DO BANK MANAGERS STRATEGICALLY EXPLOIT THE WIGGLE ROOM IN LOAN LOSS PROVISIONING FOR SECURITIZED LOAN SELLER'S INTERESTS?

A Dissertation

Presented to

The Faculty of the C.T. Bauer College of Business

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In Partial Fulfillment

Of the Requirements for the Degree

Doctor of Philosophy

By

Lin Yi

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ABSTRACT

Extant literature on the use of securitization as an earnings management tool focuses solely on the one-off use of securitization gains/losses to manage earnings at the inception of securitization transactions. In contrast, I conjecture that securitizations provide managers with greater wiggle room to manage earnings via loan loss provisions (LLP) for retained seller's interest of securitized loans (SIL) over the term of the loan because managers possess relatively less information about securitized loans vis-à-vis regular loans. Consistent with this conjecture, I find that bank managers' use of LLP for income smoothing is greater when the bank holds the SIL and is increasing in the ratio of SIL to total loans. Further tests reveal that the incremental use of the SIL's LLP for income smoothing is lower for public banks because they face greater external capital market scrutiny than private banks. I also find that SIL is particularly useful for income smoothing in the fourth quarter, when greater auditor scrutiny makes it more difficult to manage earnings via LLP of non-securitized loans.

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Chapter 1

INTRODUCTION

Securitization is a key financing source for banks that involves both substantial benefits and costs. On the one hand, securitization is a convenient financing vehicle because it provides immediate liquidity and reduces banks' risk by transferring it to investors with varying risk appetites. On the other hand, securitization can induce unanticipated costs due to adverse selection and moral hazard problems that arise when credit risk is offloaded by issuers (lender banks). The adverse selection and moral hazard problems could result in both lax screening of loans ex-ante and reduced monitoring efforts ex-post.

Securitization can also facilitate earnings management. The extant literature on the use of securitization as an earnings management tool focuses solely on the one-off use of securitization gains/losses to manage earnings at the inception of securitization transactions and does not consider the implications of the aforementioned screening and monitoring problems. For example, Dechow and Shakespeare (2009) find that firms are more likely to engage in securitization towards the end of the quarter, when managers have a clearer idea about what they require as securitization gains in order to achieve financial reporting goals. Consistent with the use of securitization gains to smooth earnings, Dechow et al. (2010) find that securitization gains are negatively correlated with pre-securitization income. I argue that securitizations provide bank managers with opportunities to manage earnings on an ongoing basis because of their higher discretion

in estimating loan loss provisions on seller's interest loans (SIL) that are reported as part of a bank's loan portfolio.

Because a substantial portion of an issuer bank's retained interest in securitization is categorized as SIL and reported as part of the bank's loan portfolio,[1] and, like other components of the loan portfolio, it is recorded at book value (as opposed to fair value), and its expected losses are recognized through loan loss provisions (LLP). While it is well established that bank managers use LLP to achieve financial reporting objectives such as smoother income (e.g., Wahlen 1994; Kanagaretnam et al. 2003; Kanagaretnam et al. 2004; Liu and Ryan 2006), I argue that bank managers enjoy a particularly higher degree of discretion with respect to LLP on SIL when compared to other loans because SIL carry a relatively greater degree of information uncertainty, which provides managers more wiggle room to manage earnings.

The higher degree of information uncertainty associated with SIL originates from a bank's reduced effort in both ex-ante screening and ex-post monitoring of loans that are subject to securitization. Generally, banks have strong incentives to ex-ante screen loan applications and ex-post monitor borrowers because of credit risk exposure. Securitizations weaken these incentives by transferring substantial parts of the loans from banks to outside investors and thus offloading much of the associated risk initially borne by the banks. Consequently, banks tend to reduce their efforts in screening and monitoring loans subject to subsequent securitization (Keys et al. 2010; Purnanandam

[1]In my sample, the average percentage of SIL to total loans outstanding is 6.18% for banks with SIL.

2011; Mian and Sufi 2009; Wang and Xia 2014).[2] As a result, the extent of banks' knowledge about securitized loans (parts of which are retained through SIL) is likely to be lower than that of non-securitized loans. Bank managers' relative lack of knowledge about SIL will reduce the quality of LLP associated with SIL, and, in equilibrium, monitors such as auditors should be aware of this shortcoming.[3] In fact, theoretical literature in accounting suggests that outsiders (shareholders) are more tolerant of insiders' (managers') partial disclosures when it is known that the insiders' information endowment may be incomplete (e.g., Dye 1985; Jung and Kwon 1988).

Given the above, an interesting question that arises is whether managers strategically exploit their own information limitations with respect to SIL and the monitors' (e.g., auditors') tacit acknowledgement of this information limitation to engage in earnings management activities. In a variation of the well-known dictator's game, Dana et al. (2007) show that the dictator acts significantly more selfishly when the receiver is unsure about whether or not the given outcome is within the dictator's control.[4] The intuition is that deniability provides the dictator with "moral wiggle room" in behaving in a more self-serving manner (also see Roth and Murnighan 1982; Mitzkewitz and Nagel 1993; Kagel et al. 1996; Dana et al. 2006). Similarly, to the extent that the lower level of information about securitized loans provides bank managers with

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[2]This reduced effort is not an outcome of agency conflicts between managers and shareholders. Rather, the relative cost-benefit tradeoff with respect to monitoring of non-securitized versus securitized loans will lead managers to put relatively less emphasis on the latter.

[3]The argument here is that reduced need to engage in costly monitoring is one benefit of securitization, and auditors will not be able to impose stringent monitoring requirements on these loans. The extant literature on lax screening and monitoring of securitized loans is consistent with this notion (Keys et al. 2010; Purnanandam 2011; Mian and Sufi 2009; Wang and Xia 2014).

[4]In the classical "dictator's game," one participant, the dictator, is given an endowment of money that she may share however she likes, with an anonymous other participant, the receiver. The receiver knows the dictator's instructions but must accept whatever division the dictator makes (even if given nothing) and cannot punish or retaliate (see Camerer 2003; Hoffman et al. 1994).

wiggle room in their interactions with monitors (i.e., auditors, investors, financial analysts, etc.), and bank managers strategically exploit this wiggle room, it is reasonable to hypothesize that discretionary use of LLP in SIL for earnings management purposes will be greater than that of other (non-securitized) loans.

In this study, I investigate this conjecture by examining the relation between SIL and income smoothing via LLP. I focus on income smoothing because smoother incomes are highly desired by managers (e.g., Graham et al. 2005), and a large body of literature documents the use of LLP for income smoothing in the banking industry (e.g., Wahlen 1994; Kanagaretnam et al. 2003; Kanagaretnam et al. 2004; Liu and Ryan 2006). As in prior banking literature, I measure income smoothing propensity as the (positive) correlation between pre-provision earnings and LLP. This correlation indicates that more (fewer) provisions for loan losses are made when pre-provision income is higher (lower) so that the net income becomes smoother over time. I conjecture that income smoothing via LLP is greater for banks with SIL than for non-SIL banks and that this propensity is increasing in the proportion of SIL in the loan portfolio.[5]

My results are consistent with the above conjectures. In regression results that control for a number of factors that could explain LLP, I find evidence of more income smoothing via LLP when banks have SIL in their balance sheets and when the proportion of SIL to total loans is higher. The detected relations are both statistically and economically significant.

Next, I conduct several cross-sectional tests to gain further insights on the observed relation between SIL and income smoothing. These tests examine how monitoring by

[5]Note that I am unable to directly examine LLP related to SIL because this information is not publicly disclosed.

public equity markets and auditors affects the SIL-income smoothing relation. Public banks differ from private banks because they are more closely monitored by external parties such as analysts, the business press, and the investing public (Nichols et al. 2005). Moreover, speedy pricing mechanisms inherent in public equity markets could act as a disciplining mechanism against managerial opportunism. However, on the other hand, managers of publicly traded banks could be under greater pressure to produce earnings numbers that are desired by the market (Beatty et al. 2002). My findings indicate that the incremental propensity to use SIL LLP for income smoothing is lower for public banks than for private banks, suggesting that greater scrutiny and disciplining through share prices that are inherent in public markets are effective in mitigating the aforementioned behavior.

Auditors play a crucial role in assessing the reasonableness of banks' LLP (Kanagaretnam et al. 2010). When compared with interim quarters, it is generally more difficult to manage earnings in the fiscal fourth quarter, due to greater auditor scrutiny (Brown and Pinello 2007; Altamuro and Beatty 2010; Fan et al. 2010). However, whether greater auditor scrutiny in the fourth quarter mitigates or exacerbates the exercising of wiggle room with respect to SIL LLP is not clear ex-ante. While more intense monitoring by auditors should reduce earnings management behavior in general, it could also increase the exploitation of SIL LLP in achieving desired reporting outcomes because other more conventional opportunities for earnings management are now constrained. I find results in support of this conjecture. While the overall propensity to use LLP for income smoothing is lower in the fourth quarter (i.e., the relation between pre-managed earnings and LLP is less positive in the fourth quarter), the use of SIL LLP for income

smoothing is greater in this quarter. It appears that managers find the wiggle room associated with SIL LLP particularly useful in the fourth quarter when earnings management through other avenues is more difficult.

The inferences made in this paper are somewhat indirect because LLP are reported in aggregate, and the provisions that relate specifically to SIL are not directly observable. Hence, I attribute the systematic differences in LLP between SIL banks and non-SIL banks as well as between banks with high and low fractions of SIL in their loan portfolios to differential estimation of LLP for SIL and non-securitized loans. Therefore, a number of alternative explanations need to be ruled out in order to enhance confidence in the validity of my inferences. One such concern is that the results could be influenced by the differences in the composition of SIL and non-securitized loans in terms of loan type. I mitigate this concern by controlling for different loan types in all my regression models. Moreover, in additional analyses, I specifically control for income smoothing by each loan type, and the findings with respect to the incremental smoothing effect of SIL remain unchanged. Another concern is that if volatility of pre-managed income differs between SIL and non-SIL banks, the results could be driven not by "greater ability to smooth earnings via SIL LLP"[6] but by "greater need to smooth earnings for SIL banks." I address this concern by controlling for the volatility of pre-managed earnings in all my regression models. In additional tests, I also conduct matched sample analyses where SIL banks are matched with non-SIL banks in terms of pre-managed earnings volatility. My inferences remain unchanged.

[6]The main hypothesis of this study is that SIL banks have greater ability to smooth income via LLP than non-SIL banks.

Another more general concern is that the results may be driven by some unobserved systematic differences between banks that do and do not engage in securitization activities. To rule out this possibility, I conduct all my tests using two samples. The first sample consists of all banks that meet the sample selection criteria regardless of their involvement in securitization, and the second sample consists only of securitizing banks. If the above concern is valid, I should not find results for the second sample. However, I find strong and consistent results for both samples. In additional analyses, I also conduct tests using the Heckman two-stage selection method to address concerns about endogeneity. Again, my inferences remain unchanged.

This study contributes to the extant literature in at least two important ways. First, the current literature on the use of securitization to manage earnings focuses solely on securitization gains/losses (Dechow and Shakespeare 2009; Dechow et al. 2010), suggesting that the usefulness of securitization transactions as an earnings management tool is one-off and limited to the period in which the securitization is initiated. My study takes a more nuanced view in this regard by proposing that securitizations have multi-period utility in managing earnings because SIL provides managers with greater and continuing latitude in their loan loss provisioning decisions. Second, I contribute to the limited body of literature that argues managers' discretion with respect to loan loss provisioning is not homogenous across loan portfolios but varies significantly across different dimensions (Liu and Ryan 1995; Bhat et al. 2014). While the extant literature in this regard focuses on the differences in information asymmetry between managers and monitors (e.g., auditors) with respect to different loan types (e.g., homogenous vs. heterogeneous loans), I explore a novel angle where earnings management opportunities

arise not due to managers possessing an information advantage but due to the wiggle room arising as a result of their lack of information about certain types of loans.

The remainder of the paper proceeds as follows: Section 2 provides the institutional background on securitizations along with a discussion of income smoothing incentives in banks. Section 3 develops the testable hypotheses, and Section 4 describes the data. Section 5 describes the empirical design, Section 6 discusses the main results, Section 7 describes results from additional analyses, and Section 8 concludes.

Chapter 2

INSTITUTIONAL BACKGROUND

This section presents a brief overview of the securitization process and the resulting retained interests. It also discusses bank managers' incentives to engage in income smoothing.

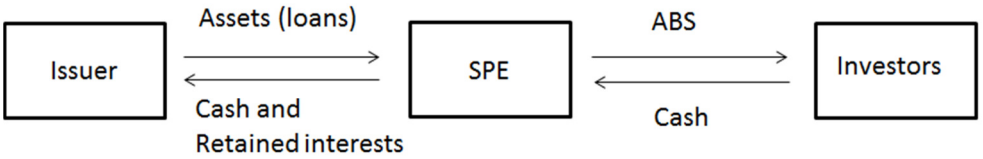
2.1 Securitization

In an asset securitization process, banks (i.e., lenders/issuers) generally transfer a package of assets, such as contract debts or loans, to a special purpose entity (SPE), and the SPE then sells asset-backed securities (ABS) to investors and delivers the retained interests back to the bank. As an intermediary, the SPE performs two functions: First, at initiation of securitization, the SPE receives cash generated from selling ABS and conveys the cash to issuers; second, after initiation of securitization, the SPE collects principal and interest payments from underlying loans and distributes the payments for ABS to investors and the payments for retained interest (if there is any) to issuers. Securitization may involve multiple layers of SPEs if multiple tiers of investments are needed or to ensure that securitized assets are bankruptcy-remote when the first layer of SPE is likely to be consolidated (Gorton and Souleles 2005).

