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Thesis: Tingyu Sun (2024) " The Effects of External Shocks on Market Based Accounting Research (MBAR)", University of Southampton, Faculty of Social Science, PhD Thesis.

**Faculty of Social Science**

**Business School**

**Three-chapter Thesis**

**The Effects of External Shocks on Market Based Accounting Research (MBAR)**

**PhD candidate**

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## **Abstract**

The thesis adopts three-chapter requirements and employs quantitative methods. All using difference-in-difference (DID) approach, chapter 2 takes 1999 rulings as an exogenous shock, while chapter 3 and chapter 4 both explore the real impacts of FAS 166/167. Using a sample spanning from 1995-2003 (with 1999 excluded), chapter 2 suggests that the litigation pressure from shareholders might be a potential explanation for managers to smooth income. The findings are robust to confounding laws and the falsification test. And the decrease in income smoothing after the 1999 rulings are more significant when firms fail to meet financial goals, are with more peer pressure, more financially constrained, in non-consumer-oriented industries and with moderate labor unions. My chapter 3 continuously explores the real impact of exogenous shock on accounting manipulation, proving the positive spillover effect of FAS 166/167 on corporate earnings management. We only find the increase in corporate accrual-based earnings management after their lenders adopt FAS 166/167, while no such evidence can be observed in real earnings management. The findings are robust to a battery of concurrent events which are triggered by the financial crisis and might be influential in the shock period. The spillover effect is more significant when firms are facing higher financially stress and experiencing lower-level governance. My chapter 4 extends the line of chapter 3 and proves the positive spillover effect of FAS 166/167 on corporate CSR performance. The main findings are robust to a set of tests and the falsification tests. And the spillover effect is more concentrated among firms which are more financially constrained, more externally monitored and with higher risk levels.

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## Research Thesis: Declaration of Authorship

Print name: Tingyu Sun

Title of thesis: The Effects of External Shocks on Market Based Accounting Research (MBAR)

I declare that this thesis and the work presented in it are my own and has been generated by me as the result of my own original research. I confirm that:

1. This work was done wholly or mainly while in candidature for a research degree at this University;
2. Where any part of this thesis has previously been submitted for a degree or any other qualification at this University or any other institution, this has been clearly stated;
3. Where I have consulted the published work of others, this is always clearly attributed;
4. Where I have quoted from the work of others, the source is always given. With the exception of such quotations, this thesis is entirely my own work;
5. I have acknowledged all main sources of help;
6. Where the thesis is based on work done by myself jointly with others, I have made clear exactly what was done by others and what I have contributed myself as follows:

I conduct the empirical part and finish the first draft under the guidance and supervision of Dr. Qingjing Zhang. Dr. Yiwei Li contributes to the empirical analysis of the reusing natural experiment, Dr. Wei Song contributes to modifications both for first draft and the R&R versions.

7. Parts of this work have been published as:

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Signature: Tingyu Sun

Date: 12 Sep 2023

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## **Chapter 1 Overall Introduction**

### **1.1 Background and Motivation**

#### **1.1.1 Theoretical and Institutional Background**

My three-chapter thesis focuses on the effects of the exogenous shocks (e.g., regulation changes and accounting requirement changes) on the area of market-based accounting research (hereafter MBAR). As Lev and Ohlson (1982) suggest, the development of finance theory during the late 1950s and early 1960s motivates the research on the research area of market-based accounting. They also indicate that MBAR focuses on the exploration of the relationship between publicly disclosed accounting information and outcomes of such information from the users (i.e., equity investors). The empirical issues in studies in market-based accounting are further discussed and developed in the following decades (e.g., Bernard, 1987; Walker, 1997). Simultaneously, the theoretical development of MBAR also can be observed in a stream of literature. Watts (1992) points out that accounting choice is essential to market-based studies and can guide the tests of the association between accounting numbers and stock prices as well as the discrimination between competing models of capital markets. His research emphasizes the importance of accounting choice theory in explaining the relation between accounting numbers and the capital market. Similarly, further discussing the impact of accounting numbers on market adjustments of share price, Gonedes (1974) provides empirical evidence that the accounting numbers jointly release information to assess equilibrium expected returns and the information on corporates' production-investment decisions. Extending the research line of MBAR, my three chapters focus on the investigation of income smoothing, earnings management and corporate social responsibility (hereafter CSR), respectively. My thesis, focusing on MBAR, is expected to offer insights based on publicly disclosed accounting information to potential information users in the markets. Lev and Ohlson (1982) point out the association between the requirement of capital market efficiency and alternative information systems which can offer information for policy makers. My chapter 2, which conducts a natural experiment by using the shock of the 1999 ruling, partially explores the motivation of income smoothing, while chapter 3 explores how earnings management can be a response to a validated credit shock (i.e., FAS 166/167). My thesis is consistent with the line of MBAR research which discusses the potential relation between accounting numbers and capital markets.

### 1.1.2 Research Motivation

As a research branch of MBAR, the research on accounting manipulation attracts scholars' attention. The extant literature attempts to reveal the firms' motivations for accounting manipulation and points out various explanations for corporate accounting manipulation behaviours. For example, Gao and Zhang (2019)'s research suggests that capital market pressure might be one motivation for managers' intervening behaviours in the reporting process, which aims at affecting capital markets' inferences to their companies. Meanwhile, a stream of extant literature (e.g., Graham et al., 2005) attributes accounting manipulation to the agency problem. That is, the agents' career concerns, especially their external reputation, explain their motivation to hit the earnings benchmark and potentially to be engaged in the reporting process. Overall, the extant literature has not reached a consensus on the consequences and true motivations of corporate accounting manipulation. Also, the channels through which these motivations work are still not clear. To be more specific, the questions of 'how the managers' reputations would be influenced by firms' accounting manipulation levels', 'what specific aspects of manager reputation would work on their accounting manipulation decisions', and 'whether the external credit shock would have a spillover effect on firms' accounting manipulation decisions' are not clear. And if capital market pressure can explain firms' motivation for accounting manipulation, how should firms' accounting manipulation adjust to the change or shock of the capital market? In my thesis, I discuss the managers' career concerns through the channel of litigation risks in chapter 2 and employ a validated credit shock (i.e., lenders' adoption of FAS 166/167) to explore the motivations of corporate accounting manipulation in chapter 3 and chapter 4. My fourth chapter extends the line of chapter 3 by exploring the spillover effect of the validated credit shock of FAS 166/167 on CSR.

According to Beidleman, (1973), income smoothing is defined as the intentional dampening of fluctuations in reported earnings during the management process. They also point out that such management is normal for a firm and can be taken as an attempt on the portion of the firm's management to moderate abnormal variations in reported income under extant accounting and management principles. Especially, as DeFond and Park (1997) suggest, managers can shift current income into the future period if current income is high and the future income could be low, and vice versa. A stream of literature further reveals that income smoothing can be a potential consequence of the job pressure (e.g., Fudenberg and Tirole, 1995). That is, investors would like to align volatile earnings as well as failures to meet specific income expectations with poor management (e.g., Bushee, 2001). In such scenario,

managers are most likely to be blamed or even sued due to the volatile earnings as well as failures to meet specific income expectations. Thus, considering the current and future relevant firm performance, managers can enhance their job securities by smoothing incomes while volatile earnings might reduce their job securities by causing unexpected shareholder litigation. In other words, income smoothing can bring managerial benefits for managers to some extent.

The existing literature has not reached a consensus on the specific nature of income smoothing. Advocates for income smoothing reveal that income smoothing can provide private information on the future firm earnings for outside investors and stakeholders (e.g., Beidleman, 1973, Tucker and Zarowin, 2006). Such conscious information releasing can influence the judgments of the market on firms. Moreover, income smoothing can also decrease the costs of debt (Trueman and Titman, 1988) and enhance the firm value through leading companies to meet analyst forecasts (e.g., Myers et al., 2007). On the other hand, however, a stream of literature casts income smoothing in a less favourable light. As a type of accounting manipulation, income smoothing can hinder detection of managerial diversion and damage the information transparency of the firm (Leuz et al., 2003). Consistent with this line, it is suggested that income smoothing is positively associated to bid-ask spreads and likelihood of informed trading (Jayaraman, 2008). Such evidence supports the view that income smoothing can lead to garble information of the corporates' true performance and strengthen information asymmetry. Similarly, recent research indicates that income smoothing can increase the stock price crash risk and damage the shareholder wealth (e.g., Chen et al., 2017) as well as lead to higher information risk as bid-ask spreads around unexpected loss announcement are increased by income smoothing (Yu et al., 2018). Taken together, a stream of literature jointly implies the benefits of income smoothing on firm value, while the other stream of studies highlights the consequences of income smoothing on increasing information asymmetry and damaging the shareholder wealth.

Also performing as a form of accounting manipulation, earnings management is defined as the subject which “occurs when managers use judgment in financial reporting and in structuring transactions to alter financial reports to either mislead some stakeholders about the underlying economic performance of the company or to influence contractual outcomes that depend on reported accounting numbers” (Healy and Wahlen, 1999). In a similar line, Dye (1988) also claims that earnings management is able to alter potential investors' perceptions of the firm value, and benefits firms' contractual terms with outsiders (e.g., accounting-based

contracts with suppliers, debt-covenant restrictions, rate-of-return regulations). Thus, it seems that earnings management is driven by the needs of shareholders and external demands. The following three perspectives are in line with Dye (1988)'s arguments towards the motivation of earnings management to some extent and point out the channels through which firms can improve their access to finance by managing earnings. First, earnings management gives managers a channel to communicate their private information, which matches the firms' specific financial situations, to the markets (Healy and Wahlen, 1999; Sankar and Subramanyam, 2001; Dutta and Gigler, 2002; Bartov and Mohanram, 2004; Linck et al., 2013). Releasing information to the market consciously, managers can alter outside information users' judgments towards firms' value and endeavour to find potential investors for firms. Especially, as outside information users, the lenders rely on such information to some extent. We argue that corporate managers have the motivations to influence the lenders' judgment through earnings management. Second, earnings management brings firms benefits in the financial market. It is suggested that the strategic management of reported earnings can bring the firms rewards in both the equity market (Barth et al., 1999; Lee et al., 2006; Das et al., 2011) and the bond market (Khurana and Raman, 2003). Especially, Jiang (2008) argues that beating earnings benchmarks helps firms in the debt market by cutting their cost of debt. Perceiving the current credit shock, it is plausible that firms have strengthened motivations to explore alternative access to finance. Thus, we expect that the credit shock of the adoption of FAS 166/167 would trigger the earnings management due to firm-level alternative finance access seeking. That is, an increase in earnings management after the adoption of the regulation is expected. Third, earnings management occurs to serve specific projects of firms. Linck et al. (2013) point out that financially constrained firms could release signals by discretionary accruals to the market, aiming at raising capital for their valuable projects, which eases the constraints and enhance the firms' value to some extent. Taken together, this stream of the extant literature emphasizes the benefits of earnings management, especially providing evidence that earnings management can contribute to firms access to finance.

Here, in my thesis, exploring income smoothing in chapter 2 and earnings management in chapter 3 respectively, it is interesting and reasonable to notice the differences between income smoothing and earnings management. First, according to Fudenberg and Tirole (1995), income smoothing may require the managers to shift income from the current to the future, however, earnings management mainly focuses on exaggerating current earnings to meet specific earnings benchmarks. That is, the operational approaches of income smoothing and earnings management can be different. Second, the aims and the expectations of income

smoothing as well as earnings management can be distinguishable. Managers use income smoothing to avoid reporting a loss and thus to achieve a certain level of earnings which affects investors' perceptions of the riskiness of earnings (e.g., Cao et al., 2023). In short, the purpose of income smoothing is to reach a less volatile earnings stream. However, earnings management, generally speaking, is triggered by activities and aiming at boosting reported earnings to meet specific short-term earnings targets (e.g., Chen et al., 2017). Thus, compared with income smoothing, earnings management would be more event-driven and focus on short-term goals. Finally, income smoothing would be more prevalent in practice than earnings management due to accounting constraints (e.g., Khurana et al., 2018; Cao et al., 2023). That is, it is more challenging and unrealistic for managers to manage income upward for long-term periods due to the accounting constraints. However, as Graham et al. (2005) report, an overwhelming 97% of about 400 financial executives show a propensity for income smoothing.

## **1.2 Related Literature and Hypothesis development**

### **1.2.1 Related Literature and Hypothesis Development of Chapter 2**

To be more specific, my chapter 2 discusses 'Impact of Reduced Shareholder Litigation risks on Income Smoothing', while chapter 3 extends the research on accounting manipulation and focuses on the spillover effect of FAS 166/167 on earnings management. These two chapters are both focusing on the real effects of exogenous shocks on corporate accounting manipulation. As a type of earnings management on a specific purpose, income smoothing aims at making the reported income stream less variable (e.g., Carl R. Beidleman, 1973; Koch, 1981; Ronen and Sadan, 1981; Tucker and Zarowin, 2006; Chen, Kim and Yao, 2017), while earnings management may involve upward accounting manipulation behaviours. My chapter 2 explores how a firm-level external shock (i.e., the 1999 ruling) which reduces the shareholder litigation threat influences corporate managers' decisions on income smoothing. The research attempts to answer the question of how the shareholder litigation risks work on managers' accounting manipulation decisions. Also, the research can partially explain the agents' motivation to smooth earnings. I further explore the earnings management in the chapter 3. My chapter 3, focusing on the spillover effect of banks on their borrowers, investigates how firms respond to the lenders' accounting requirement changes (i.e., FAS 166 and FAS 167) as a validated credit shock. The research also can partially reveal the motivation of earnings management. My chapter 4, also focusing on the spillover effects from corporates' lenders, extends the line of chapter 3 and further investigates whether and how the firms

respond to their lenders' adoption of FAS 166/167 by enhancing corporate CSR performance. Also adopting the differences-in-differences (DID) approach, the research is consistent with the setting of chapter 3 and employs the shock of the adoption of FAS 166/167. Taken together, my three chapters jointly focus on the effects of the exogenous shocks (i.e., the 1999 ruling and the adoption of FAS 166/167) during the recent decades on the research areas of market-based accounting and corporate governance.

In chapter 2, we take the shock of the "1999 ruling" to conduct our quasi-experiment and explore the real changes in corporate income smoothing level. The "1999 ruling" refers to the U.S. Ninth Circuit Court of Appeals July 2, 1999 ruling (*Re: Silicon Graphics Inc. Securities Litigation*), which leads to the changes in stringency of securities class action litigation standards. The ruling required plaintiffs' attorneys to provide evidence prior to legally conducting a class action securities lawsuit that defendant made the pointed-out misstatement or omitting any material statement with "deliberate recklessness" instead of "mere recklessness" (Houston et al., 2019). Such evidence is relatively difficult to find and acquire. Thus, in practice, it is more procedurally difficult for shareholders to sue managers by class action securities than before. It is noticeable that the 1999 ruling is distinguishable from other circuits and objectively increases the difficulties to sue agents by class action securities lawsuit in the states of the Ninth Circuit Court<sup>1</sup>. As a result, there is a 43% drop in class action suits in the Ninth Circuit while a 14% increase across other circuits (Crane and Koch, 2018). Thus, it is reasonable to believe that the 1999 ruling reduced the threat of shareholder litigation for managers. In other words, the managers of the firms headquartered in ninth circuit states suffer less job security pressure from the shareholder litigation after the adoption of the 1999 ruling.

Taking the 1999 ruling as an exogenous shock which reduced the threat of shareholder litigation risks, we conduct a natural experiment and propose two competing hypotheses. On one hand, according to our discipline hypothesis, after 1999 ruling, the managers might increase income smoothing. That is, income smoothing, as information manipulation, is expected to be moderated by governance. Given shareholder litigation risks can serve as an external governance mechanism, such discipline is expected to decrease the level of income smoothing. Now that the 1999 ruling reduced the litigation risks and weakened the external governance, it is plausible to observe an increase in income smoothing. In short, according to

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<sup>1</sup> The nine states in the Ninth Circuit are Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, and Washington.

our discipline hypothesis, income smoothing would be positively influenced by the weakened governance due to the 1999 ruling. In other words, we expect to observe an increase in income smoothing level after the adoption of FAS 166/167. On the other hand, we raise the pressure hypothesis. That is, the threat of litigation risks can result in pressure on managers during their management process, which may potentially damage their reputation and even their job security. Thus, we believe that managers have motivations to avoid any potential risks of being sued. Further, as Bushee (2001) and Agarwal et al. (2018) suggest, investors would attribute volatile earnings and failure to meet earning expectations to poor management. It is reasonable to see that managers do have pressure to smooth earnings which can help them to show more stable financial performance to shareholders and avoid any potential possibility of being sued due to volatile earnings. In other words, such job security pressure might partially be managers' motivation to smooth earnings. Given the 1999 ruling moderates the pressure on managers, managers' the motivation of income smoothing might decrease. Thus, we expect to observe a decrease in income smoothing after the 1999 ruling, which moderates such pressure on managers. That is, managers' motivations for income smoothing due to job security pressure would be moderated, and corporate income smoothing would be negatively affected by the 1999 ruling. Taken together, we have a two-side hypothesis (i.e., the discipline hypothesis and the pressure hypothesis) that the 1999 ruling might either increase the income smoothing through the channel of discipline or negatively influence the income smoothing through the manager pressure channel.

### **1.2.2 Related Literature and Hypothesis Development of Chapter 3**

In chapter 3, to further explore the real effect of external shocks on corporate accounting manipulation, we explore how the firms respond to FAS 166/167 by adjusting their earnings management level. It is noticeable that we investigate the spillover effect of banks on their borrowers in this chapter by exploring FAS 166/167 which is modifying the accounting requirements for banks. The ruling of FAS 166/167 takes effective on January 1, 2010 and modifies FAS 140 and FIN 46(R) respectively. Before the modification, banks can access to sale accounting for securitizations and non-consolidation of securitization vehicles, which consequence in off-balance sheet existent (Ryan, 2017; Ahn et al., 2020). To answer the concern of off-balance sheet existent, FAS 166 and FAS 167 together phase out the perception of qualifying special purpose entities (QSPEs), pushing securitizing banks to realise the risk integration by consolidating credit card master trusts and asset-backed commercial paper conduits from these vehicles (Ryan, 2017). The validated credit supply shock, enforcing banks to realise more risk on balance sheet, also has a real spillover effect on corporate

governance (e.g., Dou and Xu, 2021). According to existing literature, there is evidence on the impacts of the adoption of FAS 166/167 which suggests it as a validated credit shock. According to Dou et al., 2016, as direct influence of FAS 166/167 on banks, loan supply and assets held by banks' consolidated VIEs reduced. The reduction can also be observed in the following two aspects which are mortgage approval rates (Dou et al. 2018) and the balance of securitized credit card loans (Tian and Zhang, 2016) respectively. Moreover, Dou (2021) suggests that aggregate small business lending as well as the growth of the number of small businesses in counties in which consolidating banks obtain relatively more market share both reduced after the adoption of FAS 166/167. Collectively, the extant literature provides empirical evidence and suggests the adoption of FAS 166/167 as a validated credit shock. In this research, we employ FAS 166/167 as an exogenous shock, which shocked the banking system, exploring the spillover effect of the credit supply shock on firms' earnings management.

Advocates for earnings management reveal the benefits brought by such information manipulation and the partial motivations of firms to manage their earnings. A stream of extant literature points out that earnings management can contribute to firms by releasing private information (e.g., Linck et al., 2013) to the market and improving firms' financial access (e.g., Das et al., 2011; Defond and Zhang, 2014). It seems that the ideal and deliberate financial performance exhibition is partially intrinsic motivation of firms to manage earnings. Given that FAS 166/167 tighten the accounting requirement for the banks and act as a validated credit supply shock, it is conceivable that firms have motivations to respond to the changes in their borrowing and enhance reported earning-related management strategy which can potentially provide better financial access. This is because FAS 166/167 jointly push the banks to realize more risks and might consequently tighten their lending. Now that earnings management objectively enhances firms' financial performance and releases positive financial signal to outside information users in the short term, it is reasonable to observe an increase in earnings management after lenders' adoption of FAS 166/167.

To be more detailed, the following evidence in three perspectives may provide insights of firms' motivation to respond to the validated credit shock by managing earnings. First, earnings management endows managers with channels to communicate their private information to the markets (Healy and Wahlen, 1999; Sankar and Subramanyam, 2001; Dutta and Gigler, 2002; Bartov and Mohanram, 2004; Linck et al., 2013). Especially, Jiang (2008) points out that the information of beating earnings benchmarks brings benefits in the debt



market to the firms and reduces their cost of debt. Managers are able to alter the firm value judgments of outside information users (e.g., their lenders or potential lenders) and potentially ease their borrowing process under the credit shock by releasing information to the market. Second, earnings management has a role to serve specific projects of firms. According to Linck et al. (2013), firms signal the market by discretionary accruals for raising capital to make their investment of valuable projects. Similarly, it is reasonable for firms to release such signals to the lenders for serving their borrowing projects, especially when firms are perceiving a validated credit shock and lending decision changes of their lenders. Third, earnings management can bring benefits to the firms in the financial market as alternative access to finance. Prior research finds that the strategic management of reported earnings can bring the firms rewards in the equity market (e.g., Lee et al., 2006; Das et al., 2011) as well as the bond market (Khurana and Raman, 2003; Defond and Zhang, 2014). The adoption of FAS 166/167 negatively influences the bank lending and potentially deters the firms' access to banking credit to some extent. Perceiving the credit shock of the banking system, firms may have stronger incentives to seek alternative access to finance (e.g., from the equity market and the bond market). Thus, to sum up, we raise the hypothesis that the FAS 166/167 have a positive spillover effect on firms' earnings management. In other words, borrowers respond to the shock of their lenders' adoption of FAS 166/167 by increased earnings management.

### **1.2.3 Related Literature and Hypothesis Development of Chapter 4**

Chapter 4 extends the line of chapter 3 and further explores the spillover effect of FAS 166/167 on CSR. On the one hand, responding to the validated credit supply shock which retrenches bank lending, firms are reasonable to hence their access to finance. According to extant literature, superior CSR performance enhances stakeholder engagement (e.g., Cordeiro and Tewari, 2015) and firm transparency (e.g., Mishra, 2017). Furthermore, a stream of literature points out that CSR could positively signal the market (e.g., Dhaliwal et al., 2011) and bring firms financial benefits in the capital market (e.g., Roy et al., 2022). More directly, Cheng et al. (2014) reveal that superior CSR performance enhances firms' access to finance. Given that borrowers are plausible to perceive the credit shock from their lenders and potential consequences on their borrowing process, the motivations of firms to enhance their access to finance would increase after their lenders' adoption of FAS 166/167 which tightens the accounting requirements for the banks. Thus, to respond to the shock of FAS 166/167, it is reasonable to observe an increase in corporate CSR performance which may enhance their access to finance and potentially release the borrowing pressure. On the other hand, other scholars cast CSR in a less favourable light and argue that CSR performance could be

consequences of agency problems (e.g., Borghesi et al., 2014, Petrenko et al., 2016). As Cai et al. (2016) suggest, managers can benefit their own utility by CSR activities, instead of being stakeholder interests oriented. Similarly, Cai et al. (2020) believe CSR enhance managers' personal reputation and contributes to their own career. Given FAS 166/167 make banks realise more risks and retrench the bank lending, according to Jensen's (1986) free cash flow theory, it is conceivable that such shock (i.e., lenders' adoption of FAS 166/167) might reduce agency costs when firms have more borrowing pressure and less liquidity. That is, according to the free cash flow theory, the agency problem is moderated when firms are experiencing financial constraints. Given now the adoption of FAS 166/167 pushes banks to realise more risks and tightens the bank lending, the firms are expected to perceive such change during their borrowing projects and be relatively more sensitive to their own cash flow. If CSR can be explained and driven by the agency problems, in such situation, according to Jensen's (1986) free cash flow theory, agents should reduce their CSR investments if CSR investments attributes to their own interests and agency problems. Thus, consistent with this line, we expect to see a decrease in corporate CSR after the ruling of FAS 166/167. Collectively, we raise a two-side hypothesis that there is no change in corporate CSR performance after their lenders' adoption of FAS 166/167.

## **1.3 Methodology and Results**

### **1.3.1 Methodology and Results of Chapter 2**

All of my three chapters employ the difference-in-differences (DID) approach, taking the 1999 ruling and FAS 166/167 as exogenous shocks, respectively. In chapter 2, a sample of all publicly listed firms in the US over the period between 1995 and 2003 from the Compustat/CRSP database is obtained. Given the 1999 ruling gets effective in the middle of the year, the ruling year of 1999 is excluded from the analyses. We take firms under the jurisdiction of the Ninth Circuit Court as treatment ones, and control firms otherwise. Taking four years before (i.e., 1995-1998) as the pre-period and four years after (i.e., 2000-2003) as the post-period, we find significant post-ruling decreases in income smoothing levels due to reduced shareholder litigation risks after the 1999 ruling with firm and industry-year fixed effects. We further conduct the dynamic treatment analysis to address the concern that divergent trends between the treatment and control firms drive the main findings. In the dynamic treatment analysis, the results are only significant and negative in post-period, which indicates that our main findings are not explainable by the pre-trends differences between treatment and control firms. Next, the propensity score matching is conducted to address the

issue of selection bias. Our main findings that income smoothing is negatively influenced by the adoption of the 1999 ruling still hold after using a matched sample. To further explore the channels for the correlation between litigation risks and income smoothing, we then conduct the subsample analysis and find that all the subsample analysis results can support and explain our hypothesis. That is, the decrease in income smoothing after the 1999 ruling is more pronounced among firms which are likely to have a short-term investment horizon, where managers have limited outside options, which are with High IVol Risk, which belong to more competitive industries, and which are with High-tech Intensity. It is plausible that the managers in such firms are believed to have higher job security pressure from shareholder litigation threat than others. The results in subsample analysis further support our main findings that shareholder litigation pressure will push managers to smooth earnings and avoid any potential possibility of being sued. In short, the subsample analysis supports our hypothesis and indicates that such post-ruling decrease in income smoothing is more prominent among firms in which managers are more likely to suffer higher pressure from shareholder litigation. Taken together, given now the 1999 ruling moderates the threat of shareholder litigation for managers, it is plausible to see that managers reduce their income smoothing level in the ninth circuit states. And such reduction is more significant among firms in which managers are suffering higher job security pressure. Furthermore, to address the concern that our main findings might be driven by the confounding laws, we take the following confounding laws into consideration and redo the regression. The laws are antitakeover laws (i.e., directors' duties laws (DD), poison pill (PP) and business combination (BC)), derivative suits-related laws (i.e., universal demand laws (UD)), and employee takeover law (i.e., Inevitable Disclosure Doctrine (IDD) and the rejection (RIDD)), respectively. Such laws may have impacts on agents' job security pressure and thus be driven issues of our main findings. The results in the confounding laws analysis are still significant and negative. Here, we confirm that our main findings still hold after controlling the confounding laws. In other words, the decrease in income smoothing after the adoption of the 1999 ruling is not likely to be explainable by the confounding laws.

### **1.3.2 Methodology and Results of Chapter 3**

In chapter 3, we explore the spillover effect of a validated credit shock on borrowers' accounting practices. To conduct empirical analysis under the setting, we first identify the influenced bank holding companies according to the Schedule HC-V of FR Y-9C reports where VIEs' related information is covered and link the bank holding companies to their owners by using owners' RSSD IDs. Next, to link the borrowers to their lenders, we use the

loan-level data employed from the database of Thomson Reuter's DealScan. According to the loan facility, the treatment and control firms are identified. That is, the borrowers of which the lenders are influenced by FAS 166/167 are treatment firms in our sample, while the control firms are the ones only borrowing from unaffected lenders in both pre- and post-periods. More identification details are available in chapter 3. As for the case that a firm borrows from multiple lenders, we follow Dou and Xu (2021)'s research and weight banks characteristics according to the loan amount. Due to the treatment and control firms are not balanced, we use the method of propensity score matching to conduct our final sample which spans from 2007 to 2013.

Using this sample, we find that earnings management level increases after the adoption of FAS 166/167 and the results remain without control variables proving the robustness, while no such evidence for real earnings management activities. Such evidence suggests that managers respond to the credit shock of FAS 166/167 only by increasing accrual-based earnings management but not real earnings management. The potential reasons are that real earnings management is believed to be more harmful to firms' long-term actions (e.g., Cohen and Zarowin, 2010), and the threat of litigation of using real earnings management for managers is considerable (Huang et al., 2020). Thus, the firms are inclined to respond to the validated credit shock of FAS 166/167 by increasing accrual-based earnings management. To confirm that our main findings are not driven by divergent trends between the treatment and control firms, we perform the dynamic treatment analysis. There are only statistically significant results in the post-regulation period, indicating that the pre-trends discrepancy between the treatment and control firm groups is unlikely to be the driven issue for the post-regulation increase in earnings management. Further, by cross-sectional analysis, we find that the increase in earnings management after the adoption of FAS 166/167 would be more pronounced for financially constrained firms, when measuring the finance constrains using KZ index, EFD, zero\_divident, no repurchase, and cash flow, respectively. A potential explanation is that financially constrained firms are more likely to perceive the pressure of a credit shock. Simultaneously, we provide evidence that the spillover effect of consolidating securitization entities is strengthened among firms that have relatively weaker monitoring, which contains both the measures for internal governance and external governance. Next, we notice the potential concern that the financial crisis (i.e., 2007-2008) might explain our main findings and perform the falsification tests. To conduct the falsification tests, we use the pseudo year of the year of 2006 and the sample period of 2003-2009 to redo our main regression, where three years before (i.e., 2003-2005) is defined as the pre-period while

identifying four years after (i.e., 2006-2009) as the post-period. If our main results can be explained by the financial crisis (i.e., 2007-2008), it is expected to observe the significant results using such sample period. Otherwise, it is unlike that the financial crisis can drive our baseline results. In the falsification tests, we can only observe insignificant results, which indicates that our findings are not likely to be explainable by the financial crisis (i.e., 2007-2008). We confirm that our baseline results are robust to the falsification tests. Furthermore, to address the concern that the concurrent events can drive our main results, we conduct the robustness test of concurrent event analysis. During our sample period, there are several concurrent events as responses to the financial crisis. We confirm that the main findings are robust to a series of concurrent events, which are Basel III, Stress test, Troubled asset relief program (TARP), and real estate prices, respectively. More details are available in the following chapters.

### **1.3.3 Methodology and Results of Chapter 4**

In chapter 4, continuously exploring the spillover of the adoption of FAS 166/167 on borrowers, we find that firms enhance their CSR performance after their lenders adopt FAS 166/167, and the results still hold without control variables proving the robustness. The results indicate that firms respond to the validated credit shock from their lenders by enhancing their CSR performance, which can potentially improve the access to finance. We perform the dynamic treatment analysis to prove that our findings are not likely to be explained by divergent trends between treatment and control firms. The results of the dynamic treatment analysis suggest that the increase in CSR is only statistically significant in the post-regulation period, which implies that the pre-trends discrepancy cannot explain the baseline results. Furthermore, to address the concern that concurrent events are driven issues of the main findings, we conduct the robustness test of concurrent events analysis. We confirm that the results are also robust to a battery of concurrent events, which are Basel III, Stress test, TARP, and real estate prices, addressing the concerns that our findings can be confounded by contemporaneous events. Also, the results are robust to the falsification test, which confirms that the main findings are not driven by chance or the financial crisis (i.e., 2007-2008). That is, if our main findings can be explained by the financial crisis instead of the adoption of FAS 166/167, we are expected to observe significant results in the falsification test using the pseudo year of 2006, while the results of the falsification test are insignificant. Thus, we say that the financial crisis (i.e., 2007-2008) is not likely an explanation for the increase in firm-level CSR in the post-regulation period. Further, we prove that the increase in firm CSR in response to their lenders' adoption of FAS 166/167 is more significant among firms which are

more financially stressful (measured by EFD and zero dividend), with more intense external monitoring (measured by institutional investors and analysis following) and higher risk-taking level (measured by DUVOL and SDRET). The potential reasons are that financially stressful firms as well as riskier firms are more likely to be sensitive to the access to finance. This is consistent with our main findings that firms respond to the adoption of FAS 166/67 by enhancing their CSR performance which can potentially improve their access to finance. To develop the insights of the relation between the adoption of FAS 166/167 and firm CSR performance, we further provide evidence that such increase in CSR can be only observed with the CSR strengths items, which the results of the items of CSR weakness are insignificant. The results indicate that firms increase their CSR performance after the validated credit shock of FAS 166/167 by enhancing their CSR strengths rather than improving the CSR weaknesses. A plausible explanation for this finding is that enhancing CSR strengths is a more optimal choice for firms to release signals of superior CSR performance to the market.

### 1.3.4 Discussion of the DID Approach

Collectively, taking the 1999 ruling and the adoption of FAS 166/167 as external shocks, all of my three chapters employ the DID approach, respectively. The DID approach, as a quasi-natural experiment, selects an external shock and uses treatment group and control (comparison) group to verify the stated hypothesis (e.g., Meyer, 1994). Dating back to Snow (1855)'s research, the approach of DID estimates the discrepancy between the changes before and after an external shock (e.g., accounting requirement change, regulation formulation, etc.) among the treatment and control groups, of which the equation can be displayed as follow:

$$y_{it} = \beta_0 + \beta_1 Post_t + \beta_2 Treat_i + \beta_3 Treat_i * Post_t + \varepsilon_{it} \quad (1)$$

where  $i$  denotes a firm, and  $t$  denotes time.  $Post$  is a dummy variable which equals to one for post-shock period, and zero otherwise. The dummy variable of  $Treat$  equals to one if the firm is identified as treatment firm, and zero for control variable. Cook and Campbell (1979) further develop the approach by raising the validity threats and enhancing the design and analysis of the quasi-experimentation. The DID approach has also been further enhanced by Bertrand et al. (2004)'s research, where the clustering problems are discussed. In the recent decades, the scholars continuously develop the DID approach (e.g., Cengiz et al., 2019) and propose stacked DID which uses the staggered adoption design. Sun and Abraham (2021) suggest an alternative estimator for estimating dynamic treatment effects in event studies, which also enhance the application of staggered DID. Simultaneously, Callaway and Sant'Anna (2021)'s research contributes to the DID approach, especially the staggered DID

adoption design, by focusing on the identification, estimation and the inference procedure with multiple time periods. Similarly, the staggered DID adoption design has also been discussed and developed by Goodman-Bacon (2021)'s research.

All adopting the DID approach, the reverse causality issues are relatively weakened in my thesis. My three chapters take the exogenous shocks of the 1999 ruling (for chapter 2) and banks' adoption of FAS 166/167 (for chapter 3 and chapter 4), respectively. My chapter 2 explores the weakened shareholder litigation risks and income smoothing. The 1999 rulings reduced the shareholder litigation risks by requiring evidence to prove managers' "deliberate recklessness", which makes it more procedurally difficult for shareholders to sue managers. In chapter 2, the treatment group is defined as the firms which are headquartered in ninth circuit states and therefore subject to the 1999 ruling (more details can be found in the chapter 2), while the control group consists of the firms located in non-ninth circuit areas and thus unaffected by the ruling. Thus, employing the DID approach, it seems that any observed changes in income smoothing can be attributed to the reduced shareholder litigation risks (or the adoption of the 1999 ruling). In other words, the issue of reverse causality seems cannot potentially explain our results, cause the change in income smoothing unlikely trigger the formulation of the 1999 ruling. As for my chapter 3 and chapter 4, we employ the shock of the adoption of FAS 166/167 and define the treatment firms as the borrowers whose lenders are affected by the shock and consolidate their off-balance sheet (OBS) securitization entities and control firms as the ones only borrow from unaffected lenders in both pre- and post-periods. We require all the sample firms to borrow at least one loan before and after the regulation, respectively. As for the situation that the firm borrows from the bank which is latter affected after the adoption of FAS 166/167, if the previous loans end before the post period, we still define the firm as a control firm. More definition details are available in the following chapters. By such setting, we explore whether and how the validated credit shock (i.e., banks' adoption of FAS 166/167) would have a spillover effect on corporate earnings management in chapter 3. It is reasonable to believe that any change in earnings management in post period observed can be explained by the credit changes from their lenders instead of that the changes in earnings management lead the credit changes. This is because that firm-level accounting manipulation is unlikely influential to Financial Accounting Standards Board (FASB)'s decisions on the banking system and thus triggers the formulation of FAS 166/167. Again, in chapter 3, it seems that the concern of reverse causality issue is also relatively weak and addressed by employing external shock. Extending the line of the research on FAS 166/167 and focusing on corporate CSR, my chapter 4 continuously use the definition of treatment

group and control group in chapter 3. Similarly, it is expected that any observed changes in firm CSR performance are plausibly explainable by the validated credit shock. To be more specific, the changes in firm-level CSR performance unlikely trigger the accounting requirement modification for banks (i.e., FAS 166/167). And the issue of reverse causality is not likely founding in this research which employing an external shock and the DID approach, given the fact that corporate CSR performance is not likely a determination of FASB to issue FAS 166/167. Taken together, as Bertrand et al. (2004) suggest, the ideal appeal of DID estimation has its potential to address many concerns of the endogeneity problems. Thus, the concern of reverse causality in my three chapters is relatively weakened.

