Taiwan Accounting Review
Vol. 19 No. 2 pp. 285-326 (2023)
DOI:10.6538/TAR.202312_19(2).0004

Mandatory Consolidation and Stock Price Crash Risk: Evidence from the U.S. Bank Holding Companies

Audrey Wen-hsin Hsu[1] **Hsin-Tsai Liu**[1, 2]

[1] Department of Accounting, National Taiwan University
[2] Center for Research in Econometric Theory and Applications, National Taiwan University

Corresponding author: Hsin-Tsai Liu
Address: No. 1, Sec. 4, Roosevelt Rd., Zhongzheng Dist., Taipei City 100046, Taiwan (R.O.C.)
E-mail: htliu@ntu.edu.tw
Received: September 22, 2023; After 2 rounds of review, Accepted: November 23, 2023

Abstract

We investigate whether bank securitization activities are associated with opacity and, thus, future stock price crash risk and whether the mandatory changes in consolidation and disclosure requirements for qualifying special purpose entities (QSPEs hereafter) in accordance with SFAS 166/167 in the U.S. are associated with banks' opacity and future stock price crash risk. Consistent with the notion that complex off-balance-sheet securitizing transactions increase bank opacity and provide more room for bank executives to hoard bad news, we find that U.S. bank holding companies with a higher prevalence of securitization engagement are associated with higher future stock price crash risks. Moreover, we argue that the consolidation of QSPEs required under SFAS 166/167 reveals previously hidden assets, liabilities, revenues, etc., making securitizing activities more transparent. We document that the regulatory changes of SFAS 166/167 in enhanced disclosure and the consolidation of previous off-balance-sheet activities effectively decrease stock price crash risk.

Keywords: special purpose entity (SPE), SFAS 166/167, securitization, stock price crash risk

---

Hsin-Tsai Liu acknowledges the financial support from the National Science and Technology Council in Taiwan (NSTC. 105-2410-H-002-038) and the Center for Research in Econometric Theory and Applications (Grant no. 112L900201 from The Featured Areas Research Center Program within the framework of the Higher Education Sprout Project by the Ministry of Education (MOE) in Taiwan.

Data availability: Data used in this study are available from public sources identified in the study.

TAA
東華書局
Tung Hua Book Co., Ltd.

1. Introduction

Morgan (2002) suggests that banks are inherently more opaque than firms in other sectors because of the assets, particularly loan and trading securities, they hold. Wagner (2007) and Dewally and Shao (2013) also show that the financial derivatives banks typically have to hold for hedging purposes adversely affect banks' informational transparency. Moreover, banks usually transfer (sell) financial assets (primarily their loans) to special purpose entities (SPEs hereafter) or named variable interest entities (VIEs hereafter)[1] to conduct securitizations. By doing so, credit risk is removed, cash is received and recognized on the balance sheet, and earnings are recognized as loans are sold, providing banks with the regulatory capital arbitrage to raise additional lending activities. In turn, securitization has been a key tool for bank funding, regulatory capital saving, risk management, and performance improvement over the last two decades. However, securitization transactions are so complex that it is difficult for market participants to fully understand the risks arising from them (e.g., Chen, Liu, and Ryan 2008).

In response to the Enron scandal, in which Enron had used hundreds of SPEs to hide its debts and overstate equities and earnings by 2001, the FASB released FIN 46(R) in 2003 to address the misuse of SPEs. Prior to the implementation of FIN 46 (R), ARB 51: *Consolidated Financial Statements* regulated the scope of consolidated entities. ARB 51 had generally been applied to subsidiaries in which an enterprise had a majority voting interest. Under the voting interest approach, VIEs usually do not meet consolidation criteria and stay off-balance sheet.

Yet the fact that certain VIEs have relationships similar to those of consolidated subsidiaries but are exempt from consolidation creates a loophole for enterprises to manipulate the scope of consolidation. Hence, one of the goals of FIN 46(R) is to close this loophole. For example, an asset-backed commercial paper (ABCP) conduit is considered a stand-alone reporting entity, and its financial statements are not consolidated by its sponsor prior to FIN 46. Nonetheless, considering the liquidity support and credit enhancement provided to the ABCP conduit by the sponsor, the sponsor is deemed the primary beneficiary and should consolidate it (Bens and Monahan 2008).[2]

Even though the FASB had started regulating the consolidation issues of VIEs by FIN 46(R), the qualifying special purpose entities (QSPEs hereafter)[3] which are "brain dead" passive

---

[1] Not all SPEs are VIEs, but substantially all securitization SPEs are VIEs. (Deloitte & Touche, 2010). We view VIE and SPE as similar terms in this study.

[2] The primary beneficiary of a variable interest entity is the party that absorbs a majority of the entity's expected losses, receives a majority of its expected residual returns, or both, as a result of holding variable interests, which are ownership, contractual, or other pecuniary interests that change with changes in the fair value of the entity's net assets excluding variable interests (FIN 46(R), 2003, p.3).

[3] The criteria for QSPEs are prescribed in SFAS 140, paragraph 35.

entities designed to receive assets transferred by the sponsoring firm and pass through the cash flows from those assets to the investors, are generally exempt from consolidation pursuant to FASB Interpretation No. 46(R). Banks can use QSPEs to leave securitizing activities off the balance sheet and avoid 8-10% capital reserves under the Basel accords, facilitating regulatory arbitrage while remaining within the scope of the law. Especially since 2003, securitization has become a mechanism to avoid capital-adequacy regulations, leading banks to excessive lending and higher leverage (Acharya and Richardson 2009). The nature of QSPEs has also changed as banks have sought to conceal more aggressive securitization transactions within QSPEs so that QSPEs are no longer the passive "flow-through" entities and instead contain complex mortgage securitizations of lower-rated tranches of asset-backed securities (ABS) through re-pooling, such as collateralized debt obligations (CDOs) and collateralized loan obligations (CLOs). Significant growth in securitization transactions contributed to the growth in the U.S. mortgage (credit) markets and the subsequent housing boom that collapsed (Acharya and Richardson 2009).

The causes of the U.S. sub-prime mortgage crisis of 2007-2009 continue to be a source of debate, among which, accounting rules that allowed banks off-balance-sheet activities via QSPEs attract much criticism (Heilpern, Haslam, and Andersson 2009; Financial Crisis Inquiry Commission 2010). In response to the pressure and criticism, in June 2009, the Financial Accounting Standards Board (FASB) published the Statement of Financial Accounting Standards [FAS] 166/167. First, SFAS 166 eliminates the FIN46 (R) scope exception for QSPEs, and sponsors need to evaluate their risks and interest in the VIEs they sponsor and determine whether they are the primary beneficiary, in which case they need to consolidate the VIEs (i.e., before the adoption of SFAS 166, some VIEs could be set to QSPEs and enjoy consolidation exemption). Second, SFAS 167 adds the qualitative test to determine whether the sponsor is the primary beneficiary of a VIE. In addition, SFAS 166/167 requires firms to disclose key information related to consolidated VIEs. Consequently, SFAS 166/167 closes the accounting disclosure loophole in order to "enhance disclosures to provide financial statement users with greater transparency about transfers of financial assets" (FASB 2009a). We expect that the new accounting treatments make it easier for financial statement users to determine who ultimately controls QSPEs and bears the risks as well as the magnitude of banks' exposure (Credit Suisse Equity Research 2010; Deloitte & Touche 2010; Rosenblatt, Mountain, and Kenyon 2010; Oz 2020).

Motivated by the criticisms leading up to the issuance of SFAS 166/167, this study first investigates whether the prevalence of securitizing activities adversely affects banks' information transparency and increases future stock price crash risks. Previous empirical studies of the impact of securitization on the issuing banks have suggested a positive association between securitization and bank risks (e.g., Franke and Krahnen 2005; Haensel and Krahnen 2007; Chen et al. 2008; Dionne and Harchaoui 2008; Landsman, Peasnell, and Shakespeare 2008; Barth, Ormazabal, and Taylor 2012) and the opportunistic use of securitization to manage earnings (Dechow and Shakespeare 2009; Dechow, Myers, and Shakespeare 2010). Based on Jin and Myers'

(2006) findings that informational opacity is a contributing factor to future stock crash risk, we hypothesize and relate the specific informational opacity associated with securitization to banks' future stock price crash risk for two reasons. First, the common understanding is that a lower level of transparency facilitates bad news hoarding behaviors and such behaviors may trigger stock price crashes when accumulated negative information suddenly becomes publicly available (Jin and Myers 2006; Hutton et al. 2009). Information about securitizing transactions within the QSPE scope is considerably opaque (Cheng, Dhaliwal, and Neamtiu 2011). Consolidation exemptions under SFAS 140/FIN 46(R) do not allow financial statement users to accurately evaluate banks' QSPE exposure and risks. Bank executives can easily hold bad news via off-balance-sheet activities in QSPEs. Second, prior studies such as Dechow and Shakespeare (2009) and Dechow et al. (2010) find that banks appear to use securitizations to manage earnings. Thus, the opacity and opportunities for earnings management inherent in securitization and off-balance reporting can facilitate management's temporary withholding of bank-specific bad news only up to a certain point; eventually, there will be a sudden disclosure of stockpiled bad news, which may lead to a price crash. Our empirical results indicate that the U.S. bank holding companies with a higher prevalence of securitization engagement are associated with higher future stock price crash risks.

We further investigate whether the evolution of accounting standards (pre-and post-SFAS166/167 periods) regarding QSPE consolidation and disclosure improves securitizing banks' information transparency and reduces the likelihood of stock price crash. Using the change from FAS 140/FIN 46(R) (consolidation exemption regime) to SFAS 166/167 (mandatory consolidation regime), we exploit the difference-in-differences research design that compares crash risk for banks with QSPE exposures versus banks without QPSE exposures during the pre- and post-166/167 time periods. We document that the regulatory changes of SFAS 166/167 in enhanced disclosure and the consolidation of previous off-balance-sheet activities effectively decrease crash risk.

This study contributes to the literature in several aspects. First, the complexity and opacity of securitization activities have attracted investigations and scrutiny. Cheng, Dhaliwal, and Neamtiu (2011), for example, show that asset securitization affects bank information uncertainty, increasing bid-ask spreads and analyst forecast dispersion. Ryan, Tucker, and Zhou (2016) also document that the amount of inside information such as securitization-related recourse risks, is positively associated with insider trading. We contribute to this line of research by suggesting that the difficulty of assessing the risks and economic outcomes of securitization activities makes it easier for bank managers to withhold and accumulate bad news, resulting in future stock price crash risks. Second, as we investigate whether the change from off- to on-balance-sheet accounting treatment affects securitizing banks' future stock price crash risk, this study complements existing literature on changes in accounting standards for financial statement consolidation and helps understand the effect that mandated accounting rule changes which lead

to greater transparency of the risk a bank is exposed to may have on stock price movement. Specifically, OZ (2020) finds that the information asymmetry between securitizing banks and investors significantly decreases after the adoption of SFAS 166/167. Hsu, Pourjalali, and Ronen (2023) document that the consolidated earnings of securitizing banks after the adoption of SFAS 166/167 are more informative and are more predictable for future earnings and future cash flows. We echo the findings of these studies on SFAS 166/167 by showing that the implementation of SFAS 166/167 can constrain managers' bad news-hoarding behaviors which harm equity investors. Third, this study also has potential informative value for standard setters, as SPEs are of special concern to regulators and investors after a series of accounting scandals involving SPEs, from the Enron event to the more recent subprime-mortgage crisis occurring between 2007 and 2010. Especially when the subprime mortgage market collapsed after 2007, these off-balance-sheet activities revealed their high risk and adverse effects on financial institutions. The matter of consolidation for SPEs remains relevant today. In 2022, the FASB tabled its efforts to simplify the accounting standard that governs consolidation, known as ASC 810.[4] Lastly, we contribute to the literature that examines stock price crash risk. Many studies have investigated the association between information opacity and stock price crashes (e.g., Kim, Li, and Li 2014; Kim, Wang, and Zhang 2019; Mamun, Balachandran, and Duong 2020), but most of them focus on the non-financial sectors. Using the detailed information about securitization available through the regulatory reports of U.S. banks, our study complements the previous studies on entity opacity and stock price crash risk.

The rest of the study is organized as follows. We discuss the institutional background and review related literature in Section 2 and develop our hypotheses in Section 3. In Section 4, we discuss our sample and outline the research design. Section 5 reports the empirical results and Section 6 discusses the supplementary analysis. We conclude in Section 7.

2. Institutional Background and Related Literature

2.1 Accounting Treatment for Special-Purpose Entities prior to SFAS 166/167

Securitization has been an important activity in many large bank holding companies. It allows banks to isolate the financial risks inherent in lending activities, convert illiquid loans into liquid securities, and reduce regulatory capital by converting on-balance assets and liabilities to off-balance.

