銀行證券化放款揭露之市場評價

Market Valuation of Banks' Loan Securitizations Disclosures

陳維慈[1] Weitzu Chen

國立臺北大學 會計學系

Department of Accountancy, National Taipei University

摘要：由於美國財務會計準則公報第 140 號以控制權移轉作為證券化資產之出售會計的處理依據，本研究旨在探討資本市場對於證券化資產之評價是否與企業遵循會計準則之表達一致。自銀行申報主管機關之合併報表揭露資訊中，本文實證結果發現：(1)不論從事證券化活動之銀行是否持有具高風險之保留權益，投資人對於銀行以出售會計而除列於資產負債表之證券化放款以表上資產予以相似評價；(2)當銀行從事證券化活動而持有高信用風險之保留權益時，市場將視銀行保有之風險程度而於股價部分反應之；(3)放款特性隱含之不同信用風險的外部可驗證性亦將影響投資人將證券化放款視為表上資產之評價程度。本研究除發現表外活動之訊息有用性外，為提供投資人透明與攸關資訊，準則單位應在原則式準則的修訂方向中審慎思考適當之會計處理以反映交易之經濟實質。

關鍵詞：證券化放款；資產負債表外資產；出售會計；擔保借款

Abstract：This study aims at investigating how the capital market prices securitized loans, as they are accounted for as off-balance sheet assets under Statement of Financial Accounting Standards No. 140. From the regulatory reports of bank holding companies, this study provides evidence in three aspects:

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[1] Corresponding author: Department of Accountancy, National Taipei University, Taipei, Taiwan, Email: wtzchen@mail.ntpu.edu.tw

(1) investors perceive banks' securitized loans with similar value to other on-balance sheet assets, (2) riskiness of contractual interests residing with the securitizing banks partially affects market pricing on transferred loans, and (3) characteristics of loans implying differential levels of external verification of credit risk have a great impact on investors' perception of loan securitizations as secured borrowings. Findings of this study address the usefulness of off-balance sheet activities disclosures. Moreover, how to properly account for transactions, such as securitizations, to reflect their economic reality is important as standard setters adopt the principle-based concept in revising accounting standards for providing transparent and relevant information to investors.

Keywords ： Securitized loans; Off-balance sheet assets; Sale accounting; Secured
borrowings

1. Introduction

Before the subprime crisis, accounting issues on off-balance sheet financing obligations relating to financial asset securitizations were first raised due to Enron's bankruptcy. [2] Securitizations involve pooling, repackaging, and transferring individual financial assets to a special purpose entity (SPE) which is in turn funded by the sale of debt securities, supported by the cash flow for the assets, to domestic or international investors. For a securitizer-originator (S-O) with a comparative advantage in processing the required infrastructure, securitizations provide not only funds and gains from the transfer of financial assets but also fees for servicing these assets. [3] The SPE with a legal structure as a company or a trust is established to separate the source of repayment from the S-O, thus, facilitating securitizations by preventing the investors from any operational risk of the S-O. [4] Accounting for securitizations of financial assets and for the entities in these transactions has been prescribed by U.S. Statement of Financial Accounting Standards (SFAS) No. 140, *Accounting for Transfers and Servicing of*

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[2] Failure to disclose certain off-balance sheet financing obligations through transactions with SPEs, among other reasons, was blamed for Enron's failure.

[3] A securitizer can be a loan originator or a firm that purchases loans from originators.

[4] See Chen and Liu (2011a) for a complete discussion on the securitization process.

Financial Assets and Extinguishments of Liabilities (Financial Accounting Standards Board, FASB 2000).[5] In principle, when financial assets in securitizations are transferred to the SPE, most, if not all, of transactions are accounted for as sales in accordance with the "control" concept under SFAS No. 140. For S-Os, sale accounting is to derecognize transferred assets and record any gain or loss through the difference between the book value of sold assets and cash proceeds from the SPE. Thus, S-Os structuring their securitization transactions as sales gain economic and accounting-based benefits (e.g., Greenbaum and Thakor 1987; Schipper and Yohn 2007; Chen and Liu 2011a). Despite that FASB Interpretation (FIN) No. 46(R), *Consolidation of Variable Interest Entities: an interpretation of ARB No. 51* (FASB 2003) further governs the consolidation of variable interest entities (VIEs) including virtually all securitization entities with the S-O, "qualified" SPEs are exempt from consolidation requirement. In consequence, as the subprime crisis caused the S-Os to restructure the terms of their loans to help struggling homeowners, a formerly legal sales transaction before restructuring may become more likely a debt when more recourse returns after the change of original terms. Although the Securities and Exchange Commission (SEC) gave subprime lenders permission to modify already securitized mortgages without taking the assets back on their balance sheets, the permission of SEC highlighted again the concerns about accounting treatment of transferred financial assts in securitizations.[6]

A risks-and-rewards approach, in contrast with the control concept stipulated by SFAS No. 140, is addressed by the international accounting standards-setting organization for securitizations.[7] This approach is performed by comparing the

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[5] In 2000, SFAS No. 140, replacing SFAS No. 125, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, carried over most of provisions stipulated in SFAS No. 125 and required enhanced disclosures.

[6] Starting in 2010, SFAS No. 166, *Accounting for Transfers of Financial Assets: an amendment of FASB Statement No. 140* and SFAS No. 167, *Amendments to FASB Interpretation No. 46 (R)*, amend SFAS No. 140 and FIN No. 46 (R), respectively. These two accounting standards reflect FASB's concerns on completeness and representational faithfulness of SPE's disclosures.

[7] Starting in 2000, International Accounting Standards Board (IASB) and U.S. Financial Accounting Standards Board (FASB) have emerged as two major standard-setting bodies in the world. IASB issues International Financial Reporting Standards (IFRSs), which are presently used in over 115 countries. Listed companies in Taiwan are expected to adopt IFRSs in 2013.

transferor's exposure, before and after the transfer of financial assets. To derecognize a financial asset, thus, effecting sales accounting, "substantially all" the risks and rewards of ownership of the financial asset should be transferred. On the other hand, retention of substantially all the risks and rewards of ownership of a financial asset would result in a secured borrowing if the transferor's exposure to variability in future amounts and timing of the net cash flows of the asset does not change significantly after the transfer. In circumstances where a firm neither transfers nor retains substantially all the risks and rewards of ownership of the financial assets, a control test which is similar to that under SFAS No. 140, is then applied.[8] Despite the fact that a true sale is not illegal in any respect in accordance with the control concept under SFAS No. 140, the S-O's earnings, in most cases, are distorted and liabilities are underestimated when substantial risk of transferred assets is retained by S-Os through contractual or noncontractual interests created to enhance credit for investors. Because securitizations involve complex partitioning of the risks of transferred assets, whether the control or risks-and-rewards concept reflects the economic reality of the transfer of financial assets becomes an empirical question. From the point of view of information users, relevant and reliable information is important for decision making. In the meanwhile, accounting standards are a necessity to ensure the transparency of financial information for users (e.g., investors and management). To prevent a misleading picture of financial positions of firms undertaking securitizations, appropriate accounting treatment should be clarified.

Prior literature performing risk analysis of securitizing firms provides evidence on incomplete risk transfer (Dionne and Harchaoui 2003; Calomiris and Mason 2004; Niu and Richardson 2006; Chen *et al.* 2008; Chen and Liu 2011b). Those findings, generally consistent with the risks-and-rewards concept, imply that secured borrowings are the appropriate accounting treatment for S-Os' securitization transactions. Analogous to the above findings regarding

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[8]   Taiwan SFAS (TSFAS) No. 33, *Accounting for Transfers of Financial Assets and Extinguishments of Liabilities*, which is in spirit equivalent to U.S. SFAS No. 140, was issued in 2003. TSFAS No. 33 is presently effective until Taiwan's accounting standards are fully aligning with IFRSs in 2013.

risk-relevance of S-Os' securitizations, this study finds that S-Os' market values of equity have the same association with their off-balance sheet securitized assets as with their on-balance sheet assets whether or not they retain contractual interests with concentrated risk. This association is affected in part by the riskiness of contractual interests residing with the S-Os. Furthermore, differential levels of external verification of credit risk implied in types of securitized loans have a great impact on investors' perception of asset securitizations as S-Os' secured borrowings. This study differs from Landsman *et al.* (2008), the most related prior study on a multi-industry basis, by restricting to the bank holding companies (banks) sample. While such restriction reduces the external validity of empirical results, this study gains increased power and specificity in tests by providing greater ability to observe the characteristics of securitizations through bank regulatory reports, thus contributing to securitizations literature in two ways. First, as evidenced by Landsman *et al.* (2008), investors treat securitization transactions as if they were a form of secured borrowing for S-Os. This study, through a direct test on contractual retained interests (interest-only strips and subordinated securities), provides an additional insight into whether or how contractual interests with concentrated risk in securitizations affect market valuation of S-Os' securitized loans. In contrast with Landsman *et al.*'s (2008) claim that investors do not price riskiness of contractual interests retained by S-Os, this study proves that market participants partially, although not fully, incorporate risk information of retained interests into their investment decisions, thus, supporting Chen *et al.*'s (2008) findings that most securitizations are not pure sales or pure secured borrowings but rather fall at different places along the continuum between these two extremes. Second, since types of securitized loans differ in the extent and external verifiability of the loans' credit risk and thus in the extent to which banks must retain contractual interests in the loans, this study identifies and quantifies the extent to which S-Os' credit risks vary with securitized loans by type of loan.