Especially here we argue several advantages of using the setting of FAS 166/167 to explore how corporates respond to the credit shock in the chapter 3 and chapter 4. First, as accounting requirement changes for the banking system, FAS 166/167 jointly bring a shock to bank lending and not likely to have a direct impact on firm-level fundamentals. In other words, unlike the regulation or accounting requirement changes for firms, the FAS 166/167 is directly working on the banks and would influence the firms by a spillover effect from their lenders. In my chapter 3 and chapter 4, any observed results of the DID method which use the setting of FAS 166/167 should be attributed to the spillover effect of the credit shock on firms, instead of the direct influence of accounting requirement changes. Thus, the setting of FAS 166/167 optimally explores the how the corporates respond to the credit shock. Second, effective at the year of 2010, the timing of FAS 166/167 is within the recent decades. Thus, we argue that the empirical evidence acquired by using the setting of FAS 166/167 is convincible to be explained by modern corporate governance. Third, only influencing the banks which have securities assets, FAS 166/167 provide an ideal setting for the DID method. We identify a firm as a treated one if the firm is a borrower in both pre- and post-period. And the firms which only borrow from uninfluenced banks in both periods can be identified as control firms. By using such setting, we can explore the spillover effects of a validated credit shock on firm-level earnings management and CSR respectively. Fourth, the setting of FAS 166/167 is not multiply used to test the spillover effects on borrowers yet. Thus, the concern of reusing the same setting after a natural experiment (Heath et al., 2022) can be moderated in research using the setting of FAS 166/167. That is, limited research explores the spillover effect of FAS 166/167 on borrowers and proves any influenced aspects in corporate governance. It seems that any observed changes in earnings management and CSR in my chapter 3 and chapter 4 can be explained by the lenders' adoption of FAS 166/167.



To further prove the main results in DID approach, the dynamic treatment analysis should be performed to address the concern that the main findings could be driven by pre-trends differences between control group and treatment group (e.g., Huang et al., 2020; Degl'Innocenti et al., 2023). In the dynamic treatment analysis, the pre- and post-periods are separated into year-based periods. If the main findings are explainable by pre-trends between control group and treatment group, we expect to observe significant result in the pre-years. In my chapter 2, the main results using the DID regression are positively significant, suggesting that income smoothing is enhanced after the shareholder litigation threat is reduced. However, it is still arguable that pre-trends differences in income smoothing can trigger such statistical results. To address this potential issue, we use the dynamic treatment analysis and find the results are only significant during post-years, which indicates that the main findings are not driven by any pre-trend differences in income smoothing between control group and treatment group. Similarly, as for my chapter 3 and chapter 4, also using the DID approach and employing the same external shock of FAS 166/167, the main findings would be attribute to pre-trend differences. That is, in chapter 3, main findings suggest that firms enhance their earnings management after their lenders adopt the ruling of FAS 166/167. There is potential concern that the increase in corporate earnings management we observed here is driven by pre-trends differences between control group and treated group. And in chapter 4, such issue also exists when explaining the increase of corporate CSR performance. Thus, we perform the dynamic treatment analysis in chapter 3 and chapter 4 as well. The results of pre-years are insignificant which addressing the concern that pre-trends in earnings management and CSR of control group and treatment group can explain our main findings.

However, DID approach is not perfect and has its drawbacks. Bertrand et al. (2004) assert that there are three factors which can result in serial correlation issue when use DID approach. The three factors are stated as follow. First, DID estimation requires fairly long sample periods. That is, to identify pre- and post-periods, the sample period needs to be long enough. For instance, in my chapter 2, a sample spanning from 1995 to 2003 is used, while the research in chapter 3 and chapter 4 is conducted based on a seven-year sample (i.e., 2007 to 2013). Second, they suggest that the frequently taken dependent variables in DID estimation might be with high probability of being positively serially correlated. This might be a potential concern for my chapter 3 and chapter 4, where the increases in earnings management and CSR are observed, respectively. However, my chapter 2 indicates a decrease in income smoothing after the 1999 ruling, which is unlikely related to the concern. Third, Bertrand et al. (2004) further point out an intrinsic concern of DID estimation that the treatment variable

changes by its own typically little within a state over time. Thus, they come to a concluded concern that the standard error for the coefficient of the treatment variable might understate the standard deviation of it. All using the DID approach, my three chapters need answer their concerns. The sample period of my chapter 2 spans from 1995 to 2003, given the ruling is effective from 1999. As for my chapter 3 and chapter 4, the sample periods are from 2007 to 2013. As suggested in Bertrand et al. (2004)'s research, the sample periods are relatively long and there might be concern of serial correlation problem. Trying to address such concern, my chapter 2, chapter 3 and chapter 4 perform the falsification tests (taking the falsification years of 1996 and 2006, respectively). If any unobserved trend differences due to the concern of serial correlation problem can explain our findings, we should expect to see the significant results in the falsification tests. In my three chapters, the results of falsification tests are insignificant. The results indicate that our main findings are unlikely to be driven by unobserved trend differences between the treated and control groups. Also, we conduct the dynamic treatment analysis in these three chapters to answer the concern that our results might be driven by pre-trends differences between the treatment and control firms. We can only observe significant results in the post-periods which indicates that there is no statistical evidence to support the association between tested shocks and explained variables before the tested shocks. Thus, the dynamic treatment analysis can also partially address the concern that the sample periods are relatively long and may bring serial correlation problem to explain the main findings.

Simultaneously, there is also another concern towards to using DID approach, which is reusing natural experiments. Heath et al., (2022)'s research raises the concern that reusing the same setting after a natural experiment is firstly used may lead to results which are false positives. Such concern is valuable to my thesis, especially for the second chapter. The setting of the 1999 ruling have been discussed in extant literature during the recent decade (e.g., Huang et al., 2020; Arena et al., 2021). To address the concern, following Heath et al., (2022)'s research, we are expected to retest the relation between income smoothing and shareholder litigation risk using alternative approach instead of using the DID approach. We acquire an alternative measure of shareholder litigation by estimating the likelihood of shareholder litigation based on real lawsuit filing data. And the litigation likelihood is thus predicted probabilities through estimation the probit regression. Using the alternative measure of shareholder litigation risks, we redo the main regression and confirm that our main findings remain. We then are able to answer the concern of reusing natural experiment by redoing the regression with the alternative measure of litigation likelihood, instead of using the DID

approach and taking the setting of the 1999 ruling. As for my chapter 3 and chapter 4, the setting of FAS 166/167 is not that widely used, especially exploring its spillover effect on corporates accounting practices. It is noticeable that FAS 166/167 is regulated after the financial crisis and mainly works on the banking system. In other words, FAS 166/167 is not straightforwardly targeting on corporates. My chapter 3 and chapter 4, instead of discussing the effects of FAS 166/167 on the banking system, explores how the borrowers of the effected lenders respond to FAS 166/167 and potentially change their earnings management levels and CSR performance, respectively. To my best knowledge, such setting of FAS 166/167 can be only observed in Dou and Xu (2021)'s research, investigating the spillover effect of this regulation on firm-level innovation. Thus, it seems the concern of reusing natural experiments is less pressing in my chapter 3 and chapter 4.

#### **1.4 Contribution**

My thesis provides empirical evidence on how firm respond to the external shocks (i.e., regulations or rulings). My chapter 2 reveals that shareholder litigation risks are positively related to firm income smoothing by exploring the shock the 1999 ruling. We observe a decrease in income smoothing after the adoption of the 1999 ruling which objectively moderate the shareholder litigation risks. The research reveals that the job security pressure might partly be the motivation of agents to smooth earnings. My chapter 3 and chapter 4 respectively find evidence on the effects of the regulations for the banking system on corporate governance by exploring the shock of FAS 166/167. It is noticeable that the FAS 166/167 triggered by the financial crisis (i.e., 2007-2008) is expected to directly work on the banking system, instead of firms. In chapter 3, it is suggested that borrowers (i.e., firms) manage their earnings more to respond to the adoption of FAS 166/167, while an increase in firm-level CSR is observed in my chapter 4 exploring the same setting. Our empirical evidence found in chapter 3 and chapter 4 not only partially reveals the real effect of FAS 166/167, but also proves the spillover effect from firms' lenders on corporate governance.

My three chapters jointly contribute to the literature on how accounting manipulation react to regulatory changes, providing evidence by investigating a law-level (i.e., the 1999 ruling) and an accounting requirement-level (i.e., FAS 166 and FAS 167) shocks, respectively. The three chapters provide relevant policymakers with the empirical evidence on the areas of MBAR and CSR of the 1999 ruling and the regulations of FAS 166/167.

More specifically, my chapter 2 and chapter 3 jointly contribute to revealing the motivations

of accounting manipulation. Exploring the external shock of the 1999 ruling, chapter 2 provides empirical evidence that the threat of litigation risk for managers is likely one of the motivations for managers to smooth earnings. That is, after the 1999 ruling reduce the threat of litigation risks for managers, the income smoothing levels decrease. My research contributes to the view that managers' reputation concerns can partially explain their accounting manipulation behaviours. To be more specific, such findings support that managers' pressure of being sued by shareholders pushes managers to offer relatively stable financial performance and smooth earnings. In the subsample analysis, the results suggest that such relation is more significant among firms in which the managers are more likely to suffer higher pressure from the litigation risks. We offer insights of managers' external reputation and explore the managers external reputation by exploring the shock which is associated with managers' career threat of being sued. Meanwhile, continuously exploring the motivations of accounting manipulation, chapter 3 explores the spillover impact of a validate credit shock (i.e., FAS 166/167) on corporate earnings management. The research suggests that borrowers respond to the credit shock by enhancing firms' earnings management. This is consistent with the view of Dye (1988) that "external demand", such as accounting-based contracts with suppliers and rate-of-return regulations, can partially explain the motivations of earnings management. Our research, which suggest an increase in firm-level earnings management after a validated credit shock, provides empirical evidence for Dye (1988)'s view of "external demand" of earnings management. Through earnings management, firms exhibit superior performance and enhance their potential access to finance. As Gao and Zhang (2019) point out that capital market pressure motivates managers to intervene in the reporting process. In chapter 3, the results indicates that borrowers manage their earnings more after the lenders' adoption of FAS 166/167 which implies the credit shock. And we provide evidence in the cross-sectional analysis that such relation would be strengthened among financially constrained firms and firms which are with weaker monitoring. Our findings can support the view that the capital pressure and access to finance seeking can partially motivate corporates to manage their earnings. Taken together, exploring external shocks respectively (i.e., the 1999 ruling in chapter 2 and the adoption of FAS 166/167 in chapter 3), the two chapters together provide empirical evidence on the motivations of accounting manipulation.

To be more specific, chapter 2 extends the line of research on the impact of the 1999 rulings by exploring whether and how a decreased shareholder litigation risks affect the level of income smoothing. Also, the research contributes to three strands of literature. Firstly, the research provides empirical evidence for the literature in the effects of shareholder litigation

rights in corporate governance and accounting practice. Especially, chapter 2 supports the view that shareholder litigation threat is not only working as an external discipline but also brings the job security issue and the managerial pressure to managers. Secondly, it is consistent with stakeholder theory by explaining how weakened litigation risks, as a disciplinary force from shareholders on managers, negatively influence income smoothing levels. It is interesting to notice that managers decrease income smoothing level after the shareholder litigation threat is weakened. Objectively, the reduced income smoothing would contribute to information transparency and benefit other stakeholders. Thirdly, the study contributes to the literature on firms' income smoothing behaviours by providing evidence that managers' income smoothing behaviours can be partially explained by pressure from shareholders. Our results suggest that the pressure of potential litigation risks pushes managers to satisfy the shareholders by offering more stable financial performance and enhancing their motivations to smooth earnings. The research supports the view that accounting manipulation might be partially consistent with the interests of shareholders.

My chapter 3 mainly contributes to two strands of the extant literature. First, our research is in the same line with the research that explores the real effect of tightened accounting and consolidation rules for securitization after the adoption of FAS 166 and FAS 167 (e.g., Dou et al., 2016; Tian and Zhang, 2016; Dou et al., 2018; Oz, 2020; Ahn et al., 2020; Hsu et al., 2021; Dou, 2021). Specifically, our research follows the Dou and Xu (2021)'s research which observes the spillover effect of the validated credit shock (i.e., FAS 166/167) on corporate innovation, we further extend this line by providing evidence of the spillover effect of FAS 166/167 on firm earnings management. Second, the study contributes to the literature on the relation between earnings management and external financing activities, especially pointing out that the validated shock has an impact on corporate accounting manipulation. Also, chapter 3 provides insights for the motivation of corporate earnings management that the access to finance seeking would trigger firms to manage their earnings. Our results can be partially explained by opportunistic earnings management, which is consistent with the research of Chaney and Lewis (1995), DuCharme et al. (2004) and Linck et al. (2013).

My chapter 4 continuously employs the exogenous shock of banks' the adoption of FAS 166/167 to investigate the change in firm CSR performance as a response to the credit supply shock. We indicate that firms enhance their CSR performance after their lenders adopt FAS 166/167. The increase in CSR is more significant among firms which are more financially stressful, with more intense external monitoring and riskier. Our results are robust to a battery

of concurrent events. The research contributes to three areas research. First, the study contributes to the exploration on spillover effect of bank lending to corporate governance (e.g., Wu et al., 2022). Especially, we provide empirical evidence that firms enhance their CSR performance when they face a validated credit supply shock. Second, our study supports the view that superior CSR performance benefits firm value which is consistent with the stream of literature which emphasizes the benefits of CSR (e.g., Boehe and Cruz, 2010; Cheng et al., 2014; Bardos et al., 2020). In this research, we find that firms increase their CSR performance to respond to the credit shock of FAS 166/167. Especially, such relation would be more pronounced among firms which are more pressing and sensitive to the access to finance and the lenders' behaviours. To be more specific, by the cross-sectional analysis, we find that the relation is more pronounced among firms which are more financially stressful, more intense external monitored and riskier. Third, our research provides the accounting and regulatory rules design with the impact of FAS 166/167. In this research, we explore the spillover effect of accounting requirement changes (i.e., FAS 166/167) of banks on their borrowers. Our results may potentially provide information for policy makers and academics.

### **1.5 Research Philosophy**

Melnikovas (2018) emphasizes the importance of main philosophical stance in the construction of the research design and develops the "research onion". All my chapters in this thesis are consistent with the research philosophy of positivism, while conducting the empirical analysis based on the research approach of deduction. In chapter 2, to investigate whether and how income smoothing can be affected by the reduced shareholder litigation threat, we employ the financial data for all listed companies in the US the databases. As for my chapter 3 and chapter 4, exploring the spillover effect of FAS 166/167 on the borrowers (i.e., firms), the samples consist of the listed firms which can be identified as treatment or control firms for the setting of the research. By using the data and running the regression, we can test our pre-stated hypothesis in the three chapters respectively. In my three chapters, the research is conducted based on the three steps. First, based on the relevant literature, we accordingly raise the hypothesis. In chapter 2, we have a two-side hypothesis which consists of the discipline hypothesis and the pressure hypothesis. In chapter 3, it is proposed that borrowers would manage their earnings more to respond to the validated credit shock of FAS 166/167, while the chapter 4 raises a null hypothesis that borrowers' CSR performance would not change after the adoption of FAS 166/167. Second, the samples are conducted using secondary data. The data used in chapter 2 is employed from the Compustat/CRSP database, while the data for chapter 3 and chapter 4 is from the databases of Bank Regulatory, Thomson

Reuter's DealScan and Compustat. Third, we test the pre-stated hypothesis using the DID approach and estimate the regression. More details about the DID approach designs can be found in the following chapters. Thus, we say that the research strategies and approaches in my thesis are consistent of the spirits of deductive logic.

## **1.6 Structure Reminder**

The remainder of this report is organized as follows. For chapter 2, existing literature and developed our hypothesis are discussed in section 2. Section 3 presents the sample and research design. Section 4 provides descriptive statistics and reports the results of our tests. Section 5 concludes the paper. For chapter 3, the remainder of this paper is organised as follows. Section 2 discusses the background and related literature. Section 3 describes data and methodology. Section 4 presents empirical findings and robustness checks. Section five concludes. The remainder of chapter 4 is organised as follows. Section two discusses the related literature and develops the hypothesis. Section three describes data and methodology. Section four presents empirical findings and robustness checks. Section five concludes the paper.

## **Chapter 2 The Impact of Shareholder Litigation Risk on Income Smoothing**

### **Abstract**

This paper investigates whether and how shareholder litigation influences income smoothing. Using the ruling of the Ninth Circuit Court of Appeals in 1999 as an exogenous shock to the threat of litigation, we find that the increasing difficulty of class action lawsuits decreases income smoothing. This finding is robust to different model specifications. We also show that such an effect is stronger for firms that are more likely to face greater pressure from the threat of shareholder litigation risk. Overall, our findings extend the literature on investigating how class action lawsuits can affect the motivation of income smoothing.

JEL classification: K22; M41

Keywords: Shareholder litigation, income smoothing, earnings volatility, class action lawsuits



## 2.1 Introduction

The benefits and costs of shareholder litigation have attracted greater interest among scholars. Some studies show that shareholder litigation is an external corporate governance mechanism in which the interests between corporate managers and shareholders are better aligned (Bhagat and Romano 2002; Appel 2019). However, a growing body of research argues that many shareholder lawsuits are frivolous because attorneys may bring shareholders to file lawsuits to maximize their own interests rather than to plaintiff shareholders (Romano 1991; Bhagat et al. 1998; Graham et al. 2008; Gande and Lewis 2009; Badawi and Chen 2017). Such lawsuit files, with only limited evidence of fiduciary duty breaches, may put great pressures on companies as well as incur instability in the manager's career and result in possible suboptimal business decisions (Romano 1991; Aharony et al. 2015; Chu and Zhao 2021; Hassan et al. 2021; Lin et al. 2021; Obaydin et al. 2021). In this paper, we attempt to extend this line of research by investigating the association between shareholder litigation risk and income smoothing.

We focus on income smoothing for two main reasons. First, income smoothing is at the forefront of executives' minds (Gao and Zhang 2015). As noted in Loomis (1999), "The No. 1 job of management is to smooth out earnings". A survey on financial executives by Graham et al. (2005) indicates that an overwhelming 97% of interviewed financial executives show a preference for income smoothing. Second, from the shareholder's point of view, prior studies find that income smoothing can have significant drawbacks as it increases firm opacity and perceived riskiness (Bhattacharya et al. 2003; Lang et al. 2012; Chen et al. 2017; Yu et al. 2018). In this regard, exploring the variation in income smoothing following the change in shareholder litigation risk is of importance to enhance our knowledge of income smoothing motivation and of the role of shareholder litigation in influencing a common practice in financial reporting.

We notice that the impact of shareholder litigation risk on income smoothing is an empirical issue. On the one hand, shareholder litigation can be used to discipline the manipulation of financial information. Previous studies find that opportunistic disclosures and earnings manipulations are more likely to trigger shareholder litigation (DuCharme et al. 2004; Field et al. 2005; Rogers et al. 2011). Likewise, when income smoothing is used for fraudulent purposes, firms are more vulnerable to shareholder litigation, which in turn suggests a negative relationship between the threat of shareholder litigation risk and income smoothing.

On the other hand, the threat of shareholder litigation can impose excessive pressure on managers. Investors usually attribute volatile earnings and failure to meet earnings expectations to poor management (Bushee 2001; Agarwal et al. 2018; Ghaly et al. 2020; Hassan et al. 2021). Shareholder litigation can incur not only direct legal costs to firms but also indirect reputational, job security, and opportunity costs to managers (Karpoff and Lott 1993; Strahan 1998; Brown et al. 2005). Consequently, high ex ante shareholder litigation risk may pressure management into engaging in income smoothing through which reported earnings become less fluctuated and legal exposure can be reduced (Fudenberg and Tirole 1995; Graham et al. 2005; Shaner 2014; Lin et al. 2021). This suggests a positive relationship between the threat of shareholder litigation risk and income smoothing.

It is empirically challenging to test the relationship between the threat of shareholder litigation and income smoothing since they are often endogenously determined. To circumvent the endogeneity problem, we exploit a plausibly exogenous variation of the threat of class action lawsuits created by the ruling of the Ninth Circuit Court of Appeals in 1999.<sup>1</sup> Following the adoption of the 1999 ruling, shareholders have encountered greater difficulty in filing class action lawsuits and it disproportionately impacts firms headquartered in the Ninth Circuit (Chu 2017). Pritchard and Sale (2005) observe a higher rate of case dismissals due to the particularly strict pleading standards in the Ninth Circuit. Since the shock created by the 1999 ruling influences firms located in states belonging to the Ninth Circuit only (i.e., the treatment group), we estimate the effect of the ruling using the difference-in-differences method and compare the changes in income smoothing of the treatment group to those of the control group consists of firms located in states belonging to other circuits.

Similar to Huang et al. (2020), we use a sample of firm-years over the eight-year window (i.e., spanning four years before and four years after) around the ruling of the Ninth Circuit Court of Appeals in 1999. We find that the decline in the threat of class action lawsuits following the 1999 ruling significantly reduces income smoothing. In terms of economic magnitude, we find that firms headquartered in the Ninth Circuit experienced an average reduction in income smoothing of about 11.1% (as measured by the standard deviation of operating earnings divided by the standard deviation of cash flows from operations) and about 6.8% (as measured by the Spearman correlation between the change in cash flow from

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<sup>1</sup> The Ninth Circuit includes these states: Alaska, Arizona, California, Hawaii, Idaho, Montana, Nevada, Oregon, and Washington.

operations scaled by lagged total assets and the change in total accruals scaled by lagged assets), relative to the sample mean.

The key identification assumption of our difference-in-differences setting is that the treated and the control firms should be on parallel trends before the adoption of the 1999 ruling (Roberts and Whited, 2012). We thus conduct the dynamic treatment analysis to ensure that the pre-treatment differences between the treatment and control groups are indistinguishable. We show that the ruling effects up to three years prior to the treatment are statistically insignificant, while the decrease in income smoothing occurs after the adoption of the ruling. These results also suggest that our main findings are unlikely to be driven by the reverse causality.

To ensure that our results on the association between the 1999 ruling and income smoothing are not driven by chance, we follow Arena et al. (2021) and conduct a placebo test by replacing the actual event year (i.e., 1999) with a pseudo-event year (i.e., 1996). The results show that the fictional 1996 ruling does not have any significant effect on income smoothing and, hence, our baseline findings are not affected by unobserved trend differences between the treated and control firms.

We next conduct the cross-sectional variation in firm characteristics to explore possible channels through which the reduced litigation threat due to the adoption of the ruling may decrease the propensity to smooth income. We find that the ruling effect is stronger for firms where shareholders are more short-term focused, for firms with higher idiosyncratic risk, for firms where managers have limited outside options, for firms in more competitive industries, and for firms that are more high-tech intensive. All these findings are in line with the view that firms that face greater pressure from the threat of shareholder litigation risk are associated with a greater decrease in income smoothing after the 1999 ruling.

Finally, we perform several additional robustness tests. We examine whether our baseline findings are driven by other confounding legal changes. Following Karpoff and Wittry (2018), Appel (2019), and Flammer and Kacperczyk (2019), we control for three state-level antitakeover laws, the Universal Demand laws, and laws related to trade secrets. We find the negative ruling effect on income smoothing to be robust. We next examine whether our main results remain consistent under different model specifications, such as alternative dependent variables, different standard errors clustering, technology bubble, firms incorporated in

Nevada, and local economic conditions. All these robustness checks support the notion that the adoption of 1999 ruling decreases income smoothing.

Our study provides two main contributions to the extant literature. Our paper is related to a growing body of research that explores the association between shareholder litigation and corporate behaviour (Lowry and Shu 2002; Cao and Narayanamoorthy 2011; Gormley and Matsa 2011; Arena and Julio 2015, 2023; Abbott et al. 2017; Chu 2017; Arena 2018; Ni and Yin 2018; Houston et al. 2018; Appel 2019; Lin et al. 2021). More specifically, using the 1999 ruling of the Ninth Circuit Court of Appeals, previous studies show that, following the adoption of the ruling, firms have become more likely to experience decreased loan spreads (Chu 2017), increased financial restatements (Hopkins 2018), decreased voluntary disclosure (Houston et al. 2019), and increased real earnings management (Huang et al. 2020). Chung et al. (2020) find that firms in the Ninth Circuit states acquire larger targets. Arena et al. (2021) report that the adoption of the ruling significantly increases corporate tax avoidance. Hassan et al. (2021) find a significant increase in innovation output by firms headquartered in states that have adopted the 1999 ruling relative to firms elsewhere. Our paper contributes to this stream of literature by showing that the reduced threat of shareholder litigation risk after the 1999 ruling significantly decreases income smoothing.

Our paper also adds to the studies on the determinants of income smoothing. Previous studies suggest that income smoothing is positively related to managerial risk-taking incentives (Grant et al. 2009), managerial optimism (Bouwman 2014) and managerial ability (Baik et al. 2020). Other studies also examine the role of stakeholders in influencing income smoothing. For instance, Dou et al. (2013) find that firms operated in high relationship-specific environments smooth income more. Hamm et al. (2018) find that strong labor unions have better abilities to negotiate risk compensation for their employees when firm earnings are volatile, and hence, the strength of labor unions has a positive impact on income smoothing practices. Consistent with the findings of Hamm et al. (2018), Ng et al. (2019) find that a decrease in unemployment risk significantly moderates the firm's incentives of income smoothing. Chen et al. (2019) show that more socially responsible firms who also have a greater dependence on the supplier-buyer relationship are less likely to engage in income smoothing. Our study extends this line of research by showing whether an exogenous change in shareholder litigation risk can affect income smoothing activities.

The remainder of this paper is organised as follows. Section 2 discusses background and related literature. Section 3 describes our sample and empirical design. Section 4 presents empirical findings, and Section 5 concludes.

## **2.2 Background and Related Literature**

### **2.2.1 Institutional Background**

According to US law, corporate managers/officers and directors have fiduciary duties to make business decisions that serve the best interests of shareholders, while failing to do so could eventually lead shareholders to file lawsuits against them for breaching such duties. Typically, shareholders can sue corporate insiders by initiating derivative lawsuits or by filing securities class action lawsuits. Derivative lawsuits allow shareholders to sue on behalf of the corporation, from which any financial reimbursement is distributed to the corporation. Shareholders who filed a derivative lawsuit are also required to first demand the corporate board to address their allegations for which the board may either accept or reject (Chung et al. 2020). Consequently, prior studies such as Romano (1991), Ferris et al. (2007), Erickson (2010), and Chung et al. (2020) indicate that derivative lawsuits are less likely to close with financial settlements, and shareholders often benefit from improved corporate governance mechanisms and enhanced managerial action.

In contrast, class action lawsuits are generally different with derivative lawsuits in terms of their motivations and objectives (Nguyen et al. 2018, Nguyen et al. 2020; Manchiraju et al. 2021). Specifically, unlike derivative lawsuits that are indirect in nature, class action lawsuits directly address harm to shareholders (Chung et al. 2020; Manchiraju et al. 2021). A class of allegedly harmed shareholders who files the lawsuit against firms and their management team members is the plaintiff. The primary reason for a class action lawsuit is that shareholders who traded shares at a price influenced by managerial misconduct or information manipulation are entitled to sue for compensation of resulting economic losses, and the financial recovery is paid directly to the plaintiff class of shareholders (Chung et al. 2020). Larcker and Tayan (2011) and Shi et al. (2016) suggest that class action lawsuits are directly against top managers as who are responsible to disclose information to shareholders.

The Securities Act of 1933 and the Security Exchange Act of 1934, passed by the US Congress, were designed to ensure broad and equal access to reliable information from securities issuers (Gibney 2000; Yang et al. 2021). In December 1995, Congress also passed

the Private Securities Litigation Reform Act (PSLRA), through which the initiation of lawsuits became more difficult and, hence, corporations are protected from abusive, frivolous securities litigation (Chu, 2017). However, although PSLRA requires plaintiffs in securities class action lawsuits to offer proof of scienter, the exact interpretation of the pleading standard is provided by various US circuit courts (Chu 2017; Huang et al. 2020). On July 2, 1999, the Ninth Circuit Court of Appeals issued a ruling (Re: Silicon Graphics Inc.), which resulted in a considerably stricter interpretation of pleading standards than other circuit courts (Johnson et al. 1999; Grundfest and Pritchard 2002). Compared with the mere “acting with recklessness” as required in other circuits, the Ninth Circuit requires plaintiffs to provide evidence that the defendants “acted with deliberate recklessness”. Hence, the Ninth Circuit ruling adopted a high burden of proof since the evidence of intent is often obtained after a class action has been established (Huang et al. 2020). Crane and Koch (2018) document that the introduction of the Ninth Circuit ruling has led to a 43 percent reduction in the number of class action lawsuit filings when compared to an increase of 14 percent in other circuits.<sup>2</sup>

Prior studies on the Ninth Circuit ruling indicate that its enactment could not be anticipated and is unlikely to be related to firm characteristics, and thus the ruling appears to be an exogenous shock to the threat of shareholder litigation (Chu 2017; Huang et al. 2020; Yang et al. 2021). Given that the ruling was introduced to a subset of firms headquartered in the Ninth Circuit, we are able to allocate them into treated and control groups based on their locations. In particular, we employ a difference-in-differences approach to precisely compare post-ruling changes in income smoothing for firms located in the Ninth Circuit to similar changes for firms located in the other circuits.<sup>3</sup>

### **2.2.2 Prior Studies on Income Smoothing**

Beidleman (1973) describes income smoothing as the management’s intentional dampening of fluctuations in reported earnings over time. As noted in Fudenberg and Tirole (1995), managers, who have concerns about their job securities, are likely to smooth income in consideration of both current and future relative performance. Specifically, when current income is low and future income is expected to be high, managers can take actions that shift future income into the current period, and when current income is high and future income is

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<sup>2</sup> Houston et al. (2019) similarly report that the number of lawsuit files initiated decreased significantly in the Ninth Circuit relative to other jurisdictions following the adoption of the ruling.

<sup>3</sup> Since most class action lawsuit filings are ultimately litigated in the state where a firm is headquartered, we use the firm’s headquarter state as the determinant of the most likely location of litigation (Huang et al. 2020).

expected to be low, managers can take actions that shift current income into the future period (DeFond and Park, 1997).

Previous studies point out that income smoothing and earnings management can be quite different (Khurana et al., 2018). First, the process of shifting income from the present to the future distinguishes income smoothing from earnings management that typically exaggerates current earnings to meet earnings benchmarks under all circumstances (Fudenberg and Tirole, 1995). Second, unlike earnings management that aims to achieve a certain level of earnings (e.g., to avoid reporting a loss), the purpose of income smoothing is to achieve a less volatile earnings stream. Thus, although both earnings management and income smoothing affect investors' perceptions of firm earnings, the latter can also influence investors' perceptions of the riskiness of earnings (Cao et al., 2023). Third, according to Jung et al. (2013), Chen et al. (2017), and Hamm et al. (2018), whilst earnings management is often associated with activities such as boosting reported earnings to meet a short-term earnings target or to time it just before a specific event, income smoothing is usually to maintain stable earnings over multiple years. Hence, managers adopt income smoothing as an accounting strategy that sustains over the longer term and is not event driven, compared to earnings management. Finally, managers view income smoothing as more prevalent in practice than earnings management, as accounting policy is likely to constrain their ability to manage earnings upward for extended periods through earnings management (Khurana et al., 2018; Cao et al., 2023). Indeed, a survey by Graham et al. (2005) report an overwhelming 97% of around 400 financial executives to have a preference for income smoothing.

The extant literature offers mixed findings regarding the role of income smoothing. Earlier studies suggest that income smoothing can provide private information on future firm earnings and performance to uninformed outside investors and non-shareholding stakeholders (Beidleman, 1973; Barnea et al., 1975; Ronen and Sadan, 1981; Demski, 1998; Sankar and Subramanyam, 2001; Kirschenheiter and Melumad, 2002; Tucker and Zarowin, 2006). For instance, income smoothing can decrease the cost of debt (Trueman and Titman, 1988) and increase the analyst following (Schipper, 1991). Moreover, Bartov et al. (2002) and Myers et al. (2007) indicate that income smoothing can lead firms to meet analyst forecasts more frequently and enhance the firm value. However, there is a growing body of research that raises the concern of income smoothing. Studies such as Bhattacharya et al. (2003) and Leuz et al., (2003) argue that smoothing income artificially can hinder detection of managerial diversion of firm resources and undermine the information transparency of the firm.

Jayaraman (2008) finds that income smoothing is linked to higher bid-ask spreads as well as the likelihood of informed trading. This result implies that income smoothing can be used to garble information about the firm's underlying true performance and increases information asymmetry between insiders and outsiders. In more recent studies, Chen et al. (2017) and Khurana et al. (2018) highlight the negative impact of income smoothing on shareholder wealth by documenting a positive relationship between income smoothing and stock price crash risk. Yu et al. (2018) find that income smoothing can result in higher information risk as it increases bid-ask spreads around unexpected loss announcement.