[4] In response to feedback regarding consolidation treatment, the FASB focuses on the prospect of developing a unified consolidation model for business entities as a potential replacement for the existing variable interest entity (VIE) and variable ownership entity (VOE) models. The Update can be found on the FASB's website at https://www.fasb.org/index.shtml.

A typical securitization transaction involves a sponsor (a securitizing firm, usually a bank) who transfers a pool of financial assets with a series of cash flows, for example mortgages, loans, and leases, to an SPE, which finances the purchase of the financial assets by issuing asset-backed securities (ABSs hereafter) collateralized by the original pool of transferred financial assets (see Niu and Richardson 2006; Landsman et al. 2008; Chen et al. 2008). Transfers of financial assets are accounted for as sales if they meet FAS 140's surrender-of-control requirement.

The accounting standard related to SPEs has evolved over time. Before Enron's failure, SPEs were not required to be consolidated into the sponsor's financial statements but were left "off-balance-sheet." Thus, SPEs are one of the tools used by Enron to avoid reporting assets and liabilities and to defer losses (Powers et al. 2002). In response to the Enron accounting scandal, the FASB issued in January 2003 and revised in December 2003, FIN 46 (R), *Consolidation of Variable Interest Entities* (hereafter referred to as FIN 46R), which states that if firms have a variable interest in another entity (i.e., a firm's interest is tied to another entity's change in fair value of net assets), they are deemed to be related to these VIEs; furthermore, if they are primary beneficiaries of the VIEs (i.e., hold the majority of the risks and rewards associated with the VIE), firms are deemed to have controlling financial interest in and must consolidate the VIEs, whether or not they hold a majority voting interest in the entity. However, FIN 46R allows QSPEs to remain off the balance sheet. More specifically, FAS 140 establishes the criteria an entity must satisfy to be a QSPE, which include demonstrative distinction from its sponsor, limits on permitted activities, limits on assets a QSPE can hold, and limits on sales, exchanges, or distributions of its assets. QSPEs, which can be viewed as a special type of SPE, should only passively accept assets transferred to them, receive and distribute the cash flows related to the assets, and not be involved in decision-making. Nor does a QSPE have the power to choose whether or when it disposes of the assets. "If the QSPE isn't totally brain dead, it must at least be on automatic pilot (Rosenblatt and Johnson 2001). FIN 46R, in 2003, designated consolidation exceptions for QSPEs.

For transfers of financial assets that qualify for sales accounting, the use of QSPEs ensures that the securitized assets and related debt stay off the bank's balance sheets. Hence, with favorable accounting treatments (i.e., FIN 46R's explicit exception for consolidation of QSPEs), banks can follow the rule-based guidance in accordance with FAS 140 to construct QSPEs to conduct off-balance-sheet securitization activities. Even when a bank is not able to create a QSPE, a bank can create a VIE in which the bank is not the primary beneficiary (i.e., the bank does not hold most of the risks and benefits associated with the entity) to waive consolidation.

2.2 SFAS 166/167

QSPEs are supposed to comprise only the "easy-to-understand" transactions such as credit card receivables and auto loans. However, firms sought to hide more aggressive securitization transactions within QSPEs, which therefore became full of complex and opaque transactions,

leading QSPEs to be blamed for the financial crisis of 2007-2009. In 2009, the FASB issued SFAS 166, "*Accounting for Transfers of Financial Assets, An amendment of FASB Statement No. 140,*" to eliminate QSPEs as exceptions to consolidation and broaden the scope of entities that need to be consolidated. The FASB also issued SFAS 167, *Amendments to FASB Interpretation No. 46R,* which expands the definition of *primary beneficiary* specified in FIN 46(R)[5] and replaces the quantitative consolidation decision process with a qualitative assessment focusing on the sponsor's power to direct VIE activities. SFAS 167 also introduces new disclosures not previously required (Deloitte & Touche 2010). For example, a reporting enterprise must present the assets and liabilities of a consolidated VIE separately on the face of the statement of financial position.[6]

By eliminating the concept of a qualifying special-purpose entity (QSPE)[7] and replacing the quantitative approach for determining the primary beneficiary (PB) of a VIE with a qualitative assessment, SFAS 166/167 are expected to bring more assets and liabilities of VIEs back on to the consolidated balance sheet (Rosenblatt et al. 2010). Among all the industries, financial institutions are believed to be affected the most, just as the FASB anticipated[8]. On the day of the release of SFAS 166/167, Robert Herz, the former chairman of the FASB stated as follows to reemphasize the goal of the revision of the new accounting rules.

"These changes were proposed and considered to improve existing standards and to address concerns about companies who were stretching the use of off-balance sheet entities to the detriment of investors. The new standards eliminate existing exceptions, strengthen the standards relating to securitizations and special-purpose entities, and enhance disclosure requirements. They'll provide better transparency for investors about a company's activities and risks in these areas (FASB, 2009c)."

The adoption of SFAS 166/167 also brings the US GAAP standards on SPEs and QSPEs closer in line with the IFRSs, which require an SPE's assets to be consolidated if the vehicle is controlled by the sponsor firm.

2.3 Securitization and Special-Purpose Entities

Prior research investigates many aspects of the risk embedded in securitization. For example, Landsman et al. (2008) find that although all sample firms account for asset

---

[5] A primary beneficiary should satisfy both conditions: have (a) the power to direct the activities of a VIE that most significantly impact the entity's economic performance and (b) the obligation to absorb losses of the entity that could potentially be significant to the VIE or the right to receive benefits from the entity that could potentially be significant to the VIE (SFAS 166, paragraph 1A.).

[6] See SFAS 167, paragraph 22A.

[7] The criteria for QSPEs are prescribed in SFAS 140, paragraph 35.

[8] News Release 06/12/09. Available from https://www.fasb.org/page/getarticle?uid=fasb_NewsRelease06-12-09Body_0228221200

securitizations as sales, the market views such transferred assets and liabilities as still belonging to the sponsor, not the SPE. Chen et al. (2008) measure securitizing banks' risk via stock return volatility (i.e., securitizing banks' equity risk) and find that securitizing banks retain more risk when the types of loans have higher credit risk and/or less externally verifiable credit risk (i.e., commercial loans are riskier than consumer loans and mortgages) and when the loans are closed-ended and banks retain larger contractual interest in the loans. Barth et al. (2012) investigate the securitizing firm's risk from the perspective of creditors and find that credit risk is positively associated with both the firm's retained interest (on the balance) and the portion of the securitized assets not retained by the firm (off the balance sheet). From the perspective of information risk, Cheng et al. (2011) find that when banks lack transparency, market participants have a greater difficulty in estimating the risk that permeates securitization transactions. Keys et al. (2010) document that securitized loans are more likely to default than non-securitized loans with similar risk profiles, consistent with the notion that securitization adversely affects lenders' incentives to screen borrowers at origination or to keep monitoring them once the loan has been securitized.

Another stream of research focuses on the opportunistic use of securitization to manage earnings. Regarding securitization, which is usually conducted through SPEs, Feng et al. (2009) provide evidence that firms utilize SPEs to manage earnings. Dechow and Shakespeare (2009) also provide evidence that managers engage in securitization in the third month of the quarter and that almost half of the arrangements occur in the last five days of the quarter in order to beat earnings thresholds. Dechow et al. (2010) further show that managers are incentivized by the compensation package to manage securitization gains and that better monitoring from independent directors, female directors, fewer CEO-selected directors, and directors with financial expertise does not constrain such earnings management. Using a sample of bank holding companies between 2001 and 2012, Wang and Zhang (2018) document a positive association between banks' engagement in securitization and the likelihood of having an accounting restatement. Based on the argument that securitizations are complex transactions that are opaque to outsiders, Ryan et al. (2016) find that securitization-related insider information is positively associated with insider trading volume (i.e. insiders utilize securitization-related information to trade).

Consistent with the notion that the mandated consolidation for securitization entities of banks and required disclosure about securitization activities under SFAS 166/167 since 2010 facilitates information transparency, OZ (2020) documents a decline in information asymmetry among securitizing banks following the implementation of SFAS 166/167. She further finds that the effect of reduction in information asymmetry is less preannounced for more visible securitizing banks as assessed by metrics such as bank size and the number of analysts tracking them. Hsu et al. (2023) find that banks that consolidate qualified special-purpose entities (QSPEs) post the implementation of SFAS 166/167 exhibit a stronger market reaction to earnings surprises and higher predictability of future earnings and cash flows than banks unaffected by

SFAS 166/167. This finding reinforces the assertion that the consolidated earnings of these affected banks are more informative about their economic performance. Additionally, they find that this impact is more pronounced in securitizing banks, especially those whose securitized loans primarily stem from consumer loans. This is attributed to the higher exposure to risks and increased complexity associated with such banks. Besides the improvement in financial reporting and reduction in information asymmetry, the implementation of SFAS 166/167 also leads to real effects. Specifically, Dou et al. (2018) find that banks recognizing a higher volume of securitized assets after SFAS 166/167 adoption decrease their mortgage approval rates and engage in more mortgage sales to fulfill capital adequacy requirements. Furthermore, Ahn et al. (2020) also document that banks initiated a restructuring of SPEs to eliminate the retention of servicing functions or the special servicer role. This strategic adjustment aims to circumvent forced consolidation following the adoption of SFAS 166/167, reducing their regulatory capital requirements. They also find that following the SFAS 166/167 adoption, equity investors do not view the on-balance sheet versus the off-balance sheet treatment of securitized assets differently when assessing the risk-relevance of securitized assets.

2.4 Stock Price Crash Risk

A series of corporate scandals (e.g., Enron) and financial crises have led researchers to investigate the reasons for extreme price declines. Jin and Myers' (2006) paper is the first to establish a theoretical link between information opacity and stock price crash risk. They argue that opportunistic managers have incentives to hoard information about a firm's cash flow because information asymmetry allows them to extract rent from shareholders or hide bad performance. When managers intentionally hold the bad news for a time, the stock price deviates from the fundamentals. When managers can no longer conceal bad news, the market will finally reflect the true value of the company, often leading to a stock price crash. Bleck and Liu's (2007) theoretical study also shows that information opacity within a firm facilitates news-hoarding behaviors and that greater opacity in financial markets leads to more frequent and more severe price crashes under a historic-cost-accounting regime.

To explore the nature of information asymmetry that leads to bad news hoarding behaviors and thus price crashes, several empirical studies have investigated how crash risk varies with the level of information opacity. Using an accrual-based measure of earnings management as a measure of the opacity of financial statements, Hutton et al. (2009) find that the opacity of a firm is positively associated with R^2 from a market-index model regression (Roll 1988; Moeck et al. 2000), suggesting less revelation of firm-specific information. Such an association has decreased since the passage of the Sarbanes-Oxley Act, indicating that accrual-based earnings management has decreased or that firms cannot hide information as well in the new regulatory environment. Hong and Lee (2015) find that the material weakness in internal control over financial reporting disclosed under Section 404 of the 2002 Sarbanes-Oxley act indicates unreliable and/or opaque

financial reporting, which is related to a subsequent stock price crash. In addition, Kim, Li, and Zhang (2011a.) document that corporate tax avoidance activities, which provide tools, masks, and justifications for opportunistic behaviors and information opacity are used to facilitate managerial bad news hoarding behaviors. Moreover, writing complex financial reports which creates opacity also helps hide adverse information. Hence, Wang (2019) documents that less readable 10-K reports are associated with higher stock price crash risk. Not only mandatory financial reporting but self-serving voluntary management guidance can also be used to distort investors' beliefs, leading them to overestimate firm value (Hamm et al. 2015). For instance, consistent with the notion that non-GAAP disclosures provide managers with the opportunity to mislead investors regarding their companies' financial performance, Hsu, Wang, and Whipple (2022) provide evidence that non-GAAP reporting, which boosts reported income, is associated with increased stock price crash risk. Furthermore, their findings indicate that non-GAAP reporting serves as a potential alternative to accruals earnings management, allowing companies to withhold unfavorable news from investors. On the other hand, Kim and Zhang (2015) document that the more conservative a firm's accounting policy is, the lower the probability that firm-specific bad news is withheld and accumulated, suggesting that accounting conservatism reduces the likelihood of future stock price crashes. The quality of accounting standards also affects crash risk. DeFond, Hung, and Li (2015) find that mandatory IFRS adoption reduces crash risk among non-financial firms by improving reporting quality and that this effect is more pronounced in countries where IFRS results in more credible changes relative to the local GAAP. However, IFRS adoption increases the crash risk of financial firms by inducing greater volatility and more opportunistic reporting manipulation.