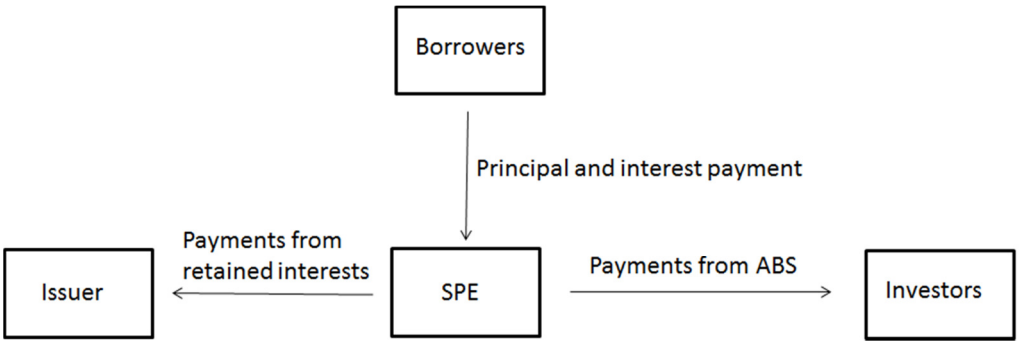
The securitization process is depicted in the following diagrams:[7]

[7] The diagrams are based on Ryan (2002, Figure 8.1).

At initiation of securitization:



After initiation of securitization:



The literature has documented that banks have several economic motives to perform securitization. First, securitization helps to improve bank liquidity. For example, as discussed in Loutskina (2011), securitization can improve bank liquidity by facilitating banks to "convert illiquid, hard-to-sell loans into marketable securities." Loutskina (2011) finds that securitizing banks' lending is less sensitive to their accessibility to external financing sources because securitization provides an alternative financing source. Second, securitization helps banks to spread out risk in the underlying assets to investors who have varied risk preferences.[8] Third, securitization can be used to reduce required

[8] However, some recent literature argues that securitization does not necessarily transfer risk from issuers because securitizing banks generally hold retained interests from securitization, which can be highly risk concentrated. This is consistent with the criticism that securitization is one of the main factors that led to the financial crisis. For example, Acharya et al. (2013) provide evidence indicating that when the asset-

regulatory capital. By transferring risky financial assets to investors, banks arguably reduce their exposure to risk, which, in turn, helps them reduce required regulatory capital because lower risk level requires lower regulatory capital. In addition to the above benefits of securitization, bank managers may also find securitizing activities to be a useful earnings management tool. The extant literature on this topic focuses on the managerial discretion associated with estimating and recognizing securitization gains and losses (Dechow and Shakespeare 2009; Dechow et al. 2010).

It is well understood that securitizations introduce adverse selection and moral hazard problems to the relationship between securitizing banks and investors because credit risk transferring through securitization reduces issuer banks' incentives to stringently screen loan applicants ex-ante and closely monitor them ex-post. To mitigate these incentive misalignments and motivate issuers to expend sufficient effort to screen and monitor assets that are subject to securitization, retained contractual interests are delivered back to securitizing banks (issuers) so that issuers are exposed to the risk of securitized assets as well. It should be noted, however, that these arrangements do not completely eliminate the above-mentioned agency problems because securitizations invariably result in the transfer of substantial portions of risk from issuers to ABS investors (Keys et al. 2010; Purnanandam 2011; Mian and Sufi 2009; Wang and Xia 2014).

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backed commercial paper (ABCP) crisis took place, commercial banks, rather than investors, suffered more losses because banks provided explicit guarantees to conduits.

2.2 Retained Interests from Securitization

There are three main types of retained interests: 1) credit enhancement tools such as credit-enhancing interest-only strips (the spread between interest generated by underlying loans and interest on the securities sold to investors), subordinated securities (lower tranches of ABS), and standby letters of credit (guarantees of limited protection against losses on the underlying loans); 2) seller's interest (the difference between loans securitized and the loans underlying ABS sold to investors); 3) liquidity support (commitment to provide funds to ensure timely payment to investors) (Instructions for Y-9C 2013; Sarkisyan and Casu 2013).

Credit-enhancement tools are the most risk-concentrated type of retained interest because they enhance credit of securitized assets by absorbing the first-loss to protect purchasers of ABS. Seller's interest, which can be in the form of loans or securities, is generally a vertical slice of assets subject to securitization. Since seller's interest is not pledged to back the issued securities, it has the same priority for claims on the underlying assets as ABS sold to investors (FDIC 2007; Sarkisyan and Casu 2013). Since the risk-reward profile of the portion of the securitized loan portfolio retained as seller's interest (SIL) is quite similar to the securitized portion, SIL is reported in the balance sheet along with non-securitized loans as a part of the loan portfolio held by the bank. Liquidity support is similar to a credit line and is used when the payments to ABS investors are not timely. Typically, liquidity support is reimbursed from subsequent collections.

A sizeable body of literature exists on credit enhancements. For example, Chen et al. (2008) show that issuers' equity risk is positively associated with the magnitude of their on-balance sheet contractual retained interest (using credit enhancements as a proxy)

from securitization. Barth et al. (2012) find that both credit rating agencies and the bond market regard securitizing banks' credit risk as closely associated with their retained interests. Cheng et al. (2011) document the impact of implicit recourse (a form of credit enhancement) on securitizing banks' information uncertainty. In contrast, studies on seller's interest and liquidity support are rather sparse, with Sarkisyan and Casu (2013), which investigates the relation of securitizing banks' insolvency risk with different types of retained interests being an exception.

2.3 Banks' Incentives for Income Smoothing

The managerial preference to report smoother income and the proclivity of managers to engage in earnings management activities towards this end are well established in the literature. According to the survey findings of Graham et al. (2005), "an overwhelming 96.9% of the respondents indicate that they prefer a smooth earnings path," and 78% of surveyed executives admit that they would give up economic value in exchange for smoother earnings. Several interrelated factors appear to drive managers' income smoothing propensity. Managers with income-based bonus plans with caps and floors have incentives to smooth income to maximize their pay (Healy 1985). Similarly, Fudenberg and Tirole (1995) argue that risk-averse managers are motivated to boost earnings during bad times and to save earnings in good times to keep their jobs or avoid external interference. Implicit or explicit contracts with external parties that use earnings as a contracting variable also contribute to managers' income smoothing incentives. Investors perceive volatile earnings to imply high firm risk (Graham et al. 2005); so by reducing income volatility, income smoothing helps firms to reduce perceived risk and

the associated financing costs (Graham et al. 2005; Kanagaretnam et al. 2003). In addition, since smoother earnings imply low firm risk, income smoothing could also be helpful in negotiating better terms of trade with customers and suppliers.[9] Bank managers may find income smoothing particularly useful because bank risk is under intense scrutiny not only from capital market participants but also from regulators. Underlying the bank managers' strong preference to report smoother income, a large body of literature finds empirical evidence on income smoothing by banks (Wahlen 1994; Collins et al. 1995; Kanagaretnam et al. 2003; Kanagaretnam et al. 2004; Liu and Ryan 2006).

The literature suggests that loan loss provisions (LLP) are the primary discretionary accounting tool available for bank mangers to engage in income smoothing. This is not surprising because LLP is by far the largest accrual item for a bank, and bank managers possess a significant degree of discretion in making these provisions since estimates of loan losses are subjective and imprecise in nature. However, income smoothing through LLP is not costless because monitors, such as auditors and regulators, are aware of bank managers' incentives and attempt to curb their opportunistic use of LLP. For example, the SEC has raised concerns about banks' using loan loss allowance as a "cookie jar" to smooth earnings and issued SAB 102 (July of 2001) and FFIEC (2001) policy statements to improve the informativeness of banks' loan loss accounts. SAB 102 and FFIEC (2001) encourage banks to estimate loan losses based more on

[9] Another strand of literature documents that income smoothing is applied to effectively convey managers' private information about firms' future growth (for example, Tucker and Zarowin 2006, Kanagaretnam et al. 2004). It should be noted that income smoothing to signal firms' future growth prospects too is intended to improve firms' contracting efficiency with stakeholders.

historical charge-offs that are more objective and verifiable than non-performing loans (Beck and Narayanamoorthy 2013).

Chapter 3

HYPOTHESIS DEVELOPMENT

3.1 Relation between SIL and Income Smoothing through LLP

Banks have incentives to exercise due diligence in screening potential loan applicants and monitoring existing borrowers due to their credit risk exposure. As securitizations transfer substantial portions of this credit risk to outside investors, banks' incentives to screen potential loan applicants and monitor existing borrowers are compromised, giving rise to both adverse selection (lower level of ex-ante screening of loan applicants) and moral hazard (lower level of ex-post monitoring of borrowers) problems.

For regular loans, lenders usually need to collect both hard and soft credit information on potential loan applicants because both types of information reflect applicants' credit risk. For loans that are subject to securitization, however, banks tend to expend less effort on soft information collection because the default risk is transferred to investors, and investors evaluate securitized loans primarily based on hard information, which is easily observable and contractible. This reduces banks' collection of credit information about potential loan applicants and results in initiation of poor-quality loans (Keys et al. 2010; Purnanandam 2011; Mian and Sufi 2009).

Additionally, empirical evidence also finds that compared to banks that are not securitization-active, securitization-active banks are less stringent with respect to monitoring of borrowers (Wang and Xia 2014). The reduced ex-post monitoring further reduces both the level and precision of banks' credit information about existing

borrowers. Hence, compared to regular loans, banks possess less credit information and/or lower information precision about loans subject to securitization, implying that securitized loans carry a greater degree of information uncertainty compared with regular loans.

As discussed in Section 2.2, the portion of securitized loans retained as seller's interest (SIL) is reported in the balance sheet as part of banks' loan portfolios along with regular non-securitized loans. Therefore, banks are required to estimate default probabilities and make allowances for loan losses on SIL, just as they would for regular non-securitized loans in their balance sheets. However, as banks possess relatively less precise information about securitized loans, the LLP estimates of SIL are expected to contain more error and be less precise than those of regular non-securitized loans. It is important to emphasize that lower quality LLP estimates of SIL are expected to arise not because of the information asymmetry between managers and external monitors such as auditors and shareholders but because managers possess less information about SIL due to weakened incentives to screen and monitor loans that are subject to securitization. While auditor intervention and disciplining by capital markets act as counterbalances against making poor LLP estimates, as all parties understand the lower level of monitoring to be an expected outcome and even a potential benefit of securitization, the aforementioned consequence is likely unavoidable in equilibrium. This proposition is consistent with the theoretical literature in accounting, suggesting that outsiders are more

tolerant of incomplete disclosures when they are aware that insiders' information endowment is incomplete (e.g., Dye 1985; Jung and Kwon 1988).[10]

The general consensus that SIL LLP contain more error than LLP of non-securitized loans could potentially create incentives for managers to use SIL LLP to a greater degree than non-securitized loan LLP for accomplishing earnings management objectives such as income smoothing. In other words, managers could use their lack of information on securitized loans to create wiggle room to engage in more earnings management activities through SIL LLP.

Dana et al. (2007) introduce the notion of moral wiggle room in an experimental variation of the Dictator's Game where the dictator is provided with an endowment that she can share with a receiver as she sees fit. In the classical "dictator game," one participant, the dictator, is given an endowment of money that she may divide however she likes with an anonymous other participant, the receiver. The receiver knows the dictator's instructions but must accept whatever division the dictator makes (even if given nothing) and cannot punish or retaliate. When the game is played with both the dictator and the receiver fully understanding each other's position, the dictator tends to allocate a non-zero amount to the receiver even if she is under no compulsion to do so, and it reduces the amount that she can keep for herself (see Camerer 2003; Hoffman et al. 1994).

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[10]This literature proposes that outsiders can provide leeway on the incompleteness of managers' information disclosure when investors know that managers are possibly endowed with no information or uncertain information (e.g., Dye 1985; Jung and Kwon 1988). Outsiders generally respond differently to the incompleteness of managers' information disclosure in the following two scenarios. In the first scenario, when outsiders are certain that managers are withholding information, outsiders will always assume the worst (Akerlof (1970)) of the undisclosed information, and the adverse subsequent outcome will force the manager to fully disclose the information. In the second scenario, when outsiders are aware that it is possible that managers are not endowed with information, or outsiders are not sure what type of information (or uncertain information) the manager is endowed with, investors do not know whether the nondisclosure (or partial disclosure) is because managers have no information (or incomplete information) or because of the information's adverse content. Under such a scenario, outsiders are more lenient, and managers' partial disclosure can be obtained in equilibrium.