### **2.2.3 Hypothesis Development**

Following prior studies, there are two competing hypotheses related to the threat of shareholder litigation risk and income smoothing (Lin et al., 2021). First, the “disciplining hypothesis” indicates that shareholder litigation can deter income smoothing by disciplining information manipulation in financial reporting and corporate misconduct. Theories and empirical evidence highlight the significant role that shareholder litigation plays in influencing accounting practices. For example, DuCharme et al. (2004) find that firms that manipulate earnings upward before stock issues are more vulnerable to litigation. Field et al. (2005) document a positive association between litigation risk and the likelihood of issuing earnings warnings, while the early disclosure can decrease the expected litigation risk. Peng and Röell (2008) show that a higher sensitivity of executive compensation to short-term stock price can lead to price manipulation and thus increases the probability of securities class action litigation. Using textual analysis to measure optimism, Rogers et al. (2011) show that the usage of more aggressive and optimistic language in earnings announcements is likely to be associated with a higher probability of shareholder litigation. Similar to Field et al. (2005) and Rogers et al. (2011), Billings and Cedergren (2015) report that firms are less likely to involve in strategic silence and are more likely to warn of the impending negative news when they face higher litigation risk. Likewise, as discussed in Section 2.2, income smoothing can be detrimental to shareholders and other stakeholders since it manipulates information and leads to information asymmetry between insiders and outsiders. In line with these arguments, illegal or aggressive forms of income smoothing can expose firms to litigation risk, and hence, firms that face a higher threat of shareholder litigation risk may not engage in income smoothing. Accordingly, when the threat of shareholder litigation risk declines, firms might perceive that income smoothing activities are less likely to trigger shareholder litigation. This leads to the following hypothesis:



Hypothesis 1a: *Following the adoption of the 1999 ruling, income smoothing activities may increase for firms headquartered in the Ninth Circuit states relative to other firms.*

Second, the “pressure hypothesis” suggests that shareholder litigation can impose excessive pressures on management. Specifically, class action lawsuits have a direct cost on firms, as the total settlement costs for security class action lawsuits are about \$107.30 billion over the period 1996-2019, with an average cost at \$58.1million (Cornerstone Research, 2020). Shareholder lawsuits also have an indirect cost to a manager’s career (Karpoff and Lott, 1993; Brown et al., 2005). Strahan (1998) shows that the likelihood of CEO turnover increases following class action lawsuits. In a similar vein, some studies demonstrate that shareholder litigation distracts managers’ attention, undermines managers’ reputation, and incurs instability of job tenure (Fich and Shivdasani 2007; Aharony et al. 2015). Further, Lin et al. (2021) document that although it is uncommon for every firm to experience shareholder lawsuits, shareholders do have the right to file a lawsuit whenever necessary and it does occur. Consequently, a higher threat of shareholder litigation can pressure managers into engaging in corporate activities that could enhance tenure stability by reducing their legal exposure (Shaner, 2014; Lin et al., 2021).<sup>4</sup>

Indeed, investors usually associate volatile earnings or failure to meet earnings expectations with poor management (Bushee, 2001; Agarwal et al., 2018; Ghaly et al., 2020; Hassan et al., 2021). As stated by US Congress senators, “Companies, particularly growth firms, say they are sued whenever their stock drops” (Seligman, 1994, p.442). Accordingly, the prior literature suggests that managers may rationally reduce the investor’s estimates of the earnings volatility and meet earnings expectations by income smoothing (Lambert, 1984; Dye, 1988; Trueman and Titman, 1988; Michelson et al., 1995; Acharya and Lambrecht, 2015). Lev and Kunitzky (1974) and Michelson et al. (1995) show that income smoothing lowers short-term price risk as it reduces earnings fluctuations. Grant et al. (2009) suggest that because earnings volatility can undermine a manager’s tenure, income smoothing could potentially be a less costly method to mitigate such undesirable risk and boost share price. Similarly, Jung et al. (2013) document that since earnings volatility is an important factor in credit ratings, managers can use income smoothing to impact credit risk as perceived by both investors and rating agencies. Ng et al. (2019) find that firms have incentives to smooth

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<sup>4</sup> For example, Cao and Narayanaamorthy (2011) find that litigation risk faced by managers is an important determinant in of management earnings forecast. Bourveau et al. (2018) indicate that higher litigation risk may decrease corporate disclosure since managers’ private costs of disclosure increase with the higher risk of being involved in shareholder lawsuits. Chu and Zhao (2021) find that managers of acquiring firms may make suboptimal merger decisions to mitigate the pressure of being sued.

income to diminish employees' concerns of unemployment risk due to volatile earnings. Collectively, these findings above are in line with the argument that managers are likely to please shareholders by reducing stock price volatility through income smoothing, as large fluctuations in firm performance are disfavored by institutional investors and can affect a manager's tenure (Badrinath et al., 1989; Carlson and Bathala, 1997). This leads to the following hypothesis:

Hypothesis 1b: *Following the adoption of the 1999 ruling, income smoothing activities may decrease for firms headquartered in the Ninth Circuit states relative to other firms.*

## **2.3 Data and Methodology**

### **2.3.1 Sample**

Our sample consists of observations for all publicly listed firms from the Compustat/CRSP merged database with non-missing information on historical headquarters between 1995 and 2003.<sup>5</sup> To mitigate the potential concern that longer periods may contain effects from other confounding events, we compare the post-ruling period (i.e., 2000-2003) to the pre-ruling period (i.e., 1995-1998) (Huang et al. 2020). We also exclude the year of the ruling, 1999, from our analyses. Only firms with non-missing accounting data at least one year before and one year after the ruling year are included to the sample. The final sample comprises 15,953 firm-year observations. To reduce the potential impact of outliers, all accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

### **2.3.2 Empirical Specification**

We classify firms as treated firms if their headquarters are located in one of the Ninth Circuit states (i.e., treatment group) and firms as control firms if their headquarters are located in non-Ninth Circuit states (i.e., control group).<sup>6</sup> To test whether litigation risk affects income smoothing, we follow Bertrand and Mullainathan (2003), Chu (2017), Huang et al. (2020), and Yang et al. (2021) and employ a difference-in-differences design, through which we compare changes in income smoothing following the 1999 Ninth Circuit ruling for the

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<sup>5</sup> Because Compustat only reports the most recent addresses of firms, we use the source of firms' headquarters location data from the yearly 10-K report by means of Jennings et al. (2017).

<sup>6</sup> Firms are unlikely to change their headquarters location frequently. Moreover, Chu (2017) indicates that since the Ninth Circuit ruling could not be anticipated, firms are unlikely to change their headquarters in anticipating of the ruling. In our sample, about 2% firms changed their headquarters location from non-Ninth Circuit states to Ninth Circuit states. Our baseline results remain robust if we exclude these firms.

treatment group to the corresponding changes for the control group. Specifically, we estimate the following regression specification:

$$y_{it} = \beta_0 + \beta_1 \text{Ninth Circuit}_i \times \text{Post}_t + \gamma X_{it} + D_i + \text{Industry} \cdot \text{Year} + \varepsilon_{i,t} \quad (1)$$

The dependent variable  $y_{it}$  is the measure of income smoothing, where  $i$  indexes firms and  $t$  indexes years. Following prior studies such as Leuz et al. (2003) and Dou et al. (2013), our first measure of income smoothing (*Smoothing1*) is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both the earnings and cash flows are scaled by lagged total assets. Standard deviations are calculated at the annual level, over rolling five-year windows ending in the current fiscal year. The rationale behind this measure is that earnings will be smoother than cash flows from operations if managers smooth reported earnings.

Our second measure of income smoothing (*Smoothing2*) is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets (Bhattacharya et al. 2003; Dechow et al. 2010). Similar to Jones (1991) and Kothari et al. (2005), we define total accruals as the change in non-cash current assets minus the sum value of the change in current liabilities excluding the current portion of long-term debt and the depreciation and amortization, scaled by lagged total assets. The intuition for *Smoothing2* is that managers are assumed to create accrual reserves in good times and use them to compensate for poor cash flows in bad times, leading to a negative correlation between changes in accruals and shocks to reported cash flows results (Burgstahler et al. 2006; Barth et al. 2008). To ensure larger values represent more income smoothing, both our income smoothing measures are multiplied by negative one.

Our main variable of interest is the interaction term  $\text{Ninth Circuit} \times \text{Post}$ , in which  $\text{Ninth Circuit}$  equals one if a firm's headquarter is located in one of the Ninth Circuit states, and zero otherwise, while  $\text{Post}$  equals one if in the 2000-2003 period, and zero in the 1995-1998 period. We expect the coefficient estimate of the interaction term  $\text{Ninth Circuit} \times \text{Post}$ ,  $\beta_1$ , to be negative and statistically significant. To further mitigate unobserved heterogeneity in our estimates of the litigation effect on income smoothing, we use two fixed effects. First, we control for firm fixed effects, denoted  $D_i$ , to remove unobserved time-invariant differences between Ninth Circuit firms and non-Ninth Circuit firms. In addition, we include industry-year fixed effects, denoted  $\text{Industry} \cdot \text{Year}$ , to ensure that we compare Ninth Circuit firms and non-Ninth Circuit firms within the same industry at the same period

of time, removing unobserved changes in industry conditions. We do not include  $Ninth\ Circuit_i$  and  $Post_t$  separately as these indicators are absorbed in the firm fixed effects and industry-year fixed effects. Standard errors are clustered by firm.

$X_{it}$  in Equation (1) refers to a vector of control variables. Following previous studies such as Pontiff and Schall (1998), Chen et al. (2002), Caprio et al. (2011), Custódio et al. (2013), Dou et al. (2013), Gao and Zhang (2015), Hovakimian and Hu (2016), Chen et al. (2017), Ham et al. (2017), Khurana et al. (2018), Hamm et al. (2018), Atanassov et al. (2020), and Huang et al. (2020), we control for firm characteristics, including the natural logarithm value of market capitalization (*Size*), firm performance (*ROA*), firm leverage (*Leverage*), firm growth opportunity (*Market-to-book Ratio*), firm tangibility (*Asset Tangibility*), firm cash (*Cash Flow*), firm stock return (*Stock Return*), firm sales growth (*Sales Growth*), firm research and development expenditures (*R&D*), firm capital expenditures (*CAPEX*), firm dividend payout (*Dividends*), firm institutional ownership (*Institutional Ownership*), the natural logarithm value of one plus the number of analysts following a firm (*Analysts Following*), the largest auditors (*Big N Auditor*), corporate debt issuance (*Debt Issue*), corporate equity issuance (*Equity Issue*), and corporate acquisitions (*Acquisitions*). All variables are defined in Appendix A.

### 2.3.3 Summary Statistics

Table 1 presents the descriptive statistics for the variables used in our baseline regression model. Mean (median) *Smoothing1* is -0.722 (-0.598) and mean (median) *Smoothing2* is 0.755 (0.915). About 20.1% of firms in our sample can be identified as Ninth Circuit firms. For firm-level characteristics, mean (median) *Size* is 5.367 (5.331), mean (median) *ROA* is 0.084 (0.120), mean (median) *Leverage* is 0.622 (0.191), mean (median) *Market-to-book Ratio* is 1.819 (1.327), mean (median) *Asset Tangibility* is 0.305 (0.243), mean (median) *Cash Flow* is 0.149 (0.066), mean (median) *Stock Return* is -0.026 (0.016), mean (median) *Sales Growth* is 0.128 (0.069), mean (median) *R&D* is 0.044 (0.000), mean (median) *CAPEX* is 0.070 (0.046), mean (median) *Dividends* is 0.345 (0.000), mean (median) *Debt Issue* is 0.010 (0.000), and mean (median) *Equity Issue* is 0.067 (0.008). In addition, the average percentage of institutional ownership (*Institutional Ownership*) is 29.3%, the average percentage of financial analyst coverage (*Analysts Following*) is 88%, the average percentage of Big N auditors (*Big N Auditor*) is 86.4%, and approximately 34.3% firms in our sample engage in acquisitions (*Acquisition*).

[Please Insert Table 1 Here]

Panel A of Table 2 compares the characteristics of Ninth Circuit firms and non-Ninth Circuit firms at the firm-year level. On average, firms located in Ninth Circuit states have a lower income smoothing than those located in non-Ninth Circuit states. Also, Ninth Circuit firms are smaller, are less profitable, have lower leverage, have more growth opportunities, hold fewer tangible assets, have higher cash flow, have lower stock return, have higher sales growth, have higher R&D expenditure, pay lower dividends, have higher percentages of institutional ownership, have more analysts following them, are more likely to use Big N auditors, and have more equity issuance. Panel B compares the change in the mean value of income smoothing before and after the 1999 ruling, separately for firms located in Ninth Circuit and non-Ninth Circuit states. We find that the difference in the mean value of *Smoothing1* and *Smoothing2* before and after the adoption of ruling is 0.033 and 0.033, respectively, for non-Ninth Circuit firms, while such difference is 0.087 and 0.071, respectively, for Ninth Circuit firms. These differences are statistically significant at the 1% level. We find similar results for the difference in the median values of the two measures of income smoothing in Panel C. In sum, the results in panels B and C provide some preliminary evidence that a decrease in litigation risk may lead to a significant decrease in income smoothing.

[Please Insert Table 2 Here]

## 2.4 Main Results

### 2.4.1 Litigation Risk and Income Smoothing

Table 3 reports the results of our main analysis. In columns (1)-(2), we present the estimates by including just the interaction term *Ninth Circuit*  $\times$  *Post*, firm and industry-year fixed effects, and no control variables. The coefficients on the interaction term, the main variable of interest, are negative (coefficient = -0.072 for *Smoothing1*, and coefficient = -0.048 for *Smoothing2*) and statistically significant at the 5% level. These results suggest that firms located in Ninth Circuit states experienced a decline in income smoothing following the ruling of the Ninth Circuit Court of Appeals. We add time-varying control variables in columns (3)-(4) and find that it makes little difference to the significance of the income smoothing reduction, as the coefficients on the interaction term, *Ninth Circuit*  $\times$  *Post*, are -0.080 (*p-value* < 0.01) and -0.051 (*p-value* < 0.05), respectively. Such findings are also

economically meaningful. For example, the coefficient estimates in columns (3) and (4) demonstrate that, relative to the sample mean, the 1999 ruling decreases *Smoothing1* and *Smoothing2* by about 11.1% and 6.8%, respectively.<sup>7</sup>

[Please Insert Table 3 Here]

To mitigate the concern that our baseline results might be driven by reverse causality, we follow Bertrand and Mullainathan (2003) and employ the dynamic treatment model, which tests the timing of income smoothing relating to the timing of the adoption of the ruling of the Ninth Circuit Court of Appeals. We estimate the dynamic treatment model as follows:

$$\begin{aligned}
 y_{it} = & \beta_1 Year^{-3} \times Ninth\ Circuit_i + \beta_2 Year^{-2} \times Ninth\ Circuit_i \\
 & + \beta_3 Year^{-1} \times Ninth\ Circuit_i + \beta_4 Year^{+1} \times Ninth\ Circuit_i \\
 & + \beta_5 Year^{+2} \times Ninth\ Circuit_i + \beta_6 Year^{+3} \times Ninth\ Circuit_i \\
 & + \beta_7 Year^{+4} \times Ninth\ Circuit_i + \gamma X_{it} + D_i + Industry \cdot Year + \varepsilon_{i,t}
 \end{aligned}
 \tag{2}$$

where we replace the interaction term *Ninth Circuit*  $\times$  *Post*, the main variable of interest in Equation (1), with a set of seven interaction terms:  $Year^{-3} \times Ninth\ Circuit$ ,  $Year^{-2} \times Ninth\ Circuit$ ,  $Year^{-1} \times Ninth\ Circuit$ ,  $Year^{+1} \times Ninth\ Circuit$ ,  $Year^{+2} \times Ninth\ Circuit$ ,  $Year^{+3} \times Ninth\ Circuit$ , and  $Year^{+4} \times Ninth\ Circuit$ , respectively.  $Year^{-3}$  is a dummy variable equal to one for the third year prior to the year of the ruling,  $Year^{-2}$  is a dummy variable equal to one for the second year prior to the year of the ruling,  $Year^{-1}$  is a dummy variable equal to one for the year prior to the year of the ruling,  $Year^{+1}$  is a dummy variable equal to one for the year after the year of the ruling,  $Year^{+2}$  is a dummy variable equal to one for the second year after the year of the ruling,  $Year^{+3}$  is a dummy variable equal to one for the third year after the year of the ruling, and  $Year^{+4}$  is a dummy variable equal to one for fourth year after the year of the ruling.<sup>8</sup> *Ninth Circuit*<sub>*i*</sub> is a dummy variable equal to one if a firm's headquarter is located in one of the Ninth Circuit states. The coefficient estimates of interaction terms,  $Year^{-3} \times Ninth\ Circuit$ ,  $Year^{-2} \times Ninth\ Circuit$ , and  $Year^{-1} \times Ninth\ Circuit$ ,  $\beta_1$ ,  $\beta_2$ , and  $\beta_3$ , are of particular interest since their magnitude and statistical significance demonstrate

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<sup>7</sup> Jennings et al. (2023) argue that a greater number of dimensions of fixed effects may not ensure the robustness of the regression specification. This is because minimal measurement error can cause large biases and generate false positives when fixed effects absorb more than 90% of the variation in the main variable of interest. They therefore suggest scholars further assess the absorption rate by checking the R-squared from the regression of the main variable of interest on the fixed effect structure and be cautious if the value of R-squared is greater than 90%. In untabulated analysis, we perform the diagnostic test proposed by Jennings et al. (2023) and confirm that the combination of measurement error and high-dimensional fixed effects do not affect our results. We thank the anonymous referee for pointing out this issue.

<sup>8</sup> In Equation (2), the benchmark year is four years before the year of the ruling, namely  $Year^{-4}$ .

whether reverse causality is the potential issue, or whether the pre-trends in income smoothing are significantly different between the treatment and control groups.

Table 4 presents the estimation results of the dynamic treatment analysis as shown in Equation (2). In columns (1) and (2), we find that the coefficient estimates of  $Year^{-3} \times Ninth\ Circuit$ ,  $Year^{-2} \times Ninth\ Circuit$ , and  $Year^{-1} \times Ninth\ Circuit$  are relatively small and statistically insignificant for both measures of income smoothing. This result suggests that the parallel trend assumption is likely satisfied since there are no significant systematic differences in pretrends between the treatment and control groups (Roberts and Whited, 2012). Moreover, compared to the pre-treatment year periods, we observe a decrease in income smoothing emerging only after the ruling year, as demonstrated by the considerably larger and significant coefficient estimates of  $Year^{+2} \times Ninth\ Circuit$ ,  $Year^{+3} \times Ninth\ Circuit$ , and  $Year^{+4} \times Ninth\ Circuit$  for both *Smoothing1* and *Smoothing 2*. These findings lend further support for our baseline results not being driven by reverse causality.

[Please Insert Table 4 Here]

One potential issue is that our baseline results could be driven by the systematic differences since the choice of headquarters in states that adopted the ruling of the Ninth Circuit Court of Appeals might be non-random and the Ninth Circuit firms might be fundamentally different from the non-Ninth Circuit firms. To mitigate such concern, we repeat the estimation of Equation (1) using a sample with the treated and the matched control firms. To construct control firms, we first estimate a logit regression of whether a firm is likely to be located in one of the Ninth Circuit states based on the firm characteristics as used in Equation (1) in year 1998, at least one year before the year of the ruling. The propensity score is then the probability estimated from the logit regression. Next, we use the nearest-neighbour method to ensure the treated firms are sufficiently similar to the matched control firms. In particular, each firm in the treatment group is matched to a firm in the control group that is from the same industry and with the closest propensity score (caliper=0.005) in 1998. In Appendix B, we perform a diagnostic test to verify whether the treatment and matched control firms are fundamentally indistinguishable. The results suggest that none of the differences in means for each observed firm-level characteristic between the treatment and matched control groups remains statistically significant. Therefore, it is evident that any difference in income

smoothing between the two groups is due to the adoption of the ruling of the Ninth Circuit Court of Appeals.

Table 5 reports the estimation results using the matched sample, consists of 317 pairs of matched firms.<sup>9</sup> In columns (1)-(2), we repeat the regression analysis for income smoothing as shown in Equation (1). We find that the coefficient estimates of the interaction term, *Ninth Circuit*  $\times$  *Post*, remain negative and statistically significant. Columns (3)-(4) report the estimation results for the dynamic treatment model as shown in Equation (2). Again, we find that the results remain quantitatively similar.

[Please Insert Table 5 Here]

We also conduct a placebo test to ensure that our main results are not driven by non-parallel trends before the ruling or by unobserved characteristics that affect income smoothing differently for firms located in states belonging to the Ninth Circuit compared to firms in other circuit states. Arena et al. (2021) indicate that the test of the non-parallel trends may not work appropriately if the pseudo-event year is distant from the actual event year, while the sample period should end prior to the actual event year to ensure that there is no confounding effect from the actual event year. Following their study, we replace the actual event year (i.e., 1999) with a pseudo-event year (i.e., 1996) and reestimate the baseline regression using a four-year window (i.e., two years before and two years after the event). We report the placebo test results in Table 6. The results show that the coefficient estimates of *Ninth Circuit*  $\times$  *Post* are not statistically significant for all specifications, suggesting that the fictional 1996 ruling does not have any significant impact on income smoothing. Thus, our main results are unlikely to be driven by unobserved trend differences between the treated and control firms.

[Please Insert Table 6 Here]

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<sup>9</sup> The sample includes firms with at least one year of data in both the pre- and post-1999 periods. Moreover, in line with prior studies (Leuven and Sianesi, 2003; Caliendo and Kopeinig, 2008; Kubick et al., 2016; Ghaly et al., 2017; Florackis and Sainani, 2018; Conyon et al., 2019), we further require that matched pairs should satisfy the common support condition and be appropriately weighted by the propensity score distribution of participants.



## 2.4.2 Further Analyses and Discussion

### 2.4.2.1 Cross-sectional Variations in the Effects of the Ninth Circuit Ruling

In this subsection, we examine the cross-sectional variation in firm characteristics to explore possible channels through which the 1999 ruling can decrease income smoothing. Specifically, since the threat of shareholder litigation decreases following the ruling, we expect the association between the 1999 ruling and income smoothing to be more pronounced for firms that are more likely to experience the pressure from shareholder litigation risk.

Investors are not a homogeneous group. Different demographics, liquidity needs, or information sets can lead to different strategies of investment horizons (Hotchkiss and Strickland 2003). Investors that have a long-term orientation are less likely to be myopic as well as to pressure companies into maximizing short-term earnings growth and resell their stock at a profit compared to investors that have a short-term focus (Bushee 2001; Bolton et al. 2006; Gaspar et al. 2013). Hassan et al. (2021) indicate that myopic investors are likely to use shareholder litigation as a tool to pressure management into taking actions that can reduce short-term price risk. According to these arguments, we conjecture that institutions with short-term investment horizons (i.e., transient institutional investors) could be the main force in pressuring firms to reduce earnings volatility through income smoothing. To test this, we calculate the difference between the total amount of shares held by dedicated and quasi-index investors and the number of shares held by transient investors of a firm following Bushee's (2001) classification of institutional investor base, all divided by total shares (An and Zhang 2013; Brochet et al. 2015).<sup>10</sup> A larger (smaller) value of the difference means that firms have more (fewer) long-term institutional investors. We then partition the sample into firms with more and fewer long-term investors (i.e., *Long-term Shareholdings* and *Short-term Shareholdings*) based on the median of the distribution of the calculated differences in shareholdings. We repeat the baseline regression and report the estimated results in Panel A of Table 7. As expected, the results show that the coefficient estimates of *Ninth Circuit*  $\times$  *Post* are negative and significant for *Short-term Shareholdings* subgroup only. This suggests that the negative ruling effect on income smoothing is more pronounced for the firms where shareholders are likely to have a short-term investment horizon.

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<sup>10</sup> Dedicated institutional investors are those who provide stable ownership and take large positions in portfolio companies. Quasi-index institutional investors are those who trade infrequently but own small stakes. Transient institutional investors are those who exhibit high portfolio turnover and own small stakes in individual firms (Bushee 1998; An and Zhang 2013). Both dedicated and quasi-index institutional investors are characterized by low turnover and have a long-term investment horizon.

Grant et al. (2009) indicate that income smoothing can be viewed as an effective instrument to mitigate the idiosyncratic risk, through which undesirable risk consequences can be more likely avoided. While managers are more likely to be replaced when their firms' idiosyncratic risk increases (Bushman et al. 2010), we expect that managers under such conditions will have a higher propensity to stabilize their tenure by smoothing income, especially when the litigation risk is high. We follow Campbell et al. (2001) and employ the CAPM-based approach to measure the idiosyncratic risk of firms.<sup>11</sup> We construct two subsamples based on the above- and below-median idiosyncratic risk (i.e., *High IVol Risk* and *Low IVol Risk*) and report the estimation results in Panel B of Table 7. As expected, we find that the coefficients on the interaction term, *Ninth Circuit*  $\times$  *Post*, are negative and significant for *High IVol Risk*.

We further examine the impact of ruling on income smoothing in the presence of the manager's outside options. Previous studies show that managers with limited outside options care more about the stability of their tenures (Custódio et al. 2019). Consequently, these managers can be more sensitive to litigation pressure and are more likely to take activities that can stabilize their tenures. We therefore expect the association between the ruling and income smoothing to be more pronounced for firms where managers have fewer outside options. Similar to Custódio et al. (2019), we use local beta, which is the degree of comovement between a firm's stock return and stock returns of other firms within the same state, as the measure of the manager's outside options. The wage indexation theory of Oyer (2004) points out that relevant outside job opportunities for an employee are likely to be offered by firms in the same region rather than by firms that are farther away. The local beta is estimated using a time-series regression of monthly stock return on the return of the stock's corresponding state index (exclude the particular stock), as well as the market portfolio return and the stock's industry (Fama-French 48 industry) return.<sup>12</sup> *High (Low) Local Beta* is therefore a dummy variable that equals one if the local beta is above (below) the median of the distribution, and zero otherwise. We then partition the sample into *High Local Beta* and *Low Local Beta* groups. In Panel C of Table 7, we find that the coefficient estimates of *Ninth Circuit*  $\times$  *Post* are negative and significant for *Low Local Beta* only, suggesting that the negative ruling effect on income smoothing is stronger for firms where managers have limited outside options.

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<sup>11</sup> Our results remain robust if we measure firms' idiosyncratic risk based on the Fama-French three-factor model.

<sup>12</sup> We require at least 24 nonmissing monthly return observations for a particular stock and that there should be five stocks in the state for entering the regression analysis (Custódio et al. 2019). We collect monthly T-bill from the CRSP.

We also examine the relationship between the ruling and income smoothing in the presence of industry competition. The prior literature documents that managers experience greater pressure to cater to investor preferences when their firms face intense industry competition (DeFond and Park 1999; Brickley 2003; Javakhadze et al. 2014). Therefore, it is possible that higher litigation risk leads to managers in competitive industries having greater incentives to reduce earnings volatility through income smoothing, suggesting that the negative ruling effect on income smoothing can be stronger for firms in a more competitive industry. To test this, we follow Javakhadze et al. (2014) and Khurana et al. (2018) and measure the level of industry competitiveness by using the Herfindahl–Hirschman (HHI) index. We then construct an indicator variable, *High Competitiveness*, that equals one if a firm’s HHI is smaller than the median value of the sample, and zero otherwise. We re-estimate our baseline model by constructing a subsample analysis based on the degree of industry competition. Panel D of Table 7 presents the test results for high and low levels of industry competition. Results show that the coefficients on the interaction term, *Ninth Circuit* × *Post*, are significantly negative for *High Competitiveness*, indicating that the ruling effect is more pronounced for firms in a more competitive industry.

Finally, using the Securities Class Action Clearinghouse data, prior studies posit that firms in high-tech industries are usually sued more than firms in other industries (Hassan et al. 2021). According to this, we expect high-tech firms to be more sensitive to the adoption of the 1999 ruling. Following Hsu et al. (2014) and Hassan et al. (2021), we first calculate the time-series median annual R&D expenditure growth in the state of the firm’s headquarters. We then identify a firm as high (low)-tech intensive firm within a state if its annual R&D expenditure growth is higher (below) than the median annual R&D expenditure growth of that state (*High-tech Intensity* and *Low-tech Intensity*).<sup>13</sup> In Panel E of Table 7, we re-estimate our baseline model by partitioning our sample into *High-tech Intensity* and *Low-tech Intensity* subgroups. We find that the coefficient estimates of *Ninth Circuit* × *Post* are negative and significant for *High-tech Intensity* subgroup only.

[Please Insert Table 7 Here]

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<sup>13</sup> Rajan and Zingales (1998) suggest that R&D expenditure is an appropriate measure of high-tech intensity as the financial reporting standard (i.e., Financial Accounting Standards Board Statement No. 2) requires US public firms to disclose sufficient information of firm-level R&D expenditure.

### 2.4.2.2 Additional Robustness Checks

A natural question to ask is whether our baseline results might be driven by other confounding legal changes. As noted in Karpoff and Wittry (2018), our placing legal changes under the spotlight might be linked to state-level antitakeover laws, for example. To mitigate such a concern, in columns (1)-(6) of Table 8, we repeat the regression estimation as shown in Equation (1) by sequentially adding indicator variables of three additional state-level antitakeover laws, namely directors' duties laws (DD), poison pill laws (PP), and business combination laws (BC), to the model. In columns (7)-(8), we further control for the universal demand laws (UD), which refer to legal changes that affect shareholders' ability to file derivative lawsuits. Appel (2019) points out the significant difference between class action lawsuits and derivative lawsuits, while there are not absolute substitutes for one another. Compared to class action lawsuits that simply permit managers to be sued by a subset of shareholders, derivative lawsuits allow shareholders to sue managers and/or directors on behalf of the corporation for a breach of their fiduciary duty (Ni and Yin 2018). Thus, a decreasing threat of class action lawsuits and of derivative lawsuits may not yield similar effects. Moreover, in columns (9)-(12), we follow Flammer and Kacperczyk (2019) and control for the enactment of the inevitable disclosure doctrine (IDD) and the rejection of the inevitable disclosure doctrine (RIDD), which may affect employee turnover. Both laws may impact firms' disclosure decisions and thereby influence income smoothing. Our results show that the estimated coefficients of *Ninth Circuit*  $\times$  *Post* remain negative and significant throughout all columns in Table 8.

[Please Insert Table 8 Here]

We perform further robustness checks and present the results in Table 9. First, in columns (1)-(2), we use the indicator of increasing earnings patterns for at least five years (*INC\_NI*) (Barth et al. 1999) and the discretionary accruals based on the Dechow et al. (1995) (*Accr\_MJ*) as two alternative dependent variables.<sup>14</sup> Second, one can argue that our measures of income smoothing based on a rolling five-year window may make it is less likely that the observed changes in income smoothing can be attributed to the ruling. To alleviate this concern and ensure that our measures of income smoothing are calculated using data after the ruling, we

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<sup>14</sup> Rationales of using these two alternative dependent variables are, first, if managers are more likely to smooth income to show stable income over time, the negative ruling effect should hold for the likelihood of firms showing increasing income patterns (*INC\_NI*) and, second, if managers smooth income through discretionary accruals, the negative association between the 1999 ruling and the discretionary accruals based on Dechow et al. (1995) (*Accr\_MJ*) should also hold. We thank two anonymous referees for pointing out these. Moreover, as presented in column (2) of Table 9, we replace the industry-year fixed effect by the year fixed effect because *Accr\_MJ* is calculated at the industry level.

repeat the baseline regression with an extended sample between 1995 and 2007 and report the results in columns (3)-(4). Third, in columns (5)-(6), we re-estimate our baseline results by clustering standard errors at the state of location level. Fourth, in columns (7)-(8), we repeat our baseline regression by excluding utility (SIC 4000-4999) and financial (SIC 6000-6999) industries since they are regulated and may have different reporting environments (Tucker and Zarowin 2006; Mahajan and Tartaroglu 2008). Fifth, given that the enactment year of the ruling was 1999 and one of the Ninth Circuit states is California, it is possible that the main results are driven by the technology bubble, which co-occurred in the period 1999-2000 (Chu 2017). We therefore exclude high technology industries, which are identified using the Fama-French five-industry classification from the data library (Chang et al. 2019) in columns (9)-(10).<sup>15</sup> Sixth, in columns (11)-(12), we exclude firms incorporated in Nevada because the personal legal liability of corporate managers and directors can be limited in Nevada (Donelson and Yust 2014). Finally, in columns (13)-(14), we control for local economic conditions by adding several state-level measures, such as GDP growth rate, personal income growth rate, population growth rate, unemployment growth rate, total capital expenditure growth rate, total R&D growth rate, and asset-weighted market-to-book ratio (Chen and Vashishtha 2017), to Equation (1). We find that our results are robust across all these empirical specifications.

[Please Insert Table 9 Here]

### 2.4.2.3 Reusing Natural Experiments

In a recent study, Heath et al. (2023) point out the multiple hypothesis testing problem of repeated using a natural experiment. They show that business combination laws and Regulation SHO pilot have been exploited by more than 500 different dependent variables and such repeated use of a natural experiment may increase the likelihood of false discoveries. Compared with these two laws and the universal demand laws, which have been reused in more than 30 studies, the 1999 ruling has been much less exploited.<sup>16</sup>

Nevertheless, in unreported results, we examine the association between litigation risk and income smoothing using a more recent sample period between 2004 and 2019 (these

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<sup>15</sup> The Fama-French five-industry classification refers to consumer goods (Cnsmr), manufacturing (Manuf), high technology (HiTec), health care (Hlth), and other (Other). The data can be obtained from the data library of Kenneth R. French: [http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data\\_Library/det\\_5\\_ind\\_port.html](http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/Data_Library/det_5_ind_port.html).

<sup>16</sup> To our best knowledge, there are about ten published articles that apply the 1999 ruling as a difference-in-differences setting in their baseline regression (Chu 2017; Crane and Koch 2018; Hopkins 2018; Dong and Zhang 2019; Houston et al. 2019; Chung et al. 2020; Hassan et al. 2021; Huang et al. 2020; Arena et al. 2021; Yang et al. 2021). As noted in Gao et al. (2021) and Heath et al. (2023), the possibility of false discoveries can be relatively low when a natural experiment is reused around ten times.

unreported results can be found from the online appendix). We manually search for the information on filings of securities class action lawsuits from the Stanford Law School *Securities Class Action Clearinghouse* (Kim and Skinner 2012).<sup>17</sup> After matching the litigation data with the public companies from the Compustat/CRSP merged and Execucomp databases, we identify 153 public firms as being involved in security class action lawsuits and 284 lawsuit cases over the period of 2004 to 2019. We follow previous studies (Gande and Lewis 2009; Kim and Skinner 2012; Arena 2018; Arena and Julio 2023) and estimate a probit regression with a dependent variable equal to one if a class period of a lawsuit filing occurred for a firm during a given year, and zero otherwise.<sup>18</sup> Our alternative measure of litigation risk (i.e., litigation likelihood) is therefore the predicted probabilities through estimating the probit regression. We then repeat the baseline regression analysis using the litigation likelihood and find a significant and positive association between the likelihood of shareholder litigation and income smoothing. This result lends further support to our main findings that the decline in the threat of class action lawsuits following the 1999 ruling decreases income smoothing.

## 2.5 Conclusion

In this paper, we study the relationship between litigation risk and income smoothing by exploiting the ruling of the Ninth Circuit Court of Appeals in 1999 as an exogenous shock to the threat of class action lawsuits. Using a difference-in-differences approach over the sample period 1995-2003, we find that decreasing the threat of litigation reduces the incentives to smooth income. Such findings are robust to different model specifications. We also show that the negative ruling effect on income smoothing is more pronounced for firms where shareholders have a short-term investment horizon, for firms with higher idiosyncratic risk, for firms where managers have limited outside options, for firms in competitive industries, and for firms that are more high-tech intensive. These results are consistent with the view that higher litigation risk may pressure management into taking activities that can reduce the short-term uncertainties and stabilize the tenure.

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<sup>17</sup> Kim and Skinner (2012) indicate that the Stanford Law School *Securities Class Action Clearinghouse* database is commonly used as a source of lawsuit filings. In their study, they further check the data from the Stanford database with the 10-K disclosures of the involvement in the 10b-5 litigation for S&P 500 companies and assure the completeness of the Stanford database.

<sup>18</sup> We include independent variables (return skewness, return volatility, litigation intensity, CEO share ownership, CEO bonus over to total compensation, regulated industry dummy, high-tech dummy, retail industry dummy, and high-polluting industry dummy) that have been accepted as predictors of the likelihood of class action lawsuits. Moreover, to avoid the identification problem in our baseline regression analysis, the independent variables included in the probit regression are different with any of the independent variables used in the baseline regression model.

Our findings raise two questions. First, it is possible that CEO candidates view the time and reputation costs related to shareholder lawsuits as onerous, and thus firms headquartered in states with higher shareholder litigation risk may have difficulty attracting and retaining talented CEOs. Therefore, does reduced shareholder litigation risk influence the CEO labor market? Is there any difference between the quality of CEOs of firms headquartered in the Ninth Circuit states and their counterparts in other states? To investigate this, we can examine whether any change in CEO skill sets is associated with the 1999 ruling. Second, in line with the “pressure hypothesis”, fund managers, like CEOs of corporations, may also experience the short-term pressures associated with shareholder litigation risk, which in turn would significantly impact their investment strategies. Thus, it may be useful to explore whether there are any noticeable changes related to the asset allocations and investment horizons of mutual fund managers around the 1999 ruling. These two questions could be the focus of future research.