In addition, agency problems are related to a firm's future crash risk. For example, using a unique dataset of 654 French-listed firms, Boubaker, Mansali, and Rjiba (2014) document that stock price synchronicity increases when controlling shareholders' control rights exceed their cash flow rights, suggesting that controlling shareholders tend to disclose less firm-specific information to conceal opportunistic behaviors. Accordingly, firms with substantial excess control are more likely to experience stock price crashes. Likewise, Mamun et al. (2020) demonstrate that powerful CEOs with sufficient discretion to pursue objectives that may not align with the best interests of shareholders are associated with higher stock price crash risk.

Although managers are motivated to increase firm value by share-based compensation, which aims to align the incentives of managers with the interests of shareholders, the equity incentives induce managers to conceal bad news about future growth and to invest in suboptimal projects to support the pretense, leading to a severe overvaluation and a subsequent stock crash (Benmelech et al. 2010). Consistent with this argument, Kim, Li, and Zhang (2011b) find that the sensitivity of CFOs' option value to the stock price is positively associated with a firm's future crash risk, while neither CEO nor CFO stock incentives are related to crash risk. Using a sample of firms in China, Xu et al. (2014) find a positive relation between the executives' perks

in state-owned enterprises and crash risk, supporting the notion that incentivized by excess perks, executives in state-owned enterprises withhold bad news for extended periods, leading to higher future stock price crash risk. In contrast, He (2015) finds evidence supporting the argument that CEO inside-debt-holding (i.e., CEO compensation in the form of a pension and deferred payments that resemble debt contracts, representing a fixed obligation for a firm to make future payments to the CEO) contributes to higher financial reporting quality and greater information transparency, thus constraining latitude in hoarding bad news.

Internal and external monitoring mechanisms also play a role in reducing such risk. For example, when managers are engaged in corporate social responsibility (CSR) and commit to a high standard of transparency, firms' CSR performance is negatively associated with future crash risk (Kim et al. 2014). Likewise, Callen and Fang (2015a.) find evidence that firms headquartered in countries with higher levels of religiosity are associated with lower levels of future stock price crash risk, supporting the notion that religion as a set of social norms also helps to curb managerial bad-news-hoarding activities. In addition, dedicated institutional ownership, analysts following, and takeover threats from corporate control markets also help reduce crash risk (see Callen and Fang 2013; An and Zhang 2013), while Callen and Fang (2015b) document a positive association between short interest and a one-year-ahead stock price crash risk.

3. Hypotheses Development

The objective of this study is to address the effectiveness of SFAS 166/167 based on the findings regarding firms' opacity and crash risk. We argue that crash risk is associated with whether banks are engaged in securitizing activities for two reasons. First, securitizations are complex transactions that are largely opaque to outsiders. Some risks of off-balance-sheet securitized loans are retained through credit enhancement mechanisms and retained interest by the bank that bears the first-loss interest in the securitized assets (Chen et al. 2008). Many issuers also have incentives and the ability to provide protection for purchasers of ABS implicitly, even if such protection is not legally required, to ensure continued markets. For example, issuers purchase assets from the SPE at a price higher than their fair value, provide recourse beyond contractual requirements, etc (e.g., Higgins and Mason 2004; Vermilyea et al. 2008; Chen et al. 2008). It is hard for outsiders to fully understand a bank's securitizing activities and the associated risks; thus securitizations contribute to banks' opacity (Cheng et al. 2011). As an example, Ryan et al. (2015) argue that because financial reporting requirements regarding SPEs are limited, rendering these risks opaque to users of financial reports, corporate insiders can exploit private information about SPEs by trading for personal gain. Second, prior studies relate securitization to management misbehavior. For example, Dechow and Shakespeare (2009) and Dechow et al. (2010) find that banks appear to time these securitizations to "window-dress" their balance sheets and manipulate reported earnings. Wang and Zhang (2018) further document that

securitization is positively associated with the likelihood of accounting restatement, with the results being driven mainly by the intentional use of accounting estimates of securitization for earnings management. Consequently, we argue that securitization is positively related to crash risk due to the complexity of securitization and managerial incentives; that is securitization can provide a tool for managers to cover up bad news and poor financial performance, leading to higher crash risks. Thus, we state our hypothesis in an alternative form as follows:

H1. *Ceteris paribus, banks with a higher prevalence of securitization engagement are associated with higher future crash risk.*

As discussed above, since 2009, SFAS 166/167 has eliminated QSPEs as exceptions to consolidation and broadened the number of entities being consolidated. In addition, SFAS 166/167 requires more disclosure even when banks do not have to consolidate VIEs. Using four measures, analyst forecast dispersion, implied volatility, stock illiquidity, and bid-ask spread to proxy for information asymmetry, OZ (2020) finds that after SFAS 166/167, information asymmetry significantly decreases for securitizing banks compared to non-securitizing banks. Moreover, Hsu et al. (2023) find that banks that consolidate qualified special-purpose entities (QSPEs) after SFAS 166/167 experience a stronger market reaction to earnings surprises than banks that are not affected by SFAS 166/167. In addition, these banks exhibit higher predictability in future earnings and cash flows compared to banks unaffected by SFAS 166/167. This supports the argument that the consolidated earnings of these affected banks are more informative about their economic performance. Koharki (2014) documents that rating agencies are less likely to provide inflated initial credit ratings to issuers with QSPE exposure and that bond investors required less price protection when assessing the riskiness of such entities in the post-166/167 period, suggesting that SFAS 166/167 improves the quality of credit ratings and reduces the need for of price protection against credit rating inaccuracy due to catering behaviors. Based on the prior empirical findings, we argue that the consolidation and disclosure requirements for QSPEs in SFAS 166/167 reduce information risk. Thus, the increase in transparency from SFAS 166/167 may decrease banks' future crash risk, as there is less room for bank executives to hide information and manage earnings via securitization. This leads to our second hypothesis, stated in the alternative form:

H2. *Ceteris paribus, the association between securitization and crash risk is less pronounced after the adoption of SFAS 166/167.*

4. Research Design

4.1 Sample Selection

We use US banks with the sample period beginning in 2004 and extending to 2014. While

firms in all industries conduct securitization, banks do so much more frequently than firms in other sectors. Following Chen et al. (2008) and Cheng et al. (2011), we choose to investigate loan securitizations of bank holding companies (BHCs, hereafter, banks) for two reasons. First, because after 1986, BHCs with consolidated assets of at least $150 million ($500 million after March 2006) have to file Y-9C forms with the Federal Reserve each quarter, we can obtain more comprehensive and homogenous securitization information. Specifically of interest is Schedule HC-S (Servicing, Securitization, and Asset Sale Activities) of Y-9C forms which was first reported in the second quarter of 2001 and which provides detailed and standardized data on securitizations accounted for as sales in which the bank retains servicing rights or provides some form of credit enhancement. In addition, Schedule HC-S of the Y-9C form also reports the breakdown of securitizations into seven categories: 1-4 family residential mortgages, home equity lines of credit, credit card receivables, auto loans, other consumer loans, commercial and industrial loans, and all other loans and all leases. Starting from the first quarter of 2011, Schedule HC-V also provides assets and liabilities for three categories of consolidated VIEs: securitization vehicles, asset-backed commercial paper conduits, and others. Second, prior studies such as Landsman et al. (2008) and Dechow et al. (2010), which use a multi-industry sample, document that only around 30 percent of their sample firms come from non-financial industries and that banks are major participants in securitization markets.

We start our sample selection by identifying all BHCs with the necessary financial information available from the regulatory Y-9C reports from calendar years 2004 to 2014. We exclude banks without information on total assets, total equity, total loans, capital, and securitization activities for any year of the sample period. We then eliminate banks whose common equity is not publicly traded and banks missing PERMCO[9] in the Federal Reserve Bank of New York's file, as we are not able to match Y-9C filings with Center for Research in Security Prices (CRSP) stock returns; we collect daily returns from CRSP and some other control variables from Compustat. The final data set contains 807 unique BHCs and 4,212 bank-year observations, among which 535 are securitizing bank-year observations and 3,677 are non-securitizing bank-year observations.[10] The sample selection procedure is presented in Appendix A.

4.2 Measure of Securitization

Our variable of interest is the measure of banks' engagement in securitization activities. We

[9] An unique permanent identification *number* assigned by CRSP to all companies with issues on a CRSP File.

[10] Schedule HC-S of the Y-9C report discloses only the securitization activities for which banks have either retained the right to service the loans or retained recourse or provided other credit enhancement to the securitization structure. We recognize that our sample has a caveat that securitization activities for which banks have neither retained the service nor provided credit enhancement are excluded. However, banks reporting securitized assets in Schedule HC-S generally are exposed to recourse risks, and since information opacity is usually associated with banks which retain interest or provide recourse in securitization arrangements, we believe the data from Y9-C reports serve as an appropriate sample for investigating information opacity, stock price synchronicity, and stock price crashes.

use two measures respectively: first, a simple indicator variable (*SEC*) that equals one if the bank reports securitized assets at the beginning of year *t* and zero otherwise and second, securitization intensity, *ABS* (asset-backed securities), measured as the ratio of total securitized assets to the total assets of the bank at the beginning of year *t,* to capture the amount of securitization.

4.3 Measures of Firm-specific Crash Risk and Opacity

We measure firm-specific crash risk based on prior studies such as Kim et al. (2011a) and Kim et al. (2014). Specifically, we first estimate Eq. (1). We merge the bank data with market-based measurements collected from CRSP. Our measure of market synchronicity follows prior studies (e.g., Morck et al. 2000; Dewally and Shao 2013) and R^2 is derived from the market model for each bank-year *t*:

$$r_{i,w} = a_i + \beta_1 rm_{,w-2} + \beta_2 rm_{,w-1} + \beta_3 rm_w + \beta_4 rm_{w+1} + \beta_5 rm_{w+2} + \varepsilon_{i,w} \quad (1)$$

where r_{iw} is the current weekly return for bank *i* in week w; rm_w is the CRSP value-weighted market index in the current week *w*.[11],[12] We include the lead and lag terms for the market index return for nonsynchronous trading (Kim et al. 2011a,b). The year observations with fewer than 26 weeks of stock return data are excluded in the sample for Eq. (1). We then compute the firm-specific weekly returns, $W_{i,w,}$ as the natural logarithm of one plus the residual return, $\varepsilon_{i,w,}$ from the estimation of Eq. (1). We log transform the raw residual returns to reduce the positive skew in the return distribution and to help ensure symmetry, as suggested by Chen, Hong, and Stein (2001) and Hutton et al. (2009).[13] Following Hutton et al. (2009) and Kim et al. (2011a,b), crash weeks in a given bank-year in a given firm are defined as those weeks during which the firm-specific weekly returns exceed 3.20 standard deviations below the mean firm-specific weekly returns over the entire fiscal year, with 3.20 chosen to generate a frequency of 0.1% in the normal distribution. Our measure of crash likelihood for each firm-year is denoted by *CRASH* (an indicator variable that equals one if the firm experiences one or more crash weeks during fiscal year *T*, and zero otherwise) to capture the actual occurrences of extreme-negative events in the year.

We also use two alternative firm-specific measures for crash risk as a robustness check. (1) The first alternative measure is the negative coefficient of the skewness of firm-specific weekly returns (*NCSKEW*), following Chen et al. (2001), calculated as the negative of the third moment of each stock's firm-specific weekly returns, scaled by the standard deviation of bank-specific

[11] We require at least 26 weeks in each year estimation.

[12] Following the prior literature such as Chen et al. (2001), Jin and Myers (2006), and Hutton et al. (2009), we also incorporate current, lagged, and lead value-weighted weekly industry returns of financial sectors into Eq. (2) for a robustness check.

[13] We also estimate the measures of crash risk based on raw residual returns for a robustness check.

weekly returns raised to the third power. Thus, for any stock *i* over fiscal year *T*,

$$NCSKEW_{iT} = \frac{-(n(n-1)^{3/2}\sum WRET_{it}^3)}{((n-1)(n-2)(\sum WRET_{it}^2)^{3/2})} \quad (2)$$

where *n* is the number of observations of firm-specific weekly returns during fiscal year *T*. The denominator is a normalization factor. This calculation adopts the convention that a larger value of *NCSKEW* indicates a stock's being more "crash-prone," that is, having a more left-skewed distribution, hence the minus sign on the right-hand side of Eq. (2).