Dana et al. (2007) modify the game by introducing information uncertainty. Specifically, there is some probability that the amount allocated to the receiver could differ from the allocation made by the dictator, and both parties are informed of this. The paper finds that, when the dictator knows that the recipient is unable to precisely identify whether his allocation is actually made by the dictator or not, the dictator uses this uncertainty to obtain some "moral wiggle room" and behave in a more self-interested manner (i.e., reduce the allocation to the receiver) when compared to the setting in which there is no information uncertainty. The economics literature also presents other examples, demonstrating that agents capitalize on their own information uncertainty to behave more self-interestedly to either avoid sanctions or to keep others ignorant of whether the outcomes are fair (Roth and Murnighan 1982; Mitzkewitz and Nagel 1993; Kagel et al. 1996; Dana et al. 2006). In the accounting literature, consistent with the exercising of moral wiggle room, Rogers and Stocken (2005) find that managers are more likely to provide biased forecasts when firms' earnings are associated with greater uncertainty.

Since smoother income is an important outcome sought by managers (Graham et al. 2005), and a large body of prior literature finds evidence that bank managers have substantial incentives to engage in income smoothing (Wahlen 1994; Kanagaretnam et al. 2003; Kanagaretnam et al. 2004; Liu and Ryan 2006), I examine whether bank managers use their wiggle room and exercise a higher degree of discretion in SIL LLP for income smoothing purposes. If true, this would add a fresh dimension to and enrich the extant literature on the use of securitization for earnings management purposes. The extant literature on earnings management via securitization focuses entirely on managerial

discretion over the timing of securitization transactions and estimation of the associated gains and losses (Dechow and Shakespeare 2009; Dechow et al. 2010). However, these strategies can only be used once for a given securitization transaction. On the other hand, the discretionary use of SIL LLP is potentially useful in multiple periods as long as the SIL of the securitized loan remains in the balance sheet. In this regard, it could serve as an earnings management tool that managers would find particularly useful in multi-period settings.

Even though LLP for SIL are not directly observable, if SIL LLP are indeed incrementally useful in income smoothing, the overall usage of LLP for income smoothing is expected to be higher when the bank has SIL and when the SIL fraction of the total loan portfolio is larger. Accordingly, I test the following hypotheses (stated in alternate form):

H1a: The propensity to use LLP for income smoothing is greater for banks with SIL than for banks without SIL.

H1b: The propensity to use LLP for income smoothing is increasing in the fraction of SIL in the loan portfolio.

Next, I propose cross-sectional tests to gain further insights into the use of SIL LLP for income smoothing. Specifically, I investigate how public ownership and heightened auditor scrutiny affect the relations hypothesized in H1a and H1b.

3.2 Public vs. Private Ownership

The incremental use of SIL LLP for income smoothing could differ between public and private banks for two important reasons. First, compared with private banks, public banks are exposed to more extensive monitoring from financial intermediaries such as analysts and the business press (Nichols et al. 2005). Greater scrutiny from capital market participants could enhance the cost of earnings management (Graham et al. 2005; Zang 2012; Cohen and Zarowin 2010) and potentially reduce the ability of public bank managers to exploit the wiggle room associated with SIL LLP. Furthermore, in exercising this discretion, managers of public banks would be wary that public capital markets can speedily punish suspected managerial opportunism through the lowering of share price and/or raising the borrowing cost. These arguments suggest that the propensity to use SIL LLP for income smoothing is likely to be lower for public banks than for private banks.

On the other hand, public bank managers likely have stronger incentives to perform income smoothing due to the increased pressures from public capital markets and because shareholders of public banks are more likely to rely on simple earnings-based heuristics to evaluate managerial performance than managers of private banks (Beatty et al. 2002). Therefore, whether the propensity to use SIL LLP for income smoothing is greater or less for public banks than it is for private banks is an empirical question. Accordingly, I state my second hypothesis (in null form) as follows:

H2: The propensity to use SIL LLP for income smoothing does not differ between public and private banks.

3.3 Heightened Auditor Scrutiny

Next, I investigate the effect of greater auditor scrutiny on banks' use of SIL LLP for income smoothing because auditor scrutiny is an important factor that affects the quality of LLP (Kanagaretnam et al. 2010). Compared to interim periods, it is generally more difficult for managers to manage earnings in the fourth quarter (annual report) due to more rigorous auditing of year-end financial reports (Brown and Pinello 2007; Fan et al. 2010). Indeed, Altamuro and Beatty (2010) provide empirical evidence that the validity of LLP is higher in the fourth quarter than in interim quarters. However, it is not immediately clear how greater auditor scrutiny in the fourth quarter would affect managers' tendency to use SIL LLP for income smoothing. On the one hand, if greater auditor scrutiny of year-end financial reports effectively inhibits earnings management through LLP in general, then the incremental use of SIL LLP for income smoothing should also be lower in the fourth quarter. On the other hand, bank managers may find the flexibility with respect to SIL LLP especially useful in the fourth quarter when auditor scrutiny makes it more difficult to manage earnings through LLP of regular loans. The latter outcome is plausible to the extent that auditors are more tolerant when it comes to SIL LLP because bank managers are expected to possess less precise information about that component of the loan portfolio. Therefore, it is ex-ante unclear whether the incremental propensity to use SIL LLP for income smoothing is higher or lower in the fourth quarter when compared to other quarters. Therefore, I state the hypothesis (in null form) as follows:

H3: The propensity to use SIL LLP for income smoothing does not differ between the fourth financial quarter and interim quarters.

Chapter 4

DATA AND SAMPLE SELECTION

In this study, I follow prior literature and focus on bank holding companies (Dechow et al. 2010; Barth et al. 2012). I obtain financial data and securitization information for bank holding companies from the Federal Reserve's Bank Regulatory database. This database provides detailed quarterly information from Y-9C reports of all bank holding companies with consolidated assets in excess of $150 million. Because the Bank Regulatory database contains information on securitization activities of bank holding companies starting from the second quarter of 2001, my sample period extends from Q2 of 2001 to Q4 of 2013. Since the banking industry is highly regulated and bank characteristics and activities are strongly impacted by regulations, it is important to ensure that my sample banks are subjected to similar regulatory requirements. Therefore, I focus on bank holding companies with assets larger than $500 million before 2005 and $1.0 billion in 2005 and later, as these banks are governed by the requirements of the Internal Control Act of 1991 (FDICIA) during my sample period.[11] Banks that do not meet this asset threshold are exempted from the aforementioned regulation. I conduct my analysis using two samples: (1) The full sample consisting of both securitizing and non-securitizing banks; (2) A subsample comprised of securitizing banks only. Use of the second sample should alleviate concerns that the results could be driven by unobservable differences between banks that do and do not engage in securitization activities. The full

[11]Federal Deposit Insurance Corporation Improvement Act of 1991 (FDICIA) imposed new auditing, corporate reporting, and governance reforms on depository institutions with assets exceeding $500 million, and the asset threshold increased to $1 billion in 2005.

sample consists of 26,559 bank-quarter observations from 1,167 unique bank holding companies with non-missing values for LLP. The securitizing subsample comprises 3,468 bank-quarter observations from 237 unique bank holding companies. The number of observations used in empirical tests is somewhat lower due to non-availability of some of the control variables.

Chapter 5

EMPIRICAL DESIGN

Following prior literature, I measure banks' income smoothing through LLP by examining the relationship between LLP and income before LLP (Kanagaretnam et al. 2004; Kilic et al. 2013). A positive relation between the two variables implies income smoothing behavior, where banks provide more (less) for loan losses when pre-provision income is high (low).

H1a posits that banks with SIL are more likely to smooth income via LLP compared to banks with no SIL. Therefore, H1a predicts an incremental effect of SIL on the positive association between LLP and bank income before LLP. I test H1a by estimating the following model:

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL\text{-}dummy_{it} + \alpha_3 SIL\text{-}dummy_{it} * EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Sd\_EBTP_{it} + \alpha_{11} Loan\_realestate_{it} + \alpha_{12} Loan\_commercial_{it} + \alpha_{13} Loan\_consumer_{it} + \alpha_{14} Loan\_allother_{it} + \epsilon_{it} \quad (1a)$$

All variables are defined in Table 1. *LLP* is the dependent variable. If banks use LLP for income smoothing, *LLP* and earnings before taxes and provisions (*EBTP*) will be positively related. *SIL-dummy* is a binary variable that equals one if the bank has non-zero SIL and zero otherwise. H1a predicts the relation between *LLP* and *EBTP* to be stronger for firms with SIL. Therefore, a positive and significant coefficient on the interaction term *SIL-dummy*EBTP* (α_3) would provide support for H1a.

(Insert Table 1 here)

I follow previous literature in controlling for other variables that could potentially determine LLP (Wahlen 1994; Beaver and Engel 1996; Liu and Ryan 2006; Kanagaretnam et al. 2004; Kanagaretnam et al. 2010a; Kanagaretnam et al. 2010b). Beginning loan loss allowance (*Allowance*), current loan charge-offs (*Charge-off*), beginning nonperforming loans (*NonPerform*), change in nonperforming loans (*ΔNonPerform*), beginning size of loan portfolio (*Loan*), and change in the amount of loans during the year (*ΔLoan*) are used to control for the nondiscretionary component of LLP. To the extent that a higher beginning allowance requires a lower LLP in the current period, the relation between *LLP* and *Allowance* is expected to be negative. Since *Charge-off* can provide information about future loan defaults, *Charge-off* should be positively associated with *LLP*. Because higher levels of beginning nonperforming loans and increases in nonperforming loans in the current period lead to larger *LLP* in the current period, the coefficients of *NonPerform* and *ΔNonPerform* should both be positive. Since banks with larger loan portfolios relative to total assets at the beginning of the period are likely to have more LLP, a positive association between *LLP* and *Loan* is expected. The change of loans (*ΔLoan*), could be positively or negatively correlated with *LLP* depending on the relative default risk of incremental loans.

In addition, I control for different loan types (*Loan_realestate, Loan_commercial, Loan_consumer, Loan_allother*) and volatility of EBTP (*Sd_EBTP*). As proposed by Liu and Ryan (1995), bank managers' discretion over LLP estimation differs across homogeneous (such as consumer loans) and heterogeneous loans (such as commercial loans). Therefore, the composition of a loan portfolio likely impacts LLP estimation (Ryan 2011). Accordingly, I augment my regression models by incorporating controls for

different loan types. The volatility of EBTP (*Sd_EBTP*) is used to control for banks' incentive to perform income smoothing. Compared to banks with less volatile income, banks with higher income volatility may have stronger incentive to smooth income. At the same time, the volatility of banks' income could be influenced by securitization activity if securitizing banks are taking on more risky loans (Purnanandam 2011, and Mian and Sufi 2009).[12] Since volatility of EBTP can be positively associated with both banks' extent of income smoothing and securitization (which is related to SIL retention), I control for volatility of EBTP to alleviate the concern that the results might be driven by the different income smoothing incentives between SIL and non-SIL banks. The regression model also controls for year and quarter fixed effects.

H1b posits that banks with a larger fraction of SIL in their loan portfolio are more likely to rely more on LLP for income smoothing compared to banks with a lower fraction of SIL. Accordingly, H1b predicts a greater positive association between *LLP* and *EBTP* when the SIL fraction is higher. I test H1b using the following regression:

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL\text{-}fraction_{it} + \alpha_3 SIL\text{-}fraction_{it} * EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Sd\_EBTP_{it} + \alpha_{11} Loan\_realestate_{it} + \alpha_{12} Loan\_commercial_{it} + \alpha_{13} Loan\_consumer_{it} + \alpha_{14} Loan\_allother_{it} + \epsilon_{it} \quad (1b)$$

Model (1b) is identical to model (1a) except that variable *SIL-dummy* is replaced by *SIL-fraction*. *SIL-fraction* is measured as the ratio of SIL to total loans outstanding. Of interest is the coefficient on the two-way interaction term *SIL-fraction*EBTP* (α_3). H1b predicts a positive α_3.

[12] This is based on the assumption that transferring of risk through securitizations does not make securitizing banks' income volatility comparable to that of non-securitizing banks.

H2 tests the differential effect of SIL on income smoothing between public and private banks. On the one hand, with more stringent monitoring from public capital markets, public bank managers could be less likely to exercise their wiggle room with respect to SIL LLP. On the other hand, the opposite could be true if greater market pressure to produce earnings with desirable attributes becomes the overriding consideration for public bank managers. I use the following regression to test these competing conjectures.

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL_{it} + \alpha_3 \text{Public-dummy}_{it} + \alpha_4 SIL_{it} * EBTP_{it} + \alpha_5 SIL_{it} * \text{Public-dummy}_{it} + \alpha_6 EBTP_{it} * \text{Public-dummy}_{it} + \alpha_7 SIL_{it} * EBTP_{it} * \text{Public-dummy}_{it} + \alpha_8 ALL_{it-1} + \alpha_9 \text{Charge-off}_{it} + \alpha_{10} \text{Non-perform}_{it-1} + \alpha_{11} \Delta\text{Non-perform}_{it} + \alpha_{12} Loan_{it-1} + \alpha_{13} \Delta Loan_{it} + \alpha_{14} Sd\_EBTP_{it} + \alpha_{15} Loan\_realestate_{it} + \alpha_{16} Loan\_commercial_{it} + \alpha_{17} Loan\_consumer_{it} + \alpha_{18} Loan\_allother_{it} + \epsilon_{it} \quad (2)$$

In the above regression, variable *SIL* stands for either *SIL-dummy* or *SIL-fraction*. *Public-dummy* equals one for public banks and zero for private banks. Of interest is the coefficient on the three-way interaction term *SIL* EBTP* Public-dummy* (α_7). If public bank managers are less (more) likely to use SIL LLP for income smoothing than their private counterparts, the coefficient α_7 should be negative (positive).