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**Table 1. Summary Statistics**

This table presents descriptive statistics of the main variables used in this study. The sample period is from 1995 to 2003, while the year of the Ninth Circuit ruling, 1999, is excluded. Only firms with at least one year before and one year after the ruling year are included in the sample. The detailed definitions of these variables are provided in Appendix A. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	N	Mean	Median	Std	P25	P75
Smoothing1	15,953	-0.722	-0.598	0.536	-0.967	-0.329
Smoothing2	15,953	0.755	0.915	0.368	0.705	0.980
Ninth Circuit	15,953	0.201	0.000	0.401	0.000	0.000
Size	15,953	5.367	5.331	0.916	4.662	6.004
ROA	15,953	0.084	0.120	0.238	0.060	0.178
Leverage	15,953	0.622	0.191	1.422	0.025	0.582
Market-to-book Ratio	15,953	1.819	1.327	1.570	0.992	1.987
Asset Tangibility	15,953	0.305	0.243	0.230	0.121	0.439
Cash Flow	15,953	0.149	0.066	0.190	0.017	0.208
Stock Return	15,953	-0.026	0.016	0.583	-0.318	0.295
Sales Growth	15,953	0.128	0.069	0.405	-0.034	0.199
R&D	15,953	0.044	0.000	0.091	0.000	0.046
CAPEX	15,953	0.070	0.046	0.076	0.024	0.087
Dividends	15,953	0.345	0.000	0.476	0.000	1.000
Institutional Ownership	15,953	0.293	0.206	0.296	0.000	0.552
Analysts Following	15,953	0.880	0.000	1.071	0.000	1.792
Big N Auditor	15,953	0.864	1.000	0.343	1.000	1.000
Debt Issue	15,953	0.010	0.000	0.091	-0.016	0.018
Equity Issue	15,953	0.067	0.008	0.285	0.000	0.031
Acquisition	15,953	0.343	0.000	0.475	0.000	1.000



**Table 2. Univariate Analysis**

This table presents the univariate analysis of firms headquartered in states belonging to Ninth Circuit and firms located in other circuit states. The sample period is from 1995 to 2003, while the year of the Ninth Circuit ruling, 1999, is excluded. Only firms with at least one year before and one year after the ruling year are included to the sample. Panel A compares the characteristics of Ninth Circuit firms and non-Ninth Circuit firms at the firm-year level. Panel B compares the change in the mean value of income smoothing before and after the adoption of the 1999 ruling separately for firms located in Ninth Circuit states and those in other circuit states. Panel C compares the difference in the median value of income smoothing before and after the adoption of the 1999 ruling separately for firms located in Ninth Circuit states and those in other circuit states. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

<i>Panel A. Summary Statistics</i>							
	Non-Ninth Circuit States (N=12,740)		Ninth Circuit States (N=3,213)		Differences		
	Mean	Median	Mean	Median	Mean	Median	
Smoothing1	-0.702	-0.582	-0.803	-0.672	0.100***	0.089***	
Smoothing2	0.768	0.921	0.702	0.889	0.065***	0.032***	
Size	5.387	5.360	5.285	5.206	0.102***	0.154***	
ROA	0.096	0.124	0.035	0.104	0.061***	0.020***	
Leverage	0.681	0.219	0.389	0.093	0.292***	0.126***	
Market-to-book Ratio	1.744	1.303	2.116	1.448	0.372***	0.145***	
Asset Tangibility	0.316	0.259	0.259	0.180	0.057***	0.080***	
Cash Flow	0.127	0.053	0.234	0.163	0.107***	0.110***	
Stock Return	-0.014	0.025	-0.071	-0.014	0.057***	0.038***	
Sales Growth	0.125	0.068	0.140	0.076	-0.014*	-0.008	
R&D	0.032	0.000	0.089	0.040	0.056***	0.040***	
CAPEX	0.071	0.046	0.069	0.046	0.002	0.000	
Dividends	0.380	0.000	0.207	0.000	0.174***	0.000***	
Institutional Ownership	0.290	0.204	0.302	0.211	-0.012**	-0.006	
Analysts Following	0.854	0.000	0.983	0.693	0.129***	0.693***	
Big N Auditor	0.854	1.000	0.903	1.000	0.049***	0.000***	
Debt Issue	0.009	0.000	0.010	0.000	-0.001	0.000	
Equity Issue	0.059	0.007	0.098	0.018	0.039***	0.011***	
Acquisition	0.343	0.000	0.343	0.000	0.001	0.000	

<i>Panel B. Univariate Tests: variable difference before and after 1999 ruling (Mean Value)</i>								
	Non-Ninth Circuit States (N=12,740)				Ninth Circuit States (N=3,213)			
	Before	After	$\Delta$ mean	p-value	Before	After	$\Delta$ mean	p-value
Smoothing1	-0.686	-0.718	0.033***	0.000	-0.757	-0.844	0.087***	0.000
Smoothing2	0.784	0.752	0.033***	0.000	0.739	0.669	0.071***	0.000

<i>Panel C. Univariate Tests: variable difference before and after 1999 ruling (Median Value)</i>								
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	Non-Ninth Circuit States (N=12,740)				Ninth Circuit States (N=3,213)			
	Before	After	$\Delta$ median	p-value	Before	After	$\Delta$ median	p-value
Smoothing1	-0.558	-0.609	0.052***	0.000	-0.617	-0.718	0.100***	0.000
Smoothing2	0.928	0.912	0.016***	0.000	0.907	0.870	0.038***	0.000

**Table 3. Shareholder Litigation and Income Smoothing**

In this table, we examine the impact of shareholder litigation on income smoothing. The main dependent variables are *Smoothing1* and *Smoothing2*, respectively. *Smoothing1* is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both of the earnings and cash flows are scaled by lagged total assets. *Smoothing2* is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets. Our main variable of interest is the interaction term *Ninth Circuit*  $\times$  *Post*, in which *Ninth Circuit* equals one if a firm's headquarter is located in one of the Ninth Circuit states, and zero otherwise, while *Post* equals one in the 2000-2003 period, and zero in the 1995-1998 period. In columns (1) and (2), we present the estimates by including just the interaction term *Ninth Circuit*  $\times$  *Post*, firm and industry-year fixed effects, and no control variables. We add time-varying control variables in columns (3)-(4). Detailed definitions of all control variables are provided in Appendix A. Statistical significance is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	Smoothing1	Smoothing2	Smoothing1	Smoothing2
	(1)	(2)	(3)	(4)
Ninth Circuit $\times$ Post	-0.072** (0.029)	-0.048** (0.022)	-0.080*** (0.029)	-0.051** (0.022)
Size			0.091** (0.038)	0.052* (0.028)
ROA			0.107*** (0.035)	-0.003 (0.027)
Leverage			-0.005 (0.006)	-0.001 (0.003)
Market-to-book Ratio			-0.002 (0.005)	0.002 (0.004)
Asset Tangibility			0.068 (0.087)	0.022 (0.066)
Cash Flow			0.234*** (0.057)	-0.005 (0.042)
Stock Return			0.010 (0.008)	-0.015*** (0.005)
Sales Growth			0.005 (0.011)	0.010 (0.007)
R&D			-0.158 (0.150)	-0.089 (0.112)
CAPEX			0.017 (0.089)	-0.023 (0.061)
Dividends			0.124*** (0.019)	0.011 (0.013)
Institutional Ownership			0.048 (0.051)	0.011 (0.036)
Analysts Following			0.005 (0.013)	0.005 (0.009)
Big N Auditor			-0.054 (0.033)	-0.015 (0.026)
Debt Issue			0.059 (0.047)	-0.039 (0.029)
Equity Issue			-0.004 (0.014)	-0.015 (0.012)

Acquisition			0.026** (0.010)	0.009 (0.007)
Firm FE	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.046	0.060	0.061	0.063
Observations	15,953	15,953	15,953	15,953

**Table 4. Dynamic Treatment Analysis**

This table presents the estimation results of the dynamic treatment analysis. The main dependent variables are *Smoothing1* and *Smoothing2*, respectively. In column (1), *Smoothing1* is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both the earnings and cash flows are scaled by lagged total assets. In column (2), *Smoothing2* is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets. We replace the interaction term *Ninth Circuit*  $\times$  *Post*, the main variable of interest in our baseline regression model, with a set of seven interaction terms:  $Year^{-3} \times Ninth\ Circuit$ ,  $Year^{-2} \times Ninth\ Circuit$ ,  $Year^{-1} \times Ninth\ Circuit$ ,  $Year^{+1} \times Ninth\ Circuit$ ,  $Year^{+2} \times Ninth\ Circuit$ ,  $Year^{+3} \times Ninth\ Circuit$ , and  $Year^{+4} \times Ninth\ Circuit$ , respectively.  $Year^{-3}$  is a dummy variable equal to one for the third year before the year of the ruling,  $Year^{-2}$  is a dummy variable equal to one for the second year before the year of the ruling,  $Year^{-1}$  is a dummy variable equal to one for the year before the year of the ruling,  $Year^{+1}$  is a dummy variable equal to one for the year after the year of the ruling,  $Year^{+2}$  is a dummy variable equal to one for the second year after the year of the ruling,  $Year^{+3}$  is a dummy variable equal to one for the third year after the year of the ruling, and  $Year^{+4}$  is a dummy variable equal to one for the fourth year after the year of the ruling. Detailed definitions of all control variables are provided in Appendix A. Statistical significance is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	Smoothing1	Smoothing2
	(1)	(2)
Before <sup>-3</sup> $\times$ Ninth Circuit	-0.017 (0.034)	-0.019 (0.024)
Before <sup>-2</sup> $\times$ Ninth Circuit	-0.033 (0.039)	-0.019 (0.027)
Before <sup>-1</sup> $\times$ Ninth Circuit	-0.052 (0.041)	-0.006 (0.027)
After <sup>+1</sup> $\times$ Ninth Circuit	-0.094** (0.042)	-0.038 (0.028)
After <sup>+2</sup> $\times$ Ninth Circuit	-0.098** (0.045)	-0.071** (0.030)
After <sup>+3</sup> $\times$ Ninth Circuit	-0.121*** (0.045)	-0.067** (0.033)
After <sup>+4</sup> $\times$ Ninth Circuit	-0.120*** (0.044)	-0.076** (0.034)
Firm Controls	Yes	Yes
Firm FE	Yes	Yes
Industry-year FE	Yes	Yes
Adjusted R <sup>2</sup>	0.062	0.063
Observations	15,953	15,953

**Table 5. Shareholder Litigation and Income Smoothing: The Matched Sample**

This table examines the impact of shareholder litigation on income smoothing with a sample consists of 317 pairs of matched firms. The main dependent variables are *Smoothing1* and *Smoothing2*, respectively. *Smoothing1* is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both the earnings and cash flows are scaled by lagged total assets. *Smoothing2* is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets. In columns (1) and (2), the main variable of interest is the interaction term *Ninth Circuit*  $\times$  *Post*, in which *Ninth Circuit* equals one if a firm's headquarter is located in one of the Ninth Circuit states, and zero otherwise, while *Post* equals one in the 2000-2003 period, and zero in the 1995-1998 period. In columns (3) and (4), we replace the interaction term *Ninth Circuit*  $\times$  *Post* with a set of seven interaction terms:  $Year^{-3} \times Ninth\ Circuit$ ,  $Year^{-2} \times Ninth\ Circuit$ ,  $Year^{-1} \times Ninth\ Circuit$ ,  $Year^{+1} \times Ninth\ Circuit$ ,  $Year^{+2} \times Ninth\ Circuit$ ,  $Year^{+3} \times Ninth\ Circuit$ , and  $Year^{+4} \times Ninth\ Circuit$ .  $Year^{-3}$  is a dummy variable equal to one for the third year before the year of the ruling,  $Year^{-2}$  is a dummy variable equal to one for the second year before the year of the ruling,  $Year^{-1}$  is a dummy variable equal to one for the year before the year of the ruling,  $Year^{+1}$  is a dummy variable equal to one for the year after the year of the ruling,  $Year^{+2}$  is a dummy variable equal to one for the second year after the year of the ruling,  $Year^{+3}$  is a dummy variable equal to one for the third year after the year of the ruling, and  $Year^{+4}$  is a dummy variable equal to one for the fourth year after the year of the ruling. Detailed definitions of all control variables are provided in Appendix A. Statistical significance is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	Smoothing1	Smoothing2	Smoothing1	Smoothing2
	(1)	(2)	(3)	(4)
Ninth Circuit $\times$ Post	-0.144*** (0.045)	-0.080** (0.034)		
Year <sup>-3</sup> $\times$ Ninth Circuit			-0.036 (0.054)	0.001 (0.037)
Year <sup>-2</sup> $\times$ Ninth Circuit			-0.027 (0.064)	-0.014 (0.043)
Year <sup>-1</sup> $\times$ Ninth Circuit			-0.051 (0.069)	0.003 (0.045)
Year <sup>+1</sup> $\times$ Ninth Circuit			-0.143** (0.072)	-0.019 (0.047)
Year <sup>+2</sup> $\times$ Ninth Circuit			-0.152** (0.073)	-0.094* (0.050)
Year <sup>+3</sup> $\times$ Ninth Circuit			-0.216*** (0.073)	-0.110** (0.054)
Year <sup>+4</sup> $\times$ Ninth Circuit			-0.201*** (0.072)	-0.136** (0.055)
Firm Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.118	0.100	0.119	0.103
Observations	3,889	3,889	3,889	3,889

**Table 6. Shareholder Litigation and Income Smoothing: Pseudo-ruling Year**

This table presents the placebo test results using 1996 as the pseudo-ruling year. The sample is between 1994 and 1998 (i.e., two years before and two years after the pseudo-ruling year). The main dependent variables are *Smoothing1* and *Smoothing2*, respectively. *Smoothing1* is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both of the earnings and cash flows are scaled by lagged total assets. *Smoothing2* is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets. Our main variable of interest is the interaction term *Ninth Circuit*  $\times$  *Post*, in which *Ninth Circuit* equals one if a firm's headquarter is located in one of the Ninth Circuit states, and zero otherwise, while *Post* equals one in the 1997-1998 period, and zero in the 1994-1995 period. In columns (1) and (2), we present the estimates by including just the interaction term *Ninth Circuit*  $\times$  *Post*, firm and industry-year fixed effects, and no control variables. We add time-varying control variables in columns (3)-(4). Detailed definitions of all control variables are provided in Appendix A. Statistical significance is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1st and 99th percentiles.

	Smoothing1	Smoothing2	Smoothing1	Smoothing2
	(1)	(2)	(3)	(4)
Ninth Circuit $\times$ Post	-0.010 (0.031)	0.019 (0.020)	-0.008 (0.031)	0.017 (0.020)
Firm Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.011	0.008	0.027	0.015
Observations	9,279	9,279	9,279	9,279

**Table 7. Shareholder Litigation and Income Smoothing: The Cross-sectional Analysis**

This table presents the cross-sectional variation analysis of the effects of the Ninth Circuit ruling on income smoothing. The main dependent variables are *Smoothing1* and *Smoothing2*, respectively. *Smoothing1* is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both the earnings and cash flows are scaled by lagged total assets. *Smoothing2* is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets. Our main variable of interest is the interaction term *Ninth Circuit*  $\times$  *Post*, in which *Ninth Circuit* equals one if a firm's headquarter is located in one of the Ninth Circuit states, and zero otherwise, while *Post* equals one in the 2000-2003 period, and zero in the 1995-1998 period. In panels A to E, we conduct subsample analyses for investor horizons, for a firm's idiosyncratic risk, for a firm's outside options, for the industry competitiveness, and for the level of a firm's high-tech intensity, respectively. We calculate the difference between the total amount of shares held by dedicated and quasi-index investors and the number of shares held by transient investors of a firm following Bushee's (2001) classification of institutional investor base, all divided by total shares (An and Zhang, 2013; Brochet et al., 2015). A larger (smaller) value of the difference means that firms have more (fewer) long-term institutional investors. We then partition the sample into firms with more and fewer long-term investors (i.e., *Long-term Shareholdings* and *Short-term Shareholdings*) based on the median of the distribution of the calculated differences in shareholdings. We follow Campbell et al. (2001) and employ the CAPM-based approach to measure the idiosyncratic risk (*IVol Risk*) of firms. *High IVol Risk* and *Low IVol Risk* are firms with above- and below-median idiosyncratic risk. We measure a firm's outside options using local beta, which is the degree of comovement between a firm's stock return and stock returns of other firms within the same state. The local beta is estimated using a time-series regression of monthly stock return on the return of the stock's corresponding state index (exclude the particular stock), as well as the market portfolio return and the stock's industry (Fama-French 48 industry) return. *High (Low) Local Beta* is a dummy variable that equals one if the local beta is above (below) the median of the distribution, and zero otherwise. We measure the level of industry competitiveness by using the Herfindahl-Hirschman (HHI) index. *High (Low) Competitiveness* is a dummy variable that equals one if a firm's HHI is smaller (larger) than the median value of the sample. We follow Hsu et al. (2014) and Hassan et al. (2021) and first calculate the time-series median annual R&D expenditure growth in the state of the firm's headquarters. A firm is identified as *High-tech (Non-high-tech) Intensity* within a state if its annual R&D expenditure growth is higher (below) than the median annual R&D expenditure growth of that state. Detailed definitions of all control variables included in the regression analysis are provided in Appendix A. Statistical significance is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

*Panel A. Investor Horizons*

	Smoothing1		Smoothing2	
	Long-term Shareholdings	Short-term Shareholdings	Long-term Shareholdings	Short-term Shareholdings
	(1)	(2)	(3)	(4)
Ninth Circuit $\times$ Post	-0.051 (0.043)	-0.116** (0.045)	-0.045 (0.033)	-0.078** (0.033)
Firm Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.091	0.097	0.095	0.113
Observations	8,137	7,816	8,137	7,816

*Panel B. IVol Risk*

	Smoothing1		Smoothing2	
	Low <i>IVol Risk</i>	High <i>IVol Risk</i>	Low <i>IVol Risk</i>	High <i>IVol Risk</i>
	(1)	(2)	(3)	(4)
Ninth Circuit $\times$ Post	-0.004 (0.041)	-0.107** (0.045)	0.027 (0.030)	-0.067** (0.034)
Firm Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.120	0.088	0.104	0.105
Observations	6,774	6,868	6,774	6,868

*Panel C. Outside Options*



	Smoothing1		Smoothing2	
	Low Local Beta	High Local Beta	Low Local Beta	High Local Beta
	(1)	(2)	(3)	(4)
Ninth Circuit×Post	-0.097** (0.043)	-0.060 (0.040)	-0.060** (0.030)	-0.004 (0.028)
Firm Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.054	0.034	0.046	0.048
Observations	6,764	6,774	6,764	6,774

*Panel D. Industry Competition*

	Smoothing1		Smoothing2	
	Low Competitiveness	High Competitiveness	Low Competitiveness	High Competitiveness
	(1)	(2)	(3)	(4)
Ninth Circuit×Post	-0.038 (0.042)	-0.112*** (0.039)	-0.014 (0.030)	-0.084*** (0.030)
Firm Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.089	0.041	0.094	0.033
Observations	8,074	7,879	8,074	7,879

*Panel E. Technology Intensity*

	Smoothing1		Smoothing2	
	Non-high-tech Intensity	High-tech Intensity	Non-high-tech Intensity	High-tech Intensity
	(1)	(2)	(3)	(4)
Ninth Circuit×Post	-0.012 (0.057)	-0.141** (0.057)	-0.038 (0.045)	-0.085** (0.043)
Firm Controls	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.049	0.075	0.053	0.063
Observations	3,612	3,595	3,612	3,595

**Table 8. Controlling for Confounding Legal Changes**

This table examines the impact of shareholder litigation on income smoothing by controlling for confounding legal changes. The main dependent variables are *Smoothing1* and *Smoothing2*, respectively. *Smoothing1* is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both the earnings and cash flows are scaled by lagged total assets. *Smoothing2* is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets. Our main variable of interest is the interaction term *Ninth Circuit*  $\times$  *Post*, in which *Ninth Circuit* equals one if a firm's headquarter is located in one of the Ninth Circuit states, and zero otherwise, while *Post* equals one in the 2000-2003 period, and zero in the 1995-1998 period. In columns (1)-(6), we repeat the baseline regression estimation by sequentially adding indicator variables of three additional state-level antitakeover laws, namely directors' duties laws (DD), poison pill laws (PP), and business combination laws (BC), respectively. In columns (7)-(8), we further control for the universal demand laws (UD), which refers to legal changes that affect shareholders' ability to file derivative lawsuits. In columns (9)-(12), we follow Flammer and Kacperczyk (2019) and control for the enactment of the inevitable disclosure doctrine (IDD) and the rejection of the inevitable disclosure doctrine (RIDDD). Detailed definitions of all control variables, included in the regression analysis, are provided in Appendix A. Statistical significance is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	Smoothing1	Smoothing2	Smoothing1	Smoothing2	Smoothing1	Smoothing2	Smoothing1	Smoothing2	Smoothing1	Smoothing2	Smoothing1	Smoothing2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Ninth Circuit $\times$ Post	-0.080*** (0.029)	-0.051** (0.022)	-0.080*** (0.029)	-0.051** (0.022)	-0.080*** (0.029)	-0.052** (0.022)	-0.080*** (0.029)	-0.051** (0.022)	-0.079*** (0.029)	-0.051** (0.022)	-0.080*** (0.029)	-0.051** (0.022)
DD	-0.177*** (0.043)	-0.046 (0.031)	-0.176*** (0.044)	-0.046 (0.031)	-0.178*** (0.044)	-0.047 (0.031)	-0.179*** (0.043)	-0.043 (0.031)	-0.177*** (0.044)	-0.043 (0.031)	-0.177*** (0.044)	-0.044 (0.031)
PP			0.011 (0.038)	-0.003 (0.023)	0.014 (0.038)	-0.001 (0.023)	0.014 (0.038)	-0.001 (0.023)	0.014 (0.038)	-0.001 (0.023)	0.015 (0.040)	-0.001 (0.024)
BC					-0.066 (0.067)	-0.059 (0.044)	-0.054 (0.076)	-0.098* (0.052)	-0.054 (0.076)	-0.098* (0.052)	-0.054 (0.076)	-0.097* (0.052)
UD							-0.014 (0.048)	0.046 (0.035)	-0.013 (0.048)	0.046 (0.035)	-0.014 (0.048)	0.046 (0.035)
IDD									0.012 (0.024)	-0.001 (0.017)	0.011 (0.024)	-0.001 (0.017)
RIDD											-0.006 (0.036)	-0.003 (0.023)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.061	0.063	0.061	0.063	0.061	0.063	0.061	0.064	0.061	0.064	0.061	0.064

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Observations	15,953	15,953	15,953	15,953	15,953	15,953	15,953	15,953	15,953	15,953	15,953	15,953
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**Table 9. Additional Robustness Checks**

In this table, we provide additional robustness checks of our main findings. In columns (1)-(2), we use the indicator of increasing earnings patterns for at least five years (*INC\_NI*) (Barth et al. 1999) and the discretionary accruals based on Dechow et al. (1995) (*Accr\_MJ*) as two alternative measures of income smoothing. To ensure that our measures of income smoothing are calculated using data after the ruling, in columns (3)-(4) we repeat the baseline regression with an extended sample between 1995 and 2007. In columns (5)-(6), we re-estimate our baseline results by clustering standard errors at the state of location level. In columns (7)-(8), we repeat our baseline regression by excluding utility (SIC 4000-4999) and financial (SIC 6000-6999) industries since they are regulated and may have different reporting environments. In columns (9)-(10), we exclude high technology industries, which are identified using the Fama-French five-industry classification from the data library. In columns (11)-(12), we exclude firms incorporated in Nevada, as the personal legal liability of corporate managers and directors can be limited in Nevada. In columns (13)-(14), we control for local economic conditions by adding several state-level measures to the baseline model, such as GDP growth rate, personal income growth rate, population growth rate, unemployment growth rate, total capital expenditure growth rate, total R&D growth rate, and asset-weighted market-to-book ratio. The main dependent variables across columns (3)-(14) are *Smoothing1* and *Smoothing2*, respectively. *Smoothing1* is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both the earnings and cash flows are scaled by lagged total assets. *Smoothing2* is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets. The main variable of interest is the interaction term *Ninth Circuit*  $\times$  *Post*, in which *Ninth Circuit* equals one if a firm's headquarter is located in one of the Ninth Circuit states, and zero otherwise, while *Post* equals one in the 2000-2007 period, and zero in the 1995-1998 period. Detailed definitions of all control variables included in the regression analysis are provided in Appendix A. Statistical significance for columns (1)-(4) and columns (7)-(14) is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	INC_NI	Accr_MJ	Smoothing1	Smoothing2	Smoothing1	Smoothing2	Smoothing1	Smoothing2	Smoothing1	Smoothing2	Smoothing1	Smoothing2	Smoothing1	Smoothing2
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Ninth Circuit $\times$ Post	-0.025** (0.012)	-0.015** (0.007)	-0.052** (0.027)	-0.041** (0.021)	-0.080*** (0.021)	-0.051** (0.022)	-0.075** (0.031)	-0.052** (0.022)	-0.106*** (0.034)	-0.052** (0.026)	-0.077*** (0.029)	-0.050** (0.022)	-0.088*** (0.028)	-0.051** (0.021)
Firm Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Industry-year FE	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	No	Yes	No	No	No	No	No	No	No	No	No	No	No	No
State Variables	No	No	No	No	No	No	No	No	No	No	No	No	Yes	Yes
Adjusted R <sup>2</sup>	0.047	0.080	0.022	0.028	0.061	0.063	0.058	0.056	0.074	0.073	0.060	0.063	0.063	0.065
Observations	18,076	16,326	21,511	21,511	15,953	15,953	14,068	14,068	12,424	12,424	15,606	15,606	15,912	15,912

## Appendix A. Variable Definitions

Variable	Description
Smoothing1	The standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both the earnings and cash flows are scaled by lagged total assets and standard deviations are calculated at the annual level over rolling five-year windows ending in the current fiscal year (Leuz et al., 2003; Dou et al., 2013).
Smoothing2	The Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets (Bhattacharya et al., 2003; Dechow et al., 2010).
Ninth Circuit	Indicator takes the value one when the firm is under the jurisdiction of the Ninth Circuit Court as determined by headquarters location, and zero otherwise.
Size	The natural logarithm value of total assets in thousands of dollars.
ROA	Earnings before interest, tax, depreciation, and amortization (EBITDA) divided by total assets.
Leverage	Short-term plus long-term debt, divided by common equity.
Market-to-book Ratio	Computed as the book value of net assets minus the book value of equity plus the market value of equity, all divided by the book value of assets.
Asset Tangibility	Total value of property, plant, and equipment, divided by total assets.
Cash Flow	Cash and short-term investments divided by total asset.
Stock Return	Annual stock return over the fiscal year.
Sales Growth	Current year's sales less prior year's sales less the increase in receivables, scaled by prior year's sales.
R&D	Research and development (R&D) expenses divided by total asset.
CAPEX	Capital expenditures divided by total asset.
Dividends	An indicator variable that equals 1 if a firm pays dividends, and zero otherwise.
Institutional Ownership	The number of shares held by institutional investors divided by the number of shares outstanding.
Analysts Following	The natural logarithm value of one plus the number of analysts following a firm.
Big N Auditor	An indicator variable that equals one when firms are audited by a Big N audit firm, and zero otherwise. Big N firms are defined by Compustat as firms with AU codes between 1 and 8, inclusive.
Debt Issue	Computed as Long-term debt issuance minus long-term debt reduction, divided by total assets.
Equity Issue	Computed as sale of common stock, divided by shareholder equity.
Acquisition	An indicator variable that equals 1 if a firm is involved in mergers and acquisitions in the focal year as reported by the Securities Data Company (SDC), and zero otherwise.
INC_NI	An indicator variable that equals 1 if a firm has at least five consecutive prior years of increasing earnings, and zero otherwise.

Discretionary accruals, defined as residuals ( $\varepsilon_t$ ) from the following model estimated for every industry and year (Jones 1991, Dechow et al. 1995):

$$\frac{TA_t}{Assets_{t-1}} = \alpha_1 \frac{1}{Asset_{t-1}} + \alpha_2 \frac{\Delta SALES_t - \Delta AR_t}{Asset_{t-1}} + \alpha_3 \frac{PPE_t}{Asset_{t-1}} + \varepsilon_t$$

Accr\_MJ

$TA_t$  is computed as  $TA_t = \Delta CA_t - \Delta CL_t - \Delta Cash_t + \Delta STD_t - DEP_t$ ; where  $\Delta CA_t$  is the change in current assets,  $\Delta Cash_t$  is the change in cash,  $\Delta CL_t$  is the change in current liabilities,  $\Delta STD_t$  is the change in debt in current liabilities, and  $DEP_t$  is the depreciation and amortization expense.  $Asset_{t-1}$  is the total assets.  $\Delta SALES_t$  is the change in sales,  $\Delta AR_t$  is the change in accounts receivables; and  $PPE_t$  is the gross value of property, plant, and equipment.

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## Appendix B. Diagnostic Tests for the Propensity Score Matching

This table reports the diagnostic test results for the propensity score matching presented in Table 5. We report the univariate comparisons between treated firms (i.e., firms located in states belonging to the Ninth Circuit) and their matched control firms (i.e., firms located in states belonging to other circuits). Definitions of all variables are provided in Appendix A.

Variables	Treated Firms	Matched Control Firms	Differences	t-statistics
Size	5.150	5.215	-0.065	-0.89
ROA	0.031	0.057	-0.026	-0.97
Leverage	0.293	0.295	-0.003	-0.07
Market-to-book Ratio	2.111	2.030	0.081	0.55
Asset Tangibility	0.250	0.267	-0.017	-0.97
Cash Flow	0.201	0.198	0.003	0.20
Stock Return	-0.204	-0.178	-0.025	-0.52
Sales Growth	0.137	0.122	0.015	0.46
R&D	0.095	0.092	0.003	0.29
CAPEX	0.070	0.072	-0.002	-0.43
Dividends	0.208	0.230	-0.022	-0.67
Institutional Ownership	0.253	0.274	-0.020	-0.92
Analysts Following	0.872	0.990	-0.118	-1.38
Big N Auditor	0.899	0.890	0.009	0.39
Debt Issue	0.018	0.029	-0.010	-1.27
Equity Issue	0.081	0.066	0.015	0.51
Acquisition	0.435	0.426	0.009	0.24

**“The Impact of Shareholder Litigation Risk on Income Smoothing”**

**Online Appendix**

**Not Included in the Paper**



**Table IA. 1 Staggered Adoption of Confounding Legal Changes**

This table presents the detailed information of staggered adoption of confounding legal changes, including directors' duties laws (DD), poison pill laws (PP), business combination laws (BC), universal demand laws (UD), inevitable disclosure doctrine (IDD), and rejection of the inevitable disclosure doctrine (RIDDD), across US states.

State Name	DD	PP	BC	UD	IDD	RIDDD
Arizona	1987		1987	1996		
Arkansas					1997	
Colorado		1989				
Connecticut	1988	2003	1988	1997	1996	
Delaware			1988		1964	
Florida	1989	1989		1990	1960-2001	2001
Georgia	1989	1989	1988	1989	1998	
Hawaii		1988		2001		
Idaho	1988	1988	1988	1998		
Illinois	1985	1989	1989		1989	
Indiana	1986	1986	1986		1995	
Iowa	1989	1989	1997	2003	1996	
Kansas			1989		2006	
Kentucky	1988	1988	1986			
Louisiana	1988					
Maine	1985	2003	1988	1997		
Maryland	1999	1999	1989			
Massachusetts	1989	1989	1989	2004	1994	
Michigan		2001	1989	1989	1966-2002	2002
Minnesota	1987	1995	1987		1986	
Mississippi	1990	2005		1993		
Missouri	1986	1999	1986		2000	
Montana				1992		
Nebraska	1988		1988	1996		
Nevada	1991	1989	1991			
New Hampshire				1993		
New Jersey	1989	1989	1986		1987	
New Mexico	1987					
New York	1987	1986	1985		1919	
North Carolina	1993	1989		1995	1976	
North Dakota	1993					
Ohio	1984	1986	1990		2000	
Oklahoma			1991			
Oregon	1989	1989	1991			
Pennsylvania	1990	1988	1988	1997	1982	
Rhode Island	1990	1990	1990	2005		
South Carolina		1998	1988			
South Dakota	1990	1990	1990	2005		
Tennessee	1988	1989	1988			
Texas	2006	2003	1997	1997	1993-2003	2003
Utah		1989		1992	1998	
Vermont	1998	2008				
Virginia	1988	1990	1988	1992		
Washington		1988	1987		1997	

Wisconsin	1987	1987		1991
Wyoming	1990	2009	1989	1997

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**Table IA.2 Probit Regression of Litigation Risk**

This appendix table reports the results of the probit regression employed to estimate the litigation risk variable used in the study. The dependent variable, *Class Action Lawsuit*, is a dummy variable equal to one if a class period of a lawsuit filing occurred for a firm during a given year, and zero otherwise. The information on filings of securities class action lawsuits from the Stanford Law School *Securities Class Action Clearinghouse*. *Return Skewness* is the skewness of a firm's 12-month return. *Return Volatility* is the standard deviation of a firm's 12-month stock return. *Litigation Intensity* is the fraction of firms in a particular industry (e.g., four-digit SIC) that have been brought into class action litigation in a given year. *CEO Share Ownership* is the fraction of CEO shareholdings to total shares outstanding. *CEO Bonus to Total Compensation* is the fraction of CEO bonus compensation to total compensation, where the total compensation includes the sum of the dollar values of salary, bonus, value of restricted stock granted, value of options granted, long-term incentive payout, and other compensation. *Regulated Industry* is a dummy variable equal to one if a firm is in regulated industry (i.e., financial and utility industries). *High Tech Dummy* equals one for firms whose three-digit SIC codes are 283, 357, 360-368, 481, 737 and 873, respectively, and zero otherwise (Francis and Schipper, 1999; Core et al., 2003). *Retail Industry Dummy* equals one for a firm whose four-digit SIC code is between 5200 and 5961, and zero otherwise. *High-polluting Industry Dummy* equals one if a firm is in the seven high-polluting industry sectors as described in Flammer and Kacperczyk (2016), and zero otherwise. The seven high-polluting industries are metal mining (NAICS 212), electric utilities (NAICS 2211), chemicals (NAICS 325), primary metals (NAICS 331), paper (NAICS 322), food, beverages, and tobacco (NAICS 311 and NAICS 312), and hazardous waste management (NAICS 5622 and NAICS 5629). We use the North American Industry Classification System (NAICS) & SIC Crosswalk to match NAICS with four-digit SIC codes of these sectors. Statistical significance is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	Class Action Lawsuits
Return Skewness	0.014 (0.039)
Return Volatility	-0.059 (0.419)
Litigation Intensity	0.415*** (0.049)
CEO Share Ownership	0.025 (0.631)
CEO Bonus to Total Compensation	-0.426* (0.256)
Regulated Industry	-1.649*** (0.557)
High Tech Dummy	-0.055 (0.225)
Retail Industry Dummy	3.229*** (0.217)
High-polluting Industry Dummy	1.035*** (0.383)
Industry FE	Yes
Year FE	Yes
Pseudo R <sup>2</sup>	0.158
Observations	24,884

**Table IA.3 Likelihood of Litigation Risk and Income Smoothing**

This table presents the impact of litigation risk on income smoothing over the sample period 2004-2019. The main dependent variables are *Smoothing1* and *Smoothing2*, respectively. *Smoothing1* is the standard deviation of operating earnings divided by the standard deviation of cash flows from operations, where both of the earnings and cash flows are scaled by lagged total assets. *Smoothing2* is the Spearman correlation between the change in cash flow from operations scaled by lagged total assets and the change in total accruals scaled by lagged assets. Our main variable of interest, *Litigation Likelihood*, is the predicted probabilities of litigation estimated with a probit regression on the sample that consists of securities class action lawsuits between 2004 and 2019 from the Stanford Law School *Securities Class Action Clearinghouse*. Detailed definitions of all control variables are provided in Appendix A. Statistical significance is based on the heteroscedasticity-robust firm-clustered standard errors reported in parentheses. \*\*\*, \*\*, and \* denote statistical significance at the 1%, 5%, and 10% levels, respectively. All accounting variables are winsorized at the 1st and 99th percentiles.

	Smoothing1	Smoothing2	Smoothing1	Smoothing2
	(1)	(2)	(3)	(4)
Litigation Likelihood	5.185*** (1.937)	4.572*** (1.364)	5.031** (2.002)	4.056*** (1.396)
Size			0.076*** (0.017)	0.080*** (0.015)
ROA			0.028 (0.047)	-0.069 (0.062)
Leverage			-0.005 (0.006)	-0.002 (0.004)
Market-to-book Ratio			-0.005 (0.009)	0.014** (0.006)
Asset Tangibility			0.040 (0.100)	0.161 (0.100)
Cash Flow			0.108* (0.064)	0.085 (0.052)
Stock Return			0.028*** (0.010)	-0.010 (0.008)
Sales Growth			-0.006 (0.016)	0.017 (0.013)
R&D			0.451** (0.223)	0.055 (0.170)
CAPEX			0.018 (0.129)	0.001 (0.142)
Dividends			0.069*** (0.023)	0.058*** (0.020)
Institutional Ownership			-0.024 (0.028)	-0.030 (0.028)
Analyst Following			0.025** (0.010)	0.014 (0.010)
Big N Auditor			-0.012 (0.046)	0.035 (0.041)
Debt Issue			0.011 (0.047)	0.042 (0.035)
Equity Issue			0.021 (0.015)	-0.014 (0.019)
Acquisition			0.013 (0.008)	-0.006 (0.007)
Firm FE	Yes	Yes	Yes	Yes

Industry-year FE	Yes	Yes	Yes	Yes
Adjusted R <sup>2</sup>	0.023	0.023	0.032	0.036
Observations	15,622	15,622	15,622	15,622

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## Chapter 3 Bank Lending and Corporate Earnings Management:

### Evidence from FAS 166 and FAS 167

#### 3.1 Introduction

One stream of literature indicates that one of the motivations of earnings management is to benefit firms by getting financially supported. Objectively, earnings management provides a channel through which managers communicate their private information, which matches the firms' specific financial situations, to the markets (Healy and Wahlen, 1999; Sankar and Subramanyam, 2001; Dutta and Gigler, 2002; Bartov and Mohanram, 2004; Linck et al., 2013). Prior research finds that the strategic management of reported earnings can bring the firms rewards in the equity market (Chaney and Lewis, 1995; Barth et al., 1999; Lee et al., 2006; Das et al., 2011). In a similar vein, it is suggested that earnings information is also useful in the bond market (Khurana and Raman, 2003; Defond and Zhang, 2014). Especially, taking initial bond yield spread as one of the measures of firm's cost of debt, Jiang (2008) points out that beating earnings benchmarks bring firms benefits in the debt market and reduce their cost of debt. Furthermore, Linck et al. (2013) also provide evidence that financially constrained firms with valuable projects can release reliable signals by discretionary accruals to the market in purpose of raising capital to make their investment, which effectively eases those constraints and increase their firms' value.