The rest of the study is organized as follows. Section 2 elaborates on accounting treatment of asset securitizations under sale and secured borrowing models. Section 3 reviews the related literature and proposes hypotheses for this

study. Section 4 and 5 presents research design, data and sample selection, and empirical findings. Section 6 concludes findings of this study.

2. Accounting Treatment

Accounting for transfers of financial assets is primarily governed by SFAS No. 140, *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, as sales and secured borrowings. Along with SFAS No. 140, consolidation of securitization entities is further prescribed in FIN No. 46 (R), *Consolidation of Variable Interest Entities: an interpretation of ARB No. 51*.

Sale vs. Secured Borrowing Accounting

Under the control concept in SFAS No. 140, sale accounting for transfers of financial assets is applied when S-Os surrender control over some or all interests in the assets, with gains or losses on sale recognized in their books. The retained component is measured and recognized at the original carrying value of the securitized assets times the component's proportion of the fair value of underlying financial assets. In contrast, if control is not surrendered over any component of the transferred assets, a securitization transaction would be treated as a form of secured borrowings. The S-O shall continue to carry the assets transferred out as its on-balance sheet asset. Cash received is considered the amount borrowed, and the securitized assets are considered pledged and reclassified as collateral.

Consolidation of Securitization Entities

Divergence between aforementioned accounting treatments highlights the S-O's preference in sale to secured borrowing. Sale provides gains, in most cases, recognized in the S-O's book, thus, resulting in a higher return on assets. As cash proceeds from asset transfers are used to extinguish on-balance sheet liabilities, S-O's leverage ratio can be further improved. Apart from the S-O's preference, the issue of whether the securitization is a sale or a secured borrowing was raised after Enron's demise. Enron, as a S-O, failed to disclose certain off-balance sheet financing obligations through its transactions with SPEs when it still retained risk in securitized assets. In response to the exclusion of entities' important financial items from consolidated financial statements (e.g., Enron and its SPEs), FASB in 2003

introduced a risks-and-rewards model in FIN No. 46 (R) prescribing the guidelines to determine whether firms (e.g., S-Os) should include certain investments or other financial arrangements (e.g., SPEs) in consolidated financial statements.[9] However, the fact that qualifying SPEs are exempt from consolidation of the S-O's financial statements under FIN No. 46 (R) plus incomplete disclosure in notes to the S-O's financial reporting potentially impedes users of information in their ability to fully price the S-Os' assets and liabilities.[10]

3. Prior Literature and Hypothesis Development

In general, securitized loans are more likely to default than non-securitized loans with similar risk profiles since securitizations adversely affect the S-O's incentives to screen loans, hence, altering its risk profile (Keys *et al.* 2008). The complex partitioning of the risks of securitized loans further obscures the economic reality of transactions. It is suggested by previous literature that risks arising from contractual or non-contractual (implicit) interests in securitizations reside actually in S-Os. Jones (2000) first indicates that banks treat securitization as a technique to undertake regulatory capital arbitrage and substantially reduce their regulatory measures of risk, with little or no corresponding reduction in their overall economic risks. Jones's (2000) proposition is supported by Dionne and Harchaoui's (2003) evidence on a positive relation between securitizations and risk. Calomiris and Mason (2004) further indicate that S-Os keep the risks of securitized assets on their balance sheets, thus resulting in reducing their regulatory capital requirements without commensurately reducing their assets.

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[9] Before the issuance of FIN No. 46, *Consolidation of Variable Interest Entities: an interpretation of ARB No. 51.* Accounting Research Bulletin (ARB) No. 51, *Consolidated Financial Statements*, is usually applied to subsidiaries in which an enterprise has a "majority voting interest". This voting interest approach, however, is not effective in identifying controlling financial interests in entities (such as VIEs) that are not controllable through voting interests or in which the entity investors do not bear the residual economic risks. In December 2003, FIN No. 46 (R) replaces FIN No. 46 to clarify the application of ARB No. 51.

[10] To be a qualifying SPE, an entity (1) is "demonstrably distinct" from the sponsor; (2) is significantly limited in its permitted activities, and these activities are entirely specified by the legal documents defining its existence; (3) holds only "passive" receivables, that is there are no decisions to be made; (4) has the right, if any, to sell or otherwise dispose of non-cash receivables only in "automatic response" to the occurrence of certain events (par. 35, SFAS No. 140).

Chen and Liu (2011b), consistent with Dionne and Harchaoui's (2003) findings, report the positive impacts of securitizations on S-Os' total and priced risk. Their results imply that increased risk from credit enhancements and moral recourse provided by the S-Os outweighs decreased risk due to diversified asset portfolios. Niu and Richardson's (2006) findings support that S-Os retain most, if not all, of the risks related to the transfer of receivables. Specifically, off-balance sheet securitized assets have, on average, the same risk-relevance as on-balance sheet debt for explaining market measures of risk. In sum, prior literature supports incomplete risk transfer of securitized loans by S-Os and is consistent with the practical view of securitizations as secured borrowings.

Prior evidence on incomplete risk transfer of the S-O's securitized assets, however, does not provoke changes of sale accounting for most, if not all, of securitization transactions under the control approach.[11] Divergence between academic evidence generally consistent with the risks-and-rewards concept and accounting standards prescribed by SFAS No. 140 highlights an important issue to be resolved. To the extent that a firm's market value reflects all economic information, prior studies provide evidence on value-relevance of accounting numbers regarding most, if not all, of economic events.[12] Since Ohlson (1995) and Feltham and Ohlson (1995) have derived the properties of accounting information under the clean surplus relation (CSR), a substantial body of research, including Landsman *et al.* (2008) on securitizations, employs their model to investigate the association between firms' market values of equity and financial statement numbers.[13] For securitization transactions, if market participants, on average, price the incomplete risk transfer of securitized assets from the S-O to

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[11] WESCO, among other few firms, amended in December 2006 their accounting treatment of $500 million securitization program by including receivables sold on its balance sheet and labeling them secured borrowings for the purpose of transparency and good governance.

[12] Economic information meeting the recognition criteria prescribed by accounting standards is reflected in accounting numbers.

[13] The clean surplus relation (CSR) states that the ending book value of equity must equal the beginning balance plus earnings less dividends. Based on assumptions of valuation equation expressing that the market value equals the present value of future expected dividends, and CSR, Feltham and Ohlson (1995) derive a model relating equity market value to the book value of equity and earnings.

SPEs, the transactions would be treated as secured borrowings and the transferred assets would be viewed as on-balance sheet assets. On the contrary, if assets transferred in securitizations are perceived by the market as true sales, these assets would become unrelated to the S-O's equity market value. Landsman *et al.* (2008), among other studies examining the valuation implications of off-balance sheet activities (e.g., Landsman 1986; Venkatachalam 1996), first investigate how the capital market views the S-O's financial assets in securitizations. By consolidating assets and liabilities of the S-O and SPEs, they suggest that assets and liabilities of SPEs are viewed as the S-O's. Their findings support secured borrowings treatment for the S-O's transactions across industries.[14] Following Landsman *et al.* (2008), this study, based on bank loan securitizations, a limited subset of research sample, expects that if investors incorporate information of incomplete risk transfer of loans in securitizations into their investment decisions, the S-O's securitized loans, although derecognized under sale accounting, would be treated as on-balance sheet assets. The first hypothesis is posited as follows.

H1 :Banks' equity market values are positively related to the magnitude of their off-balance sheet securitized loans, all else being equal.