H3 investigates whether the greater auditor scrutiny in the fourth quarter alleviates or exacerbates banks' incremental propensity to use SIL LLP for income smoothing. I test this hypothesis using the following regression model, where the variable *Public-dummy* in model (2) is replaced by the variable *Yearend-dummy:*

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL_{it} + \alpha_3 \text{Yearend-dummy}_{it} + \alpha_4 SIL_{it} * EBTP_{it} + \alpha_5 SIL_{it} * \text{Yearend-dummy}_{it} + \alpha_6 EBTP_{it} * \text{Yearend-dummy}_{it} + \alpha_7 SIL_{it} * EBTP_{it} * \text{Yearend-dummy}_{it} + \alpha_8 ALL_{it-1} + \alpha_9 \text{Charge-off}_{it} + \alpha_{10} \text{Non-perform}_{it-1} + \alpha_{11} \Delta\text{Non-perform}_{it} +$$

$\alpha_{12}Loan_{it-1} + \alpha_{13}\Delta Loan_{it} + \alpha_{14}Sd\_EBTP_{it} + \alpha_{15}Loan\_realestate_{it} + \alpha_{16}Loan\_commercial_{it} + \alpha_{17}Loan\_consumer_{it} + \alpha_{18}Loan\_allother_{it} + \epsilon_{it}$ (3)

Yearend-dummy equals one for fiscal year-end quarters and zero for interim quarters. The coefficient on the three-way interaction term *SIL* EBTP* Yearend-dummy* (α_7) is the coefficient of interest. If managers' incremental ability to use SIL LLP for income smoothing is reduced in the fourth quarter, α_7 should be negative and significant. If, on the other hand, greater auditor scrutiny of LLP for regular loans makes managers exploit the wiggle room with respect to SIL LLP even more in the fourth quarter, then α_7 should be positive.

Chapter 6

RESULTS

6.1 Summary Statistics

Table 2, Panels A and B, present the descriptive statistics for the full sample and the securitizing bank subsample, respectively. In the full sample, the mean of *LLP* amounts to 32.6 percent of mean of *EBTP*, implying that meaningful changes in income can be achieved by making moderate changes to LLP. Both *EBTP* and *LLP* are relatively larger in the subsample of securitizing banks, suggesting that securitizing banks are more profitable and make higher provisions for loan losses. About 2 percent of all banks and 13 percent of securitizing banks hold SIL in their loan portfolios. Note that the descriptive statistics averaged at the bank level understate the magnitude of SIL held in the banking sector because SIL are typically only held by bigger banks[13]. For example, in 2005Q1, total assets of banks with SIL accounted for 67 percent of the total assets of all banks in the full sample. On average, SIL accounts for 6.18 percent of the loan portfolio for banks with non-zero amounts of SIL in their balance sheets (untabulated). Analyses of Panels A and B of Table 2 also reveal that compared to non-securitizing banks, securitizing banks have higher values of *Charge-off* and *Non-perform,* implying that securitizing banks generally hold lower quality loans. In addition, securitizing banks have higher *Sd_EBTP*, which suggests that securitizing banks' incomes are more volatile than those of non-securitizing banks.

[13] The mean values of total assets for the full sample and for the subsample of banks with SIL are $26 billion and $485 billion, respectively.

(Insert Table 2 here)

6.2 Univariate Correlations

Table 3 reports univariate correlations. Consistent with income smoothing behavior, *LLP* is positively associated with *EBTP*. As expected, *LLP* is positively associated with *Charge-off*, *Nonperform, ΔNonperform,* and *Loan*. The correlation between *LLP* and *ALL* is positive and inconsistent with expectations. One explanation for this inconsistent correlation may be that it is driven by the increase of lower quality loans over the sample period. *SIL-dummy* and *SIL-fraction* are positively associated with both *LLP* and *EBTP*, suggesting that banks with SIL have lower quality loans but are more profitable.

(Insert Table 3 here)

6.3 Main Results

6.3.1 Results for Hypotheses H1a and H1b

Hypothesis H1 examines the incremental impact of SIL on the extent of income smoothing via LLP. Panels A and B of Table 4 report the results for the full sample and the subsample of securitizing banks, respectively. The first column of Table 4, Panel A, reports results for hypothesis H1a, which compares the extent of income smoothing via LLP for banks with and without SIL. The results are consistent with H1a. The coefficient on the interaction term *SIL-dummy*EBTP* is positive and significant (α_3=0.128, p<0.01), suggesting that compared to banks without SIL, banks with SIL perform income smoothing via LLP to a significantly greater extent. Specifically, for banks with no SIL, a

$1 decrease in pre-LLP income (*EBTP*) will lead to a $0.017 ($\alpha_1$=0.017, p<0.01) downward adjustment of *LLP*; for banks with SIL, a $1 decrease in *EBTP* income will lead to a $0.145 ($\alpha_1 + \alpha_3$) downward adjustment of *LLP*. The second column of Panel A in Table 4 reports results for H1b, which examines the effect of the SIL fraction on the extent of income smoothing via LLP. Again, the results are consistent with the hypothesis that a higher fraction of SIL is associated with a significantly greater extent of income smoothing via LLP. The coefficient of the interaction term *SIL-fraction*EBTP* is positive and significant as hypothesized (α_3=1.389, p<0.01). This result implies that with an increase of the SIL fraction from 0 to 10%, a $1 decrease in *EBTP* will lead to a $0.139 lower LLP.

The signs of the coefficients on the control variables are generally as expected and consistent with prior research (e.g., Wahlen 1994; Kanagaretnam et al. 2004; and Kilic et al. 2013). *Allowance* and *ΔLoan* are negatively related to *LLP*, and *Chargeoff, Nonperform, ΔNonperform,* and *Loan* are significantly positively associated with *LLP*.

(Insert Table 4 here)

Panel B of Table 4 presents the results of H1a and H1b using the subsample of securitizing banks. This subsample analysis alleviates the concern that some unobservable factors that drive banks' decisions to engage in securitizations also impact bank managers' income smoothing behavior. Results obtained from this subsample are consistent with those of the full sample. As reported in the first column of Table 4, Panel B, the coefficient on the interaction term *SIL-dummy*EBTP* is positive and significant (α_3=.041, p<0.01), providing support for hypothesis H1a and suggesting that compared to

securitizing banks without SIL, securitizing banks with SIL perform income smoothing via LLP to a significantly greater extent. The results reported in the second column of Table 4, Panel B are consistent with hypothesis H1b. The coefficient of the interaction term *SIL-fraction*EBTP* is positive and significant as hypothesized (α_3=.871, p<0.01)

The adjusted r-squares of the models in Panels A and B of Table 4 are quite high (greater than 0.72 in Panel A and greater than 0.87 in Panel B), suggesting that the empirical model employed is capable of capturing a significant portion of variation in LLP.

6.3.2 Results for Hypothesis H2

Hypothesis H2 investigates whether banks' incremental propensity to smooth income via SIL LLP differs between public and private banks. This hypothesis is presented in null form because a directional prediction cannot be made ex-ante. The aforementioned propensity could be lower if public market participants effectively curtail banks' incremental use of SIL LLP for income smoothing. The opposite would be true if pressures from public markets induce public bank managers to exercise their wiggle room to an even greater extent. The results reported in Table 5 provide strong support for the former but not the latter argument. Panels A and B of Table 5 present test results of the full sample and the securitizing bank subsample, respectively. The coefficient of interest, which is the coefficient on the three-way interaction term SIL*EBTP*Public-dummy (α_7), is negative and significant in both panels, irrespective of whether SIL is represented as SIL-dummy or SIL-fraction. In the first column of Panel A in Table 5, where SIL is SIL-dummy, it can be observed that private banks with no SIL generally smooth income via

LLP (α_1=0.071, p<0.01), and the existence of SIL further facilitates this effect (α_4=0.132, p<0.01). However, this facilitation effect is significantly reduced for public banks with the coefficient of interest on the three-way interaction term SIL*EBTP*Public-dummy being significantly negative (α_7=-0.090, p<0.01). On average, for private banks with SIL, a $1 decrease in EBTP is associated with a $0.203 ($\alpha_1$+ α_4) downward adjustment of LLP; for public banks with SIL, a $1 dollar decrease in EBTP is associated with only a $0.009 ($\alpha_1$+ α_4 +α_6+ α_7) downward adjustment of LLP. Consistent results are obtained when SIL-fraction is used to proxy for SIL (column 2 of Panel A in Table 5) and when subsample of securitizing banks is tested (Table 5, Panel B). Therefore, test results in Table 5 provide strong empirical evidence that monitoring and pricing power of public equity markets are effective in attenuating the exercising of wiggle room for income smoothing by bank managers. It is also noteworthy that the two-way interaction term EBTP*Public-dummy (α_6) also is significantly negative, suggesting that public equity markets are able to curtail banks' income smoothing behavior in general as well.

(Insert Table 5 here)

6.3.3 Results for Hypothesis H3

Hypothesis H3 examines whether greater auditor scrutiny in the fiscal fourth quarter moderates or exacerbates banks' incremental use of SIL LLP for income smoothing. The test results for hypothesis H3 are presented in Table 6 with full sample and securitizing bank subsample results presented in Panels A and B, respectively. The variable of interest is the three-way interaction term SIL*EBTP*Yearend-dummy (α_7). If greater auditor scrutiny effectively constrains banks' strategic use of wiggle room with

respect to LLP estimation associated with SIL, α_7 should be negative and significant. However, if bank managers find this wiggle room to be of even greater use when auditor scrutiny makes it more difficult to smooth income via manipulating LLP of regular loans, α_7 should be positive and significant. The results in Table 6 provide strong support for the latter argument. The coefficient on the two-way interaction term EBTP*Yearend-dummy (α_6) is negative and significant across all specifications, indicating, as suggested by prior literature (Altamuro and Beatty 2010), that bank managers generally find the discretionary use of LLP more difficult in the fiscal fourth quarter when auditor scrutiny is higher. More importantly, I find the coefficient on the three-way interaction term SIL*EBTP*Yearend-dummy (α_7) to be positive and significant in all of four model specifications reported in Panels A and B of Table 6. The results in the first column of Panel A indicate that banks with no SIL generally smooth income via LLP (α_1=0.026, p<0.01) during interim quarters, and banks with SIL exhibit incrementally stronger income smoothing behavior (α_4=.105, p<0.01). This incremental effect is further strengthened for year-end quarters (α_7 = .087, p<0.01), when auditor scrutiny is greater. On average, in interim reports of banks with SIL, a $1 decrease in EBTP is associated with a $0.131 ($\alpha_1$+ α_4) downward adjustment of LLP; in year-end reports for these banks, a $1 dollar decrease in EBTP is associated with a $0.183 ($\alpha_1$+ α_4 +α_6+ α_7) downward adjustment of LLP. The results are consistent when SIL-fraction is used to proxy for SIL (Table 6, Panel A, column 2) and when the subsample of securitizing banks (Table 6, Panel B) is examined (Table 6, Panel B). This result suggests that managers find the wiggle room associated with SIL LLP particularly useful when greater auditor scrutiny

impedes their ability to engage in earnings management via LLP of loans that are not securitized.

(Insert Table 6 here)

Findings on hypotheses H2 and H3 reveal public market scrutiny and auditor scrutiny to have opposite effects on managers' use of SIL LLP for income smoothing. It appears that market disciplining via pricing is effective in inhibiting the exercising of wiggle room but not monitoring by auditors who likely concede that managers possess less precise information about SIL.

Chapter 7

ADDITIONAL ANALYSES

7.1 Heckman Selection Model

Issues relating to self-selection are ubiquitous in empirical financial economics studies. This study is no exception. The concern here is that the empirical findings could be driven not by the hypothesized factors but by some omitted variables that make banks with SIL (or more SIL) systematically different from banks without SIL (or with fewer SIL). The previously discussed research design alleviates this concern to an extent because, in addition to the full sample, all hypotheses are tested using a restricted sample comprising only securitizing banks. Nevertheless, to mitigate any remaining concerns, I also examine my hypothesis by applying a Heckman's two-stage selection model as explained below.

In the first-stage, I estimate a probit model with an SIL-dummy as the dependent variable. In this model, I use the fraction of revolving loans in the total outstanding loan portfolio (*Revolving_loan_ratio*) as the exclusion restriction variable. As previously discussed, SIL is the residual of securitized loans that remain unsold to investors. Therefore, SIL is more likely to be present when the underlying loans of ABS are subject to frequent change. Since revolving loans are flexible financing that allow borrowers to decide the frequency with which credit can be accessed and repaid, SIL is more likely to be retained when revolving loans are securitized (Comptroller of the Currency 1997; Department of the Treasury et al. 2011). Accordingly, *Revolving_loan_ratio* and SIL will be positively related. On the other hand, the relationship between *Revolving_loan_ratio*

and the degree of discretion used in LLP estimation is unclear. Even though prior research suggests that discretion in LLP estimation could differ between homogenous and heterogeneous loans (Ryan 2011), revolving loans include both homogenous loans (e.g., credit card loans) and heterogeneous loans (e.g., commercial and industrial loans). Therefore, *Revolving_loan_ratio* is likely to meet the criteria for a valid exclusion restriction variable.