Despite the extant research stated above, little empirical evidence reveals whether and how firm-level earnings management would respond to the credit supply shock, as a spillover effect of their creditors. Wu et al. (2022) show that creditors' financial innovations, such as credit default swaps (CDS) trading, have an impact on corporate earnings management. Also providing evidence of the spillover effect of the shock of creditors on borrowers, Dou and Xu (2021) reveal the negative effect of consolidating securitization entities on firm-level innovation. In this paper, we extend this line of research by exploring the real effect of the adoption of FAS 166 and FAS 167, which is a credit supply shock, on corporate earnings management.

Effective in 2010, FAS 166 and FAS 167 tightened accounting rules of securitizations and the consolidation of variable interest entities (VIEs), leading banks to realize an estimated \$811 billion of off-balance sheet securitized assets (e.g., Ryan, 2017; Dou et al., 2018; Dou and Xu, 2021). Ryan (2017) points out that the impact of securitization accounting on securitizing

banks' regulatory capital is significant enough to impact banks' stability-related decisions. The extant research provides consistent evidence that the adoption of FAS 166 and FAS 167 reduced banks' loan supply as well as decreased assets held by their consolidated VIEs (Dou et al., 2016), mortgage approval rates (Dou et al. 2018), and the balance of securitized credit card loans (Tian and Zhang, 2016). Along the same vein, Dou (2021) documents that the aggregate small business lending in counties where consolidating banks have larger market share decreases, while the growth of the number of small businesses in these counties also drops. Collectively, FAS 166 and FAS 167 cause banks to realize more risk and tend to tighten their lending behaviours.

We propose the hypothesis that the adoption of FAS 166 and FAS 167 would have a positive spillover effect on corporate earnings management. As discussed above, earnings management may bring the companies more latent chances for financial access. Meanwhile, the adoption of FAS 166 and FAS 167, as a validated credit supply shock, potentially enhances the firms' motivation for strategic management of reported earnings, especially when their creditors show the firms a propensity to be more risk-averse and their affected lending behaviours. Thus, it is plausible that firm would increase their earning management level in respond to the adoption of FAS 166 and FAS 167.

Taking the adoption of FAS 166 and FAS 167 as an exogenous shock, we apply difference-in-differences (DID) approach to examine the changes on firm-level earnings management. We use a matched sample of firm-years over a seven-year window, spanning from 2007 to 2013, taking three years before (i.e., 2007-2009) as the pre period and four years after (i.e., 2010-2013) as the post period (e.g., Dou and Xu, 2021). Only involving firms at least borrowed one loan before and after the regulation, we identify a firm as a treated one if the firm borrowed at least one loan in both pre and post periods respectively from the affected banks. For each treatment firm, following Dou and Xu (2021), we select a matched control firm, which borrowed only from unaffected lenders in both periods and has the closest propensity score to the treatment firm according to both firm characteristics and total securitized assets of banks which lending to them. Using the propensity score matching method, we get two comparable groups to conduct our sample.

We do the regression with only firm characteristics and both firm and bank characteristics as control, respectively. Using the earnings management level measured by Jones' (1991) abnormal accruals model and Modified Jones (1991) model, our results are all positive and



statistically significant at 5% level, suggesting that firm-level earnings management level increases after the adoption of FAS 166/167. We assert that firms respond the credit supply shock from their creditors by enhancing their strategic management of reported earnings. The results still remain without control variables proving the robustness. However, further examining real activities manipulation, we find no such evidence for real earnings management activities.

To check the robustness of our main findings, we perform several additional tests. First, we conduct the dynamic treatment analysis to make sure the pre-treatment differences between the treatment and control groups are indistinguishable, probing the “parallel trend” assumption. The results suggest that our main findings are not driven by the pre-trends discrepancy between treated and control firm groups. Second, taking the year preceding the financial crisis as a pseudo effective year of the adoption of FAS 166 and FAS 167, we use falsification tests to ensure that the financial crisis cannot be the explanation for the differences in earnings management between the treatment and control firms. Third, we show that our main findings still hold after controlling for a set of concurrent events, which are financial reforms in the banking system as the responses to the financial crisis during our sample period.

To provide insights into the correlation, we also conduct the cross-sectional variation in firm characteristics to explore possible channels by which the credit supply shock may increase the propensity to earnings management. We first find that the positive spillover effect of FAS 166/167 on earnings management is more pronounced for financially constrained firms. The potential explanation is that managers facing higher credit availability-related stress would have stronger motivation to strategically manage reported earnings which may bring better financial access to their firms. On the other hand, we provide evidence that the positive effect is strengthened among firms that have relatively weaker monitoring. That is, given that a stream of extant literature also views earnings management as a consequence of the agency problem (e.g., Dye, 1988; Marinovic, 2014), we conduct subsample analysis based on firms’ internal and external governance levels, revealing that the spillover effect of FAS 166 and FAS 167 would be weakened by well-organized corporate governance.

The remainder of this paper is organised as follows. Section two discusses the related literature. Section three describes data and methodology. Section four presents empirical findings and robustness checks. Section five concludes.

## 3.2 Literature Review and Hypothesis Development

### 3.2.1 Institutional Background

Triggered by the financial crisis, a multifaceted debate about policy makers' actions, which are expected to enhance the stability of financial system, has raised (Acharya and Ryan, 2016). According to Ryan (2017), accounting requirements mainly regarding three fields have been amended, which are loan loss reserving, fair value measurement (FVM) guidance and accounting for securitizations, respectively. In this paper, we focus on the spillover effect of FAS 166 and FAS 167 on firms, which are the accounting requirement changes for securitizations.

FAS 166 and FAS 167, as a part of the Statements of Financial Accounting Standards (SFAS), are consistent with the spirit of Financial Accounting Standards Board (FASB). Adopting U.S. Generally Accepted Accounting Principles (GAAP), the FASB shows the convergence on International Financial Reporting Standards (IFRS) as announced by the International Accounting Standards Board (IASB), which are formalized through the Norwalk Agreement signed on September 18, 2002 and updated regularly. Thus, despite the relatively stable issuance of asset-backed securities in Europe over the same time period (Dou et al., 2016), it is plausible to see the international influence of FAS 166 and FAS 167 both in SFAS and IASB regions in the foreseeable future.

Effective on January 1, 2010, FAS 166 and FAS 167 amended FAS 140 and FIN 46(R), respectively. Now FAS 166 is codified as parts of Accounting Standards Codification (ASC) Sections 860, named as Accounting for Transfers of Financial Assets, while Sections 810 for FAS 167, named as Improvements to Financial Reporting by Enterprises Involved with Variable Interest Entities. Before the modification, under FAS 140<sup>1</sup> and FIN 46(R)<sup>2</sup>, banks got access to sale accounting for securitizations and non-consolidation of securitization vehicles, being allowed to remain off-balance sheet (e.g., Ryan, 2017; Ahn et al., 2020).

FAS 166 and FAS 167 together phase out the perception of qualifying special purpose entities (QSPEs). FAS 166 is inclined to improve financial reporting by eliminating "(1) the

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1. <https://www.fasb.org/page/pageContent?pageId=/reference-library/superseded-standards/status-of-statement-no-140.html>

2. <https://www.fasb.org/page/pageContent?pageId=/reference-library/superseded-standards/status-of-interpretation-no-46r.html>

exceptions for qualifying special purpose entities from the consolidation guidance and (2) the exception that permitted sale accounting for certain mortgage securitizations when a transferor has not surrendered control over the transferred financial assets” as well as changing the requirements for derecognizing financial assets, on the purpose to “improve the relevance, representational faithfulness, and comparability of the information that a reporting entity provides in its financial reports about a transfer of financial assets; the effects of a transfer on its financial position, financial performance, and cash flows; and a transferor’s continuing involvement in transferred financial assets”. Meanwhile, FAS 167, which amends certain requirements of FASB Interpretation No. 46 (revised December 2003), Consolidation of Variable Interest Entities, aims to “improve financial reporting by enterprises involved with variable interest entities and to provide more relevant and reliable information to users of financial statements”. In practice, FAS 166 and FAS 167 jointly led securitizing banks to risk integration by consolidating credit card master trusts and asset-backed commercial paper conduits from these vehicles (Ryan, 2017).

After the amendment, FAS 166 and FAS 167 intensified the accounting rules for securitizations and the consolidation of variable interest entities (VIEs), bringing hundreds of billions of dollars of assets and liabilities onto the balance sheet <sup>3</sup> (e.g., Ryan, 2017; Dou et al., 2018). As one of the responses to the financial crisis, the amendment has a discussable influence on banks’ regulatory capital adequacy, triggering the debate on the explanation of why the banks’ stability-related decisions are driven by securitizing banks’ regulatory capital adequacy (Ryan, 2017).

### **3.2.2 Motivation of Earnings Management**

Our research provides evidence for the explanation of motivations for earnings management. As Dye (1988) suggested, there are two potential sources for earnings management, which are “internal demand” and “external demand”. To further explain the latter, he pointed out that issues, such as accounting-based contracts with suppliers, debt-covenant restrictions, and rate-of-return regulations, are possible origins of such external demand. The argument is consistent with the extant empirical evidence that the reported earnings and a firm's stock market performance are related (Ball and Brown, 1968; Beaver, 1968; and Rendleman et al., 1982; DuCharme et al., 2004; Lee et al., 2006; Das et al., 2011), which meets the “external demand”

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3 . According to Dou and Xu (2021), banks have to consolidate \$363 billion of previously off-balance sheet (OBS) securitized loan assets. More information is accessible via: <https://www.federalreserve.gov/releases/h8/h8notes.htm> March 31, 2010, and <https://www.fasb.org/page/ShowPdf?path=0002-%201700-CNU%20FIRCA.pdf>

of shareholders.

Earnings management may be aligned with firms' needs, which can be explainable by the "external demand" of shareholders. Earnings management "occurs when managers use judgment in financial reporting and in structuring transactions [...] to influence contractual outcomes that depend on reported accounting numbers" (Healy and Wahlen, 1999).

Consistent with this line, showing that earnings management reduces the cost of revealing truthful forecasts, Dutta and Gigler (2002) assert that shareholders may not believe it optimal to prohibit earnings management for their own sake.

Our research advances this line by showing evidence that enhanced earnings management is taken as a response to a recognized credit supply shock, also proving the "external demand" assumption and exploring the motivation for earnings management.

### **3.2.3 Spillover Effect of Bank Lending on Borrowing Firms**

Borrowing firms can be affected when their lenders are engaged in significant structural and regulatory changes in the banking sector. For example, extant literature provides empirical evidence on that bank deregulation materially influences the innovation (Chava et al., 2013; Cornaggia et al., 2015) and risk of borrowing firms (Jiang et al., 2020). It seems that borrowers would adjust their business strategy according to lenders practice as response to bank-level validated shocks and changes.

Especially, borrowers can adjust their financial reporting strategy to response to bank-level shocks. For example, Su (2023) examines whether bank cross-selling activities can affect borrowing firms' financial reporting quality for debt contracting purposes, suggesting that banking practices can have an influence on borrowers' financial reporting quality. Consistent with this line, it is proved that borrowers' information disclosure is also affected when their banks engage in mergers and acquisitions (Chen and Vashishtha, 2017). Such evidence suggests that firms would involve their lenders' practices into consideration when making financial reporting strategy.

### **3.2.4 Real Effect of FAS 166/167**

Our research is in the same line with a growing body of research that explores the real effect of FAS 166 and FAS 167. In response to the financial crisis, FAS 166 and FAS 167 jointly

tightened the accounting for securitizations and consolidation of securitization entities (Dou et al., 2018). As Ryan (2017) suggests, the influence of securitization accounting on securitizing banks' regulatory capital is significant enough to impact banks' stability-related decisions. And the tightened financial environment of banks would plausibly impress banks' lending behaviours, given as Paravisini (2008) suggests the relation between lending and financing that banks expand lending by \$0.66 as a corresponding change in an additional dollar of external financing. The extant literature offers evidence of the effect of consolidating securitization entities on bank lending. Dou et al., (2016) prove that the adoption of FAS 166 and FAS 167 reduced banks' loan supply as well as decreased assets held by their consolidated VIEs. To be more specific on the loan type, according to Dou et al. (2018), after recognizing more securitized assets, banks show greater decreases in mortgage approval rates and larger increases in mortgage sale rates, resulting in strengthened market discipline and desire not to recognize high-risk mortgages on balance sheet. Also, Tian and Zhang (2016) provide evidence that credit card securitizations decrease after the adoption of FAS 166 and FAS 167 among affected banks, attributing these results to increased financial reporting transparency and reduced regulatory capital arbitrage. In a similar vein, Dou (2021) documents that the aggregate small business lending decreases in counties where consolidating banks have larger market share, while the growth of the number of small businesses in these counties also drops. Simultaneously, extant research find that FAS 166 and FAS 167 positively affect bank transparency. Oz (2020) points out, enhancing the stability of the financial system, the adoption of FAS 166 and FAS 167 improves bank transparency by decreasing information asymmetry. Similarly, Hsu et al. (2021) verify that the treatment group experienced higher market reaction to earnings surprises, and the predictive ability of earnings in banks is more advanced after the implement of FAS 166 and FAS 167. In this paper, we further provide evidence for the real effect of the adoption of FAS 166 and FAS 167.

Our study is related to one contemporaneous paper. Also taking the adoption of FAS 166 and FAS 167 as a natural shock, Dou and Xu (2021) reveal that corporate innovation of firms borrowing from FAS 166 and FAS 167 affected banks is negatively influenced. Their research empirically substantiates the spillover effect of bank lending on firm-level decisions and contributes to policymakers, practitioners, and academics understanding the role of bank lending. Consistent with this line, we provide empirical evidence for the spillover effect of FAS 166 and FAS 167 on corporate earnings management.

### 3.2.5 Hypothesis Development

Extant literature on earnings management reveals that firms can manage their earnings to portray financial situations and facilitate the access to both the equity market (e.g., Chaney and Lewis, 1995; Barth et al., 1999; Lee et al., 2006; Das et al., 2011) as well as the bond market (e.g., Khurana and Raman, 2003; Defond and Zhang, 2014). That is, earnings management can help firms acquiring benefits both from the equity market and the bond market.

Simultaneously, existing literature points out that earnings management can be consistent with shareholders' benefits. As suggested by Dye (1988), earnings management may benefit firms' contractual terms with outsiders (e.g., accounting-based contracts with suppliers and debt-covenant restrictions), thus, shareholders may have "external demand" for earnings management if they expect to influence the market perception of their firm value. Also, earnings management make it possible for managers to communicate private information to the markets and can have a role to serve specific projects of firms (Healy and Wahlen, 1999; Sankar and Subramanyam, 2001; Dutta and Gigler, 2002; Bartov and Mohanram, 2004; Linck et al., 2013).

Especially, it is noticeable that earnings management can be beneficial to firms in the debt market. For example, Jiang (2008) suggests that the information of beating earnings benchmarks can be beneficial to the firms by reducing their cost of debt. Consistent with this line, it is suggested that discretionary accruals also can help financially constrained firms raising capital to support their investments (Linck et al., 2013).

Consistent with these studies, when there is a negative shock to the credit supply following the implementation of FAS 166/167, borrowing firms may respond to this change through engaging in earnings management as they have a higher propensity to ease the borrowing process by altering the firm value judgements by their lenders. This leads to the following hypothesis:

*Hypothesis 1: Borrowers would enhance their earnings management after their lenders adopt FAS 166/167.*

### 3.3 Data and Methodology

#### 3.3.1 Sample

To identify the influenced lenders, we employed the financial data of lenders by using their FR Y-9C reports. The Schedule HC-V of FR Y-9C reports contains VIEs' related information, where the VIEs consolidating can be reflected. We used Bank Regulatory Database to get the data of items under Schedule HC-V. Here, the bank holding companies are linked to their owners by being identified by owners' RSSD IDs.

We link the lenders to borrowers by the loan-level data from Thomson Reuter's DealScan database. According to the information of the loan facility, the borrower and the lender offered by the database, we identify the firms as treated firms or control ones. Only involving firms at least borrowed one loan before and after the regulation, we identify a firm as a treated firm if the firm borrowed at least one loan in both pre and post periods respectively from the same bank which is influenced by FAS 166/167 and consolidate OBS securitization entities. Here, it is noticeable that the loan borrowed in the post period should be a new one, instead of the persistent ones from the pre period. We identify a firm as a control firm if the firm borrowed only from unaffected lenders in both periods. For the situation that a firm borrowed from a later affected lender in the pre period and then only borrow from unaffected lenders in the post period, we identify the firm as a control one if the previous loans from affected lenders have ended before the post period.

To assign the bank characteristics to firm observations, following Dou and Xu (2021), we weighted the bank characteristics according to the loan amount and transferred the bank data from firm-bank-year level into firm-year level if one firm borrowed from multiple lenders. More details of weighting method can be found in Dou and Xu (2021)'s research.

Given the regulation took effect in 2010, our sample spans from 2007 to 2013, taking three years before (i.e., 2007-2009) as the pre period and four years after (i.e., 2010-2013) as the post period. To address the concern that the treated and control firms are not balanced, we use the propensity score matching method to make the two groups comparable. To construct control firms, we first estimate a logit regression with the treatment dummy as the dependent variable. The propensity score is estimated from the logit regression before we use the nearest-neighbour method without replacement to ensure the treated firms are statistically similar to the matched control firms (caliper=0.05). The logit regression is with the treatment

dummy as the dependent variable and the mean values of ln (total asset), ln (sales), sale growth, ROA, leverage, MTB, big4 as well as the bank's total securitized assets over the pre period (2007-2009) as independent variables. Here, we run the logit regression with industry fixed effects. The treated and control firms should be with the same 2-digit SIC code. Following Prencipe (2012) and Farrell et al. (2014), financial institutions and utilities (SIC code 6000–6999 and 4900–4999) are excluded. To reduce the potential impact of outliers, all variables are winsorized at the 1st and 99th percentiles. The final matched sample involved 404 firms, with 2091 firm-year observations. We explore the relation between consolidating securitization entities and firm earnings management using this matched sample.

In Panel A of Table 1, a diagnostic test is employed to verify whether the treatment and control firms are fundamentally indistinguishable. Both unmatched raw sample and matched sample are presented in Table 1. The results confirm that none of the differences in means for both firm-level and bank-level characteristics between the matched treatment and control groups is statistically significant after matching. Thus, using the matched sample, it is evident that any differences in earnings management between treatment and control groups can be explained by the adoption of FAS 166/167. Panel B presents the summary statistics of variables of the matched sample. The median of sample firms has a total asset of 7.111 and a market-to-book ratio of 1.713. The median of lending banks has securitized assets of 16.605% of bank assets.

[Please Insert Table 1 Here]

### 3.3.2 Earnings Management Measures

We measure the earnings management in the spirit of Jones' (1991) abnormal accruals model and Modified Jones (1991) model. Using Jones' (1991) abnormal accruals model, we take the residuals of the following cross-sectional model estimated for each 2-digit SIC-year grouping to capture the discretionary accruals as our first measurement for earnings management (Jones, 1991; DeFond and Jiambalvo, 1994):

$$\frac{TA_{it}}{Assets_{it-1}} = k_1 \frac{1}{Asset_{it-1}} + k_2 \frac{\Delta SALES_{it}}{Asset_{it-1}} + k_3 \frac{PPE_{it}}{Asset_{it-1}} + \varepsilon_{it} \quad (1)$$

Portraying the modified version of Jones' (1991) models as the most power in detecting earnings management, Dechow et al. (1995) suggest the rationality of Modified Jones (1991) model to measure earnings management. Following Kothari et al. (2005), we employed



Modified Jones (1991) model along with Jones' (1991) abnormal accruals model as our second earnings management measurement. The discretionary accruals are measured as the residual from the following model estimated for every industry and year (Jones 1991, Dechow et al. 1995, Kothari et al. 2005).

$$\frac{TA_{it}}{Assets_{it-1}} = k_1 \frac{1}{Assets_{it-1}} + k_2 \frac{\Delta SALES_{it} - \Delta AR_{it}}{Assets_{it-1}} + k_3 \frac{PPE_{it}}{Assets_{it-1}} + \varepsilon_{it} \quad (2)$$

where:

$TA_{it}$  = total accruals in year t for firm i;

$\Delta SALES_{it}$  = change in revenues for firm i;

$\Delta AR_{it}$  : change in accounts receivables or change in account receivables for firm i;

$PPE_{it}$  = gross property, plant, and equipment in year t for firm i;

$Assets_{it-1}$  = total assets in year t -1 for firm i;

$\varepsilon_{it}$  = error term in year t for firm i.

We capture the residuals, which are labelled as  $Accr\_J$  and  $Accr\_MJ$ , from the models in (1) and (2) as the discretionary accruals of Jones' (1991) abnormal accruals model and Modified Jones (1991) model respectively. In this research, we conduct the following analysis using  $Accr\_J$  and  $Accr\_MJ$  as the main measurements of earnings management.

### 3.3.3 Research Design

In the light of Snow (1855), our study uses the approach of difference-in-difference (DID), which explores the effect of exogenous shocks. The DID approach can reveal the differences in the pre- and post-periods caused by an external shock, identifying treatment and control groups. Such setting is superior in moderating the concern of endogeneity, especially addressing the issue of reverse causality. That is, the exogenous shocks are not likely explainable by the observed group-level practices (e.g., individuals or firms).

In this study, we conduct a difference-in-difference (DID) approach to explore the changes in firms' earnings management as the spillover effect of FAS 166/167, which has been proved to influence bank lending. The empirical model is presented as follows:

$$EM_{it} = \beta_0 + \beta_1 Post \times Treat_j + \gamma X_{it} + \delta Z_{it} + FirmFE + YearFE + \varepsilon_{it} \quad (3)$$

where  $i$  denotes a firm, and  $t$  denotes time. The time dummy,  $Post$ , equals to one for the post-regulation period (fiscal years of 2010-2013), and 0 otherwise (fiscal years of 2007-2009). The indicator of  $Treat$  equals to one if the firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. Following Park and Shin (2004), Katz (2009), Jiang et al. (2020), Huang et al. (2020) and Li et al.(2021), the vector of  $X$  contains the variables concerning firm characteristics, which are  $\ln(total\ asset)$ ,  $\ln(sale)$ ,  $sale\ growth$ ,  $ROA$ ,  $leverage$ ,  $MTB$ , and  $big4$ . We use the vector of  $Z$  to present a series of bank characteristics, including *securitized assets*, *bank size*, *bank capital ratio*, *bank ROA*, *C&I loans charge-off*. The indicators of *Firm FE* and *Year FE* present the firm fixed effects and year fixed effect, respectively. The cluster standard errors by firms (cluster by the state of headquarters). A more detailed checklist refers to Appendix A.

To explore the spillover effect of FAS 166/167 from bank-level to firm-level, we follow the research of Dou and Xu (2021), estimating the model with and without bank characteristics as controls respectively.

We control the firm characteristics by including *total asset*, *sales*, *sale growth*, *ROA*, *leverage*, *MTB* and audit supervision quality by considering whether the firm is audited by the auditing company belonging to the *big 4*.

### 3.4 Main Results

#### 3.4.1 Multivariate Test Results

Table 2 presents the multivariate test results. We report the estimation result measuring earnings management using  $Accr\_J$  and  $Accr\_MJ$  without bank characteristics as control in columns (1) and (3), respectively. We found that the coefficients on the interaction term as the main variable of interest are positive (coefficient = 0.0258 for  $Accr\_J$ , and coefficient = 0.0282 for  $Accr\_MJ$ ) and significant at the 5% level. The results indicate that firms' earnings management level is positively influenced by the adoption of FAS 166/167 as a spillover effect of consolidating securitization entities. Subsequently, we redo the regression and report the estimation results in columns (2) and (4) with bank characteristics. The results remain statistically significant at the 5% level, as the coefficients on the interaction term,  $Post*Treat$ , are 0.0257 for  $Accr\_J$  and 0.0276 for  $Accr\_MJ$ , respectively. The results suggest that the

adoption of FAS 166/167 increase earnings management level measuring by *Accr\_J* and *Accr\_MJ*. Also, we estimate the equation without control variables to test the robustness and the results remain significant. These findings are also economically meaningful. For example, based on the results demonstrated in columns (3)-(4), the adoption of FAS 166/167 increases borrowers' earnings management by 77.64% for *Accr\_J* and 84.92% for *Accr\_MJ*, relative to the sample means. These results are comparable to prior studies such as Ni (2020).

Simultaneously, it is worth noting that the control variables *ln (total asset)*, *ln(sale)* and *ROA*, as measurements of firm characteristics, are statistically significant, which is consistent with Park and Shin (2004), Huang et al. (2020) and Katz (2009)'s research. Consistent with Dou and Xu (2021), most of the control variables as measurements of bank characteristics, apart from the variable of bank capital ratio in column (2), are statistically insignificant.

[Please Insert Table 2 Here]

### 3.4.2 Dynamic Treatment Analysis

Employing the DID approach, there might be a concern of pre-trends differences. To be more specific, the concern is that our main findings of positive effect of consolidation on firm-level earnings management may be driven by pre-trends differences of earnings management between treatment and control groups, instead of the shock of the adoption of FAS 166/167. To address the concern, we follow Bertrand and Mullainathan (2003)' research and investigate the earnings management and spillover effect of FAS 166/167 by the dynamic model below:

$$EM_{it} = \beta_0 + \beta_1 Pre \times Treat_j + \beta_2 Post^0 \times Treat_j + \beta_3 Post^1 \times Treat_j + \beta_4 Post^2 \times Treat_j + \beta_5 Post^3 \times Treat_j + \gamma X_{it} + \delta Z_{it} + FirmFE + YearFE + \varepsilon_{it} \quad (4)$$

where the main variable of interest in (3), the interaction term of Post\*Treat, is replaced by a set of five variables: *Pre* × *Treat*, *Post*<sup>0</sup> × *Treat*, *Post*<sup>1</sup> × *Treat*, *Post*<sup>2</sup> × *Treat*, and *Post*<sup>3</sup> × *Treat*. *Pre* equals to one in the case of that the firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities before the year the FAS 166/167 takes effect, and 0 otherwise. *Post*<sup>0</sup>, *Post*<sup>1</sup>, *Post*<sup>2</sup> and *Post*<sup>3</sup> equals to one for the year 2010, year 2011, year 2012, and year 2013 respectively, and 0 otherwise.

The dynamic treatment analysis allows us to address the concern that the results we get by

equation (3) may be due to the divergent trends between pre-regulation and post-regulation periods, instead of the regulation.

We report the results of the dynamic treatment analysis in Table 3. We find that the coefficient estimates of  $Pre \times Treat$  are small and statistically insignificant for both measures of earnings management for pre-period. This result implies that there are no significant differences in pre-trends between the treated and control firms, and thus the parallel trends assumption is likely to hold (Roberts and Whited, 2012). Further, we observe that the increases in borrowers' earnings management only emerged after the enactment of FAS 166/167. In summary, these results suggest that the observed positive effect of FAS 166/167 on earnings management is unlikely to be driven by reverse causality.

[Please Insert Table 3 Here]

### 3.4.3 Falsification Tests

A battery of literature has been discussing the bank's securitization in the context of the financial crisis (i.e., 2007-2008) (Loutskina, 2011; Acharya et al, 2013; Covitz et al., 2013). To address the concern that our findings might be explained by the continuation of influence on the bank's securitization of the financial crisis, first, we include bank's total securitized assets as a matching variable when doing the propensity score matching. Also, total securitized assets, along with other bank characteristics (i.e., bank size, bank capital ratio, bank ROA, C&I loans charge-off), are controlled when analysing of earnings management. Second, taking three years before (2007-2009) as the pre period and four years after (i.e., 2010-2013) as the post period, we find statistical evidence that earnings management levels increase only after the year of the adoption of FAS 166/167 (i.e., 2010). With the assumption of the continuous influence of the financial crisis, it should be less likely to get such empirical results.

To further address the concern, we follow Dou and Xu (2021) and conduct falsification tests to see whether the results remain when taking the year preceding the financial crisis, the year 2006, as the pseudo effective year of FAS 166/167, while the period of 2003-2009 is taken as the sample period.

The falsification tests are conducted following the way we do the main analysis. We identify

the firms as treated and control following the same way in the main analysis section. Financial institutions and utilities (SIC code 6000–6999 and 4900–4999) are excluded. Then we redo the propensity score matching to get the sample spanning 2003-2009 for falsification tests where the mean values of  $\ln(\text{total asset})$ ,  $\ln(\text{sales})$ , sale growth, ROA, leverage, MTB, big4 as well as the bank's total securitized assets are taken as matching variables. We redo the equation (3) using the sample for falsification tests with and without bank characteristics, respectively.

With the assumption that the financial crisis can explain the increase in earning management level, the coefficients on Post\*Treat are expected to be statistically significant. Table 4 presents the results of falsification tests. As shown in columns (1)-(4), the coefficients are statistically insignificant, indicating the financial crisis cannot likely explain our results.

[Please Insert Table 4 Here]

#### **3.4.4 Real earnings Management Changes**

Extant literature suggests that firms manipulate earnings both by accrual-based activities and real activities (e.g., Roychowdhury, 2006; Huang et al., 2020), and they are also substitutes for each other based on specific costs and timing (e.g., Cohen et al., 2008; Cohen and Zarowin, 2010; Zang, 2012; Wongsunwai, 2013). Especially, Zang (2012) points out that firms prefer discrepant earnings management strategy, cause each earnings management behaviour decreases with its own costs and boosts with the other's costs. Consistent with this line, it is more reasonable for borrowers to respond to the validated credit shock only by one earnings management technique.

Responding to the shock of lenders' adoption of FAS 166/167, accrual-based earnings management might be more optimal mainly due to three reasons. First, as Zang (2012) pointed out, the real earnings management has to be practiced during the fiscal year, while accrual-based earnings management can occur after the fiscal year-end. Compared with the accrual manipulation, real earnings management requires longer period to be practiced. The timing of accrual-based earnings management is shorter and might be more suitable and flexible for responding an external shock. Second, as Cohen and Zarowin (2010) point out, managers implement real earnings management by the actions which deviate from normal business practices and result in cash flow consequences, while accrual-based earnings

management activities come with no direct cash flow consequences. Compared with accrual-based manipulation, real earnings management may affect the business activities and decisions more directly. Consistent with this line, it is indicated that real earnings management requires managers to justify the business actions undertaken for the sake of boosting earnings but may partially forgo firm long-term value (Roychowdhury, 2006). It might be more optimal for firms to remain their pre-designed real earnings management strategy which may have real impact on their long-term firm value if their can use alternative method to respond to the external shock of their lenders' accounting requirement changes whose influence on firms is still ambiguous. Third, Huang et al. (2020) argue that the origins of a number of class action lawsuits blaming managers because of issuing misleading disclosures can be rooted in real earnings management. That is, managers seem to have to take the risk of engaging in lawsuits and potential reputation damage when using the real earnings management. Hence, it is plausible that accrual-based manipulation seems more applicable and feasible for managers to answer their lenders' adoption of FAS 166/167. Thus, we expect that, other things being equal, the adoption of FAS 166/167 has no impact on corporate real activities manipulation.

Consistent with Roychowdhury (2006), Cohen and Zarowin (2010), and Zang (2012), we initially measure real earnings management via three metrics, followed by another three aggregate measures. Since acceleration of the timing of sales contributes as a way to manage real earnings, we firstly take the abnormal level of cash flow from operations, which is labelled as *CFO\_resid*, as our measure for real earnings management. It is noticeable that a lower level of abnormal level of cash flow from operations indicates a higher level of real earnings management in terms of sales manipulation. To make the results more logical, in following research, we take the negative value to get the *CFO\_resid*.

Second, we capture abnormal production costs, labelled as *PROD\_resid*, to measure real earnings management. Lowering the fixed costs per unit, overproduction can spread the fixed overhead number of units and contribute to real earnings management. Here, *PROD\_resid* indicates a higher level of real earnings management in terms of inventory overproduction.

Third, we take *SGA\_resid* to stand for abnormal discretionary expenses as our third measure of real earnings management. Decreases in discretionary expenses, including advertising development, and SG&A expenses, can lead to higher current period cash if the firms generally pay for such expenses in cash, despite potential detrimental influence on firms'

long-term competitiveness. A lower level of abnormal level of discretionary expenditures indicates a higher level of real earnings management in terms of sales manipulation. Here, to make the results more logical, we take the negative value to get the measure of *SGA\_resid*. That is, the higher amount, the more likely it is that the firm is cutting discretionary expenses.

Beyond these three metrics, we also employed another three aggregate real earnings measures, which are labelled as *RM\_1*, *RM\_2* and *RM\_3* respectively. To capture the total effects of real earnings management, we combine the three individual measures, computing two comprehensive metrics of real earnings management activities. First, consistent with Zang (2012), we combine the measures for abnormal production costs and abnormal discretionary expenses (i.e., the sum of *PROD\_resid* and *SGA\_resid*) to get the aggregate measure *RM\_1*. The higher the amount of *RM\_1*, the more likely the firm engages in real earnings management activities. Second, consistent with Cohen and Zarowin (2010), we combine abnormal cash flows from operations and abnormal discretionary expenses (i.e., the sum of *CFO\_resid* and *SGA\_resid*) as the second aggregate measure *RM\_2*, so that higher amounts signify higher possibility that the firm engages in sales manipulations and cutting discretionary expenditures to manipulate reported earnings upwards. Third, in the spirit of Cohen and Zarowin (2010), we address the concern that *RM\_1* and *RM\_2* may show different emphasis on earnings and dilute any results. Thus, we compute the aggregate measure *RM\_3* as the sum of *CFO\_resid*, *PROD\_resid* and *SGA\_resid*.

Table 5 includes the results of real earnings management. We examine the relation between real earnings management and the spillover effect of consolidating securitization entities with and without bank characteristics respectively, using the same matched sample for the main analysis. Column (1)-(6) present the results measuring the real earnings management with the three individual measures, while column (7)-(12) showing the results for aggregate measures. With insignificant results, we find no statistical evidence for the relation between real earnings management and the spillover effect of consolidating securitization entities.

[Please Insert Table 5 Here]

Consistent with one of our expectations, accrual-based earnings management and real earnings management manifest differently towards the adoption of FAS 166/167. The distinction between accrual-based and real earnings management may potentially explain the results. As Cohen and Zarowin (2010) pointed out, managers implement real earnings

management by the actions which deviate from normal business practices and result in cash flow consequences, while accrual-based earnings management activities come with no direct cash flow consequences. Compared with accrual-based manipulation, real earnings management may affect the business activities more direct. Further, real earnings management requires managers to justify the short-term actions undertaken for the sake of boosting earnings but harmful to the firm long-term performance (Cohen and Zarowin, 2010; Kothari et al., 2016; Huang et al., 2020). Thus, conceivably, the motivation for accrual-based and real earnings management is distinguishable. Cohen et al., (2008) provide evidence that the increases in accrual-based management are with equity-based compensation, indicating stock-options components offer a differential set of incentives respecting accrual-based earnings management. Contrarily, according to Huang et al. (2020), the high threat of litigation prevents managers from engaging in real earnings management. That is, managers have to take the risk of reputation damage when they employ the real earnings management activities improperly and engage in such lawsuits. Hence, it is plausible that accrual-based manipulation seems more applicable and reasonable for managers to answer the spillover effect that come with the adoption of FAS 166/167.