(2) The second alternative measure is the down-to-up volatility of firm-specific weekly returns (*DUVOL*), following Jin and Myers (2006), calculated as

$$DUVOL_{iT} = \log\left\{\frac{(n_u-1)\sum_{DOWN}R_{it}^2)}{(n_d-1)\sum_{UP}R_{it}^2}\right\} \quad (3)$$

where n_u and n_d are the number of up and down weeks over fiscal year *T*, respectively. For each stock *i* over a one-year period, we separate all the trading weeks with firm-specific weekly returns above (below) the mean of the period and call this the "up" ("down") sample. We further calculate the standard deviation for the up and down samples separately and then compute the log ratio of the standard deviation of the down sample to the standard deviation of the up sample. Similar to *NCSKEW*, a higher value of *DUVOL* indicates a stock being more "crash-prone." This alternative measure does not involve the third moment and hence is less likely to be excessively affected by a small number of extreme returns.

In addition, based on Eq. (1), the stock's synchronicity with the market is captured by R^2_{it}, and the relative bank-specific idiosyncratic risk, defined as the ratio of idiosyncratic variance to total variance, is precisely $1 - R^2_{it}$. Given that R^2_{it} is bounded within the unit interval, following Morck et al. (2000), we use a logistic transformation of $1 - R^2_{it}$ as the dependent variable, denoted *PSI* (ψ_{it}). Thus, the variable *PSI* (ψ_{it}) measures bank-specific idiosyncratic risk relative to systematic risk. A high value of *PSI* (ψ_{it}) indicates a high level of disclosure of bank-specific information. As discussed above, we expect banks with a higher level of asset securitization, that is a higher level of opacity, to provide less bank-specific information to the market and therefore to affect the bank's stock returns by lowering *PSI* (ψ_{it}).

4.4 Research Models for H1 and H2

We use the following regression model to examine the relation between banks' opacity and future stock price crash risk,

$$CrashRisk_{i,t} = \beta_0 + \beta_1 POST + \beta_2 SEC_{it-1} + \beta_3 POST \times \mathrm{SEC}_{it-1} + \delta' GeneralControl_{it-1} + \gamma' BankControl + \varepsilon_{i,t} \quad (4a)$$

$$CrashRisk_{i,t} = \beta_0 + \beta_1 POST + \beta_2 ABS_{it-1} + \beta_3 POST \times ABS_{it-1} + \delta' GeneralControl_{it-1} + \gamma' BankControl + \varepsilon_{i,t} \quad (4b)$$

where *CrashRisk* measures the risk of a stock price crash in year *t*. When $CrashRisk_{it}$ is proxied by *CRASH* and Eq. (4) is estimated as a logit regression with year-fixed effects, and when $CrashRisk_{it}$ is proxied by *NCSKEW* or *DUVOL*, we use (panel) OLS regressions with year-fixed effects. The variables of interest are *SEC* and *ABS*, respectively as defined above. To test H2, we interact *SEC* and *ABS*, respectively with an indicator, *POST*, which equals one if the fiscal year is after 2009 and zero otherwise.

We include general control variables that are documented to be related to crash risk: bank size (*SIZE_MV*), a natural log of the market value of the equity at the beginning of year *t*; leverage (*LEV*), the ratio of the total liability over the total assets at the beginning of year *t*; operating performance (*ROA*), net income scaled by total assets; bank growth, proxied by *MB,* the market to book value of equity; return level (*AVE_RET*), the average bank-specific weekly returns over year *t*−1; returns volatility (*VOL_RET*), the standard deviation of bank-specific weekly returns over bank-year period *t*−1; *DTURN,* the detrended average monthly stock turnover, calculated as the average monthly share turnover over current bank-year *t* minus the average monthly share turnover over the previous bank-year, *t*−1; and *CRISIS*, an indicator variable for the period 2007-2008.

Specifically, Chen et al. (2001) and Hutton et al. (2009) document a positive relation between firm size (*SIZE_MV*) and crash risk. Hutton et al. (2009) show that firm financial leverage (*LEV*) and operating performance (*ROA*) are negatively related to crash risk. Growth firms (proxied by *MB*) are more likely to experience a price crash. *AVE_RET* measures annual stock return, as stocks with high returns are more likely to crash (Chen et al. 2001). *VOL_RET* captures the level of returns volatility since more volatile stocks are more likely to experience a price crash (Chen et al. 2001). *DTURN,* the detrended average monthly stock turnover, is a proxy for differences of opinion among investors (Chen et al. 2001).[14] We also include the indicator variable *CRISIS* to denote the period 2007-2008 to control for the effects of the liquidity crisis.[15]

[14] Following Chen et al. (2001), we first measure $TURNOVER_{jt}$ as the average monthly share turnover in stock *i*, defined as shares traded divided by shares outstanding over period *t*. *DTURN,* detrended turnover, is calculated by subtracting from the *TURNOVER* variable from a moving average of its value over the prior12 months.

[15] Piotroski and Roulstone (2004) suggest that the prevalence of institutional investors and analysts following improve the information environment and are related to price synchronicity; we also include variables to control for synchronicity and the results are robust.

TIER1_RATIO, the tier 1 risk-based capital ratio, captures regulatory capital; *LOAN_RATIO*, balance-sheet loan scaled by total assets, captures the effect of loan level on information uncertainty; *SECINC*, the sum of the servicing fee and securitization income over year *t* scaled by total assets at the beginning of year *t*, captures dependence on securitization; *DERIV*, notional amounts of derivatives scaled by total assets, captures the effect of risk management product on information uncertainty; *TRADING*, trading income scaled by total assets, measures the technical sophistication; *SECURITIES*, total (trading, available-for-sale, and held-to-maturity) securities minus retained interest in securitizing assets (*RI*) scaled by total assets, captures bank liquidity; *NPL_ONBS* (past due on balance sheet loans scaled by total assets, where the past due loans equal loans 30 through 89 days past due plus loans 90 days or more past due); and *CHOFF_ONBS* (charge-offs on balance sheet loans scaled by total assets) captures the non-performing risk of the balance-sheet loans. Detailed variable definitions are presented in Appendix B.

We winsorize the continuous variables at 1% and 99% level to eliminate outliers and also correct standard errors for firm-level clustering. H1 predicts $\beta 1$ to be significantly positive and H2 predicts $\beta 2$ to be significantly negative.

4.5 Descriptive Statistics

Before turning to the main tests, we compare securitizing and non-securitizing banks along several dimensions: (i) balance sheet structure; (ii) general characteristics; and (iii) crash risk and bank opacity.

Given that securitization is a recurring activity, we assign a bank to the group of securitizing banks if it reports securitized assets at the beginning of year *t*. This yields 535 securitizing bank-year observations and 3,677 non-securitizing bank-year observations for the period 2004 to 2014. Univariate comparisons between securitizing and non-securitizing banks are presented in Panel A of Table 1, where we report means and standard deviations for all bank years, securitizing and non-securitizing bank years, and the difference in means between securitizing and non-securitizing bank years with its statistical significance. Although the number of securitizing banks in our sample is significantly smaller than that of non-securitizing banks (12.7%), securitizing banks are larger in terms of total assets than non-securitizing banks. The average amount of total assets for the sample of BHCs is $7.69 billion and the mean value of total assets for securitizing banks is $178 billion, approximately 28 times the mean value of total assets for non-securitizing banks ($6.36 billion). This finding is consistent with previous research that documents that larger banks are more likely to engage in securitizing activities (e.g., Bannier and Haensel, 2007; Minton et al. 2009) Further, securitizing banks tend to hold more liquid assets (28.6% versus 23.4% of total assets), which is consistent with having a better ability to convert illiquid assets to liquid assets. Originated loans, on average, constitute 60.4% of securitizing banks' total assets while such loans constitute 67.4% of non-securitizing banks' total assets. We turn next to the liability side of the balance sheet. Both securitizing and non-securitizing banks are funded mainly

by deposits, while non-securitizing banks rely on this source of capital more than securitizing banks (67.4% of total assets versus 60.4%). The percentage of total assets funded by equity capital is slightly higher for securitizing banks (10.8%) than for non-securitizing banks (9.8%). Tier 1 capital constitutes 13.1% of total assets with no significant difference between securitizing and non-securitizing banks.

Looking at more general characteristics, we find that securitizing banks are less leveraged (*LEV*) and more profitable (measured as returns on assets, *ROA*) than non-securitizing banks; securitizing banks have significantly larger stock turnover (*TURNOVER*) and larger differences of opinion among investors (measured by *DTURN*) than do non-securitizing banks.

In addition, securitizing banks exhibit higher levels of future crash risk relative to non-securitizing banks. Specifically while there is no significant difference in the likelihood of a future crash (*CRASH*) between securitizing and non-securitizing banks (the mean value is 0.163 verses 0.158), the negative conditional skewness of firm-specific weekly returns over the year (*NCSKEW*) has a mean value of −0.033 for the full sample while the mean value for securitizing banks (−0.017) is significantly larger than that for non-securitizing banks (−0.036). Similarly, the down-to-up volatility measure (*DUVOL*) of crash likelihood has a mean value of −0.179 for the full sample while the mean value for securitizing banks (−0.082) is significantly larger than that for non-securitizing banks (−0.193). Moreover, the variable *PSI*, measuring the bank-specific idiosyncratic risk relative to systematic risk, has a mean value of 1.240 for the full sample while the mean value for securitizing banks (0.560) is significantly smaller than that for non-securitizing banks (1.339); a lower value of *PSI*, on average, for securitizing banks indicates a lower level of bank-specific information incorporated into the market. Such univariate comparisons support the argument that securitizing banks are less transparent and are more likely to have price crashes due to the nature of securitizing activities.

Panel B of Table 1 reports more details regarding the restricted sample of the securitizing banks. Specifically, the sum of the servicing fee and securitization income over the year accounts for 0.208% of total assets; 45.8% of securitizing firms report consolidated VIEs as BHCs are required to report any since 2011. The securitized assets account for 13.16 % of their total assets (*ABS*); when breaking down the categories of securitized assets, mortgage-based securitizations (*MBS*) represent the biggest category of securitized assets, around 10.46% of total assets, while consumer loan securitizations (*CONSBS*) and commercial loan securitizations (*COMMBS*) are much smaller, with mean values 1.99% and 0.71% of total assets, respectively.

Interests in securitized assets that still remain on-balance sheet are on average relatively small, constituting 0.20 % of total assets; the percentage of nonperforming loans associated with securitized loans (*NPL_SEC*) is on average 4.18%, among which 4.66% are securitized mortgages; 1.67% are securitized consumer loans; 0.67% are securitized commercial loans. The percentage of charge-offs associated with securitized loans (*CHOFF_SEC*) is on average 0.85%.

Table 1 Descriptive Statistics

Panel A: Univariate comparisons between securitizing and non-securitizing banks

	all banks		securitizing banks		non-securitizing banks		Test of difference in means	
	Mean	Std	Mean	Std	Mean	Std	*t*-stat	*p*-value
Bank characteristics								
SIZE_AT	14.681	1.631	16.903	2.168	14.357	1.241	39.480	0.000***
LIQUIDITY_RATIO	0.241	0.119	0.286	0.160	0.234	0.109	9.544	0.000***
LOAN_RATIO	0.665	0.141	0.604	0.187	0.674	0.131	−10.990	0.000***
DEPOSIT_RATIO	0.631	0.126	0.532	0.160	0.645	0.114	−20.360	0.000***
EQUITY_RATIO	0.099	0.052	0.108	0.084	0.098	0.045	4.270	0.000***
TIER1_RATIO	0.131	0.067	0.131	0.101	0.130	0.060	0.300	0.765
General characteristics								
SIZE_MV	19.431	1.851	21.668	2.345	19.102	1.508	33.788	0.000***
LEV	0.899	0.053	0.890	0.085	0.901	0.046	−4.532	0.000***
ROA	0.007	0.015	0.009	0.022	0.006	0.013	4.701	0.000***
MB	1.495	0.980	1.535	0.921	1.489	0.988	0.993	0.321
AVE_RET	0.001	0.008	0.001	0.007	0.001	0.008	−0.385	0.700
VOL_RET	0.049	0.040	0.050	0.039	0.049	0.041	0.778	0.437
TURNOVER	0.075	0.105	0.157	0.187	0.063	0.080	20.369	0.000***
DTURN	0.005	0.077	0.013	0.157	0.004	0.055	2.609	0.009***
Price dynamics and opacity								
CRASH	0.158	0.365	0.163	0.369	0.158	0.365	0.289	0.773
NCSKEW	−0.033	0.144	−0.017	0.067	−0.036	0.151	2.822	0.005***
DUVOL	−0.179	0.429	−0.082	0.358	−0.193.	0.437	5.619	0.000***
PSI	1.240	1.051	0.560	0.945	1.339	1.029	−16.552	0.000***
Observations	4,212		535		3,677			

Panel B: Descriptive statistics for securitizing banks

	Mean	std
SECINC	0.00208	0.00884
VIE	0.01800	0.03778
VIE_dummy	0.45801	0.50015
Types of Securitization		
ABS	0.13161	0.35994
MBS	0.10463	0.34207
CONSBS	0.01988	0.10317
COMMBS	0.00710	0.01857

Table 1 Descriptive Statistics (continued)

Panel B: Descriptive statistics for securitizing banks		
	Mean	std
Types of Retained Interests		
RI	0.00197	0.00721
MRI	0.00068	0.00399
CONSRI	0.00006	0.00288
COMMRI	0.00006	0.00046
Quality of Securitized Loan		
NPL_SEC	0.04180	0.08685
MNPL_SEC	0.04666	0.10020
CONSNPL_SEC	0.01671	0.03567
COMMNPL_SEC	0.00670	0.03215
CHOFF_SEC	0.00851	0.02191

Note 1: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

2: All the variables are defined in Appendix B.