I apply the Heckman two-stage model as follows:

$$\text{SIL-dummy}_{it} = \alpha_0 + \alpha_1\text{Revolving\_loan\_ratio}_{it} + \alpha_2\text{EBTP}_{it} + \alpha_3\text{ALL}_{it-1} + \alpha_4\text{Charge-off}_{it} + \alpha_5\text{Non-perform}_{it-1} + \alpha_6\Delta\text{Non-perform}_{it} + \alpha_7\text{Loan}_{it-1} + \alpha_8\Delta\text{Loan}_{it-1} + \alpha_9\text{Sd\_EBTP}_{it} + \alpha_{10}\text{Loan\_realestate}_{it} + \alpha_{11}\text{Loan\_commercial}_{it} + \alpha_{12}\text{Loan\_consumer}_{it} + \alpha_{13}\text{Loan\_allother}_{it} + \epsilon_{it} \quad (4a)$$

$$\text{LLP}_{it} = \alpha_0 + \alpha_1\text{EBTP}_{it} + \alpha_2\text{SIL}_{it} + \alpha_3\,\text{SIL}_{it}*\text{EBTP}_{it} + \alpha_4\text{ALL}_{it-1} + \alpha_5\text{Charge-off}_{it} + \alpha_6\text{Non-perform}_{it-1} + \alpha_7\Delta\text{Non-perform}_{it} + \alpha_8\text{Loan}_{it-1} + \alpha_9\Delta\text{Loan}_{it} + \alpha_{10}\text{Sd\_EBTP}_{it} + \alpha_{11}\text{Loan\_realestate}_{it} + \alpha_{12}\text{Loan\_commercial}_{it} + \alpha_{13}\text{Loan\_consumer}_{it} + \alpha_{14}\text{Loan\_allother}_{it} + \alpha_{15}\text{Mills}_{it} + \alpha_{16}\text{EBTP}_{it}*\text{Mills}_{it} + \epsilon_{it} \quad (4b)$$

In model (4a), *Revolving_loan_ratio* is the ratio of the total amount of revolving loans to total outstanding loans as defined in Table 1. All other variables are as previously defined. The second-stage model (4b) is an OLS regression similar to model (1a) except that it includes *Mills* (the inverse Mills ratio obtained from the first-stage) and its interaction with *EBTP* ($EBTP_{it}$* $Mills_{it}$) as additional independent variables. The same approach is also used for testing hypotheses H2 and H3.

The results of the first-stage Heckman selection model appear in Appendix I, with Panels A, B and C presenting the outcomes relating to H1, H2 and H3, respectively. As evident from Appendix I, the coefficient of *Revolving_loan_ratio* (α_1) is significantly

positive in all first-stage regressions, suggesting that banks with a greater portion of revolving loans are indeed more likely to retain SIL upon securitization.

Table 7 presents results of the second-stage model, with Panels A to C reporting findings for hypotheses H1 to H3 sequentially. As can be seen in Table 7, the results from the Heckman self-selection approach are quite consistent with those obtained earlier. Consistent with hypothesis H1, the coefficient on two-way interaction term *SIL*EBTP* is positive and significant in Panel A of Table 7, indicating that the propensity to use LLP for income smoothing is greater in the presence of SIL. The coefficient on the three-way interaction term *SIL*EBTP*Public-dummy* is negative and significant in Panel B of Table 7, suggesting that the incremental use of SIL LLP for income smoothing is lower for public banks when compared with private banks. Supporting H3, and suggesting that bank managers find the wiggle room of SIL LLP to be of even greater use when auditor scrutiny makes it more difficult to smooth income via manipulating LLP of regular loans, the coefficient on the three-way interaction term *SIL*EBTP*Yearend-dummy* is reliably positive and significant in Panel C of Table 7.

(Insert Table 7 here)

7.2 Subsample Analyses with SIL Banks

The main results reported in Section 6 are based on the full sample of banks that meet the sample selection criteria and a subsample of banks that engage in securitizations. However, not all banks that engage in securitizations have SIL, and an argument could be made that the results are due to unobservable systematic differences between securitizing banks that do and do not carry SIL in their balance sheets. I eliminate this possibility by

further restricting my sample to banks with SIL only and re-estimating the OLS regression of model (1b).[14] These results are reported in Table 8. Despite a significant reduction in sample size, the coefficient on the interaction term *SIL-fraction*EBTP* continues to be positive and significant (α_3=.664, p<0.01), supporting the earlier finding that the propensity to use LLP for income smoothing is increasing in the fraction of SIL in the loan portfolio.

(Insert Table 8 here)

7.3 Matched Sample Analyses

As pointed out previously, the inferences made in this study are somewhat indirect because LLP on SIL are not directly observable. A concern is that if pre-managed earnings of banks with SIL are more volatile than pre-managed earnings of banks with no SIL, the results could be driven not by the exercising of wiggle room with respect to SIL LLP but due to the greater need to engage in income smoothing for SIL banks. The main analyses alleviate this concern by controlling for volatility of EBTP. To give further credence to my argument, I also conduct matched sample analyses with SIL banks matched with non-SIL banks based on the volatility of EBTP. These results are reported in Table 9. The coefficient on the interaction term *SIL*EBTP* is positive and significant (α_3=0.046, p<0.01), suggesting that my findings are unlikely to be driven by volatility differences in pre-managed earnings.

[14]Note that I cannot use this subsample for regression model (1a) because there is no cross-sectional variation in the variable *SIL-dummy*.

(Insert Table 9 here)

7.4 Alternative Model Specifications

To strengthen the validity of the primary findings, I repeat the analyses using various alternative model specifications.

7.4.1 Controlling for Bank Size

Bank size can impact both the securitization decision and LLP estimation. On the one hand, larger banks are more likely to perform securitization (so are more likely to retain SIL); on the other hand, larger banks tend to have a larger fraction of heterogeneous loans (Ryan 2011), which can provide them greater discretion to smooth income via LLP. All control variables in main analyses are scaled by total assets at the beginning of the period. Directly controlling for size does not alter any of my inferences.

7.4.2 Controlling for Tier1-ratio and ΔEBTP

In addition to the nondiscretionary determinants of LLP, Kilic et al. (2013) also controls for capital adequacy ratio (*Tier1-ratio*) and the next period's change in income before taxes and provisions (*ΔEBTP*) when capturing the extent of income smoothing via LLP. To the extent that increase of *LLP* can reduce minimum required capital ratio, a positive association is expected between *LLP* and *Tier1-ratio*[15]. If banks use LLP to signal future profitability, there should be a positive relation between *LLP* and *ΔEBTP*.

[15] *Tier-1 ratio* is defined as the ratio of Tier-1 capital before loan loss reserves to the minimum required regulatory capital.

Following Kilic et al. (2013) and incorporating these additional variables does not alter my results.

7.4.3 Controlling for Interaction Terms between EBTP and Loan Types

As mentioned previously, bank managers have differential discretions over LLP estimation of homogeneous (such as consumer loans) and heterogeneous loans (such as commercial loans) (Liu and Ryan 1995). Different loan types are controlled for in the main regressions. As a further robustness test, I also include interaction terms of *EBTP* and different loan types to ensure that any results on the variable of interest (*SIL-dummy*EBTP*) are not driven by differences in the loan types that compose SIL and non-securitized loans. Incorporating these additional control variables has no bearing in my findings.

7.4.4 Controlling for Securitized Loan Types

To the extent that composition and size of securitized loans could affect both retention of SIL and LLP estimation, I modify my regression models by incorporating controls for different securitized loan types. Again, results remain unchanged.

Table 10 reports the test results when the above control variables are added in the model specifications (as shown in models 5a and 5b), with the first column and second column using SIL-dummy and SIL-fraction to capture SIL, respectively. The two-way interaction term in both columns, *SIL*EBTP*, is positive and significant, implying that my findings are unlikely to be driven by aforementioned factors.

(Insert Table 10 here)

Chapter 8

CONCLUSION

Due to bank managers' reduced efforts in ex-ante screening and ex-post monitoring of loans subject to securitization, banks possess relatively less information on the credit quality of SIL when compared with that of non-securitized loans. In this paper, I argue that this relative lack of information provides bank managers with wiggle room in LLP estimation for SIL and investigate whether managers strategically exploit this wiggle room to perform income smoothing. My findings indicate this indeed to be the case.

In further cross-sectional analyses, I find that greater monitoring by public equity markets attenuates the above mentioned behavior. I also find that managers are likely to exercise their wiggle room with respect to SIL LLP even more in the fiscal fourth quarter where greater auditor scrutiny makes it more difficult to engage in income smoothing via LLP of non-securitized loans.

This study contributes to the extant literature in at least two ways: First, the current literature on securitization-related earnings management focuses exclusively on using securitization gains/losses to manage earnings (Dechow and Shakespeare 2009; Dechow et al. 2010). This is a single-period earnings management tool that can only be realized at the initiation of a securitization transaction. In contrast, this paper proposes that securitizations can provide managers with a tool to manage earnings in a multi-period context due to higher discretion in making LLP for SIL. Second, the extant literature addressing the association between the extent of LLP management and loan characteristics is quite limited and focuses only on the differential discretions arising due

to differences in information asymmetry between managers and auditors (Liu and Ryan 1995; Ryan, 2011). In contrast, this paper adds a novel insight by showing that the insiders' (i.e., bank managers') relative lack of credit information and the outsiders' (i.e., auditors', shareholders', etc.) knowledge of this shortcoming can also create earnings management opportunities due to the emergence of wiggle room.

In this paper, I attempt to rule out alternative explanations and omit correlated variable concerns by rigorous application of control variables, execution of subsample analyses, and implementation of well-established econometric techniques that address endogeneity issues. However, as in many empirical accounting studies, caution must be exercised in making strong causal inferences. The financial crisis as well as the financial accounting standards FAS 156 and 157 significantly impacted the operation and reporting of banks' securitization activities. It will be interesting to examine whether and how these changes affected bank managers' ability to exercise wiggle room with respect to SIL LLP. I leave this question for future research.

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APPENDIX I

Heckman Selection Model First-stage Results

The following are the results of the first-stage heckman selection model

Panel A: Hypothesis H1

$$\text{SIL-dummy}_{it} = \alpha_0 + \alpha_1\text{Revolving\_loan\_ratio}_{it} + \alpha_2\text{EBTP}_{it} + \alpha_3\text{ALL}_{it-1} + \alpha_4\text{Charge-off}_{it} + \alpha_5\text{Non-perform}_{it-1} + \alpha_6\Delta\text{Non-perform}_{it} + \alpha_7\text{Loan}_{it-1} + \alpha_8\Delta\text{Loan}_{it} + \alpha_9\text{Sd\_EBTP}_{it} + \alpha_{10}\text{Loan\_realestate}_{it} + \alpha_{11}\text{Loan\_commercial}_{it} + \alpha_{12}\text{Loan\_consumer}_{it} + \alpha_{13}\text{Loan\_allother}_{it} + \epsilon_{it}$$

		Coefficient estimate	p-value
Revolving_loan_ratio	**α_1**	**6.144**	**0.000**
EBTP	α_2	-1.578	0.707
ALL	α_3	-15.419	0.000
Charge-off	α_4	6.958	0.246
Non-perform	α_5	8.386	0.000
ΔNon-perform	α_6	8.767	0.003
Loan	α_7	1.054	0.005
ΔLoan	α_8	1.852	0.000
Sd_EBTP	α_9	-14.131	0.010
Loan_realestate	α_{10}	-3.548	0.000
Loan_commercial	α_{11}	0.545	0.252
Loan_consumer	α_{12}	-1.895	0.001
Loan_allother	α_{13}	4.490	0.065
Year fixed effect?		Yes	
Quarter fixed effect?		Yes	
Likelihood Ratio Score		1305.05	
($Pr>\chi^2$)		0.000	
N		17,499	

Panel B: Hypothesis H2

$$\text{SIL-dummy}_{it} = \alpha_0 + \alpha_1\text{Revolving\_loan\_ratio}_{it} + \alpha_2\text{EBTP}_{it} + \alpha_3\text{Public-dummy} + \alpha_4\text{EBTP*Public-dummy} + \alpha_5\text{ALL}_{it-1} + \alpha_6\text{Charge-off}_{it} + \alpha_7\text{Non-perform}_{it-1} + \alpha_8\Delta\text{Non-perform}_{it} + \alpha_9\text{Loan}_{it-1} + \alpha_{10}\Delta\text{Loan}_{it} + \alpha_{11}\text{Sd\_EBTP}_{it} + \alpha_{12}\text{Loan\_realestate}_{it} + \alpha_{13}\text{Loan\_commercial}_{it} + \alpha_{14}\text{Loan\_consumer}_{it} + \alpha_{15}\text{Loan\_allother}_{it} + \epsilon_{it}$$

