	Yes
Four-factor loadings	Yes	Yes
Industry FE	Yes	Yes

This table presents results of the relationship between BSC and stock returns using robustness test. Panel A replaces BSC in $Eq.(3.2)$ with alternative proxy constructed as an index of firms' conservative reporting of asset values, conditional and unconditional conservatism using principal component analysis. Panel B replaces BSC in $Eq.(3.2)$ with alternative proxy following Beaver and Ryan (2000, 2005). Panel C add FRQ following Dechow and Dichev 2002 augmented by the fundamental variables (PPE and change in revenues) following McNichols 2002. All the variables are as described in Table 3.7. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on heteroskedasticity-consistent standard errors clustered by two-digit SIC industry.

Internet Appendix

Table 3.1: Measuring balance sheet conservatism

This table presents the OLS regression results of BTM on a set of variables for estimation of BSC following *Eq.*(3.1). The results replicate findings of Sunder et al. (2018), Appendix 1. ***, **, * denote statistical significance at 1%, 5% and 10% levels. P-values are derived based on heteroskedasticity-consistent standard errors clustered at the firm-level.

VARIABLES	(1) Dep. Variable = BTM
LT Growth Forecast	-0.006***
	(-27.912)
Sales Growth	-0.074***
	(-14.806)
Industry Concentration	-0.041
	(-1.001)
1/Consumer Sentiment Index	15.099***
	(7.548)
1/S&P Index	264.211***
	(10.306)
Profitability	-0.422***
	(-15.057)
Credit Rating	0.007***
	(10.807)
Return Volatility	0.187***
	(20.135)
High Inflation	-0.026***
	(-4.300)
AOCI	0.927***
	(10.126)
Observations	57,150
Adjusted R-squared	0.262
Year F.E.	Yes
Industry F.E.	Yes

Table 3.2: Correlation Matrix

This table presents correlation matrix between *BSC-index* constructed using first component from principal component analysis and BSC characteristics. *Depreciation* is an indicator variable equal to one if the compustat footnote (dpact_fn) shows that the firm uses accelerated depreciation, and zero otherwise. *R&D* and *Advertising reserves* are "hidden" reserves following Penman and Zhang (2002). *Advertising reserve* (xad) (*R&D reserve*) (xrd) is amortized using a sum-of-the-years-digits method over two (five) years. *Goodwill* is an indicator variable equal to one if there is no goodwill balance (gdwl), and zero otherwise. *Acquisition* is an indicator variable equal to one if the compustat footnote (aqs_fn) shows that the firm uses pooling of interest method ("AI"), and zero otherwise. *Accruals* the average of nonoperating accruals (ni + dp - oancf + recch + invch + apalch + txach) scaled by assets (at) over a period with a maximum of three years and a minimum of two years. ***, **, * denote statistical significance at 1%, 5% and 10% levels.

	BSC-index	Depreciation	R&D reserve	Advertising reserve	Goodwill	Acquisition	Accruals	BSC
BSC-index	1.00							
Depreciation	-0.00	1.00						
	(0.66)							
R&D reserve	0.80***	0.00	1.00					
	(0.00)	(0.41)						
Advertising reserve	0.00	-0.02***	-0.04***	1.00				
	(0.76)	(0.00)	(0.00)					
Goodwill	0.35***	0.01	0.09***	0.03***	1.00			
	(0.00)	(0.13)	(0.00)	(0.00)				
Acquisition	0.01*	0.01	0.02***	-0.02***	-0.01***	1.00		
	(0.07)	(0.16)	(0.00)	(0.00)	(0.01)			
Accruals	-0.75***	0.01**	-0.29***	-0.02***	-0.03***	0.02***	1.00	
	(0.00)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)		
BSC	0.18***	0.01***	0.17***	0.07***	0.04***	0.06***	-0.07***	1.00
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	

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