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ABSTRACT

In this paper, I investigate whether banks use loan sales and securitizations (*loan transfers*) to manage regulatory capital and earnings. My analysis suggests that banks use gains from loan transfers to influence both reported earnings and regulatory capital after controlling for other economic motivations. The gains can be attributed both to cherry-picking of loans whose market values exceed their book values and also to overvaluation of the retained interests that are carried at fair market value in the case of securitizations. In addition, the use of securitizations for financial statement management is positively associated with the degree of financial reporting discretion available to managers. Finally, regulatory capital considerations seem to play a significant role in the decision to transfer loans, while earnings management considerations are more important in the calculation of reported gains conditional on performing a transfer, particularly in the case of securitizations.

Key words: securitization, loan sales, accounting, capital standards, risk measurement

JEL Classification: G18, G14, G21, M41

CFR research programs: bank regulatory policy, risk measurement

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I. Introduction

In this paper, I first investigate whether banks use loan sales and securitizations (loan transfers) to affect regulatory capital and earnings. Then, I examine how the degree of financial reporting discretion is associated with the use of loan transfers for financial statement management and with how these transactions are structured. Finally, I analyze the motivations for the use of financial reporting discretion.

Securitization is the process of transferring loans to third parties through the issuance of debt whose cash-flows are collateralized by the original loan pool.[1] A loan sale is the transfer of loans in whole without any future involvement by the transferor. Both loan sales and securitizations provide similar benefits. The ability to transfer otherwise illiquid loans through sales and securitizations allows banks to focus on core competencies in banking such as origination, servicing, and management of loan portfolios. In addition, banks use loan transfers as a source of funding and a tool for risk management.

Loan transfers also enable banks to influence balance sheet and income statement information. Discretionary gains or losses from loan transfers result from the historical cost accounting for loans. In addition, securitizations that are accounted for as sales affect income and regulatory capital by allowing the capitalization of expected future income for the fair value estimates of retained interests after securitization.[2] Thus, the financial reporting for loan transfers involves both transaction timing and accrual management and provides a unique setting

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[1] The debt instruments into which loans are transformed are often referred to as "mortgage-backed securities" – when the underlying asset pools consist of mortgage loans – or "asset-backed securities" – when the underlying asset pools consist of loans other than mortgages. Approximately, $6 trillion in mortgage- and asset-backed securities is outstanding as of the end of 2002 (Coy et al. [2002]).

[2] Securitization transactions can be accounted for as sales or secured borrowings.

to compare their implications. Moreover, loan transfers provide significant opportunities to affect regulatory and financial reporting outcomes, as loans constitute over half of the balance sheet of an average commercial bank (Table 1).

Examining regulatory bank filings between 1997 and 2000, I find that banks manage regulatory capital and earnings by both cherry-picking loans and biasing the reported gains or losses from loan sales or securitizations (*gains* hereafter). This finding is generally consistent with prior studies of discretionary behavior in the banking industry. Several studies investigate whether regulation, taxes, contracting, and communication of private information to capital markets motivate regulatory capital and earnings management in banks. Moyer (1990), Beatty, Chamberlain, and Magliolo (1995), Collins, Shackelford, and Wahlen (1995), Kim and Kross (1998) and Ahmed, Takeda, and Thomas (1999) find evidence that regulatory capital and earnings outcomes influence managers' discretion in loan loss provisions, charge-offs, and miscellaneous gains. For example, the latter two studies find a reduction in loan loss allowances, after risk-based capital regulations limited their inclusion in regulatory capital. On the other hand, tax considerations do not seem to have a strong influence (Beatty et al., 1995, Collins et al., 1995, Scholes, Wilson, and Wolfson, 1990).