Table 2 reports the cross-correlations among our principal variables. As expected, *SEC* is generally positively associated with *CRASH*, *NCSKEW,* and *DUVOL* and negatively associated with *PSI*.

Our sample banks have a cumulative unconditional probability of experiencing at least a one-time price crash a year of 15.83% (untabulated), suggesting that price crashes were quite frequent for publicly traded BHCs during 2004-2014. Table 3 reports the number of stock price crashes by securitizing and non-securitizing banks, respectively each year. The final sample contains 535 securitizing bank-year observations and 3,677 non-securitizing bank-year observations. Table 3 shows that securitizing banks experienced stock price crashes more frequently than non-securitizing banks in the years 2004, 2005, 2010, 2012, and 2014 while Table 3 just compares the percentage of price crashes between securitizing banks and non-securitizing banks each year without any control variables.

5. Empirical Results

5.1 Propensity Score Matching

It is possible that securitizing is fundamentally different from non-securitizing and there could be some omitted variables that are associated with both the likelihood of securitizing and stock price synchronicity and price crash. To alleviate this concern, following for instance, Casu et al. (2011), we adopt the method of propensity-score matching to more effectively control for the difference in relevant dimensions between securitizing and non-securitizing banks.

Table 2 Spearman correlation table

	SEC	*CRASH*	*NCSKEW*	*DUVOL*	*PSI*	*SIZE_MV*	*LEV*	*ROA*	*MB*	*AVE_RET*	*VOL_RET*	*TURN-OVER*	*DTURN*
SEC	1												
CRASH	0.0082	1											
NCSKEW	0.0448	0.0865	1										
DUVOL	0.0887	0.312	0.5629	1									
PSI	−0.2431	0.0407	−0.1126	−0.2266	1								
SIZE_MV	0.4666	0.0296	0.1717	0.2563	−0.641	1							
LEV	−0.0823	0.0021	−0.0767	−0.0835	0.1537	−0.2073	1						
ROA	0.0762	−0.0123	0.2154	0.1498	−0.1736	0.3422	−0.4724	1					
MB	0.0138	0.0141	0.1162	0.1063	−0.1588	0.3005	−0.0065	0.3864	1				
AVE_RET	−0.0024	−0.1548	−0.2289	−0.2833	0.0177	−0.0282	−0.0216	0.0263	−0.014	1			
VOL_RET	0.0084	0.0542	−0.6903	−0.3117	0.0114	−0.1911	0.1112	−0.4363	−0.2558	−0.1064	1		
TURNOVER	0.301	0.06	−0.1205	0.0251	−0.3467	0.4617	−0.0524	−0.1108	−0.0539	−0.0435	0.3844	1	
DTURN	0.0423	0.0365	−0.1577	−0.1037	0.0188	0.035	0.0183	0.0164	0.0327	−0.0536	0.2718	0.4663	1

Note: All the variables are defined in Appendix B.

Table 3 Number of crashes by year

		all banks		securitizing banks		non-securitizing banks	
	number of banks	times of crashes	%	times of crashes	%	times of crashes	%
2004	459	75	16.34%	15	22.39%	60	15.23%
2005	457	61	13.35%	13	23.63%	48	11.88%
2006	456	75	16.45%	5	9.43%	70	17.28%
2007	377	76	20.16%	8	17.02%	68	20.54%
2008	357	63	17.65%	7	15.91%	56	18.15%
2009	344	68	19.77%	7	15.91%	61	20.27%
2010	338	55	16.27%	9	18.00%	46	15.92%
2011	322	52	16.15%	5	11.36%	47	16.85%
2012	318	55	17.30%	8	19.05%	47	16.97%
2013	389	33	8.48%	2	4.00%	31	9.12%
2014	381	53	13.91%	8	20.51%	45	13.12%

Whether a bank engages in securitizations is a bank's choice. The possibility of endogeneity exists in which omitted determinants that lead to securitizing or not also affect a bank's information transparency and thus crash risk. To address the sample selection bias due to unobservable differences between securitizing and non-securitizing banks (Rosenbaum 2002), we use propensity score matching to compare a sample of non-securitizing banks and a sample of securitizing banks that are similar along all other observable characteristics.

First, we generate a propensity score using the following ordered logistic regression that models the likelihood of a bank engaging in securitization.

$$\begin{aligned} Prob(SEC_{it} = 1) = {} & \beta_0 + \beta_1 SIZE\_AT_{it-1} + \beta_2 LIQUIDITY\_RATIO_{it-1} + \beta_3 LAON\_RATIO_{it-1} + \\ & \beta_4 DEPOSIT\_RATIO_{it-1} + \beta_5 EQUITY\_RATIO_{it-1} + \\ & \beta_6 TIER1\_RATIO_{it-1} + \varepsilon_{it} \end{aligned} \tag{5}$$

where *SEC* is an indicator variable which equals one if a bank is involved in securitizing activities, and zero otherwise. To predict securitization likelihood while balancing the covariates between the securitizing and non-securitizing banks, we consider six balance sheet components of securitizing and non-securitizing banks. As Cheng et al. (2011) and Casu et al. (2011) show that securitizing banks are much larger than non-securitizing banks or in other words, large banks are more likely to engage in securitizing activities, we include bank size (*SIZE_AT*), measured as the natural logarithm of total assets, as a predictor. Prior studies (e.g., Casu et al. 2011) also suggest that securitizing banks tend to hold less liquid assets than do non-securitizing banks,

which is consistent with securitizing banks' having better access to external capital and thus needing a smaller liquidity buffer compared to non-securitizing banks; we, therefore, include the liquidity ratio (*LIQUIDITY_RATIO*), measured as the sum of cash, available-for-sale securities, trading assets, federal funds sold, and securities purchased with the intent to resell, scaled by total assets. Securitizing banks rely on loans in their asset composition to a larger extent than non-securitizing banks (see Casu et al. 2011), so we include loan ratio (*LOAN_RATIO*), measured as the proportion of on-balance-sheet net loans to total assets.

On the liability side of the balance sheet, because as Casu et al. (2011) indicate that while both securitizing and non-securitizing banks are financed mainly by deposits, non-securitizing banks rely more on this source of funding, we include the deposit ratio *(DEPOSIT_RATIO*), measured as the quarterly average for all interest-bearing deposits, scaled by total assets; we also include the equity ratio (*EQUITY_RATIO*), measured as the total equity scaled by total assets. Last, we look at regulatory capital. On one hand, Calomiris and Mason (2004) suggest that securitizing and non-securitizing banks may be different in terms of tier 1 risk-based capital ratio; as securitizing banks provide implicit recourse, the tier 1 ratio of securitizing banks will be higher. On the other side, prior studies show that securitizing banks are less capitalized than non-securitizing on a risk-adjusted basis (e.g., Minton et al. 2009; Casu et al. 2011); thus, we include the tier 1 risk-based-capital ratio (*TIER1_RATIO*). For each year, we estimate an ordered logistic model for the banks in the overall sample: the probability of securitization at year *t* on a vector of six balance sheet characteristics, lagged one year (at the beginning of year *t*). Detailed variable definitions are presented in Appendix B.

We then match one securitizing bank in the same year with one non-securitizing bank, employing the closest propensity score. We impose a 3% tolerance level on the maximum propensity score distance. By doing so, we create a pseudo-random matched sample which is similar to the treatment sample in terms of balance sheet structures except for involvement in securitizing activities.

Panel A of Table 4 reports the results of the ordered logistic propensity-score regression of the likelihood of securitization. Our analyses suggest that larger banks, banks with more liquid assets, lower amounts of loans and deposits, and lower leverage are more likely to engage in securitizing activities.

We then impose a 3% tolerance level on the maximum propensity score distance and match approximately 90% of securitizing banks with non-securitizing banks. We obtain a propensity-score matched sample of 1,716 bank-year observations, of which 858 are securitizing banks (*SEC* = 1) and 858 are non-securitizing banks (*SEC* = 0). As demonstrated in Panel B of Table 4, the differences in the selective variables between the securitizing banks (treatment) and the matched non-securitizing banks are insignificant according to the paired t-tests, suggesting that the propensity-score matching procedure effectively forms a pseudo-random matched sample

Table 4 Propensity Score Matching

Panel A: Ordered logistic model

	SEC	*t*-stat
SIZE_AT	0.320	9.250***
LIQUIDITY_RATIO	0.258	3.250***
LOAN_RATIO	−0.484	(7.250)***
DEPOSIT_RATIO	−0.874	(5.700)***
EQUITY_RATIO	0.894	12.610***
TIER1_RATIO	0.058	1.011
Constant	yes	
N	4,212	
adj. R^2	28.88%	

Panel B: Descriptive statistics for the securitizing banks and the matched non-securitizing banks.

	SEC = 1	*SEC* = 0		
	Mean	Mean	DIFF	*t*-test
SIZE_AT	15.537	14.445	0.09	1.01
LIQUIDITY_RATIO	0.276	0.269	0.17	1.38
LOAN_RATIO	0.635	0.642	−0.01	−0.15
DEPOSIT_RATIO	0.612	0.621	−0.01	−0.23
EQUITY_RATIO	0.102	0.909	0.29	1.01
TIER1_RATIO	0.131	0.130	0.03	1.45
Observations of unique banks	78	78		

Note 1: ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.
2: All the variables are defined in Appendix B.

that is similar to the treatment sample in terms of banks' balance sheet characteristics so that any resulting differences between the two samples should reflect the securitization choice and not pre-existing balance sheet characteristics.

5.2 Results for H1 and H2

Table 5 reports results from the analysis of the relation between securitizing activities and future firm-specific crash risk after controlling for other potential determinants of crash risk. All reported p-values are based on standard errors adjusted by the cluster at the bank and year levels (Petersen 2009). Panel A of Table 5 reports the results using the indicator variable *SEC* as the variable of interest. When $CrashRisk_{it}$ is proxied by *CRASH*, as in Column (1), Eq. (5) is estimated as a logit regression with year-fixed effects, and when $CrashRisk_{it}$ is proxied by

Table 5 Results for H1 and H2

Panel A: Results for H1 and H2, using *SEC* as the variable of interest						
Dependent Variable	(1) *CRASH*		(2) *NCSKEW*		(3) *DUVOL*	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
POST	0.042	0.812	0.049	0.856	−0.003	−0.578
SEC	**0.122**	**0.036****	**0.014**	**0.073***	**0.067**	**0.015****
POST*SEC	**−0.183**	**0.047****	**−0.015**	**0.021****	**−0.117**	**0.008*****
SIZE_MV	−0.012	0.598	0.135	0.008***	0.077	0.001***
LEV	−0.638	0.479	0.014	0.157	0.148	0.358
ROA	0.577	0.496	−0.897	0.002***	0.438	0.451
MB	0.158	0.3365	0.013	0.000***	−0.007	0.589
AVE_RET	−23.203	0.000***	−4.238	0.000***	−16.238	0.003***
VOL_RET	0.553	0.168	−2.687	0.023**	−3.143	0.002***
DTURN	0.357	0.277	0.098	0.047**	0.238	0.358
CRISIS	0.087	0.168	0.023	0.000***	−0.158	0.128
TIER1_RATIO	0.577	0.687	0.018	0.896	−0.113	0.358
LOAN_RATIO	−0.498	0.323	−0.078	0.035**	0.123	0.352
SECINC	7.633	0.235	−1.240	0.064*	−1.577	0.432
DERIV	0.003	0.982	−0.012	0.687	−0.012	0.328
TRADING	23.147	0.081*	−0.238	0.867	2.358	0.238
SECURITIES	0.323	0.478	−0.098	0.041**	−0.078	0.855
RI	8.772	0.868	−0.578	0.698	1.275	0.658
NPL_ONBS	5.231	0.158	−0.423	0.232	0.577	0.328
CHOFF_ONBS	2.397	0.582	4.133	0.000***	3.597	0.005***
Constant	0.486	0.677	0.135	0.000	0.689	0.048
Adjusted R^2	0.039		0.658		0.297	
Number of obs.	1,716		1,716		1,716	
Panel B: Results for H1 and H2, using *ABS* as the variable of interest						
Dependent Variable	(1) *CRASH*		(2) *NCSKEW*		(3) *DUVOL*	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
POST	0.045	0.689	−0.135	0.253	0.031	0.454
ABS	**0.238**	**0.027****	**0.028**	**0.026****	**0.107**	**0.035****
POST*ABS	**−0.215**	**0.068***	**−0.045**	**0.043****	**−0.203**	**0.031****
SIZE_MV	−0.017	0.578	0.035	0.238	0.057	0.002***
LEV	0.358	0.689	−0.117	0.087*	0.128	0.478
ROA	−0.127	0.687	−0.912	0.000***	−0.578	0.358
MB	0.078	0.412	−0.012	0.000***	0.012	0.577
AVE_RET	−26.387	0.000	−4.778	0.001***	−19.248	0.000***