### **3.4.5 Cross-sectional Variations in the Effect of FAS 166/167**

To further explore the channels of the spillover effect of consolidating securitization entities on firm earnings management, we conduct a battery of subsample analysis in this section. According to our main findings, the adoption of FAS 166/167, which intensifies the accounting rules for securitizations and the consolidation of VIEs, increases managers' propensity to use the earnings management. The results suggest that firms use earnings management to respond to the validated shock of FAS 166/167, facilitating their access to bank loan and alleviating the negative influence of affected bank lending. To further explore the reasons or channels in which firms increase their earnings management after the adoption of FAS 166/167, we conduct the cross-sectional analysis based on firm-level external financing dependence and governance, respectively. In principle, firms which are more financially constrained and with higher financing dependence are more likely perceive a credit shock and respond to changed bank lending. Simultaneously, it is more feasible for firms which are with weaker governance to manipulate their earnings. Thus, it is plausible that the increase of earnings management after the adoption of FAS 166/167 would be more significant for firm which are not under strong governance. To sum up, we expect that the relation would be more prominent among firms that are more financially constrained or with



weaker governance.

### 3.4.5.1 Strengthening Role of External Financing Dependence

First, managers in financially constrained firms have a higher possibility to manage earnings (Park and Shin, 2004; Linck et al., 2013). Fischer and Louis (2008) show consistent evidence that managers would manage earnings to get supportive debt contract terms in highly levered buyouts. Prior studies (e.g., Campello et al., 2010; Chen and Vashishtha, 2017; Chen et al., 2024) also indicate that firms with greater credit needs can be more sensitive to negative credit supply shocks, such as financial crisis and bank mergers. On the bank side, it is proved that bank lines of credit to firms with higher risk would be costlier (Acharya et al., 2013). Consistent with this line, Lamont (1997) indicates that financially constrained firms may have difficulties obtaining external finance. Thus, managers in financially constrained firms have to face higher credit availability-related stress. Here, we expect that financially constrained firms would be more sensitive to the impact of FAS 166/167.

We conduct the subsamples of external financing dependence with five indicators, which are KZ index, External Financing Dependence (EFD), zero dividend, no repurchase, and cash flow, respectively. In the spirit of Lamont et al. (2001) and Kaplan and Zingales (1997), we construct KZ index as our first indicator of financial constraints. Our following indicators of financial constraints are *EFD* following Rajan and Zingales (1998), zero dividend following Foucault and Frésard, (2012), *no\_repurchase* from Hong et al. (2012), and cash flow from (Chang et al., 2014). Consistent with the previous studies, the variable of *KZ index* and *EFD* take value of one if firms are with values above the median, and zero otherwise, while higher values mean more likely to be financially constrained. The dummy variable of zero dividend equals to one if a firm does not pay dividend, and zero otherwise, while financially constrained firms have a lower payout as Fazzari et al. (1988) suggest. Then dummy variable of no repurchase equals to one if the firm has no repurchases, and zero otherwise. According to Hong et al. (2012), firms that engage in equity repurchases are supposed to be less equity dependent and hence less financially constrained. Our last indicator of cash flow equals to one if the value is above median, and zero otherwise. As Lamont (1997) suggest, financial constraints tighten the cash flow both internally and externally, we expect the impact of FAS 166/167 would be more prominent among firms with a lower level of cash flow. Table 6 reports the results of subsample firms with high- and low-propensity for financial constraints. We find that the spillover effect of FAS 166/167 on earnings management is more pronounced

for financially constrained firms.

[Please Insert Table 6 Here]

### 3.4.5.2 Moderating Role of Governance

Second, agency problems, which are negatively associated with both internal and external governance, can partially explain the propensity of managers to engage in earnings management (Xie et al., 2003; Setia-Atmaja et al., 2011; Chen, et al., 2015). Here, we expect that the spillover effect of FAS 166/167 would be weakened by well-organized corporate governance.

To capture the governance characteristics, we employ four indicators, which are *institutional investor*, *analyst following*, *busy board*, *E-index*, respectively. For external governance channels, we use the indicators of institutional investor and analyst following. As Chen et al. (2007) indicated, independent institutions with long-term investments will specialize in monitoring. And Ayres et al. (2019) portray analyst following as an effective way for corporate governance through both ex ante and ex post monitoring. As for internal governance channels, we mainly explore our main findings further using the indicators of busy board, E-index, *co\_opted*, and *vega*. Following Fich and Shivdasani (2006) and Falato et al. (2014), we conduct the indicator of busy board to present the weakness of corporate governance which is captured as “if firms are with a majority of outside directors hold three or more directorships”. The indicator of E-index, also regarded as managerial entrenchment index and demonstrated by Bebchuk et al., (2009), is composed of six anti-takeover provisions. Thus, the higher value of E-index presents a lower level of internal governance. We construct two subsamples based on the above- and below-median values of the indicators and report the estimation results in Table 7. The results present the coefficients on the interaction term, *Post\*Treat*, to be positive and statistically significant, suggesting that the spillover of FAS 166/167 is stronger for firms with relatively weaker monitoring.

[Please Insert Table 7 Here]

To sum up, we find the spillover effect of consolidating securitization entities on firm earnings management is strengthened among firms that have relatively weaker monitoring. We also report the results of the subsample based on the information asymmetry differences in

### **3.4.6 Robustness Checks of Concurrent Events**

To moderate the consequences of the financial crisis, a set of financial reforms towards the banking system are undertaken during our sample period (2007-2013) (i.e., Basel III). The concern that our findings can be explained or influenced by the concurrent events instead of the adoption of FAS 166/167 has raised. To address this concern, we follow Dou and Xu (2021)'s research and take the impact of concurrent events into consideration.

[Please Insert Table 8 Here]

#### **3.4.6.1 Robustness Check of Basel III**

To strengthen bank capital requirements after the financial crisis, Basel Committee on Banking Supervision (BCBS) developed Basel Accords and made an agreement on the third installment, which is known as Basel III, in 2010. Basel III intensifies the regulatory capital requirements, which cuts down the Tier 1 capital of the bank's mortgage serving rights (MSRs) from 50% to 10%. Undoubtedly, this exerted regulatory pressure on bank capacity.

To capture the regulatory pressure, we identified a bank as Basel III affected one if its MSR/Tier1 (%) ratio is greater than 10%, following Hendricks et al. (2022). With the double-check with the BCBS reporting, we finally identified 16 banks as Basel III affected banks. For earnings management analysis on the firm-level, the indicator of *Basel* equals to one if the firms borrow from these 16 banks, and zero otherwise. Panel A of Table 8 represents the results after controlling for the interaction item of *Basel\*Post*, showing that our results remain under Basel III.

#### **3.4.6.2 Robustness Check of Stress Test**

Relevant to the financial crisis, the financial panic on the opacity of the banking system raised. In February 2009, the US Federal Reserve System responded to the panic by conducting the Supervisory Capital Assessment Program (SCAP, or stress test), requiring all banking institutions with assets over \$100 billion to participate in a "forward looking

comprehensive stress test” to assess capital adequacy. According to this requirement, there are 19 bank holding companies involved in the stress test, which collectively hold “two-thirds of the assets and more than one-half of the loans in the US banking system”, servicing as vital roles of credit intermediation in the US<sup>4</sup>.

To test whether our results can be explained by the differential regulatory pressure of banks relevant to stress tests, we employ the indicator of *Stresstest* which equals to one if the firms borrow from banks involved in the stress test in that year. After controlling for the interaction item of *Stresstest\*Post*, as shown in Panel B in Table 8, our results remain. That is, stress tests do not explain our findings.

### **3.4.6.3 Robustness Check of Troubled Asset Relief Program (TARP)**

To combat the financial crisis, the US government agencies undertook a series of emergency actions to prevent a collapse of the country’s financial system. In 2008, Congress authorized \$ 700 billion for TARP, which is overseen by the Office of Financial Stability at the US Department of the Treasury, through the Emergency Economic Stabilization Act of 2008 (EESA)<sup>5</sup>. To explore whether TARP could explain our findings, we get TARP participation information from the US Department of the Treasury, using the Transactions Report. The indicator of *TARP* equals to one if the firms borrow from banks that are involved in TARP in that year, and zero otherwise.

Panel C of Table 8 shows the results controlling for the interaction item of *TARP\*Post*, indicating that our results remain after controlling for the effects of TARP. It is suggested that TARP cannot be the explanation for our findings.

### **3.4.6.4 Robustness Check of Real Estate Prices**

Relevant to the subprime mortgage crisis, the real estate prices descended and contributed to banks’ capacity deteriorated correspondingly. Beyond controlling for the impact of direct shocks to banking system, we also further explore whether the banks’ exposure to real estate

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4. <https://www.federalreserve.gov/newsevents/speech/bernanke20090511a.htm>

5. <https://home.treasury.gov/data/troubled-assets-relief-program/about-tarp>

price are explanations for our findings. To measure the exposure of banks to real estate markets, we employed the state-level House Price Index (HPI) from the Federal Housing Finance Agency and the Summary of Deposits data from the Federal Deposit Insurance Corporation. We weight the changes in state-level HPI in 2010 with the proportion of deposits in each state before weighting the index by loan amount and averaging it to the firm-year level. The indicator of Low Exposure equals to one if the firm-year level index is below the median value, and zero otherwise.

We report the results in Panel D of Table 8, indicating that our results hold after controlling for the interaction item of *Low Exposure\*Post*. To sum up, our results are robust to controlling for the impact of four concurrent events. That is, these concurrent events cannot explain the relation between consolidating securitization entities and firm earnings management.

### **3.5 Conclusion**

In this paper, we explore whether the bank-level accounting requirement change (i.e., FAS 166/167) would have a real spillover effect on firm-level earnings management. Effective in 2010, FAS 166 and FAS 167 jointly tightened accounting rules of securitizations, objectively acting as a validated credit shock (Dou and Xu, 2021). Using a difference-in-differences approach with the sample period 2007-2013, we find that firms borrowed from FAS 166/167 affected banks increase their accrual-based earnings management level after the validated credit shock, while there is no such evidence found in real earnings management. It is proved that such findings are robust to different model specifications. The relation is strengthened among firms which are financially constrained and firms with weaker external and internal governance. Furthermore, we prove that our results still remain after taking concurrent events, a set of financial reforms towards the banking system during our sample period (2007-2013), into consideration. The research suggests that one of the motivations of earnings management can be explained by facilitating firms' access to bank loan.

Our research contributes to three aspects. First, suggesting an increase in accrual-based earnings management after a validated credit shock, this study can partially explain the motivation of earnings manipulation. Second, consistent with the line of research in FAS 166/167 (e.g., Dou, 2021; Dou and Xu, 2021), we provide empirical evidence for the real effect of adoption of FAS 166/167 on borrower-level accounting practices (i.e., earnings management). Third, our study can provide information for policy makers, emphasizing the

spillover effect of accounting requirement changes for banks on their borrowers. We expect that our findings, focusing on firm-level consequences, may potentially contribute to bank-level accounting and regulatory rules design.

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## Table 1 Summary Statistics

This table reports the quality of matching and summary statistics for firm and bank variables. Panel A shows the differences in characteristic variables for the unmatched raw sample and matched sample with the sample period of pre-regulation years (2007-2009). Treatment firms are identified as the firms which borrow at least one loan in both pre and post periods from the affected banks. Control firms are the ones which only borrow from unaffected banks. The propensity score is estimated from the logit regression using the nearest-neighbour method without replacement (caliper=0.05) based on the mean values of ln (total asset), ln (sales), sale growth, ROA, leverage, MTB, big4 as well as the bank's total securitized assets. Panel B presents the firm characteristics and bank characteristics for the matched sample spanning from 2007-2013. The definitions of variables are available in Appendix A.

### Panel A: Quality of matching

		control	treatment	Diff.	t-statistics
<b>Firm characteristics</b>					
ln (total Asset)	Raw	6.260	7.392	-1.132	-11.616
	Matched	6.948	7.104	-0.156	-0.989
ln (sale)	Raw	6.141	7.326	-1.185	-12.479
	Matched	6.845	6.995	-0.150	-0.964
sale growth	Raw	0.061	0.037	0.024	1.351
	Matched	0.037	0.048	-0.011	-0.548
ROA	Raw	0.015	0.085	-0.070	-5.627
	Matched	0.057	0.073	-0.016	-1.279
leverage	Raw	0.302	0.280	0.022	1.421
	Matched	0.280	0.259	0.021	0.832
MTB	Raw	1.809	2.150	-0.341	-1.754
	Matched	2.385	2.104	0.281	0.988
big4	Raw	0.744	0.914	-0.170	-7.746
	Matched	0.876	0.871	0.005	0.151
<b>Bank characteristics</b>					
securitized assets	Raw	14.881	24.799	-9.918	-12.418
	Matched	22.656	22.081	0.575	0.464

### Panel B: The matched sample

	N	Mean	Median	Std	P25	P75
<b>Firm characteristics</b>						
total asset	2090	7.202	7.111	1.572	6.016	8.157
ln (sale)	2089	7.097	6.995	1.517	6.120	8.044
sale growth	2084	0.076	0.056	0.293	-0.036	0.150
ROA	2089	0.076	0.085	0.132	0.042	0.126
leverage	2086	0.258	0.223	0.237	0.086	0.366
MTB	2079	2.437	1.713	4.388	1.012	2.779
big4	2085	0.876	1.000	0.329	1.000	1.000
<b>Bank characteristics</b>						
securitized assets	2091	19.131	16.605	13.441	11.903	25.965
bank size	2091	19.144	21.354	5.804	20.718	21.500
bank capital ratio	2091	8.471	8.974	2.884	8.102	10.254
bank ROA	2091	0.473	0.492	0.462	0.189	0.837
C&I Loans	2091	7.927	7.458	3.853	5.708	10.119
charge -off	2091	0.748	0.670	0.488	0.376	1.118

**Earnings Management  
Measures**

Accr_J	2082	0.033	0.030	0.137	-0.027	0.090
Accr_MJ	2078	0.033	0.028	0.132	-0.028	0.088

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**Table 2 Consolidation and Earnings Management Changes**

This table examines the changes in earnings management following the FAS 166/167. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Variable definitions are provided in Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Accr_J	(2) Accr_J	(3) Accr_MJ	(4) Accr_MJ
Post*Treat	0.0258** (0.0120)	0.0257** (0.0123)	0.0282** (0.0114)	0.0276** (0.0117)
ln (total asset)	0.0554* (0.0303)	0.0577* (0.0305)	0.0580* (0.0310)	0.0604* (0.0313)
ln (sale)	-0.0794*** (0.0277)	-0.0807*** (0.0278)	-0.0805*** (0.0292)	-0.0815*** (0.0295)
sale growth	0.0145 (0.0185)	0.0154 (0.0183)	0.0167 (0.0185)	0.0172 (0.0185)
ROA	0.4122*** (0.0713)	0.4108*** (0.0717)	0.4503*** (0.0647)	0.4492*** (0.0653)
leverage	0.0088 (0.0466)	0.0075 (0.0472)	0.0150 (-0.0464)	0.0163 (0.0467)
MTB	-0.0004 (0.0007)	-0.0004 (0.0007)	-0.0006 (0.0007)	-0.0006 (0.0007)
big4	-0.0242 (0.0458)	-0.0253 (0.0460)	-0.0171 (0.0495)	-0.0191 (0.0499)
securitized assets		0.0001 (0.0004)		0.0003 (0.0003)
bank size		-0.0035 (0.0027)		-0.0011 (0.0020)
bank capital ratio		0.0097** (0.0047)		0.0042 (0.0044)
bank ROA		-0.0038 (0.0117)		0.0026 (0.0114)
C&I Loans		-0.0020 (0.0023)		-0.0021 (0.0022)
charge -off		-0.0004 (0.0221)		-0.0068 (0.0203)
Constant	0.1886 (0.1773)	0.1972 (0.1794)	0.1651 (0.1726)	0.1606 (0.1749)
Observations	2067	2067	2063	2063
Adjusted R <sup>2</sup>	0.1201	0.1230	0.1471	0.1484
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

### Table 3 Dynamic Treatment Analysis

This table examines the changes in earnings management in the year of the adoption of FAS 166/167, 2010. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Variable definitions are provided in Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Accr_J	(2) Accr_MJ
Pre×Treat	0.0056 (0.0160)	0.0127 -0.0149
Post <sup>0</sup> ×Treat	0.0214 (0.0170)	0.0230 (0.0166)
Post <sup>1</sup> ×Treat	0.0312* (0.0174)	0.0332** (0.0165)
Post <sup>2</sup> ×Treat	0.0235 (0.0215)	0.0296 (0.0205)
Post <sup>3</sup> ×Treat	0.0432* (0.0230)	0.0586** (0.0233)
Controls	Yes	Yes
Observations	2067	2063
Adjusted R <sup>2</sup>	0.1236	0.1502
Firm FE	Yes	Yes
Year FE	Yes	Yes



**Table 4 Consolidation and Earnings Management Changes: Falsification Test**

This table reports the results of falsification tests based on a matched sample of treatment and control firms during 2003-2009. We include firm fixed effects and year fixed effects. Firm characteristics include ln (total asset), ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. Variable definitions are provided in Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) Accr_J	(2) Accr_J	(3) Accr_MJ	(4) Accr_MJ
Post*Treat	-0.0060 (0.0179)	-0.0044 (0.0182)	0.0062 (0.0164)	0.0067 (0.0168)
Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	No	Yes	No	Yes
Observations	3384	3384	3360	3360
Adjusted R <sup>2</sup>	0.0719	0.0746	0.0701	0.0725
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

**Table 5 Consolidation and Real Earnings Management Changes**

This table examines the changes in real earnings management following the FAS166/167. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS166/167 and consolidate OBS securitization entities, and zero otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Firm characteristics include ln (total asset), ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. Variable definitions are provided in Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
	CFO_resid	CFO_resid	PROD_resid	PROD_resid	SGA_resid	SGA_resid	RM_1	RM_1	RM_2	RM_2	RM_3	RM_3
Post*Treat	-0.0177 (0.0192)	-0.0195 (0.0190)	0.0048 (0.0181)	0.0048 (0.0185)	-0.0122 (0.0129)	-0.0115 (0.0127)	-0.0099 (0.0236)	-0.0091 (0.0237)	-0.0276 (0.0215)	-0.0287 (0.0214)	-0.0288 (0.0287)	-0.0302 (0.0287)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank characteristics	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Observations	2007	2007	2035	2035	2067	2067	2035	2035	2007	2007	1975	1975
Adjusted R <sup>2</sup>	0.1031	0.1068	0.1001	0.1049	0.0772	0.0833	0.0886	0.0922	0.1010	0.1061	0.1272	0.1329
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes

**Table 6 Cross-sectional Analysis: External Financing**

This table presents the subsample analysis results. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. The variable of KZ Index equals to one if firms are with values above the median, and zero otherwise. The variable of zero\_div equals one if a firm pays dividend, and zero otherwise. The variable of EFD takes the value one if firms are above the median value, and zero otherwise. We then construct the dummy variable of no\_repurchase which equals to one if the firm has no repurchases. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Firm characteristics include ln (total asset), ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. I assess the statistical significance of the difference in coefficients using chi-square tests and standard errors clustered by firm. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)		(2)		(3)		(4)	
	Accr_J		Accr_MJ		Accr_J		Accr_MJ	
	KZ index		KZ index		EFD		EFD	
	High	Low	High	Low	High	Low	High	Low
Post*Treat	0.0357** (0.0179)	0.0019 (0.0156)	0.0439** (0.0175)	-0.0001 (0.0145)	0.0400** (0.0199)	-0.0020 (0.0145)	0.0421** (0.0200)	-0.0003 (0.0143)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1032	1032	1030	1030	1030	1036	1028	1034
Adjusted R <sup>2</sup>	0.1845	0.0895	0.2084	0.0959	0.1741	0.1411	0.2051	0.1446
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coefficient difference significant	Yes		Yes		Yes		Yes	
p value	0.0353		0.0187		0.0725		0.0813	
	(5)		(6)		(7)		(8)	
	Accr_J		Accr_MJ		Accr_J		Accr_MJ	
	zero dividend		zero dividend		no repurchase		no repurchase	
	Yes	No	Yes	No	Yes	No	Yes	No
Post*Treat	0.0448** (0.0192)	-0.0014 (0.0141)	0.0430** (0.0180)	0.0086 (0.0144)	0.0431** (0.0217)	-0.0008 (0.0169)	0.0378* (0.0207)	0.0054 (0.0160)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1163	901	1159	901	875	1121	871	1121
Adjusted R <sup>2</sup>	0.1623	0.0755	0.1855	0.0998	0.1449	0.1493	0.1628	0.1768
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coefficient difference significant	Yes		No		Yes		No	
p value	0.0743		0.1724		0.0912		0.2280	
	(9)		(10)					
	Accr_J		Accr_MJ					
	cash flow		cash flow					
	High	Low	High	Low				
Post*Treat	0.0029 (0.0172)	0.0591*** (0.0202)	0.0101 (0.0175)	0.0549*** (0.0182)				

Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes
Observations	1043	1024	1043	1020
Adjusted R <sup>2</sup>	0.1254	0.1352	0.1477	0.1552
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
Coefficient difference significant		Yes		Yes
p value		0.0202		0.0526

**Table 7 Cross-sectional Analysis: Governance**

This table presents the subsample analysis results. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS166/167 and consolidate OBS securitization entities, and 0 otherwise. We construct two subsamples based on the above- and below-median values of institutional investor, analyst following, busy board, E-index, co\_opted, and vega, respectively. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Firm characteristics include ln (total asset), ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. I assess the statistical significance of the difference in coefficients using chi-square tests and standard errors clustered by firm. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

<b>Panel A External governance</b>								
	(1)		(2)		(3)		(4)	
	Accr J		Accr MJ		Accr J		Accr MJ	
	institutional investor		institutional investor		analyst following		analyst following	
	High	Low	High	Low	High	Low	High	Low
Post*Treat	-0.0074 (0.0163)	0.0548*** (0.0187)	-0.0046 (0.0156)	0.0627*** (0.0193)	-0.0104 (0.0195)	0.0363* (0.0193)	-0.0135 (0.0165)	0.0389** (0.0185)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1037	1030	1035	1028	721	778	717	778
Adjusted R <sup>2</sup>	0.0892	0.1803	0.1023	0.2106	0.1149	0.1267	0.1507	0.1492
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coefficient difference significant	Yes		Yes		Yes		Yes	
p value	0.0136		0.0105		0.0841		0.0745	
<b>Panel B Internal governance</b>								
	(1)		(2)		(3)		(4)	
	Accr J		Accr MJ		Accr J		Accr MJ	
	busy board		busy board		E-index		E-index	
	High	Low	High	Low	High	Low	High	Low
Post*Treat	-0.0015 (0.0155)	0.0496** (0.0192)	-0.0002 (0.0137)	0.0538*** (0.0201)	-0.0099 (0.0153)	0.0586*** (0.0184)	-0.0089 (0.0151)	0.0554*** (0.0172)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	988	1079	987	1076	865	1202	864	1199
Adjusted R <sup>2</sup>	0.0975	0.1745	0.0953	0.2025	0.1115	0.1578	0.1184	0.1845
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coefficient difference significant	Yes		Yes		Yes		Yes	
p value	0.0925		0.0720		0.0121		0.0119	

**Table 8 Controlling for Concurrent Shocks**

This table examines the changes in real earnings management following the FAS166/167 controlling for proxies for concurrent events. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS166/167 and consolidate OBS securitization entities, and zero otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Firm characteristics include ln (total asset), ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

<b>Panel A: Regulatory pressure under proposed Basel III</b>				
	(1)	(2)	(3)	(4)
	Accr_J	Accr_J	Accr_MJ	Accr_MJ
Post*Treat	0.0199*	0.0202*	0.0236**	0.0232**
	(0.0117)	(0.0120)	(0.0115)	(0.0117)
Basel*Post	0.0544**	0.0538**	0.0439**	0.0446**
	(0.0226)	(0.0241)	(0.0176)	(0.0192)
Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	No	Yes	No	Yes
Observations	2067	2067	2063	2063
Adjusted R <sup>2</sup>	0.1251	0.1275	0.1506	0.1517
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
<b>Panel B: Stress test</b>				
	(1)	(2)	(3)	(4)
	Accr_J	Accr_J	Accr_MJ	Accr_MJ
Post*Treat	0.0228*	0.0240*	0.0268**	0.0265**
	(0.0131)	(0.0135)	(0.0129)	(0.0134)
Stresstest*Post	0.0209	0.0152	0.0145	0.0132
	(0.0248)	(0.0263)	(0.0223)	(0.0237)
Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	No	Yes	No	Yes
Observations	2018	2018	2014	2014
Adjusted R <sup>2</sup>	0.1223	0.1244	0.1497	0.1504
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
<b>Panel C: TARP</b>				
	(1)	(2)	(3)	(4)
	Accr_J	Accr_J	Accr_MJ	Accr_MJ
Post*Treat	0.0281**	0.0279**	0.0305***	0.0299**
	(0.0122)	(0.0125)	(0.0116)	(0.0119)
TARP*Post	-0.0188	-0.0192	-0.0190	-0.0195
	(0.0121)	(0.0121)	(0.0119)	(0.0118)
Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	No	Yes	No	Yes
Observations	2067	2067	2063	2063
Adjusted R <sup>2</sup>	0.1217	0.1247	0.1489	0.1503
Firm FE	Yes	Yes	Yes	Yes

Year FE	Yes	Yes	Yes	Yes
<b>Panel D: Exposure to real estate prices</b>				
	(1) Accr_J	(2) Accr_J	(3) Accr_MJ	(4) Accr_MJ
Post*Treat	0.0259** (0.0131)	0.0264** (0.0134)	0.0265** (0.0124)	0.0260** (0.0127)
Low Exposure*Post	-0.0041 (0.0139)	-0.0029 (0.0138)	-0.0050 (0.0130)	-0.0041 (0.0130)
Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	No	Yes	No	Yes
Observations	2008	2008	2004	2004
Adjusted R <sup>2</sup>	0.1216	0.1242	0.1485	0.1499
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

## Appendix A Variable Definitions

Variables	Definition	Source
<b>Firm characteristics</b>		
ln (total asset)	Natural logarithm of total assets.	Compustat
ln (sale)	Natural logarithm of net sales.	Compustat
sale growth	Firm growth, the growth rate of total sales from year t-1 to year t.	Compustat
ROA	Earnings before interest, taxes, depreciation, and amortization, divided by total assets.	Compustat
leverage	Sum of short- and long-term debt, divided by total assets.	Compustat
MTB	Market-to-book ratio, the ratio of the market value of equity (PRCC_F × CSHO) to the book value of equity (CEQ).	Compustat
big4	An indicator variable equalling one if the company is audited by the auditing company belonging to the BIG 4, and zero otherwise.	Compustat
<b>Bank characteristics</b>		
securitized assets	[Sum of OBS securitized assets (BHCKB705 through BHCKB711) + assets in consolidated Variable Interest Entities under SFAS 166 and 167 (sum of BHCKJ981 through BHCKJ998, BHCKK003 through BHCKK014, and BHCKK030 through BHCKK032) + maximum amount of credit exposure arising from credit enhancements provided to ABCP conduits (BHCKB806)] * 100/total assets (BHCK2170).	Bank Regulatory
bank size	Natural logarithm of total assets (BHCK2170).	Bank Regulatory
bank capital ratio	Total equity capital (BHCK3210)*100/total assets (BHCK2170).	Bank Regulatory
bank ROA	Net income (BHCK4340)*100/ total assets (BHCK2170).	Bank Regulatory
C&I Loans	Commercial and industrial loans (BHCK1766)*100/ total assets (BHCK2170).	Bank Regulatory
charge -off	[Charge-offs on allowance for loan and lease losses (BHCK4635) - recoveries on allowance for loan and lease losses (BHCK4605)] *100/total assets (BHCK2170).	Bank Regulatory
<b>Accruals-based earnings management variables</b>		
Accr_MJ	the discretionary accruals captured as the residuals from the Modified Jones (1991) model.	
Accr_J	the discretionary accruals captured as the residuals from the Jones' (1991) abnormal accruals model.	
<b>Real earnings management variables</b>		



CFO_resid	The abnormal level of cash flow from operations is the residual of equation (5). A lower level of abnormal level of cash flow from operations indicates a higher level of real earnings management in terms of sales manipulation. So we take the negative value to get the CFO_resid.
PROD_resid	The abnormally production costs which is the residual of equation (6). PROD_resid indicates a higher level of real earnings management in terms of inventory overproduction, which leads to a reduction in the cost of goods sold.
SGA_resid	The abnormal level of discretionary expenditures is the residual of equation (7). A lower level of abnormal level of discretionary expenditures indicates a higher level of real earnings management in terms of sales manipulation. So we take the negative value to get the SGA_resid.
RM_1	$RM_1 = PROD\_resid - SGA\_resid$
RM_2	$RM_2 = -CFO\_resid - SGA\_resid$
RM_3	$RM_3 = -CFO\_resid + PROD\_resid - SGA\_resid$

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## Appendix B Cross-sectional Analysis: Information Asymmetry

This table presents the subsample analysis results. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Firm characteristics include ln (total asset), ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. I assess the statistical significance of the difference in coefficients using chi-square tests and standard errors clustered by firm. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1)		(2)		(3)		(4)	
	Accr_J		Accr_MJ		Accr_J		Accr_MJ	
	Illiq		Illiq		Bid_Ask		Bid_Ask	
	High	Low	High	Low	High	Low	High	Low
Post*Treat	0.0456** (0.0199)	-0.0063 (0.0151)	0.0469** (0.0181)	-0.0078 (0.0133)	0.0421* (0.0238)	-0.0111 (0.0164)	0.0436** (0.0216)	-0.0072 (0.0147)
Firm characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	906	912	902	912	906	912	902	912
Adjusted R <sup>2</sup>	0.1251	0.1061	0.1749	0.1247	0.1500	0.0609	0.1939	0.0662
Firm FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Coefficient difference significant	No		Yes		Yes		Yes	
p value	0.1020		0.0840		0.0343		0.0316	

## Chapter 4 Consolidation of Variable Interest Entities and Corporate CSR

### 4.1 Introduction

In recent decades, extant literature has a debate on corporate social responsibility (hereafter CSR). On the one hand, a stream of research finds evidence that superior CSR performance can enhance firm value (e.g., Dhaliwal et al., 2011; Roy et al., 2022), especially pointing out that CSR performance is positively related to firms' access to finance (Cheng et al., 2014). On the other hand, other researchers raise the concern that agents' managerial benefits drive CSR activities (e.g., Borghesi et al., 2014, Petrenko et al., 2016). Prior literature has not reached a consensus on CSR, especially on whether and how corporate CSR can be a response to changes in bank lending.

In this paper, employing the adoption of FAS 166/167 as an exogenous shock, we explore corporate CSR performance as a potential response to their lenders' credit supply change. FAS 166 and FAS 167 get effective on January 1, 2010, which modified FAS 140 and FIN 46(R), respectively. Prior to the modification, FAS 140<sup>1</sup> and FIN 46(R)<sup>2</sup> allowed banks' access to sale accounting for securitizations and non-consolidation of securitization vehicles, objectively allowing off-balance sheet existent (Ryan, 2017; Ahn et al., 2020). After the effective of FAS 166 and FAS 167, which cooperate phase out the perception of qualifying special purpose entities (QSPEs), banks who used to involve in securitization need to integrate risk through the credit card master trusts and asset-backed commercial paper conduits from consolidated vehicles (Ryan, 2017). The two rulings jointly intensified the accounting rules for securitizations and the consolidation of variable interest entities (VIEs). As a result, hundreds of billions of dollars of assets and liabilities are brought onto the balance sheet<sup>3</sup> (e.g., Ryan, 2017; Dou et al., 2018). Responding to the 2007-2008 financial crisis, FAS 166/167, having an impact on banks' regulatory capital adequacy (e.g., Dou and Xu, 2021), trigger the debate on how and whether firms would respond their lenders credit supply shock.

The potential effect of credit supply shock on corporate CSR performance is an empirical

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1. <https://www.fasb.org/page/pageContent?pageId=/reference-library/superseded-standards/status-of-statement-no-140.html>
  2. <https://www.fasb.org/page/pageContent?pageId=/reference-library/superseded-standards/status-of-interpretation-no-46r.html>
  3. According to Dou and Xu (2021), banks have to consolidate \$363 billion of previously off-balance sheet (OBS) securitized loan assets. More information is accessible via: <https://www.federalreserve.gov/releases/h8/h8notes.htm> March 31, 2010, and <https://www.fasb.org/page/ShowPdf?path=0002-%201700-CNU%20FIRCA.pdf>

issue. According to a stream of literature, superior CSR performance can enhance firm value by improving stakeholder engagement (e.g., Bardos et al., 2020; Banker et al., 2022), moderating information asymmetry (e.g., Mishra, 2017; Cui et al., 2018), and obtaining benefits in capital market (e.g., Roy et al., 2022). Furthermore, Cheng et al. (2014) provide evidence that superior CSR performance bring firms with better access to finance. The preceding discussion leads us to the hypothesis that firms may enhance their CSR performance to respond to the validated credit supply shock. On the other hand, other scholars attribute firms' CSR motivations to managerial benefits (e.g., Petrenko et al., 2016), indicating that CSR can benefit agents instead of firm value. Given Jensen's (1986) free cash flow theory, we expect CSR will be decreased, under the assumption that agency problems can explain CSR performance, after the credit supply shock. Hence, we have a two-side hypothesis that the adoption of FAS 166/167 will not have a spillover effect on corporate CSR performance.

We use difference-in-differences (DID) approach to explore the real effect of FAS 166/167 on corporate CSR performance, attempting to circumvent endogeneity issues by testing firms' responses to the exogenous change in credit supply. Consistent with Dou and Xu's (2021) research, our matched sample contains seven-year's firm-years data, taking three years before (i.e., 2007-2009) as the pre period and four years after (i.e., 2010-2013) as the post period. The treatment firms are the ones which borrow at least one loan during both pre and post periods from the influenced banks. Further, we match a control firm for each treatment firm, following Dou and Xu's (2021) method that the control firm should be the ones which borrow only from uninfluenced banks in both periods and have the closest propensity score to the treatment firm considering both firm-level characteristics and total securitized assets of their lenders.

To measure the borrowing firms' CSR performance, following extant literature (e.g., Davidson et al., 2019), we calculate the CSR net score focusing on five main dimensions of CSR, which are community activities, diversity, employee relations, environmental policies, and product development. We find a significant increase in CSR for treatment firms after their lenders adopt FAS 166/167. The results hold without control variables proving the robustness.

Further, we perform a series of robustness tests to address the concerns that our results can be explained by divergent trends or confounded by contemporaneous events. First, we employ

the dynamic treatment analysis to test the “parallel trend” assumption. The results indicate no significant pre-treatment differences between the treatment and control groups, and our main results are not explicable by the pre-trends discrepancy between treatment and control firms. Second, we take the year prior to the financial crisis as the pseudo effective year and conduct a falsification test to address the concern that the increase of CSR can be driven by the financial crisis. Third, to test whether our findings remain after considering concurrent events, we involve a battery of financial reforms in the banking system, which are responding the financial crisis, during our sample period, and prove that our main findings still hold with considering these events. Collectively, these tests are additional credence to our main findings and decrease the possibility that our results can be explained by other issues.

Furthermore, we use a battery of cross-sectional analysis to offer insights into the correlation, attempting to explore the potential channels through which the credit supply shock enhances borrowers’ CSR performance. We find that the increase in firm CSR in response to their lenders’ adoption of FAS 166/167 is more pronounced when firms are more financially stressful, with more intense external monitoring or higher risk-taking level.

The remainder of this paper is organised as follows. Section two discusses the related literature and develops the hypothesis. Section three describes data and methodology. Section four presents empirical findings and robustness checks. Section five concludes the paper.

## **4.2. Related Literature and Hypothesis Development**

### **4.2.1 CSR and Access to Finance**

A comprehensive literature review by Mellahi et al. (2016) attribute the motivations of CSR activities to external drivers (e.g., stakeholder theory and obtaining legitimacy) and internal drivers (e.g., developing valuable nonmarket resources). Consistent with this line, advocates for CSR argue that CSR activities can contribute to firm value by enhancing CSR-driven stakeholder engagement (Deng et al., 2013; Bardos et al., 2020; Banker et al., 2022), signalling market ( Dhaliwal et al., 2011; Cowan and Guzman, 2020), and improving access to finance ( Cheng et al., 2014; Mishra, 2017). Especially, Cheng et al. (2014) attribute the positive relation between CSR activities and access to finance to lower agency costs through stakeholder engagement and enhanced transparency.