Prior studies on loan sales and securitization in banking, such as Pavel and Phillis (1987), and Jagtiani et al. (1995) do not examine the financial reporting impact and find only weak evidence of regulatory capital motivations.[3] On the other hand, prior studies of financial reporting discretion in banking, such as Beatty et al. (1995), combine gains from all asset sales and do not analyze loan sales separately from the sales of securities and other assets. They find that banks use gains from all asset sales only for earnings management, but not for regulatory capital management. In addition, most of this literature analyzes the period before the risk based

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[3] The early theoretical literature often does not differentiate between loan sales and securitizations, although financial reporting consequences are substantially different.

regulation.[4] The risk-based regulations limited the impact of discretionary loan loss provisions on regulatory capital and fair value accounting substantially reduced the securities gains that can affect regulatory capital. On the other hand, both regulatory and financial reporting changes impacted banks' discretion in accounting for loan transfers.

In this study, I specifically analyze the decision to transfer loans and how banks recognize gains as a result. Further, I compare gains from loan sales to gains from securitizations. Loan sales, which are "pure" asset sales, and securitizations, which involve the capitalization of expected future income, have different degrees of managerial discretion available for financial reporting. My results suggest that these different degrees of managerial discretion affect how managers structure the transactions. This is an important contribution on how the accounting treatment may influence real actions and the structure of transactions.

In concurrent accounting research related to securitizations, Niu and Richardson (2005) show that off-balance-sheet securitization debt has the same risk relevance for explaining market measures of risk as on-balance-sheet debt. Dechow, Myers, and Shakespeare (2005) find that firms with powerful CEOs are more likely to engage in earnings management while firms with greater outside monitoring are less likely to engage in earnings management with securitizations. Bank regulation provides an opportunity to compare the market based incentives and contracting incentives as motivations for earnings management. Moreover, securitizations by banks alone constitute between one-thirds to two-thirds of all securitizations (Dechow et al. 2005; Niu and Richardson 2005) and therefore are of particular interest. Finally, regulatory reporting requirements lead to an unbiased and comprehensive dataset with homogenous reporting requirements.

Outside banking, earlier studies on asset sales, e.g. Bartov (1993), find similar evidence of earnings management motivated by both income smoothing and bond covenants. In this

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[4] Before 1990, regulations required banks to hold equity capital in excess of 5.5% of total assets on balance sheet, regardless of the risk of the banks' assets. The risk-based regulations that have been in effect since 1990 are discussed later in Section 2.

study, I further find that income smoothing and analyst forecasts driven earnings management is conditional on earnings management motivated by contracting.[5] Banks seem to influence the reported gains by choosing which loans to sell or securitize and by biasing the estimated fair values of retained securities. Thus, regulation appears to lead banks to incur the costs associated with securitization while capital market incentives seem to induce biased financial reporting conditional on a securitization being performed. Banks then seem to affect earnings through gains, conditional on having decided to undertake the securitization.

Whether equityholders reward financial reporting outcomes that resulted from costly securitization is an important question. Graham, Harvey, and Rajgopal (2004) report that more than three quarter of executives would give up economic value in exchange for smooth earnings. My findings suggest that managers engage in costly securitizations in order to achieve financial statement outcomes. However, they seem to incur the costs due to contracting motivations rather than market based incentives. Since contracts are costly to violate, it may be value enhancing for equityholders to reward such financial statement management.

The remainder of the paper is organized as follows. Section 2 describes the institutional details of securitizations. Research hypotheses are developed in Section 3. Section 4 presents the empirical analyses. Section 5 summarizes the conclusions.

II. Institutional Background

Securitization is the process of transferring loans through the issuance of debt whose cash-flows are collateralized by the original loan pool. Transferors often retain interests in the transferred loan pool, instead of selling in whole, for three main reasons. First, the transferor has superior information about the quality of the loans at the time of transfer and needs to monitor

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[5] Core and Schrand (1999) interpret minimum capital requirements for banks as covenants in exchange for government provided depository insurance.

the loans. This creates moral hazard and adverse selection problems that can be mitigated by mechanisms that protect transferees from potential losses and give the transferor a disproportionate share of the gains to monitoring (Pennacchi, 1988). Second, lenders value borrowing relationships and often arrange to service the loans after the transfer. Third, transfers with no further involvement are immediately taxable while transfers with retained interests can be structured as secured borrowings without triggering a taxable sale event. In contrast to the tax treatment, Generally Accepted Accounting Principles (GAAP) treat transfers with retained interests as sales under certain conditions that I discuss below.