To credit protect purchasers of the asset-backed securities (ABS) against adverse selection, S-Os as a subset of investors assume sufficiently large first-loss interests in their securitized assets by retaining contractual interests. Ignoring other forms of credit enhancement, the three types of contractual interests are servicing rights, recourse obligations, and asset-backed securities. Because servicing rights usually have relatively small value and recourse obligations are relatively rare, asset-backed securities become the most common form to credit enhance investors. Among different layers of asset-backed securities, the junior securities taking the first defaults, relative to the senior sold to investors, are generally retained by S-Os. Interest-only strips and subordinated ABS are the two most important types of junior ABS. Interest-only strips have considerably more

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[14] Chuang (2008) examines market valuation of banks' securitized loans and finds that the market still values sold components of underlying loans even though the S-O accounts for these loans as true sales.

concentrated risk than subordinated ABS because the former has no right to the principal payments on securitized loans, thus, usually has very small value. In contrast, holders of subordinated ABS have the right to receive principal payments, but only after principal payments to more senior ABS have been made. As a consequence, contractual interests are expected to affect the S-O's proportion of credit risk in securitizations. If the market prices the risk of retained contractual interests through interest-only strips and subordinated securities, the level of retained interests would affect investors' perception of securitized loans as on-balance sheet assets on the S-O's equity value.

Although findings of Landsman *et al.* (2008) suggest that the level of retained interests has no influential impact on securitized assets, their findings may be attributable to market participants' inability to access information distinguishing the level of risk in contractual interests.[15] In many instances, notes disclosure of financial statements prescribed by SFAS No. 140 may not clearly reflect the nature of all retained interests relating to securitizations, however, columnar disclosure on retained interests in regulatory reports of banks can be easily and clearly identified instead. If the investors' difficulty in accessing information is the primary reason for the insignificant influence of retained interests on the risk transfer of securitized loans, it is expected that the risk of securitized loans retained by S-Os can be better assessed in the context of regulatory reports with detailed and columnar disclosure on related activities than by annual financial statements. Thus, this study proposes the following hypothesis that investors' perception of securitization transactions as secured borrowings, and in conjunction, the S-O's securitized loans as on-balance sheet assets would vary with the level of retained interests.

> *H2 : Banks' equity market values are more positively related to the magnitude of their off-balance sheet securitized loans when they retain more contractual interests from securitizations, all else being equal.*

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[15] Little or no risk transfer in securitizations accounted for as sales may be another possible reason for Landsman *et al.*'s (2008) findings on the insignificant impact of retained interests on securitized assets. However, this reason is inconsistent with prior research on incomplete risk transfer of the S-O's financial assets in securitizations.

Due to the heterogeneity of credit risk in borrowers, bank assets in general are more difficult to value than assets of nonfinancial firms (Morgan and Stiroh 2001; Morgan 2002). Loans, as one major asset type for banks, differ in the extent of and external verifiability of their credit risk. The S-Os' superior knowledge of credit risk of loan types, thus, reflects their varying degree of information advantage over investors (Chen *et al.* 2008). For example, mortgages usually have the lowest and most externally verifiable credit risk because they are more homogeneous or standardized than other loan types, and they have a majority portion sold to the two government-sponsored enterprises (GSEs), Fannie Mae and Freddie Mac, or guaranteed against default by Ginnie Mae.[16] Due to the creation of broad investor base helping fund mortgages, mortgages are securitized with a ratio of total mortgages over 50%. For consumer loans, since banks commonly securitize all of their consumer loans, the problem of cherry-picking loans of high quality for securitizations by S-Os is significantly alleviated. In contrast, commercial loans, as the individually largest and least standardized or homogeneous loan type, have the highest credit risk due to their lowest external verifiability. Banks generally securitize a small percentage of their commercial loans, thus, cherry-picking is much more likely to be a problem, relative to mortgages and consumer loans. Taken together, investors' difficulties in distinguishing credit risk of securitized loans would vary in reverse order of external verification in loans.

Aside from the differential degrees of external verification in loan types, S-Os have the incentive and ability to provide implicit recourse beyond contractual interests to preserve their reputation for the ongoing relationship with SPEs, protect future access to the markets, avoid repurchasing costs, and signal private information (Calomiris and Mason 2004). Although the probability that the S-O will incur moral or implicit recourse inversely varies with the extent of market liquidity, Niu and Richardson (2006) indicate that the S-O's securitized loans with implicit recourse have the same risk relevance as on-balance sheet debt. In the case of borrowers' defaults, the S-O's transferred loans with implicit

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[16] According to Rosen (2007), Fannie Mae, Freddie Mac, and Ginnie Mae accounted for 46% of MBS in 2006.

recourse in securitizations would be reversed, along with any gains on the original sale. Hence, it is expected that if investors incorporate the characteristics of securitized loans in terms of external verification of credit risk and moral recourse into their decisions, their perception reflected in S-Os' equity market values would be different. The third hypothesis pertaining to the effect of the type of loans securitized is stated as follows.

> ***H3 : Banks' equity market values are more positively related to the magnitude of their off-balance sheet securitized loans when the loans have higher and less externally verifiable credit risk, all else being equal.***

4. Research Design

4.1. Model Specifications

To investigate market perception of securitized loans, a cross-sectional valuation model proposed by Ohlson (1995) and Feltham and Ohlson (1995) on the basis of balance sheet identity is employed in this study.[17] The concern on securitized loans accounted for as sales is motivated by the fact that even these assets are removed from balance sheets after transactions, the S-Os still retain substantial amount of risk and by the potential for the mispricing of firm value due to inadequate securitization disclosures. Since securitization activities disclosed by bank holding companies in regulatory reports (FR Y-9C) are all

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[17] The valuation equation used as the assumption of Ohlson's (1995) and Feltham and Ohlson's (1995) model is:

$$MVE_t = \sum_{t=1}^{\infty}\left(E_t\left[D_{t+1}\right] \div (1+r)^t\right)$$

With the assumption of a clean surplus relation (CSR):

$BV_{t+1} = BV_t + NI_{t+1} - D_{t+1}$, which implies

$D_{t+1} = NI_{t+1} - BV_{t+1} + BV_t$

Thus, the valuation can be restated as follows:

$$MVE_t = BV_t + \sum_{t=1}^{\infty}\left(E_t\left[NI_{t+1}\right] \div (1+r)^t\right)$$

Where MVE is the market value of equity; D is dividends; BV is the book value of equity; NI is the net income; and r is the discount rate.

accounted for as sales under SFAS No.140, this study first performs sale models. If the market views securitized assets as secured loans, it is expected that investors would incorporate these assets into the S-O's equity value even though they are accounted for as sales. On the other hand, if securitized loans are viewed by investors as true sales, no relation between securitized loans and the S-O's equity market value would be observed.

Sale Models

Since observations undertaking securitizations in this study are all accounted for as sales in accordance with SFAS No. 140, the S-Os have derecognized securitized assets from their balance sheets and recorded any gains or losses from loan securitizations on their income statements. The following sale models, *Sal-1* and *Sal-2*, are constructed based on the S-O's reported total assets, liabilities, and net income without any adjustment, thus, providing a benchmark to examine investors' perception of off-balance sheet securitized loans. (All variables are measured by per share amounts and empirical models are specified by omitting bank subscript)

$$MVE_t = a + bASSET_t^{Sal} + cLIAB_t^{Sal} + dNI_t^{Sal} + \mu_t \qquad (Sal\text{-}1)$$

After securitized loans accounted for as a sale are transferred to the SPE, they are treated as SPE's assets rather than the S-O's. By adding the sold component of securitized loans (ABS^{Sal}) to model *Sal-1*, it is expected that ABS^{Sal} in model *Sal-2* is not associated with the S-Os' equity values if the market views ABS^{Sal} as true sales. On the contrary, if the market perceives securitized loans as collateral, the sold component of those loans is expected to be related to the S-Os' equity values even though it is derecognized from the S-Os' balance sheets.

$$MVE_t = a + bASSET_t^{Sal} + \gamma_{abs}ABS_t^{Sal} + cLIAB_t^{Sal} + dNI_t^{Sal} + \mu_t \qquad (Sal\text{-}2)$$

Secured Borrowing Models

In principle, when securitizations are secured borrowings, the transferred loans and proceeds received from the transactions by the S-O would be priced as if they belong to the S-O's assets and liabilities, respectively. Thus, if

securitizations are perceived as a form of secured borrowings, secured borrowing models, rather than sale models, should be applied.