		Coefficient estimate	p-value
Revolving_loan_ratio	**α_1**	**6.586**	**0.000**
EBTP	α_2	-9.283	0.181
Public-dummy	α_3	0.490	0.000
EBTP*Public-dummy	α_4	15.598	0.076
ALL	α_5	-11.993	0.005
Charge-off	α_6	6.892	0.261
Non-perform	α_7	8.647	0.000
ΔNon-perform	α_8	9.634	0.005
Loan	α_9	1.589	0.000
ΔLoan	α_{10}	1.792	0.000
Sd_EBTP	α_{11}	-15.477	0.007
Loan_realestate	α_{12}	-4.119	0.000
Loan_commercial	α_{13}	0.110	0.826
Loan_consumer	α_{14}	-2.138	0.000
Loan_allother	α_{15}	3.684	0.149
Year fixed effect?		Yes	
Quarter fixed effect?		Yes	
Likelihood Ratio Score		1389.64	
($Pr>\chi^2$)		0.0000	
N		17,303	

Panel C: Hypothesis H3

$$\text{SIL-dummy}_{it} = \alpha_0 + \alpha_1\text{Revolving\_loan\_ratio}_{it} + \alpha_2\text{EBTP}_{it} + \alpha_3\text{Yearend-dummy}_{it} + \alpha_4\text{EBTP}_{it}*\text{Yearend-dummy}_{it} + \alpha_5\text{ALL}_{it-1} + \alpha_6\text{Charge-off}_{it} + \alpha_7\text{Non-perform}_{it-1} + \alpha_8\Delta\text{Non-perform}_{it} + \alpha_9\text{Loan}_{it-1} + \alpha_{10}\Delta\text{Loan}_{it} + \alpha_{11}\text{Sd\_EBTP}_{it} + \alpha_{12}\text{Loan\_realestate}_{it} + \alpha_{13}\text{Loan\_commercial}_{it} + \alpha_{14}\text{Loan\_consumer}_{it} + \alpha_{15}\text{Loan\_allother}_{it} + \epsilon_{it}$$

		Coefficient estimate	p-value
Revolving_loan_ratio	**α_1**	**6.191**	**0.000**
EBTP	α_2	-2.971	0.509
Yearend-dummy	α_3	-0.059	0.415
EBTP*Yearend-dummy	α_4	13.120	0.039
ALL	α_5	-15.283	0.000
Charge-off	α_6	6.242	0.306
Non-perform	α_7	8.614	0.000
ΔNon-perform	α_8	9.107	0.003
Loan	α_9	1.074	0.005
ΔLoan	α_{10}	1.864	0.000
Sd_EBTP	α_{11}	-17.978	0.002
Loan_realestate	α_{12}	-3.586	0.000
Loan_commercial	α_{13}	0.517	0.279
Loan_consumer	α_{14}	-1.942	0.000
Loan_allother	α_{15}	4.432	0.069
Year fixed effect?		Yes	
Likelihood Ratio Score		1309.14	
($Pr>\chi^2$)		0.000	
N		17,499	

Table 1: Variable Definitions

Variable name	Definition	Item number in Bank Regulatory
Loan loss provision	Loan loss provisions scaled by beginning total assets	bhck4230[a]
SIL-dummy	1 if the sum of seller's interest loan greater than zero; 0 otherwise	bhckb500+bhckb501+bhckb502
SIL-fraction	Sum of seller's interest loan divided by loans outstanding	(bhckb500+bhckb501+bhckb502)/bhckb528[b]
EBTP	Income before taxes, extraordinary items, and provisions scaled by beginning total assets	bhck4301[a]+ bhck4230[a]
ALL	Beginning allowance for loan losses scaled by beginning total assets	bhck3123
Charge-off	Loan charge-offs scaled by beginning total assets	bhck4635[a]
Non-perform	Beginning nonperforming loans scaled by beginning total assets	bhck5524 + bhck5525 + bhck5526
ΔNon-perform	Change in nonperforming loans scaled by beginning total assets	Δ(bhck5524 + bhck5525 + bhck5526)$_t$
Loan	Beginning total loans outstanding scaled by beginning total assets	bhckb528[b]
ΔLoan	Change in total loans outstanding scaled by beginning total assets	Δ(bhckb528[b])$_t$
Sd_EBTP	Standard deviation of EBTP in the corresponding quarters in previous five years	bhck4301[a]+ bhck4230[a]
Loan_realestate	Loans secured by real estate scaled by beginning total assets	bhck1410
Loan_commercial	Commercial and industrial loans scaled by beginning total assets	bhck1766
Loan_consumer	Loans to individuals for household, family, and other personal expenditures scaled by beginning total assets	bhck1975
Loan_allother	All other loans scaled by beginning total assets	bhck1564
Public-dummy	1 if it is a public bank; 0 otherwise	N/A[c, d]
Yearend-dummy	1 if it is a report at year-end (fourth quarter); 0 other wise	rssd9999
Tier1-ratio	Tier 1 risk-based capital ratio	bhck7206
ΔEBTP	One-year-ahead change in income before taxes and provisions scaled by beginning total assets	Δ(bhck4301[a]+ bhck4230[a])$_{t+1}$

Table 1- Continued

Size	Logarithm of the quarterly ending total assets	bhck2170
Securitized_residential	Securitized loans- 1-4 family residential loans, scaled by beginning total assets	bhckb705
Securitized_homeequity	Securitized loans- home equity lines, scaled by beginning total assets	bhckb706
Securitized_creditcard	Securitized loans- credit card receivables, scaled by beginning total assets	bhckb707
Securitized_autoloan	Securitized loans- auto loans, scaled by beginning total assets	bhckb708
Securitized_otherconsumer	Securitized loans- other consumer loans, scaled by beginning total assets	bhckb709
Securitized_commercial	Securitized loans – commercial and industrial loans, scaled by beginning total assets	bhckb710
Securitized_allother	Securitized loans- all other loans, scaled by beginning total assets	bhckb711
Revolving_loan_ratio	The ratio of revolving loan to the total loan outstanding	(bhdm1797+ bhckb539+ bhckb538)/bhckb528[b]

a. It is year-to-date data, which is subsequently transferred to quarterly data.
b. When bhckb528 is not available, using bhck2125 to take the place of it.
c. If the bank can be found in CRSP, it is labeled as a public bank; otherwise, the bank is private.
d. I used the datasheet linking rssd and permco from Federal Reserve Website, which has an ending period of 2012Q3. Therefore, there might a chance that a company goes to public between 2012Q4 to 2013Q4, but is not captured by this dummy.

Table 2: Descriptive Statistics

Panel A Whole sample

	Mean	Median	Standard deviation	10th percentile	90th percentile	N
LLP	0.0014	0.0006	0.0034	0.0000	0.0031	26,559
EBTP	0.0043	0.0041	0.0075	0.0016	0.0067	26,552
SIL-dummy	0.0180	0.0000	0.1332	0.0000	0.0000	26,769
SIL-fraction	0.0011	0.0000	0.0191	0.0000	0.0000	26,747
ALL	0.0107	0.0092	0.0088	0.0054	0.0166	26,559
Charge-off	0.0014	0.0006	0.0035	0.0000	0.0032	26,556
Non-perform	0.0188	0.0120	0.0223	0.0033	0.0400	26,559
ΔNon-perform	0.0006	0.0000	0.0115	-0.0044	0.0055	26,559
Loan	0.6541	0.6731	0.1907	0.4616	0.8192	26,559
ΔLoan	0.0152	0.0085	0.1211	-0.0165	0.0427	26,559
Sd_EBTP	0.0026	0.0015	0.0049	0.0005	0.0047	22,696
Loan_realestate	0.4754	0.4857	0.1926	0.2592	0.6739	26,559
Loan_allother	0.0029	0.0000	0.0093	0.0000	0.0087	26,559
Loan_commercial	0.1092	0.0953	0.0753	0.0294	0.2021	26,559
Loan_consumer	0.0480	0.0244	0.0798	0.0026	0.1122	26,559

Note: All the variables are defined in table 1.

Panel B Subsample of securitizing banks

	Mean	Median	Standard deviation	10th percentile	90th percentile	N
LLP	0.0019	0.0008	0.0042	0.0000	0.0046	3,468
EBTP	0.0057	0.0047	0.0089	0.0014	0.0090	3,468
SIL-dummy	0.1316	0.0000	0.3381	0.0000	1.0000	3,678
SIL-fraction	0.0081	0.0000	0.0509	0.0000	0.0013	3,676
ALL	0.0113	0.0094	0.0108	0.0038	0.0192	3,468
Charge-off	0.0020	0.0010	0.0041	0.0001	0.0048	3,468
Non-perform	0.0229	0.0153	0.0259	0.0047	0.0479	3,468
ΔNon-perform	0.0005	0.0000	0.0059	-0.0035	0.0049	3,468
Loan	0.6015	0.6483	0.2026	0.3359	0.7770	3,468
ΔLoan	0.0145	0.0070	0.0763	-0.0171	0.0416	3,468
Sd_EBTP	0.0034	0.0019	0.0064	0.0006	0.0064	2,931
Loan_realestate	0.3883	0.4078	0.1870	0.1188	0.6048	3,468
Loan_allother	0.0044	0.0000	0.0131	0.0000	0.0164	3,468
Loan_commercial	0.1091	0.1066	0.0651	0.0201	0.1877	3,468
Loan_consumer	0.0813	0.0510	0.1093	0.0037	0.1675	3,468

Table 3

Correlation Matrix

This table reports the Pearson's correlations of the variables used in regression models. P-values are included in parenthesis. All variables are defined in Table 1. Consistent with regression specifications, *ALL, Loan, and Nonperform* are defined in terms of lagged variables.

	LLP	*EBTP*	*SIL-dummy*	*SIL-fraction*	*ALL*	*Charge-off*	*Nonperform*	*ΔNonperform*	*Loan*	*ΔLoan*	*Sd_EBTP*	*Loan_realestate*	*Loan_commercial*	*Loan_consumer*
EBTP	0.193													
	(0.000)													
SIL-dummy	0.085	0.079												
	(0.000)	(0.000)												
SIL-fraction	0.098	0.109	0.432											
	(0.000)	(0.000)	(0.000)											
ALL	0.570	0.270	0.070	0.091										
	(0.000)	(0.000)	(0.000)	(0.000)										
Charge-off	0.818	0.234	0.086	0.097	0.711									
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)									
Nonperform	0.449	-0.059	0.004	0.011	0.501	0.472								
	(0.000)	(0.000)	(0.543)	(0.082)	(0.000)	(0.000)								
ΔNonperform	0.196	0.370	0.004	0.001	-0.026	0.091	-0.033							
	(0.000)	(0.000)	(0.560)	(0.855)	(0.000)	(0.000)	(0.000)							
Loan	0.162	0.244	-0.046	-0.023	0.166	0.118	0.073	0.484						
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)						
ΔLoan	0.049	0.449	0.011	0.003	-0.057	0.0274	-0.0838	0.7214	0.637					
	(0.000)	(0.000)	(0.087)	(0.663)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)					
Sd_EBTP	0.242	0.270	0.063	0.077	0.366	0.312	0.207	-0.034	-0.072	-0.057				
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)				
Loan_realestate	0.081	0.124	-0.140	-0.102	0.037	0.026	0.113	0.420	0.797	0.519	-0.094			
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)			
Loan_commercial	0.000	0.018	0.009	-0.043	0.022	-0.014	-0.080	0.081	0.314	0.167	-0.059	-0.087		
	(0.941)	(0.003)	(0.138)	(0.000)	(0.000)	(0.019)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)		
Loan_consumer	0.243	0.391	0.208	0.284	0.305	0.298	0.040	0.258	0.266	0.329	0.136	-0.099	-0.029	
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	
Loan_allother	0.063	-0.020	0.058	0.013	-0.036	0.023	-0.018	0.047	0.009	0.005	-0.058	-0.050	0.035	0.009
	(0.000)	(0.001)	(0.000)	(0.038)	(0.000)	(0.000)	(0.004)	(0.000)	(0.156)	(0.396)	(0.000)	(0.000)	(0.000)	(0.148)

Table 4

OLS Regression Results for Hypotheses H1a and H1b

This table shows the OLS estimates for the following model:

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL\text{-}dummy_{it} + \alpha_3 SIL\text{-}dummy_{it} * EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Sd\_EBTP_{it} + \alpha_{11} Loan\_realestate_{it} + \alpha_{12} Loan\_commercial_{it} + \alpha_{13} Loan\_consumer_{it} + \alpha_{14} Loan\_allother_{it} + \epsilon_{it} \quad (1a)$$

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL\text{-}fraction_{it} + \alpha_3 SIL\text{-}fraction_{it} * EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Sd\_EBTP_{it} + \alpha_{11} Loan\_realestate_{it} + \alpha_{12} Loan\_commercial_{it} + \alpha_{13} Loan\_consumer_{it} + \alpha_{14} Loan\_allother_{it} + \epsilon_{it} \quad (1b)$$

All variables are defined in Tables 1.