Table 5 Results for H1 and H2 (continued)

Panel B: Results for H1 and H2, using *ABS* as the variable of interest						
Dependent Variable	(1) *CRASH*		(2) *NCSKEW*		(3) *DUVOL*	
	Coef.	*p*-value	Coef.	*p*-value	Coef.	*p*-value
VOL_RET	0.687	0.134	−3.012	0.000***	−2.987	0.004***
DTURN	−0.157	0.856	0.257	0.000***	0.233	0.258
CRISIS	−0.132	0.257	0.057	0.000***	−0.057	0.268
TIER1_RATIO	0.231	0.776	0.015	0.688	0.012	0.851
LOAN_RATIO	−0.357	0.268	−0.102	0.013**	−0.123	0.458
SECINC	3.228	0.687	−1.268	0.047**	−1.987	0.577
DERIV	0.004	0.612	−0.012	0.977	0.002	0.798
TRADING	18.458	0.325	−0.657	0.488	2.287	0.598
SECURITIES	−0.425	0.815	−0.067	0.038**	0.122	0.679
RI	6.257	0.257	0.231	0.687	−0.578	0.911
NPL_ONBS	2.387	0.452	−0.132	0.358	−0.123	0.587
CHOFF_ONBS	2.368	0.238	2.977	0.002***	5.128	0.000***
Constant	−0.412	0.658	0.358	0.023	−0.458	0.07
Adjusted R^2	0.043		0.678		0.297	
Number of obs.	1,716		1,716		1,716	

Note 1: ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.

2: All the variables are defined in Appendix B.

NCSKEW or *DUVOL*, as in Columns (2) and (3) respectively, Eq. (5) is estimated as an OLS regression with year fixed effects. The results suggest that securitizing activities are positively associated with one-year-ahead crash risk proxied by *CRASH*, *NCSKEW*, and *DUVOL*. Specifically, coefficients on *SEC* in Columns (1), (2), and (3) are 0.122, 0.014, and 0.067 respectively, significant at the 5% level and the 10% level. The results support H1 that banks with a higher prevalence of securitization engagement are associated with a higher risk of future stock price crashes. Furthermore, the coefficients on *POST*SEC* are −0.183, −0.015, and −0.117 for Columns (1)-(3) respectively, negative and significant at the 5% level and 1% level, suggesting that, on average, an increase in transparency from SFAS 166/167 may decrease a bank's future crash risk, as there is less room for bank executives to hide information and manage earnings via securitization.

Likewise, Panel B of Table 5 reports the results using the continuous variable *ABS* as the variable of interest to capture the intensity of a bank's securitizing activities. Coefficients on *ABS* in Columns (1), (2), and (3) are 0.238, 0.028, and 0.107 respectively, significant at the 5% level. The results also support H1, that banks with a higher prevalence of securitization engagement are

associated with higher future crash risk. In addition, the coefficients on *POST*ABS* are −0.215, −0.045, and −0.203 for Columns (1)-(3) respectively, negative and significant at the 10% and the 5% levels, suggesting that, on average, an increase in transparency from SFAS 166/167 may decrease a bank's future stock price crash risk as there is less room for bank executives to hide adverse information and manage earnings via securitization, supporting H2.

6. Additional Test

6.1 Stock Price Synchronicity

As discussed above, the variable PSI_{it} measures bank-specific idiosyncratic risk relative to systematic risk. A high value of PSI_{it} indicates a high level of disclosure of bank-specific information. We expect banks with higher levels of asset securitization, that is higher levels of opacity, to provide less bank-specific information to the market, affecting banks' stock returns and lowering PSI_{it}.

We employ regression analysis to examine the relation between bank opacity and securitization

$$PSI_{i,t} = \beta_0 + \beta_1 SEC_{it-1} + \beta_2 SIZE\_MV_{it-1} + \beta_3 LEV_{it-1} + \beta_4 AVE\_RET_{it} + \beta_5 VOL\_RET_{it} + \beta_6 TURNOVER_{it} + \beta_7 ROA_{it} + \beta_8 MB_{it-1} + \beta_9 CRISIS_{it} + \gamma' BankControl_{it-1} + \varepsilon_{i,t} \quad (6a)$$

$$PSI_{i,t} = \beta_0 + \beta_1 ABS_{it-1} + \beta_2 SIZE\_MV_{it-1} + \beta_3 LEV_{it-1} + \beta_4 AVE\_RET_{it} + \beta_5 VOL\_RET_{it} + \beta_6 TURNOVER_{it} + \beta_7 ROA_{it} + \beta_8 MB_{it-1} + \beta_9 CRISIS_{it} + \gamma' BankControl_{it-1} + \varepsilon_{i,t} \quad (6b)$$

where variable *PSI* measures the degree of bank-specific information revealed in the market for bank *i* in year *t*, as defined above. We use the indicator variable $SEC_{it,}$ which equals one if the banks have securitized loans in the bank year *t* and zero otherwise, and the continuous variable ABS_{it}, the securitization intensity, measured as the total amount of securitized loans scaled by total assets in Eq. (6a) and (6b), respectively as a proxy of opacity. Both variables measure the use of asset securitization for bank *i* in year *t*. If the prevalence of securitization is associated with less bank-specific information available in the market, resulting in more crash risks, as stated in H1, we expect a negative sign for regression coefficient β_1.

We include control variables that are documented to be related to stock price synchronicity: bank size (*SIZE_MV*), a natural log of the market value of equity at the beginning of year *t*; leverage (*LEV*), the ratio of the total liability over the total assets at the beginning of year *t*; returns level (*AVE_RET*), the average bank-specific weekly returns over year *t*; returns volatility (*VOL_RET*), the standard deviation of bank-specific weekly returns over bank-year period *t*; stock liquidity (*TURNOVER*), the average monthly stock turnover over year *t*, where the monthly

share turnover is calculated as the monthly trading volume divided by the total number of shares outstanding during the month; profitability (*ROA*), the income in year *t* scaled by the total assets at the beginning of year *t*; bank growth (*MB*) captured by the market to book value of equity at the beginning of year *t*; and *CRISIS*, an indicator variable for the period 2007-2008.

More specifically, we control for bank size (*SIZE_MV*), as Roll (1988) documents a strong positive association between firm size and R^2, suggesting that the stock prices of larger firms tend to incorporate more market-wide information than those of small firms. Furthermore, Piotroski and Roulstone (2004) indicate that large firms act as leading market indicators by revealing macroeconomic or industrial events, resulting in higher stock price synchronicity. On the other hand, larger firms attract more investors and analysts, leading to more information about that firm available to investors (e.g., Lang and Lundholm 1996). Therefore, price synchronicity could decrease with firm size. We incorporate bank leverage (*LEV*) as a control since Hutton et al. (2009) argue that more highly leveraged firms shift the risk from equity holders to debtholders, who bear higher idiosyncratic volatility, hence reducing stock price synchronicity. In contrast, Rajgopal and Venkatachalam (2011) argue that leveraged firms are exposed to higher financial distress, leading to stock returns being more volatile. Average stock return (*AVE_RET*) is controlled because higher levels of stock returns can incentivize investors to seek more firm-specific information, thus leading to more information transparency. We control for return volatility (*VOL_RET*) because firms with more volatile returns produce more firm-specific information and are hence less impacted by industry- and market-wide information (Chan and Hameed 2006). We also control for stock liquidity (*TURNOVER*), as Chordia et al. (2008) suggest that greater liquidity speeds price adjustment and improves market informational efficiency by incorporating more firm-specific information into stock prices.[16] In addition, we control for fundamental bank characteristics, profitability (*ROA*), and growth (*MB*); *CRISIS* denotes the period 2007-2008 as a control for the effects of the liquidity crisis.

We estimate Eq. (6a) and Eq. (6b) using a pooled ordinary least squares (OLS) regression with year-fixed effects. We winsorize the continuous variables at 1% and 99% levels to eliminate outliers and also correct standard errors for firm-level clustering.

Table 6 reports the results: Column (1) reports those for *SEC* and Column (2) for *ABS* as the variable of interest respectively. As expected, the coefficients on *SEC* and *ABS* (−0.277 and −0.356 respectively) are both negative and significant at the 1% level, suggesting that securitizing banks are associated with less transparency.

[16] We also use stock turnover and trading volume respectively to control for stock liquidity as a robustness check.

Table 6 Bank opacity and securitization

Dependent Variable = PSI	(1) *SEC*		(2) *ABS*	
	Coef.	*p*-value	Coef.	*p*-value
SEC	**−0.277**	**0.000****		
ABS			**−0.356**	**0.000*****
SIZE_MV	0.407	0.000***	0.384	0.000***
LEV	0.940	0.000***	0.934	0.002***
AVE_RET	−3.891	0.002***	−3.745	0.034**
VOL_RET	−2.811	0.027**	−2.685	0.000***
TURNOVER	0.075	0.000***	0.048	0.767
ROA	2.617	0.641	2.386	0.050**
MB	0.017	0.031**	0.007	0.655
CRISIS	−0.116	0.255	−0.123	0.001***
Constant	6.612	0.000**	6.560	0.001***
Bank Control	Yes		Yes	
Adjusted R^2	0.431		0.032	
Number of obs.	1,716		1,716	

Note 1: ***, **, and * indicate significance at the 1%, 5%, and 10% level, respectively.
2: All the variables are defined in Appendix B.

7. Conclusions

Despite the complexity and risk involved in securitization activities, banks can benefit from them in several ways, such as reducing leverage and increasing capital adequacy. However, securitization activities also come with costs such as opacity. Moreover, although the FASB has tightened regulations on the consolidation of SPEs by FIN 46(R) since 2003, banks can still utilize QSPEs to avoid recognizing their securitization activities on the balance sheets, thereby evading the 8-10% capital reserves mandated by the Basel Accords (Acharya and Richardson, 2009). This practice, commonly referred to as regulatory arbitrage, allows banks to adhere to capital adequacy regulations while simultaneously acquiring flexibility and increasing lending through securitization. In line with the idea that outsiders have difficulties fully understanding a bank's securitizing activities, contributing to increased opacity, and managers can exploit this lack of clarity to hide bad news, our findings indicate that bank securitization activities are associated with increased opacity and, consequently, a greater risk of stock price crashes.

We further investigate whether the consolidation of QSPEs after the adoption of SFAS 166/167 improves bank transparency, reducing the stock price crash risks. To cross-validate our results, we use propensity-score matching to control for the difference in relevant dimensions

between securitizing and non-securitizing banks and create a matched sample consisting of banks with securitizing activities in the pre-SFAS 166/167 period, and banks without securitizing activities. Using a difference-in-difference design to compare stock price crash risk between two types of banks, we find that banks that are engaged in securitization activities after SFAS 166/167 experience a significant decrease in stock price crash risks than banks that are not engaged in securitization activities.

Our study has several implications. First, the results highlight the benefits of SFAS 166/167 in improving bank transparency. By requiring the consolidation of QSPEs, SFAS 166/167 provides a more complete and accurate picture of a bank's exposure to risk and constrains managers' bad-news hoarding behaviors; therefore, our study suggests that SFAS 166/167 reduces the likelihood of stock price crashes for securitizing banks. Second, these results indicate that accounting standards for consolidation play a role in increasing transparency and decreasing the future stock price crash risk since such accounting standards tighten the requirement for consolidation and prevent firms from leaving their risks and liabilities to off-balance-sheet entities. While this study examines the implementation of SFAS 166/167, which may be considered somewhat distant from the present period, the Financial Accounting Standards Board (FASB) still receives feedback from stakeholders in 2021, such as the comment that "applying the consolidation guidance in Topic 810, *Consolidation*, for variable interest entities (VIEs) is unnecessarily complex and difficult to explain and understand". The FASB continuously discusses the possibility of providing additional implementation guidance for VIEs, developing a new simplified single consolidation model, etc. Hence, this study has implications for accounting regulators.[17] Future studies may consider comparing corporate transparency between the dual models (the voting interest entity model and the VIE model) prescribed in ASC 810 and the single consolidation model prescribed in IFRS 10.