To be more specific, CSR activities can potentially enhance firms' access to finance through improving borrowers' transparency. A stream of extant literature points out that superior CSR performance leads to better stakeholder engagement (e.g., Cordeiro and Tewari, 2015; Dmytriyev et al., 2021), indicating that stakeholder theory can partially explain the motivation of CSR activities. Furthermore, some scholars point out that better stakeholder engagement comes with CSR activities can reduce information asymmetry and improve transparency (Mishra, 2017; Cui et al., 2018; Dumitrescu and Zakriya, 2021). Prior work has also revealed the relation between transparency and bank loan. For example, Hasan et al. (2014) provide empirical evidence that borrowers with higher tax avoidance, which reduces the transparency objectively, incur higher spreads when obtaining bank loans. And Chy and Kyung (2023) suggest the negative relation between secondary bond market transparency enhancements and the use of covenants in bank loan contracts. To some extent, these studies suggest that information transparency can benefit firms when obtaining bank loans. Thus, it is plausible that borrowers' CSR performance might be a potential criterion when firms are acquiring bank loans, given superior CSR performance can improve firm transparency.

Simultaneously, a battery of literature reveals the role of corporate CSR to investors and financial intermediates. Dhaliwal et al. (2011) point out that voluntarily disclosing CSR activities manifests firms' confidence, which positively signals investors, even in the case of poor CSR performance, leaving firms opportunities to provide explanations. Similarly, extant literature proves that firms' CSR activities can have a positive effect on product market perception (Boehe and Cruz, 2010; Bardos et al., 2020).

Furthermore, scholars increasingly point out that CSR can bring firms financial benefits in the capital market. Roy et al., (2022) find that mandatory CSR regulation contributes to improving stock market liquidity of CSR firms and obtaining higher market valuations in the long run. Also emphasizing the benefits brought by superior CSR performance, Riedl and Smeets (2017) indicate that investors are even willing to forgo financial performance for investing in accordance with their social preferences. Also, Heinkel et al. (2001) show the investor' preference for social responsibility and potential consequences of exclusionary ethical investing. Similarly, using quasi-natural experiments, Chen et al. (2020) find portfolio firms' CSR performance are enhanced after institutional holding increase, proving the preference of institutional shareholders in generating real social impact. It is evident that the

market does pay attention to firms' CSR performance.

#### **4.2.2 CSR and Agency Theory**

Other researchers, on the other hand, cast CSR in a less favourable light, emphasizing its managerial benefits based on agency theory (e.g., Borghesi et al., 2014, Petrenko et al., 2016). A stream of research investigates firm CSR performance along with this line and suggests CSR activities might be triggered by managers' self-serving motivations. To be more specific, Cai et al., (2016) portray superior CSR performance as a tool for managers to develop their own utility. Similarly, Cai et al., (2020) indicate that the purpose of improving their own reputation motivates managers to devote themselves to CSR activities.

Consistent with this line, extant literature also reveals that managers' opportunistic behaviours can explain the motivation for CSR. Prior et al., (2008) indicate that managers, as agents, may use a social-friendly image to disguise their earnings management. In other words, managers in firms that report more CSR activities are likely to hide the consequence of misconduct by satisfying their stakeholders and showing a social-friendly image. Similarly, Muttakin et al. (2015) suggest that CSR can be a kind of "green wash" statement which can even deceive stakeholders. Simultaneously, Bondy, (2008)'s study suggests that CSR is used by actors to enhance their position in their organization, also indicating CSR activities as opportunistic behaviours. This stream of literature consistently reveals that CSR activities can be taken as opportunistic behaviours and explained by agency theory.

Additionally, extant literature (e.g., Gillan et al., 2021) even raises the concern of reverse causality that high valuations and better financial performance lead to higher CSR, instead of that CSR contribute to firm values. In other words, this line of literature raises the concern that the proven positive results related to CSR can be attributed to the empirical issue of reverse causality instead of CSR performance itself.

#### **4.2.3 Spillover Effect of Bank Lending**

The extant literature so far has discussed the spillover effect of the bank lending on their borrowers' practices. For instance, Chen and Vashishtha (2017) suggest an increase in

borrowers' disclosure when their lenders experience mergers and acquisitions (M&A), emphasizing the effect would be strengthened when borrowers are more reliant on the services from the banks and when mergers result in larger changes in lenders' monitoring and financing of borrowers. Through bank lending, the event of M&A can push their borrowers to change their transparency decision. Also, creditors' innovation may have a spillover effect on their borrowers. It is indicated that creditors' financial innovations (i.e., credit default swaps) can have an impact on borrowers' performance volatility (Wu et al., 2022).

Especially, a stream of literature provides empirical evidence for the impact of debt covenant on their borrowers (e.g., Franz et al., 2014). According to contracting theory, a connected series of contracts (e.g., employment and debt) contribute to corporate governance (HassabElnaby et al., 2014). Especially, Ball et al. (2005)'s research emphasizes the role of contracting theory in the debt markets but not equity markets in the aspect of asymmetry prediction. To respond to the pressure of debt covenant, it is suggested that borrowers would change their accounting choices. As Franz et al., (2014) proved, the incentives to manage earnings would be stronger among firms with loans close to violation or in technical default.

Taken together, the existing research reveals the spillover effect of bank lending, emphasizing the role of bank lending in the importance of their borrowers' decision making. Especially, it is noticeable that corporates can perceive the pressure from debt covenant issues and adjust their strategy (e.g., accounting choices) accordingly.

#### **4.2.4 The Real Effect of FAS 166/167**

Effective in 2010, FAS 166/167 amended FAS 140 and FIN 46(R), jointly requiring banks to consolidate their off-balance sheet (OBS) securitization entities. As Ryan (2017) suggested, the influence of the adoption of FAS 166/167 is significant enough to banks' stability-related decisions, which potentially points to FAS 166/167 as a credit shock. Some scholars provide empirical evidence on the impact of FAS 166/167 that the shock has negatively affected banks' loan supply (Dou et al., 2016), mortgage approval rates (Dou et al. 2018), and small business lending (Dou, 2021). In short, extant research suggests that the validated credit shock of the adoption of FAS 166/167 tightens bank lending.

Furthermore, a recent research by Dou and Xu (2021) suggests that corporates' innovation is negatively influenced following their lenders' adoption of FAS 166/167. Their research



partially investigates whether and how banking system's accounting requirement changes can have an impact on their borrowers' practices.

#### **4.2.5 Hypothesis Development**

Given now FAS 166/167 objectively tightens the bank lending, and bank lending can have a spillover effect on their borrowers' practices, it seems plausible that borrowers' practices would be influenced as a response to their lenders' adoption of FAS 166/167.

On one hand, a stream literature emphasizes that CSR activities can enhance firm value through enhancing stakeholder engagement (e.g., Bardos et al., 2020; Banker et al., 2022) and diminishing information asymmetry (e.g., Mishra, 2017; Cui et al., 2018). Also, CSR activities can help firms to acquire benefits in the capital market (e.g., Roy et al., 2022). First, it is reasonable for firms to increase their CSR performance, which can potentially enhance their alternative resources in the capital market, as a response to the validated credit shock.

Second, more directly, as Cheng et al. (2014) suggest the positive relation between CSR performance and firms' access to finance, firms' motivation to enhance their CSR performance might be strengthened after they perceive the validated credit shock. In other words, borrowers might enhance their CSR performance after the validated credit shock to strengthen their access to finance. To sum up, given the preceding debate, we expect that firms are inclined to improve CSR performance to adopt themselves to the validated credit supply shock of FAS 166/167 from their lenders, for positively signalling the capital market and seeking for better access to finance. Thus, we raise the following hypothesis:

*Hypothesis 1a: Borrowers would enhance their CSR performance after their lenders adopt FAS 166/167.*

On the other hand, given the adoption of FAS 166/167 tighten banks' lending, according to free cash flow theory (Jensen, 1986), we expect to observe that managers cut off their discretionary expenditure after FAS 166/167 which may negatively influence firms' cash flow. Jensen's (1986) free cash flow theory reveals managers' motivation to invest cash at below the costs of capital or wasting cash on organization inefficiencies. Since lenders' adoption of FAS 166/167 tightens bank lending, it is highly possible that managers can perceive the

negative influence on their cash flow. If the motivation of CSR is highly related to agents' private benefits (e.g., Cai et al., 2020), we expect to see that borrowers would deduct their CSR expenses, which are taken as discretionary expenditure, after the validated credit shock of FAS 166/167. This leads to the following hypothesis:

Hypothesis 1b: *CSR performance of borrowers would decrease after their lenders adopt FAS 166/167.*

## **4.3 Data and Methodology**

### **4.3.1 Sample**

Consistent with Dou and Xu (2021), we identify the influenced lenders by using the financial data from FR Y-9C. The VIEs consolidating-related information is accessible in Schedule HC-V of FR Y-9C reports. We employ the data of items under Schedule HC-V from Bank Regulatory Database. And it is noticeable that the bank holding companies are identified by their owners' RSSD IDs.

To combine the lenders with their borrowers, the loan-level data from Thomson Reuter's DealScan database is employed. Only having firms at least borrowed one loan both before and after the regulation in our sample, according to the loan facility, we identify a firm as treated if the firm borrowed at least one loan in both pre and post periods respectively from the same bank influenced by FAS 166/167 (the loan borrowed in the post period should be new issued, instead of continuous ones from the pre period). And a firm will be identified as a control one if the firm borrowed only from unaffected lenders in both periods. In the cases that a firm borrow from an affected bank in the pre period but only borrow from unaffected banks in the post period, the firm will be identified as a control one if the previous loans from affected banks have ended within pre period.

We then assign the bank characteristics to firm-level observations by weighting the bank characteristics based on the loan amount and transferring the bank data from firm-bank-year level into firm-year level if one firm borrowed from multiple lenders. The weighting method is consistent with Dou and Xu (2021)'s research.

We conduct our sample over the period of 2007 to 2013, with 2007 to 2009 as the pre period

and 2010 to 2013 as the post period, given FAS 166/167 took effect in the year of 2010. Consistent with Cheung (2016) and Cronqvist and Yu (2017), we exclude firms in financial industry (SIC code 6000–6999) and utilities industry (SIC code 4900–4999). The financial accounting data for firm characteristics are employed from the database of Compustat. To mitigate the potential effect of outliers, the continuous variables are winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

To make the treated and control firms comparable, we use the propensity score matching with nearest-neighbour method without replacement and a caliper of 0.05. We first estimate a logit regression with industry fixed effects of whether the firm is in treatment group with the mean values of ln (sales), sale growth, ROA, leverage, MTB, big4 and the bank's total securitized assets over the pre period (2007-2009) as independent variables. Here, industry is defined at the 2-digit SIC code level. The final matched sample contains 402 firms and 2076 firm-year observations. To explore the effect of consolidating securitization entities on corporate CSR, we use this matched sample.

Panel A of Table 1 reports the quality of matching to verify whether the treatment and control firms are sufficiently indistinguishable in terms of observable characteristics. The results suggest that the differences in means for both corporate and bank characteristics between the matched treatment and control groups are statistically insignificant after matching. It is reasonable to believe that the adoption of FAS 166/167 can explain the potential differences in corporate CSR between treatment and control groups. Panel B of Table 1 shows the summary statistics of variables of the matched sample. The matched sample has a median of the ratio of sales of 6.975 and a median of the market-to-book ratio of 1.750, respectively. The mean of securitized assets ratio of the lending banks is 19.126 %.

[Please Insert Table 1 Here]

#### **4.3.2 CSR Measures**

We obtain the firm CSR performance data from Kinder, Lydenberg, and Domini (KLD) database, which is now acquired by Morgan Stanley Capital International (MSCI). Consistent with prior research (e.g., Davidson et al., 2019), we focus on five main dimensions of CSR: community activities, diversity, employee relations, environmental policies, and product

development<sup>4</sup>. The database provides each category several dimensions with positive (i.e., strength) and negative (i.e., concern) indicators which equal to 1 if the criteria is met. We then calculate modified scores for each category by dividing the strength and concern scores by the number of strength and concern indicators in that category. To examine CSR strength and weakness, we sum the modified scores of strength and concern for each category, respectively. As for our main measure of CSR performance, we obtain net CSR score by subtracting the sum of modified scores of concerns from the sum of modified scores of strength across all five categories. In further analysis, to test the CSR strength or weakness separately, we use the sum of modified scores of strength or concerns for each category, respectively.

### 4.3.3 Research Design

Consistent with the spirit of DID approach's pioneer (i.e., Snow, 1855), our research employ the difference-in-differences (DID) approach and explore an external shock. By using DID approach and taking an external shock, the concern of endogeneity can be largely moderated. Especially, the DID approach is efficient to address the concern of reverse causality, given firm-level practices are not likely the drivers of external shocks (e.g., regulation or accounting requirement changes).

Specifically, to investigate the effect of consolidating securitization entities on corporate CSR level, we use the adoption of FAS 166/167 as an exogenous shock to lending banks and employ a DID framework to compare changes in CSR level of borrowers whose lenders have to react to the tightened accounting rules of securitizations (i.e., treated firms) to the changes in CSR level of borrowers whose lenders are not influenced by the rulings (i.e., control firms). The empirical model is presented as follows:

$$CSR_{it} = \beta_0 + \beta_1 Post \times Treat_j + \gamma X_{it} + \delta Z_{it} + FirmFE + YearFE + \varepsilon_{it} \quad (1)$$

where  $i$  denotes a firm, and  $t$  denotes time. The indicator of  $Post$  is a time dummy, which

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<sup>4</sup> KLD also provides the categories of Corporate Governance and Human Rights. Mainly focusing on the mechanisms of moderating corporate governance related issues (e.g., agency problems), the category of Corporate Governance shows a propensity to shareholder perspective rather than social objectives or stakeholders. Thus, following prior research, we exclude this category out of our CSR measure. As for the category of Human Rights, we exclude this category due to the concern of the data limitation which is discussed in extant research.

equals to 1 for the post-regulation period (years of 2010-2013), and 0 otherwise (years of 2007-2009). The dummy variable, *Treat*, equals to 1 if the firm's lender consolidates their OBS securitization entities after the adoption of FAS 166/167, and 0 otherwise. Consistent with Davidson et al. (2019), Chen et al.(2020) and Wang et al. (2018), we include the vector of *X* to represent the control variables of ln (sales), sale growth, ROA, leverage, MTB and big4, capturing firm characteristics which could potentially influence firm CSR level. The vector of *Z* to involves a series of bank characteristics which could potentially have a spillover effect on firm CSR level, including securitized assets, bank size, bank capital ratio, bank ROA, C&I loans charge-off. A more detailed checklist of our control variables refers to Appendix A. We estimate the regression controlling fixed effects and year fixed effect.

## 4.4 Main Results

### 4.4.1 Multivariate Test Results

We report the multivariate test results in Table 2. Column (1) represents the estimation results controlling only the firm characteristics, while column (2) further reports the results controlling the firm characteristics and the bank characteristics. It is found that coefficient estimates of the interaction term in columns (1) and (2), *Post\*Treat*, are both positive and statistically significant at 5% level, with coefficient equals to 0.2393 in column (1) and coefficient equals to 0.2325 in column (2). We find primary evidence that the borrowers enhance their CSR performance after their lenders adopt FAS 166/167 and consolidate securitization entities. Showing the effect of a validated credit shock (i.e., FAS 166/167) on borrowers' CSR strategy, our findings are consistent with a stream of literature which suggests the influence of bank lending or debt covenant on borrowers practices (e.g., Franz et al., 2014; Chen and Vashishtha, 2017). Such findings are also consistent with Cheng et al. (2014)'s research, indicating that firms tend to enhance their CSR performance which is proved to be positively related to access to finance, as a response after they perceive a validated credit shock. Here, to test the robustness, we estimate the equation without control variables and confirm that the results remain positive and significant.

We also notice that the firm-level control variables, ln(sales), MTB, and big4, are statistically significant and virtually indistinguishable between columns (1) and (2). It is worth noting that the coefficient estimates of the control variable of *Size* are positive, which is consistent with

Davidson et al. (2019)'s research. In column (2), most of the bank-level control variables apart from *Bank size*, are statistically insignificant, which is consistent with Dou and Xu (2021)'s research.

[Please Insert Table 2 Here]

#### 4.4.2 Dynamic Treatment Analysis

Following Bertrand and Mullainathan (2003)'s research, we conduct the dynamic treatment analysis to further address the concern of reverse causality. Especially, the dynamic treatment analysis can test the timing of CSR relating to the timing of their lenders' adoption of FAS 166/167, which can address the concern that our findings may be driven by pre-existing divergent trends. Table 3 shows the results. We present our dynamic regression model below:

$$CSR_{it} = \beta_0 + \beta_1 Pre^2 \times Treat_j + \beta_2 Pre^1 \times Treat_j + \beta_3 Post^0 \times Treat_j + \beta_4 Post^1 \times Treat_j + \beta_5 Post^2 \times Treat_j + \beta_6 Post^3 \times Treat_j + \gamma X_{it} + \delta Z_{it} + FirmFE + YearFE + \varepsilon_{it} \quad (2)$$

where the main variable of interest in equation (1), the interaction item of *Post\*Treat*, further splits into five indicators, serving to capture the parallel trends. *Pre*<sup>2</sup>, *Pre*<sup>1</sup>, *Post*<sup>0</sup>, *Post*<sup>1</sup>, *Post*<sup>2</sup> and *Post*<sup>3</sup> equals to 1 for the year 2008, year 2009, year 2010, year 2011, year 2012, and year 2013 respectively, and 0 otherwise.

Table 3 reports the results of dynamic treatment analysis, when all the control variables for firm characteristics and bank characteristics in the baseline model of equation (1) remain unchanged. We find no trending differences between the firms borrowing from affected and unaffected banks before the adoption of FAS 166/167. The statistically significant coefficient estimates are only observable in the post-regulation period. The results indicate that pre-trends discrepancy between treated and control firm groups can not explain our main findings.

[Please Insert Table 3 Here]

#### 4.4.3 Falsification Tests

Next, to test whether unobserved characteristics can explain our main findings, we conduct the falsification tests. Our research uses the DID approach and employs the shock of the adoption of FAS 166/167, attracting the attention that the financial crisis (i.e., 2007-2008), as

a potential trigger of the accounting requirement changes, can explain our main findings. The financial crisis (i.e., 2007-2008) has been taken as a discussable issue in a battery of literature investigating the bank's securitization (Loutschina, 2011; Acharya et al., 2013; Covitz et al., 2013). We mitigate the concern that our findings may be attributable to the persistent influence of the financial crisis on the bank's securitization in three ways. First, we assert that the propensity score matching, which includes bank's total securitized assets as a matching variable, applicably captures the bank securitization size. And the variable is also subsequently controlled in the analysis of CSR.

Secondly, spanning from 2007 to 2013, our sample period does not cover the pre-crisis years. And it is noticeable that the FAS 166/167 took effect in 2010, when the economy was recovering. Logically, if the financial crisis can explain our main findings, it seems unlikely that we only find the increase in firm-level CSR in the post-regulation period.

Third, consistent with Dou and Xu (2021), taking the year preceding the financial crisis (i.e., the year of 2006) as the pseudo effective year of FAS 166/167, we further conduct falsification tests to address the concern that our main findings can be driven by the financial crisis.

We conduct the falsification test by replicating the main analysis and taking the period of 2003-2009 as the new sample period. The identification of treatment and control groups is consistent with the main analysis. With the assumption that the financial crisis is one of the driven issues of the increase in firm-level CSR, we expect similar effects when using the pseudo period. Table 4 shows the results of falsification tests. It is reported in columns (1) and (2) that the coefficients are statistically insignificant. The results indicate that the increase in firm-level CSR is not driven by the financial crisis.

[Please Insert Table 4 Here]

#### **4.4.4 Cross-sectional Analysis**

In this section, we further discuss the channels of the spillover effect of FAS 166/167 on firm-level CSR. Our main analysis reveals that firms enhance their CSR performance in response to consolidation of securitization entities under FAS 166 /167. We expect that the effect would

be more profound for firms which are more financially stressful, with more intense external monitoring and higher risk-taking level.

[Please Insert Table 5 Here]

#### **4.4.4.1 Strengthening Role of External Financing Dependence**

Firms' financial status is heterogeneous and can lead to various sensitivities to financing. Eskandari and Zamanian (2022) suggest a negative relation between cash holdings and the cost of carry for financially unconstrained firms, while the relation is insignificant among financially constrained firms, showing different cash sensitivities to the cost of cash holdings. Thus, it is reasonable to see the incentives to response to a validated credit shock can be also distinguishable among financially constrained firms and financially unconstrained firms.

We test the financing channel based on two magnitudes. First, in the light of Rajan and Zingales (1998), we use the indicator of External Financing Dependence (EFD) to conduct our sample. Consistent with their studies, we identify a firm in the high EFD value subsample if firms have values above the median, and low EFD value subsample otherwise. The higher values mean higher propensity to be financially constrained. Secondly, consistent with Foucault and Frésard, (2012), the indicator of zero dividend is used to conduct the subsample. The zero dividend is a dummy variable which equals to 1 if a firm does not pay dividend, and 0 otherwise. We conduct the subsample of zero dividend based on the dummy value. As Fazzari et al. (1988) and Cleary (1999) point out, firms with higher dividend payouts would be less likely to be financially constrained. We expect that financial constrained firms, with higher financial pressure, would be more motivated to access alternative finance and more inclined to respond FAS 166/167 by enhancing their CSR performance.

Panel A of Table 5 shows that only the results of the group of financially constrained firms remain statistically significant and positive. It is indicated that financial constrained firms have to be more sensitive to their lenders' adoption of FAS 166/167 and more socially responsible to ease their potential financial pressure. Such finding is consistent with Franz et al. (2014)'s research, which suggests that firms with higher financial pressure have additional incentives to manipulate earnings, indicating that financial distress bring firms stronger motivation. Our results provide evidence in the same line that financially constrained firms,



enhancing their CSR performance after their lender's adoption of FAS 166/167, are more sensitive to the credit shock.

#### **4.4.4.2 Strengthening Role of External Monitoring**

External monitoring may influence firms' CSR performance. For example, it is suggested that institutional ownership can be taken as a kind of external monitoring (e.g., Demiralp et al., 2011). Suggesting institutional investors would underweight stocks with negative ES indicators, Nofsinger et al. (2019) emphasize institutional investors' preferences regarding corporate social responsibility. Thus, firms with more institutional investors are more likely to enhance CSR performance as response to a validated credit shock, given their investors show a preference regarding CSR.

In this section, we then test the external governance channels by conducting subsamples based on the indicators of institutional investor and analyst following. As extant research suggested (e.g., Ward et al., 2018; Abramova et al., 2020), the attention of independent institutions specialize in monitoring. We identify a firm based on their institutional investor numbers, classifying a firm in the subsample of high institutional investor if its value is above the median, otherwise, the firm will be classified in the other subsample. Also, the larger numbers of analyst followings of firms are positively related to both ex ante and ex post monitoring (e.g., Lang and Lundholm, 1996; Ayres et al., 2019). The dummy variable of analyst following takes the value of 1 if firms have the values above the median, and 0 otherwise. We conduct the subsamples based on the dummy value.

Panel B of Table 5 reports the results that positive spillover effect of FAS 166/167 is more pronounced when corporates' the external monitoring levels are relatively higher. As shown in column (1), the significant results only remain among the subsample of higher institutional investor. Similarly, both being significant, the results of the subsample of higher analyst following are mathematically larger than other firms. The results demonstrate that the borrowers with higher external monitoring levels respond to their lenders' adoption of the tightened accounting rules more sensitively and enhance their CSR performance more.

#### 4.4.4.3 Strengthening Role of Firm Risk

Borrowers' risk-taking level may urge firms to show diverse sensitivity to access to finance. Generally, bank lending is risk averse. As Lin et al. (2013) suggested, lenders view D&O insurance coverage as high credit risk, which is associated with higher loan spreads. Also, it is suggested that banks' risk tolerance would be positively influenced by bank deregulation (Bens et al., 2023). That means, during bank lending, banks do value their borrowers in the aspect of borrowers' risk-taking level according to their own standards and strategy. Thus, it seems that borrowers with higher risk-taking level need to respond to a credit shock more pressingly.

In this section, we split the sample into two groups based on firm-level risk level. First, consistent with Chen et al. (2001) and Kim et al. (2021), we use the mean value of the indicator of down-to-up volatility measure (DUVOL), which is defined as the log of the ratio of the standard deviation of firm-specific weekly returns for down weeks to the standard deviation of firm-specific weekly returns for up weeks, to conduct the subsample. Here, for each firm  $j$  over a fiscal year period  $t$ , we define down weeks as all the weeks with firm-specific weekly returns below the annual mean and up weeks as those with firm-specific returns above the annual mean. The higher value of DUVOL indicates higher crash risks. Second, in the line with Heston and Sadka (2008)'s research, we test the risk channel by conducting the subsample based on the mean value of the indicator of standard deviation of daily stock returns (SDRET), which is estimated over fiscal year  $t$ . The firms with higher values of SDRET are believed to be riskier.

We expect the increase in corporate CSR in response to their lenders' tightened accounting ruling shock is more pronounced when the firms face higher risk levels. That is, firms with higher risk levels are plausibly more sensitive to the access to finance and the lenders' behaviours. If the increase corporate CSR can be a channel through which firms can be benefited in the aspect of access to finance, it is reasonable to see that the relation would be strengthened among firms with higher risk levels.

As expected, the results shown in Panel B of Table 5 indicate that the positive relation between corporate CSR performance and the adoption of FAS 166/167 only remain among firms with higher risk levels. Our main findings can be explained by the channel of risk-

taking level.

#### **4.4.5 Individual CSR Score Changes**

We redo our main test, replacing net CSR score by CSR strengths and CSR weaknesses respectively as the dependent variables, to explore the channel through which the adoption of FAS 166/167 is likely to influence corporate CSR performance. In Panel A of Table 6, columns (1) and (2) report the results that firms significantly enhance their CSR strengths after their lender adopt FAS 166/167, while columns (3) and (4) test the CSR weaknesses and show insignificant results. The results indicate that firms are more likely to increase their CSR performance by enhancing CSR strengths rather than improving their CSR weaknesses.

We then test our main findings across individual CSR categories by reestimating the baseline respectively for Community, Diversity, Environment, Employee, and Product Safety. Panel B of Table 6 presents the results that the items of Employee and Environment are significantly and positively associated with the adoption of FAS 166/167, while there is no such evidence for Community, Diversity and Product Safety.

[Please Insert Table 6 Here]

#### **4.4.6 Robustness Checks of Concurrent Events**

Using the DID setting, there is a concern that our main results can be attributed to concurrent events. During our sample period (i.e., 2007-2013), a set of financial reforms are taken to moderate the consequences of the financial crisis and rebuild the market' confidence. Taking the potential influential of the concurrent events into consideration, we test whether our results still hold in this section.

[Please Insert Table 7 Here]

##### **4.4.6.1 Robustness Check of Basel III**

In 2010, the Basel Committee on Banking Supervision (BCBS) developed Basel Accords and facilitate Basel III, strengthening the financial resilience and intensifying the regulatory capital requirements for the banking system. In practice, Basel III adjust the cap of bank's

mortgage servicing rights (MSRs) from 50% to 10% of Tier 1 capital. Hendricks et al. (2022) suggest 16 banks whose MSR/Tier1 (%) ratios are over 10% and have been imposed relatively more regulatory pressure on.

After double-checking the BCBS reporting, we also identified these 16 banks as the influenced banks. The indicator of *Basel* equals 1 if the firm borrows from the 16 banks, and 0 otherwise. Panel A of Table 7 reports the results, suggesting that our findings remain after involving the potential influence of Basel III.

#### **4.4.6.2 Robustness Check of Stress Test**

In February 2009, the US Federal Reserve System organised the Supervisory Capital Assessment Program (SCAP, or stress test). The test needs banking institutions with assets over \$100 billion to take a “forward looking comprehensive stress test”, aiming at assessing their capital adequacy. The requirement mainly involved 19 bank holding companies, which collectively hold “two-thirds of the assets and more than one-half of the loans in the US banking system”<sup>5</sup>. It is reasonable to believe that the stress test is influential to US banking system, especially on their capital adequacy issues.

We use the indicator of *Stresstest* to assess whether the stress test can be potential explanation for our main findings. The variable of *Stresstest* equals to 1 if the firm borrows from banks involved in the stress test in that year, and 0 otherwise. We report the results in Panel B of Table 7, showing our results remain after controlling the issue of the stress test. That is, the stress test could not be responsible for our findings.

#### **4.4.6.3 Robustness Check of Troubled Asset Relief Program (TARP)**

To improve the stability and liquidity of the US financial system, in the year of 2008, Congress authorized \$ 700 billion for TARP through the Emergency Economic Stabilization Act of 2008 (EESA)<sup>6</sup>. The program purchases toxic assets and illiquid from the financial institutions, contributing to the recovery.

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<sup>5</sup> <https://www.federalreserve.gov/newsevents/speech/bernanke20090511a.htm>

<sup>6</sup> <https://home.treasury.gov/data/troubled-assets-relief-program/about-tarp>

In this section, we examine whether our results are robust to controlling for the issue of TARP. We employ TARP participation information from the US Department of the Treasury. And the variable *TARP* equals to 1 if the firm borrows from banks that are in TARP in that year, and zero otherwise. Panel C of Table 8 reports that our results still hold after controlling the TARP issue. It is suggested that TARP cannot explain our findings.

#### **4.4.6.4 Robustness Check of Real Estate Prices**

Following the collapse of a housing bubble, a large decrease in the US real estate prices consequently triggered the subprime mortgage crisis and shocked the banking system. To test whether the banks' exposure to real estate price can be responsible for our findings, we use the state-level House Price Index (HPI) from the Federal Housing Finance Agency and the Summary of Deposits data from the Federal Deposit Insurance Corporation. To conduct the exposure index, we weight the changes in state-level HPI in 2010 based on the proportion of deposits in each state and then further weight the index by loan amount for averaging it to the firm-year level. Low Exposure equals to 1 if the firm-year level index is below the median value, and 0 otherwise. Panel D of Table 7 shows the results, indicating that our main results remain after controlling the issue of real estate prices.

Collectively, our results are robust to controlling for the effects of four concurrent events. That is, the spillover effect of FAS 166/167 on firm-level CSR is not attributable to these concurrent events.

#### **4.5 Conclusion**

In this research, we employ the adoption of FAS 166/167 as an exogenous shock to explore the change in corporate CSR as a response to the credit supply shock. Using DID approach over the sample period spanning from 2007 to 2013, we find that firms enhance their CSR performance after their lenders adopt FAS 166/167 and consolidate their VIEs. Such findings are robust to various model specifications. The increase in CSR is more concentrated in firms which are more financially stressful, with more intense external monitoring and riskier. Our results are robust to involving a battery of concurrent events. The results suggest that borrowers enhance their CSR performance as a response to the validated credit shock of FAS

166/167. The findings in this study are consistent with the view that CSR can enhance firm value and improve firms' access to finance.

This study contributes to three areas of research. First, the research contributes to explaining the influence of bank lending on their borrowers. Especially, taking the adoption of FAS 166/167 as an external shock of bank lending, we find that borrowers' CSR strategy is positively influenced. Second, our study provides evidence for a stream of literature on CSR in firm value creation (e.g., Cheng et al., 2014). Our research provides empirical evidence that superior CSR performance can be taken to respond to the validated shocks. Third, the real impact of FAS 166/167 may potentially contribute to the accounting and regulatory rules design in the future. Our study reveals whether and how banks' adoption of FAS 166/167 can have an effect on their borrowers' accounting practice (i.e., earnings management), which can trigger the policymakers' consideration of the spillover effect of their regulations.

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**Table 1. Summary Statistics**

This table reports the quality of matching and summary statistics for firm and bank variables. Panel A shows the differences in characteristic variables for both unmatched raw sample and matched sample and reveals the quality of matching using data of pre-regulation period (2007-2009). Treatment firms are the ones borrowing from a bank that has been influenced by FAS166/167 and consolidate OBS securitization entities, while the control firms are the ones borrowing from unaffected banks. The propensity score matching method is used based on the mean value of firm characteristics of ln(sale), ROA, leverage, MTB, sale growth, big4 and bank characteristics of securitized assets in pre-regulation period. Panel B reports the characteristic variables of firms, banks and firm-level CSR measure during the full sample period (2007-2013). Variable definitions are provided in the Appendix A.