Panel A Full sample

SIL_proxy		**SIL-dummy**		**SIL-fraction**	
		Coefficient estimate	p-value	Coefficient estimate	p-value
EBTP	α_1	0.017	0.000	0.017	0.000
SIL	α_2	0.000	0.000	-0.025	0.000
SIL*EBTP	**α_3**	**0.128**	**0.000**	**1.389**	**0.000**
ALL	α_4	-0.023	0.000	-0.021	0.000
Charge-off	α_5	0.706	0.000	0.705	0.000
Non-perform	α_6	0.018	0.000	0.018	0.000
ΔNon-perform	α_7	0.069	0.000	0.068	0.000
Loan	α_8	0.002	0.000	0.002	0.000
ΔLoan	α_9	-0.001	0.000	-0.001	0.001
Sd_EBTP	α_{10}	-0.004	0.115	-0.003	0.298
Loan_realestate	α_{11}	-0.001	0.001	-0.001	0.000
Loan_commercial	α_{12}	-0.001	0.014	-0.001	0.007
Loan_consumer	α_{13}	-0.001	0.053	0.000	0.231
Loan_allother	α_{14}	-0.003	0.028	-0.003	0.031
Year fixed effect?		Yes		Yes	
Quarter fixed effect?		Yes		Yes	
Adj. R^2		0.720		0.721	
N		22,688		22,688	

Panel B Subsample of securitizing banks

SIL_proxy		**SIL-dummy**		**SIL-fraction**	
		Coefficient estimate	p-value	Coefficient estimate	p-value
EBTP	α_1	0.029	0.000	0.028	0.000
SIL	α_2	0.000	0.322	-0.017	0.000
SIL*EBTP	**α_3**	**0.041**	**0.000**	**0.871**	**0.000**
ALL	α_4	-0.042	0.000	-0.041	0.000
Charge-off	α_5	0.943	0.000	0.934	0.000
Non-perform	α_6	0.006	0.002	0.006	0.001
ΔNon-perform	α_7	0.080	0.000	0.077	0.000
Loan	α_8	0.001	0.003	0.002	0.002
ΔLoan	α_9	-0.003	0.000	-0.002	0.000
Sd_EBTP	α_{10}	0.010	0.165	0.005	0.507
Loan_realestate	α_{11}	0.000	0.579	0.000	0.279
Loan_commercial	α_{12}	0.000	0.600	0.000	0.600
Loan_consumer	α_{13}	0.000	0.453	0.000	0.681
Loan_allother	α_{14}	0.009	0.013	0.009	0.013
Year fixed effect?		Yes		Yes	
Quarter fixed effect?		Yes		Yes	
Adj. R^2		0.877		0.882	
N		2,926		2,926	

Table 5

OLS Regression Results for Hypothesis H2

This table shows the OLS estimates for the following model:

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL_{it} + \alpha_3 Public\text{-}dummy_{it} + \alpha_4 SIL_{it}*EBTP_{it} + \alpha_5 SIL_{it}*Public\text{-}dummy_{it} + \alpha_6 EBTP_{it}*Public\text{-}dummy_{it} + \alpha_7 SIL_{it}*EBTP_{it}*Public\text{-}dummy_{it} + \alpha_8 ALL_{it-1} + \alpha_9 Charge\text{-}off_{it} + \alpha_{10} Non\text{-}perform_{it-1} + \alpha_{11} \Delta Non\text{-}perform_{it} + \alpha_{12} Loan_{it-1} + \alpha_{13} \Delta Loan_{it} + \alpha_{14} Sd\_EBTP_{it} + \alpha_{15} Loan\_realestate_{it} + \alpha_{16} Loan\_commercial_{it} + \alpha_{17} Loan\_consumer_{it} + \alpha_{18} Loan\_allother_{it} + \epsilon_{it} \quad (2)$$

All variables are defined in Tables 1.

Panel A Full sample

SIL_proxy		**SIL-dummy**		**SIL-fraction**	
		Coefficient estimate	p-value	Coefficient estimate	p-value
EBTP	α_1	0.071	0.000	0.071	0.000
SIL	α_2	-0.001	0.004	-0.028	0.000
Public-dummy	α_3	0.000	0.000	0.000	0.000
SIL*EBTP	α_4	0.132	0.000	2.150	0.000
SIL*Public-dummy	α_5	0.001	0.005	0.031	0.000
EBTP*Public-dummy	α_6	-0.104	0.000	-0.105	0.000
SIL*EBTP*Public-dummy	**α_7**	**-0.090**	**0.000**	**-2.086**	**0.000**
ALL	α_8	-0.041	0.000	-0.041	0.000
Charge-off	α_9	0.689	0.000	0.685	0.000
Non-perform	α_{10}	0.023	0.000	0.023	0.000
ΔNon-perform	α_{11}	0.067	0.000	0.067	0.000
Loan	α_{12}	0.001	0.000	0.002	0.000
ΔLoan	α_{13}	-0.001	0.000	-0.001	0.000
Sd_EBTP	α_{14}	0.001	0.861	-0.001	0.725
Loan_realestate	α_{15}	-0.000	0.037	-0.001	0.010
Loan_commercial	α_{16}	-0.000	0.525	-0.000	0.469
Loan_consumer	α_{17}	-0.001	0.078	-0.001	0.001
Loan_allother	α_{18}	-0.003	0.057	-0.003	0.056
Year fixed effect?		Yes		Yes	
Quarter fixed effect?		Yes		Yes	
Adj. R^2		0.726		0.730	
N		20,732		20,732	

Panel B Subsample of securitizing banks

SIL_proxy		**SIL-dummy**		**SIL-fraction**	
		Coefficient estimate	p-value	Coefficient estimate	p-value
EBTP	α_1	0.123	0.000	0.122	0.000
SIL	α_2	-0.000	0.063	-0.021	0.000
Public-dummy	α_3	0.001	0.000	0.001	0.000
SIL*EBTP	α_4	0.045	0.000	1.542	0.000
SIL*Public-dummy	α_5	0.001	0.009	0.021	0.000
EBTP*Public-dummy	α_6	-0.134	0.000	-0.132	0.000
SIL*EBTP*Public-dummy	$\boldsymbol{\alpha_7}$	**-0.054**	**0.011**	**-1.434**	**0.000**
ALL	α_8	-0.081	0.000	-0.090	0.000
Charge-off	α_9	0.897	0.000	0.885	0.000
Non-perform	α_{10}	0.012	0.000	0.014	0.000
ΔNon-perform	α_{11}	0.078	0.000	0.077	0.000
Loan	α_{12}	0.000	0.888	0.000	0.475
ΔLoan	α_{13}	-0.003	0.000	-0.003	0.000
Sd_EBTP	α_{14}	0.012	0.068	0.001	0.903
Loan_realestate	α_{15}	0.001	0.067	0.000	0.269
Loan_commercial	α_{16}	0.002	0.013	0.002	0.002
Loan_consumer	α_{17}	0.001	0.009	0.000	0.549
Loan_allother	α_{18}	0.007	0.033	0.007	0.038
Year fixed effect?		Yes		Yes	
Quarter fixed effect?		Yes		Yes	
Adj. R^2		0.887		0.897	
N		2,926		2,926	

Table 6

OLS Regression Results for Hypothesis H3

This table shows the OLS estimates for the following model:

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL_{it} + \alpha_3 Yearend\text{-}dummy_{it} + \alpha_4 SIL_{it}*EBTP_{it} + \alpha_5 SIL_{it}*Yearend\text{-}dummy_{it} + \alpha_6 EBTP_{it}*Yearend\text{-}dummy_{it} + \alpha_7 SIL_{it}*EBTP_{it}*Yearend\text{-}dummy_{it} + \alpha_8 ALL_{it-1} + \alpha_9 Charge\text{-}off_{it} + \alpha_{10} Non\text{-}perform_{it-1} + \alpha_{11} \Delta Non\text{-}perform_{it} + \alpha_{12} Loan_{it-1} + \alpha_{13} \Delta Loan_{it} + \alpha_{14} Sd\_EBTP_{it} + \alpha_{15} Loan\_realestate_{it} + \alpha_{16} Loan\_commercial_{it} + \alpha_{17} Loan\_consumer_{it} + \alpha_{18} Loan\_allother_{it} + \epsilon_{it} \quad (3)$$

All variables are defined in Tables 1.

Panel A Full sample

SIL_proxy		**SIL-dummy**		**SIL-fraction**	
		Coefficient estimate	p-value	Coefficient estimate	p-value
EBTP	α_1	0.026	0.000	0.027	0.000
SIL	α_2	-0.000	0.004	-0.018	0.000
Yearend-dummy	α_3	0.000	0.000	0.000	0.000
SIL*EBTP	α_4	0.105	0.000	1.102	0.000
SIL*Yearend-dummy	α_5	0.000	0.205	-0.022	0.000
EBTP*Yearend-dummy	α_6	-0.035	0.000	-0.036	0.000
SIL*EBTP*Yearend-dummy	**α_7**	**0.087**	**0.000**	**0.889**	**0.000**
ALL	α_8	-0.024	0.000	-0.022	0.000
Charge-off	α_9	0.706	0.000	0.704	0.000
Non-perform	α_{10}	0.018	0.000	0.018	0.000
ΔNon-perform	α_{11}	0.067	0.000	0.067	0.000
Loan	α_{12}	0.002	0.000	0.002	0.000
ΔLoan	α_{13}	-0.001	0.000	-0.001	0.002
Sd_EBTP	α_{14}	-0.003	0.230	-0.001	0.676
Loan_realestate	α_{15}	-0.001	0.001	-0.001	0.000
Loan_commercial	α_{16}	-0.001	0.015	-0.001	0.010
Loan_consumer	α_{17}	-0.001	0.043	0.000	0.269
Loan_allother	α_{18}	-0.003	0.030	-0.003	0.034
Year fixed effect?		Yes		Yes	
Adj. R^2		0.720		0.721	
N		22,688		22,688	

Panel B Subsample of securitizing banks

SIL_proxy		**SIL-dummy**		**SIL-fraction**	
		Coefficient estimate	p-value	Coefficient estimate	p-value
EBTP	α_1	0.039	0.000	0.041	0.000
SIL	α_2	-0.000	0.259	-0.013	0.000
Yearend-dummy	α_3	0.000	0.026	0.000	0.000
SIL*EBTP	α_4	0.038	0.000	0.696	0.000
SIL*Yearend-dummy	α_5	0.000	0.946	-0.014	0.000
EBTP*Yearend-dummy	α_6	-0.061	0.000	-0.075	0.000
SIL*EBTP*Yearend-dummy	**α_7**	**0.040**	**0.028**	**0.655**	**0.000**
ALL	α_8	-0.047	0.000	-0.042	0.000
Charge-off	α_9	0.939	0.000	0.922	0.000
Non-perform	α_{10}	0.006	0.001	0.006	0.000
ΔNon-perform	α_{11}	0.077	0.000	0.075	0.000
Loan	α_{12}	0.001	0.003	0.001	0.003
ΔLoan	α_{13}	-0.003	0.000	-0.002	0.000
Sd_EBTP	α_{14}	0.016	0.020	0.014	0.039
Loan_realestate	α_{15}	0.000	0.675	-0.000	0.423
Loan_commercial	α_{16}	0.000	0.693	-0.000	0.795
Loan_consumer	α_{17}	0.000	0.672	0.000	0.857
Loan_allother	α_{18}	0.009	0.011	0.009	0.010
Year fixed effect?		Yes		Yes	
Adj. R^2		0.879		0.885	
N		2,926		2,926	

Table 7

Results from Heckman Selection Model Approach

Panel A: Hypothesis H1

The following are the results of the second-stage heckman selection model:

$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL_{it} + \alpha_3 SIL_{it}*EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Sd\_EBTP_{it} + \alpha_{11} Loan\_realestate_{it} + \alpha_{12} Loan\_commercial_{it} + \alpha_{13} Loan\_consumer_{it} + \alpha_{14} Loan\_allother_{it} + \alpha_{15} Mills_{it} + \alpha_{16} EBTP_{it}*Mills_{it} + \epsilon_{it}$

All variables are defined in Tables 1.