[17] Information can be found on the FASB's website at https://www.fasb.org/index.shtml.

References

Acharya, V. V., and M. Richardson. 2009. "Causes of the financial crisis." *Critical Review* 21(2–3): 195-210.

Ahn, M, S.B. Bonsall IV, Z. Bozanic, Y. Dou, G. Richardson, and D. Vyas. 2020. "Have SFAS 166 and SFAS 167 improved the financial reporting for securitizations?" *Journal of Business Finance Accounting* 47: 821-857.

An, H., and T. Zhang. 2013. "Stock price synchronicity, crash risk, and institutional investors." *Journal of Corporate Finance* 21: 1-15.

Bannier, C. E., and D. N. Haensel. 2007. "Determinants of banks' engagement in loan securitization." Working paper. Frankfurt School of Finance & Management, Frankfurt a. M. Available at https://www.econstor.eu/handle/10419/27882.

Barth, M. E., G. Ormazabal, and D. J. Taylor. 2012. "Asset securitizations and credit risk." *The Accounting Review* 87(2): 423-448.

Benmelech, E., E. Kandel, and P. Veronesi. 2010. "Stock-based compensation and CEO (dis) incentives." *Quarterly Journal of Economics* 125(4): 1769-1820.

Bens, D., and S. Monahan. 2008. "Altering investment decisions to manage financial reporting outcomes: Asset-backed commercial paper conduits and FIN 46." *Journal of Accounting Research* 46: 1017-1055.

Bleck, A., and X. Liu. 2007. "Market transparency and the accounting regime." *Journal of Accounting Research* 45(2): 229-256.

Bonsall, S., and Z. Bozanic. 2012. "Ceteris paribus? Variable interest entity (VIE) consolidation under FIN 46R." Working paper. The Ohio State University.

Boubaker, S., H. Mansali, and H. Rjiba. 2014. "Large controlling shareholders and stock price synchronicity." *Journal of Banking & Finance* 40: 80-96.

Callen, J. L., and X. Fang. 2013. "Institutional investor stability and crash risk: Monitoring versus short-termism?" *Journal of Banking and Finance* 37(8): 3047-3063.

Callen, J. L., and X. Fang. 2015a. "Religion and stock price crash risk." *Journal of Financial and Quantitative Analysis* 50(1-2): 169-195.

Callen, J. L., and X. Fang. 2015b. "Short interest and stock price crash risk." *Journal of Banking & Finance* 60: 181-194.

Calomiris, C. W., and J. R. Mason. 2004. "Credit card securitization and regulatory arbitrage." *Journal of Financial Services Research* 26(1): 5-27.

Casu, B., A. Clare, A. Sarkisyan, and S. Thomas. 2011. "Does securitization reduce credit risk taking? Empirical evidence from US bank holding companies." *The European Journal of Finance* 17(9-10): 769-788.

Chan, K., and A. Hameed. 2006. "Stock price synchronicity and analyst coverage in emerging markets." *Journal of Financial Economics* 80(1): 115-147.

Chen, J., H. Hong, J. Stein. 2001. "Forecasting crashes: Trading volume past returns, and conditional skewness in stock prices." *Journal of Financial Economics* 61(3): 345-381.

Chen, W., C. C. Liu, and S. G. Ryan. 2008. "Characteristics of securitizations that determine issuers' retention of the risks of the securitized assets." *The Accounting Review* 83(5): 1181-1215.

Cheng, M., D. S. Dhaliwal, and M. Neamtiu. 2011. "Asset securitization, securitization resource, and information uncertainty." *The Accounting Review* 86(2): 541-568.

Chordia, T., R. Roll, and A. Subrahmanyam. 2008. "Liquidity and market efficiency." *Journal of Financial Economics* 87(2): 249-268.

Credit Suisse Equity Research (CSER). 2010. *Off Again, On Again?* New York, NY: CSER.

Dechow, P. M., and C. Shakespeare. 2009. "Do managers time securitization transactions to obtain accounting benefits?" *The Accounting Review 84*(1): 99-132.

Dechow, P. M., L. Myers, and C. Shakespeare. 2010. "Fair value accounting and gains from asset securitizations: A convenient earnings management tool with compensation side-benefits." *Journal of Accounting and Economics* 49(1-2): 2-25.

DeFond, M. L., M. Hung, S. Li, and Y. Li. 2015. Does mandatory IFRS adoption affect crash risk?" *The Accounting Review* 90(1): 265-299.

Deloitte & Touche. 2010. *Back on-balance sheet: Observations from the adoption of FAS 167*. Deloitte & Touche LLP. Available at https://dart.deloitte.com/USDART/home/publications/archive/deloitte-publications/other-publications/back-balance-sheet-observations-from-adoption

Dewally, M., and Y. Shao. 2013. "Financial derivatives, opacity, and crash risk: Evidence from large US banks." *Journal of Financial Stability* 9(4): 565-577.

Dionne, G., and T. Harchaoui. 2008. "Banks' capital, securitization and credit risk: An empirical evidence for Canada." *Insurance and Risk Management* 75(4): 459-485.

Dou, Y., S.G. Ryan, and B. Xie. 2018. "The real effects of FAS 166/167 on banks' mortgage approval and sale decisions." *Journal of Accounting Research* 56 (3):843-882.

FASB. 2000. *S*tatement of Financial Accounting Standards No. 140: Accounting for transfers and servicing of financial assets and extinguishments of liabilities. Financial Accounting Standards Board, Stamford, CT.

FASB. 2003. Fin 46R: Consolidation of variable interest entities. Financial Accounting Standards Board, Norwalk, CT.FASB. 2009a. Statement of Financial Accounting Standards No. 166 Accounting for transfers of financial assets. Financial Accounting Standards Board, Norwalk, CT.

FASB. 2009b. Statement of Financial Accounting Standards No. 167 Amendments to FASB Interpretation No. 46(R). Financial Accounting Standards Board, Norwalk, CT.

FASB. 2009c. *News release 06/12/09, FASB issues statements 166 and 167 Pertaining to securitizations and special purpose entities*. Available at https://www.fasb.org/page/getarticle?uid=fasb_NewsRelease06-12-09Body_0228221200

Feng, M., J. D. Gramlich, and S. Gupta. 2009. "Special purpose vehicles: Empirical evidence on determinants and earnings management." *The Accounting Review* 84(6): 1833-1876.

Financial Crisis Inquiry Commission. 2010. *The Financial Crisis Inquiry Report: Final Report of the National Commission on the Causes of the Financial and Economic Crisis in the United States*. Washington, DC: Financial Crisis Inquiry Commission.

Franke, G., and J. P. Krahnen. 2005. "Default risk sharing between banks and markets: The contribution of collateralized debt obligations." Working paper. Available at https://www.econstor.eu/handle/10419/32167.

Hamm, S. J. W., E. X. Li, and J. Ng. 2015. "Management earnings guidance and stock price crash risk." Working paper.

Hänsel, D., and J. Krahnen. 2007. "Does credit securitization reduce bank risk? Evidence from the European CDO market." Working paper. Available at https://ssrn.com/abstract=967430.

He, G., 2015. "The effect of CEO inside debt holdings on financial reporting quality." *Review of Accounting Study* 20, 501-536.

Heilpern, E., C. Haslam, and T. Andersson. 2009. "When it comes to the crunch: What are the drivers of the US banking crisis?" *Accounting Forum* 33(2): 99-113.

Higgins, E. J., and J. R. Mason. 2004. "What is the value of recourse to asset backed securities? A clinical study of credit card banks." *Journal of Banking & Finance* 28(4): 875-899.

Hong, S., and J. E. Lee. 2015. "Internal control weakness and stock price crash risk." *The Journal of Applied Business Research* 31(4): 1289-1294.

Hsu, A. W., H. Pourjalali, and J. Ronen. 2023. "Does consolidation of variable interest entities improve the pricing of financial reporting in bank holding companies? Evidence from FAS 166/167." *Journal of Accounting, Auditing & Finance* 38(3): 510–541.

Hsu, C., R. Wang, and B.C. Whipple. 2022. "Non-GAAP earnings and stock price crash risk." *Journal of Accounting and Economics* 73(2-3): 1-26.

Hutton, A. P., A. J. Marcus, and H. Tehranian. 2009. "Opaque financial reports, R^2, and crash risk." *Journal of Financial Economics* 94(1): 67-86.

Jin, L., and S. C. Myers. 2006. "R^2 around the world: New theory and new tests." *Journal of Financial Economics* 79(2): 257-292.

Keys, B., T. Mukherjee, A. Seru, and V. Vig. 2010. "Did securitization lead to lax screening? Evidence from subprime loans." *The Quarterly Journal of Economics* 125(1): 307-362.

Kim, J. B., and L. Zhang. 2016. "Accounting conservatism and stock price crash risk: Firm level evidence." *Contemporary Accounting Research* 33(1): 412-441.

Kim, J. B., H. Li, and S. Li. 2014. "Corporate social responsibility and stock price crash risk." *Journal of Banking & Finance* 43: 1-13.

Kim, J. B., Y. Li, Y., and L. Zhang. 2011a. "Corporate tax avoidance and stock price crash risk: firm-level analysis." *Journal of Financial Economics* 100(3): 639-662.

Kim, J. B., Y. Li, Y., and L. Zhang. 2011b. "CEOs versus CEOs: Equity incentives and crashes." *Journal of Financial Economics* 101(3): 713-730.

Kim, C., K. Wang, and L. Zhang. 2019. "Readability of 10-K reports and stock price crash risk" *Contemporary Accounting Research* 36 (2): 1184-1216.

Koharki, K. J., 2014. "Mandatory disclosure requirements and rating agency catering: A study of the rule changes for qualifying special purpose entities." Working paper.

Kothari, S. P., S. Shu, and P. D. Wysocki. 2009. "Do managers withhold bad news?" *Journal of Accounting Research* 47(1): 241-276.

Kousenidis, D. V., A. C. Ladas, and C. I. Negakis. 2014. "Accounting conservatism, quality of accounting information and crash risk of stock prices." *The Journal of Economic Asymmetries* 11: 120-137.

Landsman, W., K. V. Peasnell, K., and C. Shakespeare. 2008. "Are asset securitizations sales or loans?" *The Accounting Review* 83(5): 1251-1272.

Lang, M, and R. Lundholm. 1996. "Corporate disclosure policy and analyst behavior." *The Accounting Review* 71(4): 467-492.

Mamun, M.A., B. Balachandran, and H.N. Duong. 2020. "Powerful CEOs and stock price crash risk." *Journal of Corporate Finance* 62: 1:25.

Minton, B., Stulz, R., and R. Williamson. 2009. "How much do banks use credit derivatives to hedge loans?" *Journal of Financial Services Research* 35: 1-31.

Morck, R., B. Yeung, and W. Yu. 2000. "The information content of stock markets: Why do emerging markets have synchronous stock price movements?" *Journal of Financial Economics* 58(1-2): 215-260.

Morgan, D. P. 2002. "Rating banks: Risk and uncertainty in and opaque industry." *American Economic Review* 92(4): 874-888.

Niu, F. F., and G. D. Richardson. 2006. "Are securitizations in-substance sales or secured borrowings? Capital market evidence." *Contemporary Accounting Research* 23(4): 1105-1133.

Oz, S., 2020. "Did FAS 166/167 decrease the information asymmetry of securitizing banks?" *The Financial Review* 55(4): 557-581.

Petersen, M. A. 2009. "Estimating standard errors in finance panel data sets: Comparing approaches." *Review of Financial Studies* 22 (2), 435-480.

Piotroski, J. D., and D. T. Roulstone. 2004. "The influence of analysts, institutional investors, and insiders on the incorporation of market, industry, and firm-specific information into stock prices." *The Accounting Review* 79(4): 1119-1151.

Powers, W. C., R. S. Troubh, and H. S. Winokur. 2002. *Report of investigation by the special investment committee of the board of directors of Enron Corp*. Available at https://i.cnn.net/cnn/2002/LAW/02/02/enron.report/powers.report.pdf.

Rajgopal, S., and M. Venkatachalam. 2011. "Financial reporting quality and idiosyncratic return volatility." *Journal of Accounting and Economics* 51(1-2): 1-20.

Roll, R. 1988. R-squared. *Journal of Finance* 43(2): 541-566.

Rosenbaum, P. R. 2002. *Observational Studies*. 2nd ed. New York, NY: Springer-Verlag.

Rosenblatt, M., and J. Johnson. 2001. *Securitization accounting under FASB 140: The standard formerly known as FASB 125)*. Deloitte & Touche LLP. Available at http://people.stern.nyu.edu/igiddy/ABS/fasb140.pdf.