To examine market valuation of securitized loans under secured borrowing models, some adjustments need to be made to assets, liabilities, and net income in regulatory financial statements reported under the true sale basis. For assets under secured borrowings models, reported on-balance sheet assets are adjusted by deducting total retained contractual interests (interest-only strips, subordinated securities, and servicing assets) and adding off-balance sheet securitized loans to arrive at $\text{ASSET}^{\text{Sec}}$. Next, LIAB^{Sec} equals reported total liabilities plus the sum of total securitized loans and securitization gains and minus the sum of total retained contractual interests and securitization losses. Finally, NI^{Sec} is the S-O's net income minus (plus) securitization gains (losses) from current year securitization activities. All adjustments made for secured borrowing models are to undo the accounting impact of securitizations accounted for as a true sale on the S-O's books. Secured borrowing model, *Sec-1*, is thus employed as a baseline model. To ascertain whether the nature of total securitized loans (ABS) is in substance secured assets (for *H1*), model *Sec-2* is constructed by separating ABS from $\text{ASSET}^{\text{Sec}}$ in model *Sec-1*.

$$\text{MVE}_t = a + b\text{ASSET}_t^{\text{Sec}} + c\text{LIAB}_t^{\text{Sec}} + d\text{NI}_t^{\text{Sec}} + \eta_t \qquad (Sec\text{-}1)$$

$$\text{MVE}_t = a + b\text{ASSET}_t^{\text{Sec\_abs}} + v_{\text{abs}}\text{ABS}_t + c\text{LIAB}_t^{\text{Sec}} + d\text{NI}_t^{\text{Sec}} + \eta_t \qquad (Sec\text{-}2)$$

To assess the impact of retained contractual interests on securitized loans (for *H2*), ratio of retained interests (interest-only strips and subordinated securities) over total securitized loans (RI) is constructed to measure the extent of riskiness of transferred loans retained by S-Os. However, to avoid offsetting effects by interacting ABS with RI in regression estimations, this study redefines a risk variable, ARI, as the respective value of (halves, quintiles, or deciles) grouping percentage of nonzero RI in place of its actual value. For example, ARI based on the halves division has assigned value of 0.5 and 1 for lower and higher rankings of nonzero RI, respectively. For the quintiles classification of RI/ABS, values of ARI range from 0.2 (the lowest value) to 1 (the highest value). For the deciles

partition, ARI follows the same procedure of values assignment from 0.1 (the lowest value) to 1 (the highest value). To some extent, ARI based on different grouping procedure can capture the continuous level of retained interests in securitized loans. By interacting ABS with ARI, this study is able to assess the extent of riskiness of securitized loans residing in S-Os through retained interests with concentrated risk by model *Sec-3*.

$$
\begin{aligned}
MVE_t = a + bASSET_t^{Sec\_abs} + v_{abs}ABS_t + \omega ABS_t \times ARI_t + cLIAB_t^{Sec} \\
+ dNI_t^{Sec} + \eta_t
\end{aligned} \quad (Sec\text{-}3)
$$

To perform tests on market perception of differential characteristics of securitized loans (for **H3**), securitized loans (ABS) in model *Sec-2* is replaced first by securitized mortgages (MBS) and non-mortgages (NMORT) for model *Sec-4*, and then securitized non-mortgages are further divided into consumer loans (CONSBS) and commercial loans (COMMBS) for model *Sec-5*.

$$
\begin{aligned}
MVE_t = a + bASSET_t^{Sec\_abs} + v_{mbs}MBS_t + v_{nmort}NMORT_t + cLIAB_t^{Sec} \\
+ dNI_t^{Sec} + \eta_t
\end{aligned} \quad (Sec\text{-}4)
$$

$$
\begin{aligned}
MVE_t = a + bASSET_t^{Sec\_abs} + v_{mbs}MBS_t + v_{cons}CONSBS_t + v_{comm}COMMBS_t \\
+ cLIAB_t^{Sec} + dNI_t^{Sec} + \eta_t
\end{aligned} \quad (Sec\text{-}5)
$$

4.2. Data, Sample Selection and Descriptive Statistics

The quarterly securitization data (securitized mortgages, consumer loans, commercial loans, interest-only strips, subordinated securities, servicing assets, and securitization gains or losses), reported total assets, liabilities, and net income used in this study are all collected from the regulatory reports (FR Y-9C) on the Federal Reserve Bank of Chicago for banks with total consolidated assets of $150 million or more.[18] The initial sample of this study includes all bank holding companies from the second quarter of 2001 (securitization data became available in regulatory reports) to the fourth quarter of 2007. This data set has the

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[18] An increase in assets from $150 million to $500 million is required for filing FR Y-9C reports effective with March 2006.

advantage of detailed disclosure on securitization activities over the incomplete and constrained notes disclosure of annual reports (Niu and Richardson 2006). By using consolidated financial statements of banks required by the regulatory agency, this study can further avoid measurement errors in consolidation procedure (Landsman *et al.* 2008). After initial sample matches with quarterly Bank COMPUSTAT database to derive equity market value, MVE, and deletes observations with missing values, a final sample consisting of 1240 bank-quarter observations with securitization activities is gathered.

Table 1 reports descriptive statistics for all variables measured on a per share basis for securitizing banks under sale and secured borrowing models. Extreme 0.5% observations of all variables are winsorized to avoid effects of outliers and to preserve limited securitization data as well. Panel A of Table 1 reveals that securitizing banks, compared to firms undertaking securitizations in other industries, are larger in size in terms of equity market value (MVE) (7.870 to 174.420). Despite the wide cross-sectional variation in reported assets ($ASSET^{Sal}$) (45.856 to 1488.067), liabilities ($LIAB^{Sal}$) (37.874 to 1370.342), and reported net income (NI^{Sal}) (-0.617 to 2.871), descriptive statistics of these variables imply that banks depend on financing ($LIAB^{Sal}$ /$ASSET^{Sal}$) (0.83 to 0.92) more than all-inclusive industry.[19] Mean value of sold component of securitized loans (ABS^{Sal}) is 18.599, suggesting that retained contractual interests constitute a non-trivial portion of total securitized loans (ABS^{Sal}/ABS = 0.92). RI (retained component scaled by ABS) with mean value of 8.9% in Panel B of Table 1 represents the S-O's retention of a sizeable first-loss position in securitized loans. Under secured borrowing models, mean value of ABS is 20.155 relative to 210.063 of other on-balance sheet assets ($ASSET^{Sec\_abs}$), implying that ABS constitutes an important part of total assets (9.59%). The size of total securitized loans (ABS), on average, varies considerably across types of loans with 70.94% for mortgages (MBS), 17.86% for consumer loans (CONSBS), and 11.20% for commercial loans (COMMBS).

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[19] An all-inclusive industry sample investigated by Landsman *et al.* (2008) reveals that equity market value ranges from 0.035 to 104.00 and the leverage ratio of reported liabilities to assets values from 0.74 to 0.92.

Table 1
Descriptive Statistics

	Mean	S.D.	Min	Q1	Median	Q3	Max
MVE	35.120	21.653	7.870	22.190	29.675	41.620	174.420

Panel A: Winsorized Sample under Sale Models (N = 1240)

	Mean	S.D.	Min	Q1	Median	Q3	Max
ASSET^{Sal}	211.619	160.876	45.856	132.503	166.747	233.441	1488.067
LIAB^{Sal}	192.154	147.887	37.874	119.660	150.873	212.445	1370.342
NI^{Sal}	0.604	0.431	-0.617	0.371	0.523	0.737	2.871
ABS^{Sal}	18.599	35.613	-2.987	0.780	4.486	21.831	249.478

Panel B: Winsorized Sample under Secured Borrowing Models (N = 1240)

	Mean	S.D.	Min	Q1	Median	Q3	Max
ASSET$^{Sec\_abs}$	210.063	160.113	41.670	132.010	165.192	231.923	1487.970
LIAB^{Sec}	211.217	164.691	75.657	125.563	163.397	229.286	1389.490
NI^{Sec}	0.568	0.455	-0.982	0.344	0.513	0.713	2.778
ABS	20.155	36.746	0.000	1.384	4.967	25.267	252.947
MBS	14.297	34.887	0.000	0.000	0.884	9.814	247.292
CONSBS	3.600	10.420	0.000	0.000	0.000	2.363	85.194
COMMBS	2.258	5.580	0.000	0.000	0.000	1.386	40.121
RI	0.089	0.205	0.000	0.000	0.016	0.064	1.012

Note: Variables are defined as follows (all variables are measured on a per share basis):

   MVE = market value of equity,

Sale Models:
   ASSET^{Sal} = book value of total assets,

   LIAB^{Sal} = book value of total liabilities,

   NI^{Sal} = net income,

   ABS^{Sal} = total securitized loans minus the sum of credit-enhancing interest-only strips, subordinated asset-backed securities, and servicing assets,

Secured Borrowing Models:
ASSET$^{Sec\_abs}$ = book value of total assets minus retained contractual interests (credit-enhancing interest-only strips, subordinated asset-backed securities, and servicing assets),

   LIAB^{Sec} = book value of total liabilities plus the sum of all securitized loans and securitization gains minus the sum of credit-enhancing interest-only strips, subordinated asset-backed securities, servicing assets, and securitization losses,

   NI^{Sec} = net income minus (plus) securitization gains (losses),

   ABS = total securitized loans,

MBS = securitized 1-4 family residential mortgages,

CONSBS = securitized consumer loans (home equity lines of credit, credit card receivables, automobile loans, and other consumer loans),

COMMBS = securitized commercial loans (commercial and industrial loans and all other loans and leases),

RI = ratio of retained interests (credit-enhancing interest-only strips and subordinated asset-backed securities) from all loan securitizations over total securitized loans (ABS).