SIL_proxy		**SIL-dummy**	
		Coefficient estimate	p-value
EBTP	α_1	0.085	0.000
SIL	α_2	-0.000	0.079
SIL*EBTP	**α_3**	**0.094**	**0.000**
ALL	α_4	-0.010	0.000
Charge-off	α_5	0.651	0.000
Non-perform	α_6	0.026	0.000
ΔNon-perform	α_7	0.071	0.000
Loan	α_8	0.002	0.000
ΔLoan	α_9	-0.001	0.012
Sd_EBTP	α_{10}	0.004	0.314
Loan_realestate	α_{11}	-0.001	0.000
Loan_commercial	α_{12}	-0.000	0.180
Loan_consumer	α_{13}	-0.001	0.002
Loan_allother	α_{14}	-0.001	0.573
Mills	α_{15}	0.000	0.000
EBTP*Mills	α_{16}	-0.032	0.000
Year fixed effect?		Yes	
Quarter fixed effect?		Yes	
Adj. R^2		0.727	
N		17,499	

Panel B: Hypothesis H2

The following are the results of the second-stage heckman selection model:

$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL_{it} + \alpha_3 Public\text{-}dummy_{it} + \alpha_4 SIL_{it}*EBTP_{it} + \alpha_5 SIL_{it}*Public\text{-}dummy_{it} + \alpha_6 EBTP_{it}*Public\text{-}dummy_{it} + \alpha_7 SIL_{it}*EBTP_{it}*Public\text{-}dummy_{it} + \alpha_8 ALL_{it-1} + \alpha_9 Charge\text{-}off_{it} + \alpha_{10} Non\text{-}perform_{it-1} + \alpha_{11} \Delta Non\text{-}perform_{it} + \alpha_{12} Loan_{it-1} + \alpha_{13} \Delta Loan_{it} + \alpha_{14} Sd\_EBTP_{it} + \alpha_{15} Loan\_realestate_{it} + \alpha_{16} Loan\_commercial_{it} + \alpha_{17} Loan\_consumer_{it} + \alpha_{18} Loan\_allother_{it} + \alpha_{19} Mills_{it} + \alpha_{20} EBTP_{it}*Mills_{it} + \alpha_{21} Public\text{-}dummy_{it}*Mills_{it} + \alpha_{22} EBTP_{it}*Public\text{-}dummy_{it}*Mills_{it} + \epsilon_{it}$

SIL_proxy		**SIL-dummy**	
		Coefficient estimate	p-value
EBTP	α_1	0.174	0.000
SIL	α_2	-0.000	0.118
Public-dummy	α_3	0.001	0.000
SIL*EBTP	α_4	0.093	0.000
SIL*Public-dummy	α_5	0.001	0.015
EBTP*Public-dummy	α_6	-0.147	0.000
SIL*EBTP*Public-dummy	**α_7**	**-0.075**	**0.004**
ALL	α_8	-0.037	0.000
Charge-off	α_9	0.644	0.000
Non-perform	α_{10}	0.030	0.000
ΔNon-perform	α_{11}	0.073	0.000
Loan	α_{12}	0.002	0.000
ΔLoan	α_{13}	-0.001	0.000
Sd_EBTP	α_{14}	0.001	0.704
Loan_realestate	α_{15}	-0.001	0.000
Loan_commercial	α_{16}	-0.000	0.607
Loan_consumer	α_{17}	-0.001	0.000
Loan_allother	α_{18}	-0.001	0.461
Mills	α_{19}	0.000	0.000
EBTP*Mills	α_{20}	-0.039	0.000
Public-dummy*Mills	α_{21}	0.000	0.664
EBTP*Public-dummy*Mills	α_{22}	0.016	0.008
Year fixed effect?		Yes	
Quarter fixed effect?		Yes	
Adj. R2		0.734	
N		17,300	

Panel C: Hypothesis H3

The following are the results of the second-stage heckman selection model:

$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL_{it} + \alpha_3 Yearend\text{-}dummy_{it} + \alpha_4 SIL_{it}*EBTP_{it} + \alpha_5 SIL_{it}*Yearend\text{-}dummy_{it} + \alpha_6 EBTP_{it}*Yearend\text{-}dummy_{it} + \alpha_7 SIL_{it}*EBTP_{it}*Yearend\text{-}dummy_{it} + \alpha_8 ALL_{it-1} + \alpha_9 Charge\text{-}off_{it} + \alpha_{10} Non\text{-}perform_{it-1} + \alpha_{11} \Delta Non\text{-}perform_{it} + \alpha_{12} Loan_{it-1} + \alpha_{13} \Delta Loan_{it} + \alpha_{14} Sd\_EBTP_{it} + \alpha_{15} Loan\_realestate_{it} + \alpha_{16} Loan\_commercial_{it} + \alpha_{17} Loan\_consumer_{it} + \alpha_{18} Loan\_allother_{it} + \alpha_{19} Mills_{it} + \alpha_{20} EBTP_{it}*Mills_{it} + \alpha_{21} Yearend\text{-}dummy_{it}*Mills_{it} + \alpha_{22} EBTP_{it}*Yearend\text{-}dummy_{it}*Mills_{it} + \epsilon_{it}$

SIL_proxy		**SIL-dummy**	
		Coefficient estimate	p-value
EBTP	α_1	0.088	0.000
SIL	α_2	-0.000	0.364
Yearend-dummy	α_3	0.000	0.381
SIL*EBTP	α_4	0.076	0.000
SIL*Yearend-dummy	α_5	-0.000	0.180
EBTP*Yearend-dummy	α_6	-0.013	0.400
SIL*EBTP*Yearend-dummy	**α_7**	**0.080**	**0.000**
ALL	α_8	-0.012	0.000
Charge-off	α_9	0.650	0.000
Non-perform	α_{10}	0.027	0.000
ΔNon-perform	α_{11}	0.070	0.000
Loan	α_{12}	0.002	0.000
ΔLoan	α_{13}	-0.001	0.016
Sd_EBTP	α_{14}	0.003	0.400
Loan_realestate	α_{15}	-0.001	0.000
Loan_commercial	α_{16}	-0.000	0.186
Loan_consumer	α_{17}	-0.001	0.001
Loan_allother	α_{18}	-0.001	0.586
Mills	α_{19}	0.000	0.000
EBTP*Mills	α_{20}	-0.029	0.000
Yearend-dummy*Mills	α_{21}	0.000	0.758
EBTP*Yearend-dummy*Mills	α_{22}	-0.008	0.168
Year fixed effect?		Yes	
Adj. R^2		0.728	
N		17,499	

Table 8

OLS Regression Results for Subsample of Banks with SIL

This table shows the OLS estimates for the following model:

$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL\text{-}fraction_{it} + \alpha_3 SIL\text{-}fraction_{it} * EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Sd\_EBTP_{it} + \alpha_{11} Loan\_realestate_{it} + \alpha_{12} Loan\_commercial_{it} + \alpha_{13} Loan\_consumer_{it} + \alpha_{14} Loan\_allother_{it} + \epsilon_{it}$

SIL_proxy		**SIL-fraction**	
		Coefficient estimate	p-value
EBTP	α_1	0.133	0.000
SIL	α_2	-0.011	0.002
SIL*EBTP	**α_3**	**0.664**	**0.000**
ALL	α_4	-0.185	0.000
Charge-off	α_5	1.310	0.000
Non-perform	α_6	0.053	0.002
ΔNon-perform	α_7	0.204	0.000
Loan	α_8	0.013	0.000
ΔLoan	α_9	-0.005	0.000
Sd_EBTP	α_{10}	-0.087	0.000
Loan_realestate	α_{11}	-0.009	0.000
Loan_commercial	α_{12}	-0.024	0.000
Loan_consumer	α_{13}	-0.014	0.000
Loan_allother	α_{14}	0.006	0.776
Year fixed effect?		Yes	
Quarter fixed effect?		Yes	
Adj. R^2		0.933	
N		389	

Table 9

Matched Sample Results

This table shows the OLS estimates for the following model:

$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL\text{-}dummy_{it} + \alpha_3 SIL\text{-}dummy_{it} * EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Sd\_EBTP_{it} + \alpha_{11} Loan\_realestate_{it} + \alpha_{12} Loan\_commercial_{it} + \alpha_{13} Loan\_consumer_{it} + \alpha_{14} Loan\_allother_{it} + \epsilon_{it}$

SIL_proxy		**SIL-dummy**	
		Coefficient estimate	p-value
EBTP	α_1	0.031	0.012
SIL	α_2	0.000	0.425
SIL*EBTP	**α_3**	**0.046**	**0.001**
ALL	α_4	-0.100	0.000
Charge-off	α_5	1.125	0.000
Non-perform	α_6	0.014	0.041
ΔNon-perform	α_7	0.105	0.000
Loan	α_8	0.003	0.030
ΔLoan	α_9	-0.003	0.000
Sd_EBTP	α_{10}	0.001	0.947
Loan_realestate	α_{11}	-0.001	0.565
Loan_commercial	α_{12}	-0.003	0.160
Loan_consumer	α_{13}	-0.001	0.263
Loan_allother	α_{14}	0.023	
Year fixed effect?		Yes	
Quarter fixed effect?		Yes	
Adj. R^2		0.905	
N		778	

Table 10

Results with additional control variables

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL\text{-}dummy_{it} + \alpha_3 SIL\text{-}dummy_{it} * EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Tier1\text{-}ratio_{it} + \alpha_{11} \Delta EBTP_{it+1} + \alpha_{12} Size_{it} + \alpha_{13} Sd\_EBTP_{it} + \alpha_{14} Loan\_realestate_{it} + \alpha_{15} Loan\_commercial_{it} + \alpha_{16} Loan\_consumer_{it} + \alpha_{17} Loan\_allother_{it} + \alpha_{18} Loan\_realestate_{it} * EBTP_{it} + \alpha_{19} Loan\_commercial_{it} * EBTP_{it} + \alpha_{20} Loan\_consumer_{it} * EBTP_{it} + \alpha_{21} Loan\_allother_{it} * EBTP_{it} + \alpha_{22} Secuiritized\_residential_{it} + \alpha_{23} Securitized\_homeequity_{it} + \alpha_{24} Securitized\_creditcard_{it} + \alpha_{25} Securitized\_autoloan_{it} + \alpha_{26} Securitized\_otherconsumer_{it} + \alpha_{27} Securitized\_commercial_{it} + \alpha_{28} Securitized\_allother_{it} + \epsilon_{it} \quad (5a)$$

$$LLP_{it} = \alpha_0 + \alpha_1 EBTP_{it} + \alpha_2 SIL\text{-}fraction_{it} + \alpha_3 SIL\text{-}fraction_{it} * EBTP_{it} + \alpha_4 ALL_{it-1} + \alpha_5 Charge\text{-}off_{it} + \alpha_6 Non\text{-}perform_{it-1} + \alpha_7 \Delta Non\text{-}perform_{it} + \alpha_8 Loan_{it-1} + \alpha_9 \Delta Loan_{it} + \alpha_{10} Tier1\text{-}ratio_{it} + \alpha_{11} \Delta EBTP_{it+1} + \alpha_{12} Size_{it} + \alpha_{13} Sd\_EBTP_{it} + \alpha_{14} Loan\_realestate_{it} + \alpha_{15} Loan\_commercial_{it} + \alpha_{16} Loan\_consumer_{it} + \alpha_{17} Loan\_allother_{it} + \alpha_{18} Loan\_realestate_{it} * EBTP_{it} + \alpha_{19} Loan\_commercial_{it} * EBTP_{it} + \alpha_{20} Loan\_consumer_{it} * EBTP_{it} + \alpha_{21} Loan\_allother_{it} * EBTP_{it} + \alpha_{22} Secuiritized\_residential_{it} + \alpha_{23} Securitized\_homeequity_{it} + \alpha_{24} Securitized\_creditcard_{it} + \alpha_{25} Securitized\_autoloan_{it} + \alpha_{26} Securitized\_otherconsumer_{it} + \alpha_{27} Securitized\_commercial_{it} + \alpha_{28} Securitized\_allother_{it} + \epsilon_{it} \quad (5b)$$

SIL_proxy		**SIL-dummy**		**SIL-fraction**	
		Coefficient estimate	p-value	Coefficient estimate	p-value
EBTP	α_1	-0.007	0.155	-0.007	0.174
SIL	α_2	0.000	0.932	-0.028	0.000
SIL*EBTP	$\boldsymbol{\alpha_3}$	**0.064**	**0.000**	**1.157**	**0.000**
ALL	α_4	-0.081	0.000	-0.080	0.000
Charge-off	α_5	0.677	0.000	0.676	0.000
Non-perform	α_6	0.026	0.000	0.026	0.000
ΔNon-perform	α_7	0.073	0.000	0.073	0.000
Loan	α_8	0.002	0.000	0.002	0.000
ΔLoan	α_9	-0.002	0.000	-0.002	0.000
Tier1-ratio	α_{10}	-0.000	0.247	-0.000	0.283
ΔEBTP	α_{11}	-0.015	0.000	-0.015	0.000
Size	α_{12}	0.000	0.022	0.000	0.000
Sd_EBTP	α_{13}	-0.012	0.000	-0.012	0.000
Loan_realestate	α_{14}	-0.001	0.014	-0.001	0.013
Loan_commercial	α_{15}	-0.000	0.554	-0.000	0.441
Loan_consumer	α_{16}	-0.004	0.000	-0.004	0.000
Loan_allother	α_{17}	-0.008	0.000	-0.008	0.000
Loan_realestate*EBTP	α_{18}	-0.038	0.000	-0.039	0.000

Table 10-Continued

Loan_commercial*EBTP	α_{19}	-0.040	0.198	-0.037	0.233
Loan_consumer*EBTP	α_{20}	0.419	0.000	0.410	0.000
Loan_allother*EBTP	α_{21}	1.349	0.000	1.401	0.000
Securitized_residential	α_{22}	-0.000	0.512	-0.000	0.382
Securitized_homeequity	α_{23}	0.002	0.700	0.003	0.416
Securitized_creditcard	α_{24}	-0.001	0.122	0.002	0.010
Securitized_autoloan	α_{25}	-0.001	0.726	-0.001	0.734
Securitized_otherconsumer	α_{26}	-0.002	0.315	-0.004	0.072
Securitized_commercial	α_{27}	0.001	0.869	0.002	0.568
Securitized_allother	α_{28}	-0.000	0.969	0.000	0.944
Year fixed effect?		Yes		Yes	
Quarter fixed effect?		Yes		Yes	
Adj. R^2		0.736		0.737	
N		22,365		22,365	