Rosenblatt, M., J. Mountain, and A. Kenyon. 2010. *Securitization accounting: The ins and outs (and some do's and don'ts) of FAS 166, 167, and counting*. Deloitte & Touche LLP.

Ryan, S. G., J. W. Tucker, and Y. Zhou. 2016. "Securitization and insider trading." *The Accounting Review* 91(2): 649-675.

Vermilyea, T. A., E. R. Webb, and A. A. Kish. 2008. "Implicit recourse and credit card securitizations: What do fraud losses reveal?" *Journal of Banking and Finance* 32: 1198-1208.

Wagner, W., 2007. "Financial development and the opacity of banks." *Economics Letters* 97(1): 6-10.

Wang, H., and J. Zhang. 2018. "Securitization and accounting restatement." *Asian Review of Accounting* 26(4): 571-594.

Xu, N., X. Li, Q. Yuan, and K. C. Chan. 2014. "Excess perks and stock price crash risk: Evidence from China." *Journal of Corporate Finance* 25: 419-434.

Appendix A. Sample Selection

Annual observations over 2004-2014 from the Y-9C database.	37,407
bank-year observations with financial variables needed in the tests.	18,199
bank-year observations with PERMCO in the Federal Reserve Bank of New York's file that are allowed to be matched to the CRSP database.	6,380
bank-year observations over 2003-2013 matched with return data over 2004-2014 where each bank year with more than 20 weeks of weekly return	4,899
bank-year observations with both pre-and post-166/167 periods	4,212
Final sample	4,212

Appendix B. Variable Definition

Dependent Variable	
CRASH	An indicator variable which equals one if the firm experiences one or more crash weeks during the fiscal year *T*, and zero otherwise.
NCSKEW	The negative of the third moment of each stock's firm-specific weekly returns, scaled by the standard deviation of bank-specific weekly return raised to the third power.
DUVOL	The standard deviation for the up and down samples separately and then compute the log ratio of the standard deviation of the down sample to the standard deviation of the up sample.
PSI (ψ_{it})	Given the bounded nature of R^2_{it}, we take a logistic transformation of $1 - R^2_{it}$, to construct our dependent variable, ψ_{it} measures bank-specific idiosyncratic risk relative to systematic risk.
Independent Variable	
POST	An indicator variable for the year since 2010 and zero otherwise, to capture the regulatory change of 166 and 167.
SEC	Indicator variable which equals one if the banks reporting securitized assets in year *t* and zero otherwise.
SECINC	The sum of the servicing fee and securitization income over year *t* scaled by total assets at the beginning of year *t*.
VIE	A securitizing bank's involvement with VIEs (variable interest entities), calculated as the total assets of consolidated VIEs scaled by total assets.
VIE_dummy	An indicator variable equals one if *VIE* is greater than 0 and zero otherwise.
ABS	Asset-based securitization intensity measured as the ratio of total securitized assets to the total assets in year *t*.
MBS	Securitized 1-4 family residential mortgages scaled by total assets.
CONSBS	Securitized consumer loans (home equity lines of credit, credit card receivables, automobile loans, and other consumer loans) scaled by total assets.
COMMBS	Securitized commercial loans (commercial and industrial loans and all other loans, leases, and assets) scaled by total assets.
RI	Interest in securitized assets that still remain on-balance sheet in three forms (a) Credit enhancing interest-only strips; (b) Subordinated securities and other residual interests; (c) Standby letters of credit and other enhancements is excluded.
MRI	Mortgages: total retained interests from mortgage securitizations, scaled by total assets
CONSRI	Consumer loan: total retained interests from consumer loan securitizations, scaled by total assets

Appendix B. Variable Definition (continued)

COMMRI	Commercial loan: total retained interests from commercial loan securitizations, scaled by total assets
NPL_SEC	The percentage of nonperforming loans associated with securitized loans.
MNPL_SEC	Mortgages: past due (nonperforming) securitized mortgages divided by MBS
CONSNPL_SEC	Consumer loan: past due securitized consumer loans divided by CONSBS
COMMNPL_SEC	Commercial loan: past due securitized commercial loans (plus others) divided by COMMBS
CHOFF_SEC	The percentage of the charge-offs associated with securitized loans.
Control Variable	
SIZE_AT	The natural logarithm of total assets at the beginning of year *t* (from y-9c).
SIZE_MV	The natural logarithm of the market value of equity at the beginning of year *t* ; (PRC*SHROUT*1000) (from CRSP)
LEV	Total liabilities divided by total assets at the beginning of year *t.* (from Y-9C)
ROA	The net income over year *t* scaled by total assets at the beginning of year *t* (from Y-9C)
MB	Market to book ratio at the beginning of year t The ratio of market value of equity to book value of equity (CSHO*(PRCC_F) /(CEQ) (from Compustat
AVE_RET	The mean of firm-specific weekly returns over the over the bank-year *t* (presented in %)
VOL_RET	The standard deviation of firm-specific weekly returns over the bank-year *t*
TURNOVER	Monthly share turnover is calculated as the monthly trading volume divided by the total number of shares outstanding during the month and yearly turnover is the average monthly turnover over the year t.
DTURN	Average monthly share turnover over the current bank-year *t* minus the average monthly share turnover over the previous bank-year *t-1*, where monthly share turnover is calculated as the monthly trading volume divided by the total number of shares outstanding during the month.
CRISIS	An indicator variable for the time period 2007-2008.
DERIV	Notional amounts of derivatives divided by total asset
TRADING	Trading income during the quarter divided by total assets
SECURITIES	The sum of available-for-sale and held-to-maturity securities excluding retained interest, scaled by total assets
NPL_ONBS	Past due on-balance sheet loans scaled by total assets.
CHOFF_ONBS	The charge-offs on the on-balance sheet scaled by total assets.
EQUITY_RATIO	Total equity divided by total assets at the beginning of year *t.*
LIQUIDITY_RATIO	The sum of cash, interest-bearing deposits, trading assets, available-for-sale securities, federal funds sold, and securities purchased under agreements to resell, scaled by total assets
DEPOSIT_RATIO	Quarterly average for all interest-bearing deposits, scaled by total assets.
LOAN_RATIO	The proportion of on-balance sheet net loans to total assets.
TIER1_RATIO	Tier 1 risk-based capital ratio.

中華會計學刊
第 19 卷 第 2 期，285-326 頁 (2023)
DOI:10.6538/TAR.202312_19(2).0004

中文粹要

強制性合併與股價崩盤風險：美國控股銀行的證據

許文馨 [1]　劉心才 [1, 2]

[1] 國立臺灣大學會計學系
[2] 國立臺灣大學計量理論與應用研究中心

通訊作者：劉心才
通訊地址：100046 台北市羅斯福路四段 1 號
E-mail：htliu@ntu.edu.tw
投稿日期：2023 年 9 月 22 日；2 審後接受，接受日期：2026 年 11 月 23 日

摘　要

本文探討銀行資產證券化活動是否產生資訊不透明度，因而與未來股價暴跌風險相關；並且根據 SFAS 166/167 強制規定美國符合資格的特殊目的實體 (以下簡稱 QSPEs) 必須要與主體公司合併，此強制要求財報合併與資訊披露是否影響銀行的不透明度和未來股價暴跌風險。本研究發現在美國的銀行控股公司中，參與證券化活動較為普遍的公司與未來股價暴跌風險較高有關，此發現支持複雜的表外證券化交易增加銀行不透明度並為銀行高管囤積壞消息提供更多空間的觀點。此外，本文主張在 SFAS 166/167 規定下對 QSPEs 進行的合併，因此揭露了先前表外隱藏的資產、負債、收入等，使證券化活動更加透明。本文總結，SFAS 166/167 的監管變革，強化資訊披露和合併先前表外資產證券化活動，進而有效降低了股價暴跌風險。

關鍵詞：特殊目的實體 (SPE)、會計準則 166 和 167、證券化、股價崩盤風險

劉心才感謝國科會 (NSTC. 105-2410-H-002-038) 及國立臺灣大學計量理論與應用研究中心的教育部高教深耕計劃 (Grant no. 112L900201) 經費支持。

數據可用性：本文使用的數據可從公開資料來源取得。

1. 研究議題

2009 年 6 月，財務會計準則委員會 (FASB) 發布了財務會計準則 [FAS] 166/167。首先，SFAS 166 取消了在 FIN46(R) 中對 QSPEs 的合併例外，贊助方需要評估其贊助的 VIEs 風險和利益，並確定是否為主要受益人，如果是的話，則需要合併這些 VIEs。其次，SFAS 167 增加了定性測試，以確定贊助方是否為 VIE 的主要受益人。此外，SFAS 166/167 要求公司揭露與合併的 VIEs 相關信息。因此，SFAS 166/167 關閉了會計揭露漏洞，為財務報表使用者提供有關金融資產轉移更大的透明度 (FASB 2009a)。我們預期，新的會計處理使財務報表使用者更容易確定誰最終控制 QSPEs 並承擔風險，以及銀行暴險的規模。本研究首先探討證券化活動是否對銀行的信息透明度產生不利影響，並增加未來股價暴跌風險。我們進一步調查會計準則的演進 (SFAS166/167 之前和之後的時期)，特別是關於 QSPE 合併和揭露，是否提高了證券化銀行的信息透明度，降低了股價暴跌的風險。

2. 研究假說

本研究認為股價暴跌風險與銀行是否參與證券化活動有兩個相關原因。首先，證券化是一種複雜的交易，外部人難以充分了解銀行的證券化活動及相關風險，因此，證券化活動增加銀行的不透明性 (Chen et al. 2011)。其次，先前的研究將證券化與管理階層不當行為聯結起來。因此，本研究認為由於證券化的複雜性和管理層的動機，證券化活動與股價暴跌風險呈正相關；證券化可提供給管理層一種管道，以掩蓋壞消息和糟糕的財務表現，進而導致更高的暴跌風險，因此形成假說一：

H1: ***銀行參與證券化活動的程度與未來暴跌風險呈正相關。***

自 2009 年以來，SFAS 166/167 已經將 QSPEs 排除在合併的例外情況之外，此外，即使銀行無需合併 VIEs，SFAS 166/167 還要求進行更多的訊息披露。本研究認為 SFAS 166/167 對 QSPEs 的合併和披露要求降低了信息風險。因此，SFAS 166/167 執行後，銀行高層透過證券化隱瞞信息和盈餘管理的空間減少，因此形成假說二：

H2: ***SFAS 166/167 採用後，銀行參與證券化活動的程度與未來暴跌風險的正相關程度降低。***

3. 研究方法

本文以美國控股銀行為研究樣本，樣本期間為 2004 年至 2014 年。利用從 FAS 140/FIN 46(R)(合併豁免制度) 轉變為 SFAS 166/167 (強制合併制度) 的變化，我們運用差異中的差異研究設計，比較在 SFAS 166/167 之前和之後的時期，具有 QSPE 風險的銀行與沒有 QSPE 風險的銀行之間的暴跌風險。

4. 研究結果

本研究發現，參與證券化活動更為頻繁的美國銀行控股公司，與未來股價暴跌風險呈現正相關。此外，本文認為在 SFAS 166/167 下對 QSPEs 的合併要求揭示了先前隱藏的資產、負債、收入等，使得證券化活動更加透明。本文發現 SFAS 166/167 的監管變革增強披露與合併之前的資產負債表外的證券化活動，有效降低了股價暴跌風險。

5. 研究貢獻

這項研究有幾方面貢獻。首先，證券化活動的複雜性和不透明性引起學術界和實務界的興趣。本研究發現評估證券化活動的風險和經濟結果的困難性使銀行經理更容易隱瞞壞消息，從而導致未來的股價崩盤風險增加。其次，本研究調查從資產負債表外揭露到資產負債表內認列的會計準則的改變是否影響證券化銀行未來的股價崩盤風險，補充現有的關於資產負債表的合併之會計準則變更的文獻，有助於理解強制性會計準則變更對銀行面臨的風險透明度可能產生的股價變動效應。第三，這項研究對於會計準則制定者也具有價值，因為一系列涉及特殊目的實體 (SPEs) 的會計弊案之後，監管機構和投資者對 SPEs 的關注增加。從 Enron 事件到最近的 2007 年至 2010 年間發生的次貸危機，這些資產負債表外活動顯示了它們對金融機構帶來高風險的不良影響。最後，我們對研究股價崩盤風險的文獻也有所貢獻。許多研究已經調查了信息不透明度與股價崩盤之間的聯繫，但其中大多數集中在非金融行業。通過利用美國控股銀行的監管報告提供的有關證券化的詳細信息，我們的研究補充了先前關於實體 (SPEs) 不透明度和股價崩盤風險的研究。