Table 2 reports Pearson correlation matrix between all variables for sale and secured borrowing models. Panel A of Table 2 shows that equity market value (MVE) is significantly related to total assets (ASSET^{Sal}), total liabilities (LIAB^{Sal}), and net income (NI^{Sal}). The extremely high correlation between adjusted total assets (ASSET^{Sec}) and liabilities (LIAB^{Sec}) is consistent with banks' operation heavily funded with financings. The positive relation between equity market value (MVE) and sold component of total securitized loans (ABS^{Sal}) provides preliminary evidence on the market perception of loans transferred to SPEs. In Panel B of Table 2, the positive relation between MVE and ABS (0.357) reveals that, except for consumer loans (CONSBS), mortgages (MBS) and commercial loans (COMMBS) are viewed as on-balance sheet assets with significantly positive association with MVE, respectively (0.315 and 0.248).

5. Empirical Analyses

In Table 3, empirical results for sale models report some interesting findings. Model *Sal-1* indicates that coefficients of S-O's reported on-balance sheet assets (ASSET^{Sal}, $t = 11.1$) and liabilities (LIAB^{Sal}, $t = -10.7$) are positively and negatively related to equity market value at 0.01 significance level, respectively. *F*-tests for coefficient estimates of ASSET^{Sal} (1.06) and LIAB^{Sal} (-1.09) report that both values are not significantly different from conventional values of 1 ($F = 0.74$) and -1 ($F = 1.31$), respectively. ASSET^{Sal} and LIAB^{Sal} are found with similar values under model *Sal-2* to those under model *Sal-1*. However, it is noteworthy that coefficient of ABS^{Sal} ($t = 1.4$) is positively associated with the S-O's equity market value at 0.1 significance level. This significant result for

ABS^{Sal}, consistent with prior research, implies that investors do price S-O's securitized loans even though they are transferred to SPEs and derecognized by the S-O from its balance sheet under sale accounting.[20,21]

<div align="center">

Table 2
Pearson Correlation Matrix

</div>

Panel A: Winsorized Sample under Sale Models

	(1)	(2)	(3)	(4)	(5)
MVE (1)	1.000				
$ASSET^{Sal}$ (2)	**0.788**	1.000			
$LIAB^{Sal}$ (3)	**0.780**	**0.999**	1.000		
NI^{Sal} (4)	**0.844**	**0.678**	**0.671**	1.000	
ABS^{Sal} (5)	**0.361**	**0.316**	**0.311**	**0.335**	1.000

Panel B: Winsorized Sample under Secured Borrowing Models

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
MVE (1)	1.000							
$ASSET^{Sec}$ (2)	**0.790**	1.000						
ABS (3)	**0.357**	**0.322**	1.000					
MBS (4)	**0.315**	**0.244**	**0.945**	1.000				
CONSBS (5)	0.073	**0.223**	**0.262**	-0.028	1.000			
COMMBS (6)	**0.248**	**0.180**	**0.186**	0.027	0.032	1.000		
$LIAB^{Sec}$ (7)	**0.780**	**0.977**	**0.515**	**0.430**	**0.269**	**0.197**	1.000	
NI^{Sec} (8)	**0.795**	**0.647**	**0.237**	**0.275**	-0.198	**0.209**	**0.625**	1.000

Note: All variables are measured per share. Variables are as defined in Table 1. Significance is indicated by bold case.

5.1. Market Perception of Securitized loans as Collateral (*H1*)

Following the empirical results under sale models in Table 3, it is reasonable to conjecture that the market treats securitization transactions as secured borrowings rather than sales. Table 4 provides preliminary evidence on market

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[20] These findings are consistent with Chuang (2008) for securitized loans accounted for as sales, thus, being derecognized from the balance sheet.

[21] To reduce the possibility of spurious inferences resulting from the deflation in sale models, model *Sal-2* is re-estimated under three specifications by using market-to-book ratio (market value divided by book value of equity), difference between market value and book value of equity in undeflated form, and the difference deflated by number of shares outstanding as the dependent variable, respectively. In the three specifications, (unreported) results shows that the coefficient on ABS^{Sal}, the primary variable in interest, is significantly positive (22.98, $t = 2.1$; 0.04, $t = 4.9$; 0.10, $t = 9.2$), respectively.

pricing for off-balance sheet securitized loans based on the secured borrowing concept. Regression results of Table 4 confirm above conjecture by indicating that under model *Sec-1*, coefficients of adjusted total assets ($ASSET^{Sec} = 0.87$, $t = 8.5$), liabilities ($LIAB^{Sec} = -0.85$, $t = -7.8$), and net income ($NI^{Sec} = 15.50$, $t = 10.8$) are all significantly related to the S-O's equity market value despite that coefficients of $ASSET^{Sec}$ ($F = 10.13$) and $LIAB^{Sec}$ ($F = 12.24$) are different from conventional values of 1 and -1, respectively.

Table 3
Market Perception of Secured Loans as Sales

Variables	Predicted Sign	Sale Model			
		Sal-1	F-stat Coef=1(-1)	*Sal-2*	F-stat Coef=1(-1)
Intercept	?	4.79*** (8.3)		4.82*** (8.2)	
$ASSET^{Sal}$	+	1.06*** (11.1)	0.74	1.04*** (11.0)	0.35
ABS^{Sal}	+			0.01* (1.4)	
$LIAB^{Sal}$	–	-1.09*** (10.7)	1.31	-1.07*** (-10.6)	0.78
NI^{Sal}	+	24.39*** (9.0)		24.24*** (8.9)	
adjusted R^2		0.828		0.828	
N		1240		1240	
F value		1989.13		1494.09	

Note: *t*-statistics are reported in parentheses and are calculated using White's (1980) consistent covariance estimator. *F*-statistics are reported for tests whether the coefficient estimates of assets (liabilities) are different from one (minus one). All variables are measured per share. Variables are as defined in Table 1. ***, **, and * indicate significance at 0.01, 0.05, and 0.10 level, respectively.

Table 4
Market Perception of Secured Loans as Collateral

		Secured Borrowing Model			
Variables	**Predicted Sign**	*Sec-1*	**F-stat Coef=1(-1)**	*Sec-2*	**F-stat Coef=1(-1)**
Intercept	?	5.60*** (10.4)		5.44 *** (10.6)	
$ASSET^{Sec}$	+	0.87*** (8.5)	10.13 ***		
$ASSET^{Sec\_abs}$	+			0.94 *** (10.8)	1.75
ABS	+			1.00 *** (11.2)	0.01
$LIAB^{Sec}$	−	-0.85*** (-7.8)	12.24 ***	-0.93 *** (-10.0)	2.13
NI^{Sec}	+	15.50*** (10.8)		15.35*** (11.5)	
adjusted R^2		0.826		0.832	
N		1240		1240	
F value		1967.22		1530.68	

Note: t-statistics are reported in parentheses and are calculated using White's (1980) consistent covariance estimator. F-statistics are reported for tests whether the coefficient estimates of assets (liabilities) are different from one (minus one). All variables are measured per share. Variables are as defined in Table 1. ***, **, and * indicate significance at 0.01, 0.05, and 0.10 level, respectively.