**Panel A: Quality of matching**

		control	treatment	Diff.	t-statistics
<b>Firm characteristics</b>					
ln (sale)	Raw	6.1405	7.3257	-1.1852	-12.4787
	Matched	6.9013	6.9479	-0.0466	-0.2994
ROA	Raw	0.0147	0.0855	-0.0708	-5.6271
	Matched	0.0573	0.0741	-0.0168	-1.2996
Leverage	Raw	0.3023	0.2803	0.0220	1.4212
	Matched	0.2769	0.2604	0.0165	0.6319
MTB	Raw	1.8089	2.1495	-0.3406	-1.7544
	Matched	2.0635	2.1511	-0.0875	-0.3184
Sale growth	Raw	0.0606	0.0365	0.0241	1.3508
	Matched	0.0480	0.0568	-0.0088	-0.3658
Big4	Raw	0.7443	0.9138	-0.1695	-7.7460
	Matched	0.8756	0.8756	0.0000	0.0000
<b>Bank characteristics</b>					
Securitized assets	Raw	14.8813	24.7993	-9.9180	-12.4181
	Matched	22.0215	22.5279	-0.5063	-0.4088

**Panel B: The matched sample**

	N	Mean	Median	Std	P25	P75
<b>Firm characteristics</b>						
ln (sale)	2074	7.0739	6.9753	1.5136	6.1323	7.9890
ROA	2074	0.0733	0.0850	0.1360	0.0434	0.1262
Leverage	2071	0.2633	0.2303	0.2401	0.0908	0.3694
MTB	2067	2.3713	1.7497	4.2045	1.0422	2.8356
Sale growth	2071	0.0781	0.0553	0.3236	-0.0364	0.1503
Big4	2071	0.8754	1.0000	0.3303	1.0000	1.0000
<b>Bank characteristics</b>						
Securitized assets	2076	19.1263	16.6047	13.5803	11.1819	26.6371
Bank size	2076	19.3504	21.3463	5.4564	20.7134	21.4827
Bank capital ratio	2076	8.6109	9.0540	2.7709	8.1381	10.3718
Bank ROA	2076	0.4757	0.5129	0.4775	0.1893	0.8375
C&I Loans	2076	8.2671	7.7988	4.1427	5.8576	10.2795
Charge -off	2076	0.7589	0.6715	0.4881	0.3765	1.1302
<b>CSR Measures</b>						
CSR Net Score	948	0.0062	0.0000	0.5795	-0.2000	0.0000

**Table 2. Consolidation and CSR Changes**

This table examines the firm-level changes in CSR following the FAS 166/167. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) CSR Net Score	(2) CSR Net Score
Post*Treat	0.2393** (0.0965)	0.2325** (0.0978)
ln (sale)	0.1457* (0.0805)	0.1396* (0.0789)
ROA	0.0474 (0.1587)	0.0905 (0.1609)
Leverage	0.1055 (0.2135)	0.0749 (0.2121)
MTB	0.0181** (0.0084)	0.0181** (0.0087)
Sale growth	-0.0513 (0.0591)	-0.0509 (0.0609)
Big4	0.2585** (0.1275)	0.2720** (0.1358)
Securitized assets		-0.0023 (0.0017)
Bank size		-0.0219** (0.0105)
Bank capital ratio		0.0285 (0.0243)
Bank ROA		-0.0542 (0.0710)
C&I Loans		0.0051 (0.0087)
Charge -off		0.1396 (0.1075)
Constant	-1.4650*** (0.5582)	-1.2543** (0.5506)
Observations	944	944
Adjusted R <sup>2</sup>	0.2296	0.2396
Firm FE	Yes	Yes
Year FE	Yes	Yes

### Table 3. Dynamic Treatment Analysis

This table presents the results of dynamic treatment analysis. Pre2, Pre1, Post0, Post1 Post2 and Post3 equals to one for the year 2008, year 2009, year 2010, year 2011, year 2012, and year 2013 respectively, and 0 otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS166/167 and consolidate OBS securitization entities, and 0 otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	CSR Net Score
Pre <sup>2</sup> ×Treat	-0.0143 (0.0423)
Pre <sup>1</sup> ×Treat	-0.0173 (0.0505)
Post <sup>0</sup> ×Treat	0.2003* (0.1098)
Post <sup>1</sup> ×Treat	0.1974* (0.1084)
Post <sup>2</sup> ×Treat	1.2681*** (0.2823)
Post <sup>3</sup> ×Treat	0.4998 (0.4617)
Controls	Yes
Observations	944
Adjusted R <sup>2</sup>	0.2461
Firm FE	Yes
Year FE	Yes

**Table 4. Consolidation and CSR Changes: Falsification Test**

This table reports the results of falsification tests based on a matched sample of treatment and control firms during 2003-2009. We include firm fixed effects and year fixed effects. Firm characteristics include ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

	(1) CSR Net Score	(2) CSR Net Score
Post*Treat	-0.0192 (0.0250)	-0.0276 (0.0256)
Firm characteristics	Yes	Yes
Bank characteristics	No	Yes
Observations	2465	2465
Adjusted R <sup>2</sup>	0.0507	0.0602
Firm FE	Yes	Yes
Year FE	Yes	Yes

**Table 5. Consolidation and CSR Changes: Cross-sectional Analysis**

This table presents the subsample analysis results. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Firm characteristics include ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. I standard errors clustered by firm. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

<b>Panel A Financial constraints</b>				
	(1)		(2)	
	CSR Net Score		CSR Net Score	
	EFD		zero dividend	
	High	Low	Yes	No
Post*Treat	0.2602**	0.1786	0.2658***	0.1361
	(0.1229)	(0.1283)	(0.0987)	(0.1820)
Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes
Observations	472	472	552	391
Adjusted R <sup>2</sup>	0.2580	0.3426	0.2590	0.3212
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
<b>Panel B External monitoring</b>				
	(1)		(2)	
	CSR Net Score		CSR Net Score	
	institutional investor		analyst following	
	High	Low	High	Low
Post*Treat	0.3154***	0.2022	0.3828*	0.1968*
	(0.1106)	(0.1850)	(0.2010)	(0.1011)
Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes
Observations	465	469	431	492
Adjusted R <sup>2</sup>	0.1848	0.3257	0.3624	0.1193
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes
<b>Panel C Firm risk level</b>				
	(1)		(2)	
	CSR Net Score		CSR Net Score	
	DUVOL		SDRET	
	High	Low	High	Low
Post*Treat	0.2725**	0.2205	0.2516**	0.1821
	(0.1143)	(0.1370)	(0.1127)	(0.1655)
Firm characteristics	Yes	Yes	Yes	Yes
Bank characteristics	Yes	Yes	Yes	Yes
Observations	470	468	469	471



Adjusted R <sup>2</sup>	0.3541	0.2471	0.2680	0.2876
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

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**Table 6. Consolidation and Individual CSR Score Changes**

This table examines the firm-level changes in CSR following the FAS 166/167. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

<b>Panel A CSR strengths and CSR weaknesses</b>				
	(1)	(2)	(3)	(4)
	CSR Strengths	CSR Strengths	CSR Weaknesses	CSR Weaknesses
Post*Treat	0.1916** (0.0942)	0.1862* (0.0958)	-0.0477 (0.0634)	-0.0463 (0.0603)
ln (sale)	0.1027 (0.0626)	0.0960 (0.0646)	-0.0430 (0.0488)	-0.0436 (0.0474)
ROA	0.0619 (0.1369)	0.0857 (0.1361)	0.0145 (0.1049)	-0.0048 (0.1029)
Leverage	0.2673 (0.1946)	0.2445 (0.1970)	0.1618 (0.1089)	0.1696 (0.1070)
MTB	0.0145** (0.0073)	0.0143* (0.0073)	-0.0036** (0.0014)	- 0.0038** (0.0017)
Sale growth	-0.0602 (0.0482)	-0.0559 (0.0556)	-0.0090 (0.0340)	-0.0050 (0.0345)
Big4	0.2098 (0.1159)	0.2324* (0.1254)	-0.0488 (0.0557)	-0.0396 (0.0564)
Securitized assets		-0.0026 (0.0016)		-0.0004 (0.0014)
Bank size		- 0.0223** (0.0096)		-0.0004 (0.0073)
Bank capital ratio		0.0278 (0.0215)		-0.0007 (0.0150)
Bank ROA		0.0146 (0.0710)		0.0689 (0.0461)
C&I Loans		0.0043 (0.0082)		-0.0008 (0.0057)
Charge -off		0.0034 (0.1098)		-0.1363 (0.1015)
Constant	-0.8537** (0.4269)	-0.6339 (0.4435)	0.6113 (0.3264)	0.6204* (0.3355)
Observations	944	944	944	944
Adjusted R <sup>2</sup>	0.1966	0.2052	0.0564	0.0725
Firm FE	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes

**Panel B Individual CSR Score**

	(1) Community	(2) Diversity	(3) Employee	(4) Environment	(5) Product
Post*Treat	0.0463 (0.0446)	0.0431 (0.0405)	0.0771* (0.0409)	0.0640* (0.0328)	0.0020 (0.0498)
Size	-0.0007 (0.0237)	0.0290 (0.0301)	0.0242 (0.0439)	0.0673** (0.0275)	0.0198 (0.0302)
ROA	0.0174 (0.0550)	0.0347 (0.0606)	-0.0011 (0.0837)	0.0130 (0.0583)	0.0265 (0.0585)
Leverage	-0.0418 (0.0725)	0.0349 (0.0795)	-0.0890 (0.0998)	0.0349 (0.0866)	0.1359 (0.0912)
MTB	0.0029 (0.0059)	-0.0007 (0.0012)	0.0018 (0.0016)	0.0066** (0.0032)	0.0075*** (0.0027)
Sale growth	-0.0216 (0.0168)	-0.0031 (0.0168)	0.0067 (0.0339)	-0.0236 (0.0195)	-0.0093 (0.0270)
Big4	0.0169 (0.0430)	-0.0817** (0.0409)	0.0969 (0.0597)	0.0045 (0.0559)	0.0809 (0.0548)
Securitized assets	0.0010 (0.0010)	-0.0004 (0.0007)	-0.0002 (0.0007)	-0.0008 (0.0009)	-0.0018** (0.0009)
Bank size	-0.0082 (0.0058)	-0.0084* (0.0050)	0.0049 (0.0046)	-0.0049 (0.0056)	-0.0053 (0.0042)
Bank capital ratio	0.0151 (0.0146)	0.0201* (0.0118)	-0.0034 (0.0100)	-0.0021 (0.0102)	-0.0012 (0.0103)
Bank ROA	-0.0437 (0.0340)	-0.0432 (0.0313)	-0.0386 (0.0297)	0.0295 (0.0341)	0.0417 (0.0353)
C&I Loans	0.0033 (0.0031)	0.0013 (0.0039)	-0.0054 (0.0039)	0.0055 (0.0036)	0.0004 (0.0029)
Charge -off	-0.1226 (0.0749)	0.0111 (0.0501)	0.0844 (0.0602)	0.0588 (0.0552)	0.1079** (0.0517)
Constant	0.0385 (0.1722)	-0.2086 (0.2028)	-0.3326 (0.3205)	-0.5049*** (0.1808)	-0.2467 (0.2078)
Observations	944	944	944	944	944
Adjusted R <sup>2</sup>	0.0731	0.0375	0.1206	0.1505	0.1587
Firm FE	Yes	Yes	Yes	Yes	Yes
Year FE	Yes	Yes	Yes	Yes	Yes

**Table 7. Controlling for Concurrent Shocks**

This table examines the changes in firm-level CSR following the FAS 166/167 controlling for proxies for concurrent events. Post\*Treat is an interaction term. The indicator of Post equals one if the sample is ranged in post-regulation period, and zero otherwise. The indicator of Treat equals one if a firm borrow from a bank that has been influenced by FAS 166/167 and consolidate OBS securitization entities, and 0 otherwise. We include firm fixed effects and year fixed effects. The sample spans the period from 2007 to 2013. Firm characteristics include ln (total asset), ln (sale), sale growth, ROA, leverage, MTB, big4, and bank characteristics involve securitized assets, bank size, bank capital ratio, bank ROA, C&I Loans, and charge-off. Variable definitions are provided in the Appendix A. \*\*\*, \*\*, and \* indicate significance at the 1%, 5%, and 10% levels, respectively.

<b>Panel A: Regulatory pressure under proposed Basel III</b>		
	(1) CSR Net Score	(2) CSR Net Score
Post*Treat	0.2180** (0.0934)	0.2080** (0.0949)
Basel*Post	0.2595*** (0.0859)	0.2665*** (0.0923)
Firm characteristics	Yes	Yes
Bank characteristics	No	Yes
Observations	944	944
Adjusted R <sup>2</sup>	0.2377	0.2475
Firm FE	Yes	Yes
Year FE	Yes	Yes
<b>Panel B: Stress test</b>		
	(1) CSR Net Score	(2) CSR Net Score
Post*Treat	0.2169** (0.0955)	0.2187** (0.0971)
Stresstest*Post	0.3767*** (0.1181)	0.3581*** (0.1173)
Firm characteristics	Yes	Yes
Bank characteristics	No	Yes
Observations	924	924
Adjusted R <sup>2</sup>	0.2479	0.2568
Firm FE	Yes	Yes
Year FE	Yes	Yes
<b>Panel C: TARP</b>		
	(1) CSR Net Score	(2) CSR Net Score
Post*Treat	0.2519** (0.1001)	0.2428** (0.1009)
TARP*Post	-0.1279 (0.1075)	-0.1160 (0.1086)
Firm characteristics	Yes	Yes
Bank characteristics	No	Yes
Observations	944	944

Adjusted R <sup>2</sup>	0.2349	0.2439
Firm FE	Yes	Yes
Year FE	Yes	Yes

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**Panel D: Exposure to real estate prices**

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	(1) CSR Net Score	(2) CSR Net Score
Post*Treat	0.2604** (0.1035)	0.2529** (0.1053)
Low Exposure*Post	0.0858 (0.1125)	0.0861 (0.1129)
Firm characteristics	Yes	Yes
Bank characteristics	No	Yes
Observations	917	917
Adjusted R <sup>2</sup>	0.2332	0.2430
Firm FE	Yes	Yes
Year FE	Yes	Yes

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## Appendix A Variable Definitions

Variables	Definition	Source
<b>Firm characteristics</b>		
ln (sale)	Natural logarithm of net sales.	Compustat
Sale growth	Firm growth, the growth rate of total sales from year t-1 to year t.	Compustat
ROA	Earnings before interest, taxes, depreciation, and amortization, divided by total assets.	Compustat
Leverage	Sum of short- and long-term debt, divided by total assets.	Compustat
MTB	Market-to-book ratio, the ratio of the market value of equity (PRCC_F × CSHO) to the book value of equity (CEQ).	Compustat
Big4	An indicator variable equalling one if the company is audited by the auditing company belonging to the BIG 4, and zero otherwise.	Compustat
<b>Bank characteristics</b>		
Securitized assets	[Sum of OBS securitized assets (BHCKB705 through BHCKB711) + assets in consolidated Variable Interest Entities under SFAS 166 and 167 (sum of BHCKJ981 through BHCKJ998, BHCKK003 through BHCKK014, and BHCKK030 through BHCKK032) + maximum amount of credit exposure arising from credit enhancements provided to ABCP conduits (BHCKB806)] * 100/total assets (BHCK2170).	Bank Regulatory
Bank size	Natural logarithm of total assets (BHCK2170).	Bank Regulatory
Bank capital ratio	Total equity capital (BHCK3210)*100/total assets (BHCK2170).	Bank Regulatory
Bank ROA	Net income (BHCK4340)*100/ total assets (BHCK2170).	Bank Regulatory
C&I Loans	Commercial and industrial loans (BHCK1766)*100/ total assets (BHCK2170).	Bank Regulatory

Charge -off	[Charge-offs on allowance for loan and lease losses (BHCK4635) - recoveries on allowance for loan and lease losses (BHCK4605)] *100/total assets (BHCK2170).	Bank Regulatory
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**CSR Measures**

CSR Net Score	Net score (strengths less weaknesses) of for the five CSR categories which are Community, Diversity, Employee, Environment, and Product groups.	KLD (MSCI)
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## Chapter 5 Overall Conclusion

### 5.1 Summary of the Thesis

My thesis studies three natural experiments by respectively exploring the 1999 rulings (in chapter 2) and the adoption of FAS 166/167 (in chapter 3 and chapter 4) as exogenous shocks of the threat of class action lawsuits and a validated credit supply. By using difference-in-difference approach, my thesis explores the changes in the research area of market-based accounting (e.g., income smoothing and earnings management) as firms' responses to the shocks.

To be more specific, in Chapter 2, we study the impact of the reduced shareholder litigation risks on income smoothing. In this research, we employ the shock of the 1999 ruling which reduces the threat of shareholder litigation risks for managers. In practice, the 1999 ruling requires plaintiffs' attorneys to prove the defendants are acting with "deliberate recklessness" instead of "mere recklessness" before any class action securities lawsuits are conducted in the states of the Ninth Circuit Court (Houston et al., 2019). Taking the shock of the 1999 ruling which efficiently reduces the shareholder litigation risks and using the differences-in-differences (DID) approach, we raise a two-side hypothesis (i.e., discipline hypothesis and pressure hypothesis) in the study. Our sample spans from 1995-2003, excluding the year of 1999 when the ruling is issued. We identify the pre-period as four years before (1995-1998) and post-period as four years after the ruling (2000-2003). The firms under the jurisdiction of the Ninth Circuit Court are defined as the treated group, and the control group otherwise. The main results show a negative relation between the reduced shareholder litigation threat and the corporate income smoothing, which is consistent with our pressure hypothesis. The results show that managers' motivations to smooth earnings are negatively influenced after the adoption of the 1999 ruling which moderates the shareholder litigation threat for managers. To address the concern that our results may be driven by pre-trend differences between treatment and control firms, we perform the dynamic treatment analysis. It is confirmed that the parallel trend assumption is likely satisfied, and our main findings are unlikely to be explained by the pre-trend differences. Next, we conduct a propensity score matched sample and redo our regression to moderate the concern that the systematic differences between the treatment group (i.e., Ninth Circuit Court firms) and the control group (i.e., non-Ninth Circuit firms) can drive our main results. Using the matched sample, we repeat the baseline and find the main findings still hold, which support that our baseline findings are not driven by the systematic



differences between the treatment group and the control group.

To investigate the channels of the effect of the 1999 ruling on firm-level income smoothing, we conduct the subsample analysis. The results suggest that the negative relation between the adoption of the 1999 ruling and income smoothing would be more pronounced among firms that are more likely to experience the pressure from shareholder litigation risk. To be more specific, the relation is more significant for firms where shareholders are likely to have a short-term investment horizon, where managers have limited outside options, which are with High IVol Risk, which belong to more competitive industries, and which are with High-tech Intensity. The subsample analysis results are consistent with our expectation that the reduction of income smoothing after the 1999 ruling would be more significant in the group of firms where managers are more likely facing higher pressure from shareholders. That is, given now the 1999 ruling moderates the shareholder litigation threat for managers and partially reduces their motivations to smooth earnings, such effect should be more prominent the firms where managers take more pressure. Taken together, our main findings indicate that corporate income smoothing decreases after the 1999 ruling which is consistent with our pressure hypothesis. By subsample analysis, we further prove that such relation would be more pronounced among firms where the agents are more likely experiencing higher pressure.

Next, we conduct a battery of robustness tests to address the concern that our main results can be driven by a series of confounding laws. First, we control a group of antitakeover laws, namely directors' duties laws (DD), poison pill (PP) and business combination (BC). Second, we redo our baseline regression considering the influence of universal demand laws (UD). Third, we take the effects of Inevitable Disclosure Doctrine (IDD) and its rejection RIDD into consideration. By adding the confounding laws sequentially into our estimation, we confirm that our main findings hold after controlling the laws which may potentially explain our results.

My chapter 3 extends the investigation in accounting manipulation and explores the relation between the adoption of FAS 166/167 and firm-level earnings management. As suggested in a stream of literature, one of the motivations of firms to manage their earnings is transferring private information to the market (e.g., Dutta and Gigler, 2002; Bartov and Mohanram, 2004) and enhancing firms' performance in the financial markets (e.g., Das et al., 2011; Defond and Zhang, 2014 ). Especially, it is noticeable that beating earnings benchmarks can help firms to

acquire benefits in the debt market and reduce their costs of debt (Jiang, 2008). To further explore whether firms can use earnings management to respond to the credit supply shock and explain the firms' potential motivations to manage earnings, we employ the exogenous shock of banks' adoption of FAS 166/167 and test the changes in corporate earnings management. Effective on January 1, 2010, FAS 166 /167 jointly tightens accounting rules of securitizations and the consolidation of variable interest entities (VIEs), which consequently pushes banks to realize an estimated eight hundreds of billions of off-balance sheet securitized assets (e.g., Ryan, 2017; Dou and Xu, 2021). The adoption of FAS 166/167 is proved as a validated credit shock by extant studies, as it is suggested that the rulings negatively influences banks' loan supply and reduces assets held by their consolidated VIEs (Dou et al., 2016), decreases mortgage approval rates (Dou et al. 2018), reduces the balance of securitized credit card loans (Tian and Zhang, 2016) and negatively affects the aggregate small business lending (Dou, 2021). Collectively, as Ryan (2017) suggested, the influence of the adoption of FAS 166/167 is significant enough to banks' stability-related decision making. Given now the adoption of FAS 166/167, as a validated credit shock, tightens bank lending, it is reasonable to expect that borrowers can perceive such changes of their lenders and have motivations to enhance their access to finance. Based on the prior arguments on earnings management, it is conceivable that firms would enhance their earnings management which can bring potential benefits in the financial markets to firms when facing such supply shock. Thus, in this chapter, we test the relation between the adoption of FAS 166/167 and firm-level earnings management and raise the hypothesis that corporates would increase their earnings management to respond to the validated credit shock.

In this study, we use a sample spanning from 2007 to 2013, identifying the pre period as three years before the adoption of FAS 166/167 (i.e., 2007-2009) and the post period as four years after (i.e., 2010-2013). We identify the lenders using the Schedule HC-V of FR Y-9C reports where VIEs' related information is involved, before matching their borrowers according to the loan-level data from the database of Thomson Reuter's DealScan. Following Dou and Xu (2021)'s research, we assign the bank characteristics to firm observations and weight the bank characteristics according to the loan amount.

Our sample only involves corporates which at least borrowed one loan before and after the regulation. A firm is identified as a treated one if the firm borrowed at least one loan in both pre and post periods from the same influenced bank or a control firm if the firm borrowed

only from unaffected banks in both periods. And we exclude financial institutions and utilities (SIC code 6000–6999 and 4900–4999) from our sample. Next, we use propensity score matching to address the concern that the treatment group and control group may be unbalanced. The propensity score is performed based on the nearest-neighbour method without replacement (caliper=0.05). More matching details can be found in my chapter 3. Our final matched sample consists of 404 firms and 2091 firm-year observations. To moderate the issue of outliers, all the variables are winsorized at the 1st and 99th percentiles.

Using the final matched sample, we find a positive spillover effect of banks' adoption of FAS 166/167 on corporate accrual-based earnings management, whilst no such evidence is found in real earnings management. In this study, we use Jones' (1991) abnormal accruals model and Modified Jones (1991) model according to Dechow et al. (1995) to measure the accrual-based earnings management, while the real earnings management is captured by abnormal level of cash flow from operations, abnormal production costs, and abnormal discretionary expenses. Further, the dynamic treatment analysis is performed to address the concern that our main findings may be driven by pre-trends differences between the treatment and control groups. We also confirm that our main findings are unlikely to be driven by systematic differences between the treatment group and the control group by conducting the falsification tests. To provide insights regarding to the positive spillover effects of the adoption of FAS 166/167 on corporate earnings management, we next test the cross-sectional variations. The results suggest that the relation is more significant when firms are more sensitive to the shocks on credit availability. First, we argue that the relation is more significant among financially constrained firms which are more likely to be influenced by the credit shocks. Second, the results of subsample analysis support that the positive spillover effect of the adoption of FAS 166/167 on earnings management is more pronounced when firms' monitoring is relatively weaker. Collectively, we find that such relation is stronger among firms which are financially stressful and with lower-level governance.

Furthermore, our main findings are robust to a battery of concurrent events. Given our sample spans from 2007-2013 which covers the financial crisis, which triggers a series of financial reforms in the banking system, following Dou and Xu (2021)'s research, we take concurrent events into consideration and redo our main regression. Our results hold after involving the concurrent events of Basel III, Stress test, Troubled asset relief program (TARP), and Real estate prices. The results indicate that our main findings are not likely to be explain by

concurrent events.

My chapter 4 extends the line of chapter 3 and further explores whether there is a spillover effect of the adoption of FAS 166/167 on corporate CSR performance. The recent literature shows divergence in the firms' motivation of CSR. That is, some scholars argue that superior CSR performance will contribute to firm value (e.g., Roy et al., 2022), while the other stream of literature points out that CSR is a consequence of the agency problem (e.g., Borghesi et al., 2014). In this study, we explore the corporate CSR performance by a natural experiment (i.e., taking FAS 166/167 as an exogenous shock) and try to partially explain the motivation of firms to enhance their CSR performance. On one hand, according to Cheng et al. (2014), superior CSR performance can enhance firm value by improve firms' access to finance. Consistent with this line, other scholars also argue that CSR can benefit firm value by enhancing stakeholder engagement (e.g., Banker et al., 2022), reducing the information asymmetry between insiders and outsiders (e.g., Mishra, 2017), and benefit firms in capital market (e.g., Roy et al., 2022). Given now the validated credit shock of the adoption FAS 166/167 pushes banks to realise more risk and have to tend to tighten their lending, it is conceivable that the borrowers are more likely to enhance their access to finance under such credit shock. Thus, we expect that firm-level CSR, which is believed to be enhancing firms' access to finance, will increase after their lenders adopt FAS 166/167. On the other hand, as the other stream of literature suggests, to some extent, corporate CSR activities are driven by CEOs' managerial benefits (e.g., Petrenko et al., 2016). As previously stated, FAS 166/167 is working as a validated credit shock. It is plausible that managers can perceive the credit shock and will limit their own self-benefiting behaviours according to Jensen's (1986) free cash flow theory. Here, we have the hypothesis that managers would reduce their CSR investment after the adoption of FAS 166/167. Collectively, we raise a two-side hypothesis in chapter 4 that corporate CSR will not be influenced by FAS 166/167.

In chapter 4, the approach of differences-in-differences (DID) is employed. Only including firms at least borrow one loan in both pre and post periods, we identify firms which borrowed at least one loan in both pre and post periods from the same influenced bank. And firms which borrow only from uninfluenced banks in both periods are control ones. Our sample spans from 2007 to 2013, setting 2007 to 2009 as the pre period and 2010 to 2013 as the post period. And the financial industry (SIC code 6000–6999) and utilities industry (SIC code 4900–4999) are excluded. To moderate the effect of outliers, the continuous variables are

winsorized at the 1st and 99th percentiles. We conduct the sample using the propensity score matching with nearest-neighbour method and a caliper of 0.05, to address the potential concern that the treated and control firms might be unbalanced. After matching, our final sample involves 402 firms and 2076 firm-year observations.

Consistent with Davidson et al. (2019), we focus on five main dimensions of CSR and find that the firm-level CSR performance significantly increases after the lenders adopt FAS 166/167. That is, the results suggest that the corporates increase CSR performance after their lending banks adopt FAS 166/167 and consolidate securitization entities. To address the concern that the positive spillover effect of the adoption of FAS 166/167 on firm-level CSR might be driven by pre-existing divergent trends, we perform the dynamic treatment analysis and confirm that the increases in CSR can be only observed in post-years which means our main findings can not be found by pre-trends discrepancy. Next, to moderate the concern that the systematic differences between treated and control firms can explain our results, the falsification test is conducted using a falsification sample spanning from 2003-2009.

Especially, there might be one concern that our main findings may be explained by persistent influence of the financial crisis on the bank's securitization (e.g., Loutskina, 2011; Acharya et al., 2013; Covitz et al., 2013). The results of the falsification test indicate that the increase in corporate CSR is not likely to be driven by the financial crisis. Further, our main results are robust to a set of concurrent events. Spanning from 2007-2013, our sample covers the financial crisis period and may bring the concern that our main results may not be robust to a battery of financial reforms in the banking system. To address such concern, concurrent events (i.e., Basel III, Stress test, Troubled asset relief program, and Real estate prices) are taken into regression. Our main results still hold after taking concurrent events into consideration.

To explore the channels, we provide empirical evidence that such positive spillover effect is more prominent for firms which are more financially constrained, with stronger external monitoring and higher risk-taking level. In short, we suggest that the positive spillover effect of the adoption of FAS 166/167 on firm-level CSR would be more significant among firms which are more likely sensitive to the validated credit shock.

## 5.2 Contribution

My chapter 2 potentially contributes to three aspects. First, we provide evidence for the role of shareholder litigation right on accrual-based income smoothing. Especially, we find that the effect of shareholder litigation on income smoothing is more significant among firms where managers are more likely to have higher pressure, providing insights on how the role of shareholder litigation motivates managers' income smoothing decisions. Secondly, our study partially reveals the managers' motivation of income smoothing. We find the decreases in income smoothing after the 1999 ruling which suggesting that shareholder litigation threat, or we say the job security, partially explains the CEOs' motivation to smooth earnings. Third, our findings may contribute to the policymakers and practitioners' understanding of the role of shareholder litigation during the process of corporate governance.

Our study in chapter 3 mainly contributes to two streams of literature. First, my chapter 3 provides empirical evidence for the effects of the adoption of FAS 166/167. Dou and Xu (2021) suggest that the validated credit shock of the adoption of FAS 166/167 negatively influences firm-level innovation. Especially, in this study, we discuss the spillover effect of accounting requirement changes of banking system (i.e., FAS 166/167) on corporates' accounting manipulation. We suggest that firm-level earnings management increases as a response to the validated credit shock. Second, my chapter also contributes to the understanding of whether and how bank lending would affect their borrowers accounting decisions. Also contributing to this line, Wu et al. (2022) argue that creditors' credit default swaps (CDS) trading has an effect on borrowers' earnings management decision. By exploring the accounting requirement changes on banks, we add knowledge to literature that firms are increasing their earnings management under the credit shock of their lenders as responses. Additionally, our research can provide empirical evidence for the accounting and regulatory rules design.

The research of chapter 4 potentially contributes to three aspects. First, the paper contributes to our understanding of the spillover effect of the adoption of FAS 166/167 on corporate governance. This study provides empirical evidence that firms respond to the credit shock by enhancing their CSR performance. Second, the main findings of my chapter 4 are consistent with the stream of literature that CSR can contribute to firm value creation (e.g., Dhaliwal et al., 2011; Cheng et al., 2014 ). We argue that superior CSR performance can be used by borrowers to partially answer the validated credit shock. Third, we provide the accounting and

regulatory rules designers with the corporate responses to the adoption of FAS 166/167.

Taken together, my thesis contributes to the stream of literature on the impact of law-level changes on firm-level corporate governance, investigating the 1999 ruling in chapter 2 and banks' adoption of FAS 166/167 in chapter 3 and chapter 4. Also, we offer the empirical evidence on the area of market-based accounting research (MBAR) to relevant policymakers, especially tending to reveal the influence of the firms' adoption of the 1999 ruling and the banks' adoption of FAS 166/167.

### **5.3 Limitation**

My thesis, all the three chapters, takes the differences-in-differences (DID) approach, using external shocks (the 1999 ruling in chapter 2 and FAS 166/167 in chapter 3 and chapter 4) and conducting quasi-natural experiments. By using the DID approach, I claim that the reverse causality issue can be moderated in my thesis. That is, in my chapter 2, exploring the shock of the 1999 ruling, we find that income smoothing decreases due to reduced shareholder litigation risks. Given we are using an exogenous shock (i.e., the 1999 ruling), it is unlikely that the issue of the 1999 ruling is driven by decreased income smoothing. In chapter 3, using the external shock of FAS 166/167, we argue that borrowers increase their earnings management to respond to the credit shock. And the reverse causality issue, which assumes that the increased corporate earnings management triggers the issue of FAS 166/167, not likely holds. Similarly, in my chapter 4, the increased corporate CSR is unlikely to trigger the issue of FAS 166/167, which moderating the concern of the reverse causality issue as well. Especially, in chapter 3 and chapter 4, the setting of FAS 166/167 tests the spillover effect of bank-level accounting requirement changes on their borrowers, further addressing the reverse causality concern given such accounting requirement changes are not likely to be driven by firm-level issues.

However, at empirical level, my chapters have limitation respectively. First, as a recent research points out, when using the DID approach, reusing the same setting after a natural experiment is initially employed could lead to false positive results (Heath et al., 2022). In my chapter 2, the setting of the 1999 ruling is employed in a set of existing studies which also focus on the reduced shareholder litigation risks (e.g., Huang et al., 2020; Arena et al., 2021). As the setting of the 1999 ruling is reused, there might be one potential concern that the reduction of income smoothing after the 1999 ruling may attribute to other issues proved in

extant literature instead of the 1999 ruling itself. To address such concern, as Heath et al., (2022) suggests in their study, alternative measures of the shareholder litigation risks are expected to be performed as robustness checks. In chapter 2, we redo the regression with alternative measures of the shareholder litigation risks as a robustness check. However, as for the setting of chapter 3 and chapter 4, the setting of spillover effect of FAS 166/167 on borrowers is relatively less tested in existing literature. To our best knowledge, the spillover effect of the adoption of FAS 166/167 is only discussed in Dou and Xu (2021)'s research, suggesting that borrowers' innovation is negatively influenced due to the validated credit shock. Thus, we have not conducted alternative measures for the influence of validated credit shock and argue that the concern of reusing a setting would be more moderated in chapter 3 and chapter 4. It would still be optimal if we can conduct alternative measures of the influence of bank lending and accordingly perform a robustness test. Second, both of my chapter 3 and chapter 4 employ the DID approach, where treatment group and control group should be properly identified. Focusing on the spillover effect of lender-level accounting requirement changes, the identification of treatment borrowers and control borrowers strictly refer to their loan contracts and lending relationship. As a result, the sample size is limited in both chapter 3 and chapter 4. Third, using the DID approach, it is unavoidable that my chapters have to face the potential drawbacks of the approach. For example, as Bertrand et al. (2004) suggest, in DID estimation, the frequently used dependent variables may bring the concern of high probability of being positively serially correlated.

Simultaneously, to further enhance the research in chapter 3 and chapter 4, the mixed method can potentially provide insights into the relevant results. In chapter 3, we find that the validated credit shock pushes the borrowers to increase their earnings management level. It would be optimal if interviews with the borrowers' managers could be organized. Using the data from the interviews, we may provide insights into how managers understand the role of accounting manipulation during the credit shock and their potential motivation to enhance earnings management during the shock. Similarly, in chapter 4, we suggest that borrowers improve their CSR performance as response to the validated shock of FAS 166/167. Such findings can also be further explained by organizing interviews with managers where insights into the motivation to enhance CSR performance during the credit shock might be given. Especially, the interviews might provide insights into how superior CSR performance can enhance firm's access to finance. In both research of chapter 3 and 4, we only use the quantitative method and employ data from secondary database.



## 5.4 Directions for Future Research

My chapters are meaningful and may provide directions for the future studies. My chapter 2 provides evidence that managers reduce their income smoothing after the 1999 ruling and argues that the threat of shareholder litigation risks, or agents' job security, can partially motivate CEOs to smooth earnings. As Fudenberg and Tirole (1995) claim, managers' job pressure may be an explanation of income smoothing activities. Consistent with this line, Bushee (2001) indicates that investors would be inclined to associate volatile earnings or failures to meet income expectations with management failures. However, the variety of managers' job pressure is still unclear. To be more specific, we find the threat of shareholder litigation is associated with income smoothing and argue that the threat can be explained as managers' job pressure. The future studies can further explain CEOs' job pressure apart from the threat of shareholder litigation and provide insights on how and to what extent managers' job pressure influence accounting manipulation. Also, the relation between the reduced shareholder litigation risks of 1999 ruling and accounting quality can be further examined. For instance, the relation between the adoption of 1999 ruling and accounting conservatism can be explored. According to our research, CEOs will be less stressful on accounting manipulation when the threat of shareholder litigation is moderated. Given now CEOs' job security pressure can partially explain their motivations of accounting manipulation behaviours, then we expect such evidence can be found when exploring the firm accounting conservatism. Consistent with this line, it seems plausible that accounting conservatism level drops after the adoption of the 1999 ruling, which reduce the threat of shareholder litigation for CEOs.

My chapter 3 can also provide directions for future studies. In the research of chapter 3, we explore the effect of bank-level accounting requirement changes on borrower-level (firm-level) earnings management. Our findings suggest that the borrowers respond to the validated credit shock by increasing their earnings management level. First, future studies can focus on the influence of bank lending on corporate earnings management. Consistent with this line, Wu et al. (2022) focus on credit default swaps (CDS) and prove that creditors' financial innovations trading influence corporate earnings management. However, it is still not clear whether other banking issues can have a spillover effect on corporate accounting quality. To be more specific, for example, whether bank merger has a spillover effect on borrowers' accounting manipulation is still not clear. Also, whether the loan-level changes would have an effect on firm accounting quality deserves further discuss. Second, the spillover effect of the

adoption of FAS 166/167 on firm-level corporate governance can be further explored. In chapter 3, we provide evidence that the bank-level shock (i.e., FAS 166/167) can be prominent enough to influence their borrowers' accounting manipulation strategy. Our study is consistent with the research line of Dou and Xu (2021), which arguing the shock negatively influences corporate innovation. However, it is still not clear whether and to what extent the adoption of FAS 166/167 would have a spillover effect on other corporate aspects. For instant, it deserves exploration that whether there is a relation between the shock and corporate tax avoidance. That is, it is suggested that tax avoidance can improve a firm's after-tax cash flow (Arena et al., 2021). Given now the shock tightens the bank lending and corporates are proved to respond to it by cutting innovation expenses (Dou and Xu, 2021) and increasing earnings management, it seems that borrowers also have motivation to enhance their tax avoidance which can potentially relieve their pressure on cash flow after the credit shock. In other words, firm-level tax avoidance may increase after the banks' adoption of FAS 166/167. Third, in this research, we only focus on the adoption of FAS 166/167, while the financial crisis also triggers other accounting requirement changes (e.g., loan loss reserving and fair value measurement). More arguments and details about the accounting requirement changes towards the banking system can be found in Ryan (2017)' research. The future studies can explore the effect of such changes on the banking system as well as the spillover effect on their borrowers if the changes are proved as validated credit shocks.

My chapter 4, which focuses on the spillover effect of the adoption of FAS 166/167 on corporate CSR, can also trigger meaningful thoughts for future studies. My chapter 4 finds that borrowers enhance their CSR performance after their lenders adopt FAS 166/167. And we suggest that the positive effect of the adoption of FAS 166/167 on corporate CSR performance is more prominent when firms are more financially stressful, which are with stronger external monitoring, and which are riskier, respectively. First, our research suggests the positive relation between the consolidation of Variable Interest Entities (VIEs) and corporate CSR performance. Similarly to my chapter 3, the findings of chapter 4 contribute to the line of literature which focus on the spillover effect of the adoption of FAS 166/167 on corporates (e.g., Dou and Xu, 2021). Second, to some extent, our findings provide evidence for the line of literature which emphasizes the valuation of superior CSR performance to firm value (e.g., Cheng et al., 2014; Bardos et al., 2020). Exploring a validated credit shock, we find that corporates enhance their CSR performance as a response to the credit shock from their lenders. And such effect would be more significant when firms are more pressing and

sensitive to the access to finance. According to our findings, it is reasonable to argue that enhancing CSR performance is a potential mechanism for borrowers to increase their reputation as well as creditability during the credit shock.

Taken together, my thesis contributes to revealing the effects of corporate-level and bank-level shocks on corporate governance. Especially, we explore the how the market-based accounting issues changes as corporates' responses to the external shocks. My thesis may also provide potential directions for the future studies. First, my thesis suggests that accounting manipulation could be taken by firms as responses to the external shocks (e.g., changes of law or requirement). In other words, the motivation of accounting manipulation could be partially explainable by the firms' external pressure. Future studies can further explore what and how the existing external shocks (e.g., accounting requirement changes) will change firm-level accounting manipulation. Second, my thesis, especially chapter 3 and chapter 4, provides a view that the external shocks (i.e., FAS 166/167) on lenders would have a spillover effect on their borrowers. In chapter 3, we indicate that borrowers increase their earnings management level to respond to the shock of FAS 166/167, while chapter 4 suggests that borrowers enhance their CSR performance after the same shock. In the future, scholars may explore more about how the validated credit shock would have a spillover effect on the borrowers. To be more specific, it is still unclear that whether corporates would respond to the credit shock of FAS 166/167 by enhancing tax avoidance behaviours. Also, it is explorable that whether corporate-level accounting conservatism would change as a response to the credit shock.

## Overall Introduction and Conclusion Reference

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