Although $ASSET^{Sec}$ and $LIAB^{Sec}$ seem to be overstated under model *Sec-1*, it is noted in model *Sec-2* that total securitized loans (ABS = 1.00, t = 11.2), separated from adjusted total asset ($ASSET^{Sec}$), is positively associated with equity market value at 0.01 significance level. The result implies that securitized loans are treated in the same way as other on-balance sheet assets ($ASSET^{Sec\_abs}$ = 0.94, t = 10.8) by the market. Furthermore, F-tests indicate that coefficient estimates of $ASSET^{Sec\_abs}$ (F = 1.75) and ABS (F = 0.01) are indifferent from their conventional value of 1. Similar result is suggested for $LIAB^{Sec}$ (F = 2.13). These findings are consistent with Landsman *et al.* (2008) that even though securitized loans are accounted for as true sales in accordance with the control concept prescribed by SFAS No. 140, investors still perceive them as in substance secured loans.

5.2. Market Perception of Securitized Loans as Collateral by Level of Contractual Interests (*H2*)

Based on prior findings on S-Os retaining most, if not all, of risks from contractual interests (Chen *et al.* 2008; Chen and Liu 2011b), this study further investigates if investors' perception of the S-O's securitized loans as collateral is dependent on the level of contractual interests with concentrated risk. To measure riskiness of contractual interests remaining with S-Os, a risk variable, ARI, is constructed as follows. A baseline variable, RI, is first created by dividing the S-O's retained component (interest-only strips and subordinated securities) with the most concentrated risk by total securitized loans (ABS). Although RI captures continuous degree of riskiness remaining with S-Os, a classification procedure on RI is performed to avoid offsetting effects of interacting RI with ABS in model *Sec-3*. By separating RI into halves, quintiles, or deciles group based on its rankings of nonzero values, a new risk variable, ARI, is used to measure the S-O's relative level of riskiness through contractual interests. Empirical results of the three groupings on ARI in Table 5 indicate that under the halves grouping, the interaction term (ABS×ARI) is positively related to equity market value (coef = 0.19, t = 5.7) at 0.01 significance level, implying that the risk level of contractual interests does affect investors' pricing of securitized loans. To ascertain whether the differential levels of retained interests, fully, affect the market perception of S-O's risk retention, regression estimations based on ARI quintiles and deciles groupings are further performed. Results from the interaction term (ABS×ARI), however, reveal investors' dissimilar perception between quintiles (coef = 0.06, t = 1.4) and deciles (coef = 0.05, t = 1.2) groupings.[22] Two points are noteworthy from above findings on the interaction term (ABS×ARI) among ARI halves, quintiles, and deciles divisions. First, retained interests do affect investors' pricing of S-O's securitized loans. Despite the fact that inconsistent result between this study and Landsman *et al.* (2008) may result from different sampling (banking vs. all-inclusive industry), tabular disclosure on interest-only

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[22] Percentiles division on retained contractual interests is also performed to assess the market perception of securitized loans. The result of percentiles ranking is similar to that of deciles classification.

Table 5
Market Perception of Securitized Loans as Collateral:
By Level of Contractual Interests

Variables	Predicted Sign	Secured Borrowing Model (Sec-3)		
		Halves	Quintiles	Deciles
Intercept	?	5.43 ***	5.38***	5.38 ***
		(10.9)	(10.4)	(10.4)
$ASSET^{Sec\_abs}$	+	0.93 ***	0.94***	0.94 ***
		(10.2)	(10.5)	(10.7)
ABS	+	0.88 ***	0.98***	0.98 ***
		(9.3)	(11.1)	(11.2)
ABS×ARI	+	0.19 ***	0.06*	0.05
		(5.7)	(1.4)	(1.2)
$LIAB^{Sec}$	−	-0.92 ***	-0.93***	-0.93 ***
		(-9.5)	(-9.8)	(-9.9)
NI^{Sec}	+	15.88 ***	15.65***	15.65 ***
		(11.7)	(11.5)	(11.5)
adjusted R^2		0.837	0.832	0.832
N		1240	1240	1240
F value		1276.37	1228.87	1227.39

Note: *t*-statistics are reported in parentheses and are calculated using White's (1980) consistent covariance estimator. All variables are measured per share. Variables are as defined in Table 1. ***, **, and * indicate significance at 0.01, 0.05, and 0.10 level, respectively.

strips and subordinated securities with concentrated risk from regulatory reports might attribute to the significant finding in this study. This finding, therefore, supports disclosure requirement of accounting information of firms' activities on an expanded basis as the U.S. and international standards setters are working together to converge accounting standards for providing investors with more transparent and relevant information. Second, investors' perception of securitized loans as collateral depending on retained interests attributes only to a dichotomous partition, not to a more delicate classification. In consequence, riskiness of contractual interests remaining with the S-O is not fully priced by the market although it is incorporated into market pricing to some extent. This result

may reflect investors' limited ability in analyzing information, thus, partly supporting Landsman *et al.* (2008).[23]

5.3. Market Perception of Securitized Loans as Collateral by Type of Loan (*H3*)

To ascertain that characteristics of securitized loans in terms of the extent of and external verifiability of loans' credit risk may affect market perception of the degree of risk transfer, this study separates total securitized loans by type of loan into mortgages (MBS) and non-mortgages (NMORT). Table 6 reveals that coefficients of mortgages (coef = 0.98, t =10.4) and non-mortgages (coef = 1.10, t = 10.2) are similar in relative size. However, F-test for equality of coefficients on MBS and NMORT is strongly rejected (F = 25.06), suggesting market participants recognize the differential levels of risk implied in mortgages and other type of loans. By further separating non-mortgage loans (NMORT) into consumer (CONSBS) and commercial (COMMBS) loans, result in Table 6 shows seemingly increasing, not monotonic, values in coefficients on mortgages (MBS = 0.99), consumer loans (CONSBS = 1.14) and commercial loans (COMMBS = 1.03), with F-statistic of 14.73 rejecting the hypothesis that the coefficients of ABS and the three types of securitized loans (MBS, CONSBS, and COMMBS) are equal. F-test for differences in coefficients on CONSBS and COMMBS, which are separated from NMORT, in model *Sec-5* (F = 4.32) further supports that riskiness implied in characteristics of securitized loans affects market valuation of loans transferred in transactions.[24]

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[23] In addition to little or no risk transfer in securitizations and investors' inability of accessing credible information to distinguish differential risk levels of securitizations, invalid model specification with publicly available data is the third explanation proposed by Landsman *et al.* (2008).

[24] Although evidence in Table 4, 5, and 6 generally supports hypotheses in Section 3, to alleviate concerns regarding regression results affected by endogeneity, this study performs a two-stage least squares (2SLS) specification. In the first stage, a whether-or-not-to-securitize decision is modeled by a probit equation by considering economic and accounting-based factors (Chen and Liu 2011a). In the second stage, the association between the magnitude of securitized loans and equity market value is investigated by adding an inverse Mill's ratio (MILL) from the first stage as a control variable. The inverse Mill's ratio is obtained by calculating $\varphi(z_{i,t})/\Phi(z_{i,t})$, where $z_{i,t}$, φ, and Φ stand for the fitted value of the probit regression index function, standard normal density, and normal cumulative probability, respectively. After controlling for endogeneity, the findings (unreported) of the second stage still support the hypotheses in this study.

5.4. Additional Tests

Several tests are conducted to further check primary findings in Section 5.1 to 5.3 for robustness.

First, due to the close relation between securitizations and the financial crisis, it is noteworthy whether the market treats securitized loans differently before and after the emergence of the financial crisis. Since the crisis began in earnest in February 2007 (Ryan 2008), this study separates the research sample into before- and after-subprime-crisis group based on the cut-off period of the second quarter in 2007. Table 7 presents market perception of securitized loans before and after the subprime crisis for models *Sec-2*, *Sec-3*, and *Sec-5*. All results for before- and after-group seem similar to primary findings reported in Section 5.1 to 5.3. However, coefficients of all variables are significantly differently from 1 (-1) for assets (liabilities). Assets and liabilities for the after-group seem to be overstated compared to assets and liabilities with seemingly understated values for the before-group. It is suggested that investors adjust their pricing on assets and liabilities conditional on the changing markets.

Second, values of liabilities under secured borrowing treatment ($LIAB^{Sec}$) in this study are adjusted based on reported on-balance sheet liabilities of securitizing banks under sale accounting. Thus, $LIAB^{Sec}$ equals reported total liabilities plus the sum of total securitized loans and securitization gains and minus the sum of total retained contractual interests and securitization losses. However, in consideration of change amounts of securitization gains or losses, this study makes an alternative measurement of $LIAB^{Sec}$ by allowing securitization gains or losses to cumulate over a specified period to conform to the level amounts of liabilities.[25] As securitization gains or losses are cumulated over one-year period beginning three quarters before current period (quarter t), and added back with other adjustments (total securitized loans and total contractual interests) to reported liabilities for $LIAB^{Sec}$, Table 8 shows that ABS (coef = 0.99, t = 10.9) for *H1*, ABS×ARI (coef = 0.20, t = 5.9) for *H2*, and MBS (coef = 1.00, t

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[25] Due to the uncertain life of per securitization transactions, this study uses (moving) one-and two-year accumulated securitization gains or losses to alleviate measurement errors in liabilities under secured borrowing models.

= 9.7), CONSBS (coef = 1.18, t = 9.2), and COMMBS (coef = 1.03, t = 9.6) for **H3** are all supported with expected sign and similar to primary findings in Section 5.1 to 5.3. By adjusting $LIAB^{Sec}$ for securitization gains or losses with two-year cumulation period, results (unreported) are similar to primary findings as well. As a result, cumulation period for securitization gains or losses has no influential impact on test results.

Table 6
Market Perception of Securitized Loans as Collateral: By Type of Loan

Variables	Predicted Sign	Secured Borrowing Model			
		Sec-4	F-stat Coef=1(-1)	Sec-5	F-stat Coef=1(-1)
Intercept	?	5.08 *** (9.8)		4.99 *** (9.4)	
$ASSET^{Sec\_abs}$	+	0.93*** (9.9)	2.83*	0.94 *** (9.7)	1.84
MBS	+	0.98 *** (10.4)	0.29	0.99 *** (10.1)	0.05
NMORT	+	1.10*** (10.2)	3.87**		
CONSBS	+			1.14 *** (9.6)	7.06 ***
COMMBS	+			1.03 *** (9.9)	0.21
$LIAB^{Sec}$	–	-0.92 *** (-9.2)	2.95*	0.94 *** (-9.0)	1.87
NI^{Sec}	+	16.87 *** (12.6)		17.34 *** (11.9)	
adjusted R^2		0.835		0.835	
N		1240		1240	
F-statistic for each successive expansion of the model		25.06 (1,1234)		4.32 (1,1233)	
F-statistic for total expansion of the model				14.73 (2,1233)	

Note: *t*-statistics are reported in parentheses and are calculated using White's (1980) consistent covariance estimator. *F*-statistics are reported for tests whether the coefficient estimates of assets (liabilities) are different from one (minus one). All variables are measured per share. Variables are as defined in Table 1. ***, **, and * indicate significance at 0.01, 0.05, and 0.10 level, respectively.

Table 7
Additional Test Market Perception of Securitized Loans as Collateral:
Before vs. After the Subprime Crisis

Variables	Predicted Sign	Before			F-stat	After			F-stat
		Sec-2	Sec-3	Sec-5	Coef=1(-1)	Sec-2	Sec-3	Sec-5	Coef=1(-1)
Intercept	?	5.50 (11.04)	5.44 (11.7)	4.81 (10.1)		2.30 (1.6)	2.97 (2.0)	1.79 (1.3)	
ASSET$^{Sec\_abs}$	+	1.12 (16.9)	1.10 (19.0)	1.12 (17.8)	6.84***	0.49 (3.0)	0.38 (2.3)	0.56 (4.5)	13.63***
ABS	+	1.16 (16.4)	1.04 (15.9)			0.54 (2.8)	0.29 (1.4)		
ABS*ARI	+		0.20 (5.7)				0.21 (2.9)		
MBS	+			1.16 (17.5)	10.18***			0.64 (4.3)	6.13***
CONSBS	+			1.36 (18.8)	38.75***			0.19 (0.9)	22.01***
COMMBS	+			1.19 (13.9)	8.78***			0.66 (4.3)	5.70***
LIAB^{Sec}	−	-1.12 (-16.1)	-1.10 (-18.2)	-1.13 (-17.1)	7.10***	-0.44 (-2.5)	-0.32 (-1.8)	-0.52 (-3.8)	14.69***
NI^{Sec}	+	13.58 (9.1)	14.25 (9.3)	16.68 (9.5)		17.56 (11.4)	17.68 (11.3)	15.71 (9.7)	
adjusted R^2		0.823	0.830	0.830		0.938	0.940	0.944	
N		1143	1143	1143		97	97	97	
F value		1327.53	1113.30	929.05		361.04	302.03	271.21	

Note: *t*-statistics are reported in parentheses and are calculated using White's (1980) consistent covariance estimator. *F*-statistics are reported for tests whether the coefficient estimates of assets (liabilities) are different from one (minus one). All variables are measured per share. Variables are as defined in Table 1. Significance is indicated by bold case.

Table 8
Additional Test
Adjustment for Accumulated One-Year Securitization Gains or Losses

Variables	Predicted Sign	Sec-1	Sec-2	Sec-3	Sec-5
Intercept	?	5.84*** (10.6)	5.67 *** (10.8)	5.62*** (11.0)	5.07*** (9.4)
$ASSET^{Sec}$	+	0.85*** (8.3)			
$ASSET^{Sec\_abs}$	+		0.93 *** (10.6)	0.92*** (10.0)	0.95*** (9.3)
ABS	+		0.99 *** (10.9)	0.87*** (9.0)	
ABS*ARI	+			0.20*** (5.9)	
MBS	+				1.00*** (9.7)
CONSBS	+				1.18*** (9.2)
COMMBS	+				1.03*** (9.6)
$LIAB^{Sec}$	−	-0.83*** (-7.6)	-0.92 *** (-9.8)	-0.91*** (-9.2)	-0.94*** (-8.6)
NI^{Sec}	+	5.35*** (10.4)	15.10 *** (11.0)	5.66*** (11.3)	17.37*** (11.8)
adjusted R^2		0.824	0.830	0.836	0.835
N		1228	1228	1228	1228
F value		1919.14	1493.94	1252.53	1034.87

Note: t-statistics are reported in parentheses and are calculated using White's (1980) consistent covariance estimator. All variables are measured per share. Variables are as defined in Table 1. ***, **, and * indicate significance at the 0.01, 0.05 and 0.10 level, respectively.

Third, this study re-estimates regressions of models *Sec-1* to *Sec-5* based on alternative samples. For the sample including non-securitizing observations (since not all S-Os undertake securitizations across all quarters) with winsorization of extreme observations, Table 9 indicates that all findings are similar to primary results in Section 5.1 to 5.3 except for smaller values for coefficients of all variables by including non-securitizing observations. It is observed that ABS (coef = 0.34, t = 5.3) is related to equity market value at 0.01 significance level. The interaction term (ABS×ARI) based on ARI halves partition (coef = 0.23, t = 5.0) in model *Sec-3* indicates that market perception of securitized loans is dependent on the extent of risk retained by the S-O through contractual interests.

Moreover, various types of securitized loans (MBS, CONSBS, and COMMBS) implying differential levels of external verification of loans' credit risk are all positively associated with equity market value (t = 3.9, 5.5, and 5.4, respectively). The difference in relative size of coefficients of MBS, CONSBS, and COMMBS (0.32, 0.49, and 0.52, respectively) supports that characteristics of loans in the extent of and external verifiability of credit risk do affect market pricing.

Finally, in contrast to winsorization of extreme observations, a 0.5% deletion for extreme observations is also performed for the securitizing sample. Results (unreported) for deleted sample are similar to winsorized findings in Section 5. ABS (coef = 1.14, t =12.4) for *H1*, ABS×ARI (coef = 0.20, t = 5.5) for *H2*, and MBS (coef = 1.11, t = 12.4), CONSBS (coef = 1.30, t = 12.4), and COMMBS (coef = 1.17, t = 11.8) for *H3* are supported. Moreover, to mitigate concerns that primary findings in Section 5.1 to 5.3 may be driven by the securitization variable with extreme values, this study performs regressions by deleting and winsorizing extreme 1% of observations for all variables (including ABS). Results (unreported) indicate that *H1*, *H2*, and *H3* are still supported.

6. Conclusions

Despite the fact that S-Os following SFAS No. 140 account for securitizations as true sales, derecognize securitized loans from their books, and recognize gains or losses on loan transfers, academic evidence on risk of securitized loans retained by S-Os is consistent with the risks-and-rewards concept prescribed by international accounting standards. To provide further evidence on appropriate accounting treatment for S-Os' securitized loans, this study, following and extending Landsman *et al.* (2008), investigates three questions on securitizations from the market perspective: (1) whether investors treat securitization transactions as secured borrowings even though most of transactions are accounted for as sales by S-Os, (2) whether investors' perception of securitized loans as secured loans depends on riskiness of contractual interests retained by S-Os, and (3) whether the market perception of securitized loans as collateral varies with the characteristics of underlying loans by type of loan.

Table 9
Additional Test
Overall Winsorized Sample under Secured Borrowing Models

Variables	Predicted Sign	Sec-1	Sec-2	Sec-3	Sec-5
Intercept	?	8.93 (16.1)	8.88 (16.6)	8.89 (16.8)	8.55 (16.5)
$ASSET^{Sec}$	+	0.25 (3.5)			
$ASSET^{Sec\_abs}$	+		0.29 (5.2)	0.27 (3.5)	0.29 (3.9)
ABS	+		0.34 (5.3)	0.20 (2.0)	
ABS*ARI	+			0.23 (5.0)	
MBS	+				0.32 (3.9)
CONSBS	+				0.49 (5.5)
COMMBS	+				0.52 (5.4)
$LIAB^{Sec}$	−	-0.20 (-2.7)	-0.26 (-4.3)	-0.23 (-2.8)	-0.27 (-3.2)
NI^{Sec}	+	21.22 (13.2)	21.10 (6.2)	21.61 (14.2)	22.45 (15.0)
adjusted R^2		0.767	0.771	0.777	0.776
N		2089	2089	2089	2089
F value		2291.18	1754.55	1456.80	1204.99

Note: t-statistics are reported in parentheses and are calculated using White's (1980) consistent covariance estimator. All variables are measured per share. Variables are as defined in Table 1. Significance is indicated by bold case.

By constructing research models based on the secured borrowings concept, this study provides evidence on above questions. First, consistent with Landsman *et al.* (2008), capital market perceives securitized loans with similar value to other on-balance sheet assets. Second, riskiness of contractual interests residing with S-Os affects market pricing, nevertheless partially, on transferred loans. Third, information asymmetry stemming from types of loans induces differential market perception of loan securitizations as collateralized borrowings. In sum, findings of this study contribute to the line of research on the usefulness of off-balance sheet activities disclosures (e.g., Venkatachalam 1996). However, disclosures can not

be a substitute of proper recognition. For the purpose of providing more transparent financial information to investors, accounting standards should be revised to reflect the economic reality of transactions, such as securitizations.

Although window dressing may not be the only reason for firms undertaking securitizations, accounting for securitizations as true sales potentially increases the firm's ability to mange the financial statements (Dechow and Shakespeare 2009). As a response to Enron's failure and the subprime crisis, FASB has issued SFAS No. 166, *Accounting for Transfers of Financial Assets: an amendment of FASB Statement No. 140* and SFAS No. 167, *Amendments to FASB Interpretation No. 46 (R)*, in June 2009 to amend SFAS No. 140 and FIN No. 46(R), respectively. Although implementation of SFAS No. 166 and SFAS No. 167 by requiring reconsolidation of VIEs (e.g., QSPEs) with the S-O, is seemingly consistent with investors' perception of loan securitizations as secured borrowings, the fact that differential levels of risk are retained by S-Os, as evidenced in this study, is ignored in these new standards. Moreover, Fitch (2009) points out that divergence of practices for S-Os' accounting after the issuance of these two standards may still exist.[26] Future research is needed for examining this possible divergence as data becomes available under the new regime.

7. References

Calomiris, C. W. and Mason, J. R. (2004), "Credit Card Securitization and Regulatory Arbitrage," *Journal of Financial Services Research*, 26(1), 5-27.

Chen, W., Liu, C., and Ryan, S. (2008), "Characteristics of Securitizations that Determine Issuers' Retention of the Risks of the Securitized Assets," *The Accounting Review*, 83(5), 1181-1215.

Chen, W. and Liu, C. (2011a), "Motivations for Bank Decision on Financial Asset Securitizations," *Review of Securities and Futures Markets*, 23(1), 159-200.

Chen, W. and Liu, C. (2011b), "The Informativeness of Financial Asset

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[26] Both standards became effective as of the beginning of each reporting entity's first annual reporting period that begins after November 15, 2009. However, SFAS No. 166 still adopts the control concept which is similar to that under SFAS No. 140.

Securitization Activities on Predicting Bank Risk," *Taiwan Accounting Review*, 7(2), (forthcoming).

Chuang, C. (2008), "Value Relevance of Issuers' Securitized Financial Assets," Unpublished Master Thesis, Soochow University.

Dechow, P. M. and Shakespeare, C. (2009), "Do Managers Time Securitization Transactions to Obtain Accounting Benefits?" *The Accounting Review*, 84(1), 99-132.

Dionne, G. and Harchaoui, T. M. (2003), "Banks' Capital, Securitization and Credit Risk: An Empirical Evidence for Canada," Working Paper, HEC Montreal and Statistics Canada.

Feltham, G. A. and Ohlson, J. A. (1995), "Valuation and Clean Surplus Accounting for Operating and Financial Activities," *Contemporary Accounting Research*, 11(2), 689-731.

Financial Accounting Standards Board (FASB) (1996), *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, Statement of Financial Accounting Standards No. 125, Norwalk, CT: FASB.

Financial Accounting Standards Board (FASB) (2000), *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*, Statement of Financial Accounting Standards No. 140, Norwalk, CT: FASB.

Financial Accounting Standards Board (FASB) (2003), *Consolidation of Variable Interest Entities (revised December 2003)—An Interpretation of ARB No. 51*, FASB Interpretation No. 46(R), Norwalk, CT: FASB.

Financial Accounting Standards Board (FASB) (2009), *Accounting for Transfers of Financial Assets—An Amendment of FASB Statement No. 140*, Statement of Financial Accounting Standards No. 166, Norwalk, CT: FASB.

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

Financial Accounting Standards Committee (FASC) (2003), *Accounting for Transfers of Financial Assets and Extinguishments of Liabilities*, Statement of Financial Accounting Standards No. 33, Taipei: FASC.

Fitch (2009), "Off-Balance Sheet Accounting Changes: SFAS 166 and SFAS 167," Financial Institutions U.S.A. Special Report.

Greenbaum, S. I. and Thakor, A. V. (1987), "Bank Funding Models: Securitization versus Deposits," *Journal of Banking and Finance*, 11(3), 379-401.

Jones, D. (2000), "Emerging Problems with the Basel Capital Accord: Regulatory Capital Arbitrage and Related Issues," *Journal of Banking & Finance*, 24(1), 35-58.

Keys, B., Mukherjee, T., Seru, A., and Vig, V. (2008), "Did Securitization Lead to Lax Screening? Evidence from Subprime Loans 2001–2006," Working Paper, University of Michigan.

Landsman, W. R. (1986), "An Empirical Investigation of Pension Fund Property Rights," *The Accounting Review*, 61(4), 662-691.

Landsman, W. R., Peasnell, K., and Shakespeare, C. (2008), "Are Asset Securitizations Sales or Loans?" *The Accounting Review*, 83(5), 1251-1272.

Morgan, D. (2002), "Rating Banks: Risk and Uncertainty in an Opaque Industry," *The American Economic Review*, 92(4), 874-888.

Morgan, D. and Stiroh, K. (2001), "Market Discipline of Banks: The Asset Test," *Journal of Financial Services Research*, 20(2), 195-208.

Niu, F. F. and Richardson, G. D. (2006), "Are Securitizations in Substance Sales or Secured Borrowings: Capital Market Evidence," *Contemporary Accounting Research*, 23(4), 1105-1133.

Ohlson, J. A. (1995), "Earnings, Equity Book Values, and Dividends in Equity Valuation," *Contemporary Accounting Research*, 11(2), 661-687.

Rosen, R. J. (2007), "The Role of Securitization in Mortgage Lending," *Chicago Fed Letter*, No. 244.

Ryan, S. (2008), "Accounting in and for the Subprime Crisis," *The Accounting Review*, 83(6), 1605-1638.

Schipper, K. and Yohn, T. (2007), "Standard-Setting Issues and Academic

Research Related to the Accounting for Financial Asset Transfers," *Accounting Horizons*, 21(1), 59-80.

Venkatachalam, M. (1996), "Value-Relevance of Banks' Derivatives Disclosures," *Journal of Accounting and Economics*, 22(3), 327-355.

White, H. (1980), "A Heteroscedasticity-Consistent Covariance Matrix Estimator and a Direct Test for Heteroscedasticity," *Econometrica*, 48(4), 817-838.