When the transferor retains interests, loans are transferred to special purposes entities (SPEs) which issue multiple classes of claims on the cash flows from the transferred loans.[6] The senior claims are sold to investors. The most subordinated claims –residual interests– are often retained by the transferor and they are often large enough to insulate investors from all likely losses. Appendix 1 illustrates a typical institutional structure that is used for securitizations.

Securitizations can be accounted for as sales or secured borrowing according to SFAS 125. Effective December 15, 1996, SFAS 125, "Accounting for Transfers and Servicing of Financial Assets and Extinguishment of Liabilities," introduced the "control of financial components" approach. The proceeds from a securitization transaction are broken into financial components and the transferor determines whether it controls each component.[7] A transfer of financial assets in which the transferor surrenders control over transferred assets is considered a sale. In a sale, the transferor removes from the balance sheet those assets over which it has surrendered control and recognizes on its balance sheet retained assets and liabilities.[8]

Securitizations that are accounted for as sales affect income by allowing the capitalization of future expected income. The gains are determined by the difference between the fair values

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[6] The securities created in this process with varying subordination levels are often referred to as *tranches*.
[7] Control of transferred assets is surrendered if the assets are put beyond the reach of the transferor and its creditors even in bankruptcy and if transferees have the right to pledge and exchange the assets.
[8] If the criteria for surrendering control are not met, a securitization is accounted for as a secured borrowing. The loans remain on the balance sheet of the transferor and appear as pledged collateral. There is no income effect.

and the book values of the components sold. The book values of the components are determined by allocating the previous carrying amount between the sold components and retained components (e.g., residual interests) based on their relative fair values at the date of transfer. Therefore, everything else held constant, gains increase in the reported market value of the retained interests.

Discretionary gains from loan transfers partly result from the historical cost accounting for loans. SFAS 114 requires that loans be written down to market value only if it is probable that contractual payments will not be made in full.[9] Therefore, loan values are not written up or down when interest rates change or creditworthiness of borrowers improve or slightly deteriorate. Consequently, the balance sheet does not reflect most unrealized gains or losses, and loans can be *cherry-picked* to realize the targeted amount of gains or losses.

Moreover, reporting for securitizations involves additional discretion after a transaction is completed. The retained components often do not have reference market prices as the sold components do and consequently, their fair values are estimated by the transferor.[10] These estimates are often based on private information about expected cash flows and appropriate discount rates for the securitized loans. Therefore, discretion may be used in the expected default rate or discount rate assumptions to yield higher or lower gains. Moreover, the estimated values are highly sensitive to alternative assumptions. Therefore, securitizers can temporarily increase income and regulatory capital by overstating the value of the residual interests retained from securitizations.[11]

Since 1990, banks have been regulated through risk-based capital standards that incorporate asset risk and off-balance-sheet activities. Total regulatory capital must exceed eight percent of risk-weighted assets. Total risk-weighted assets are computed as the sum of balance

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[9] The fair value accounting applies only to debt and equity securities (SFAS 115). However, SFAS 107 requires the disclosure of the fair values of loans and other financial assets.

[10] After the transfer, retained residual interests are reported as debt securities available-for-sale.

[11] Valuation errors are expected to reverse over time with residual write-downs or ultimately with losses.

sheet assets and direct credit exposures from off-balance-sheet activities, weighted according to their risk levels. Regulatory capital is the sum of shareholders' equity, equity-debt hybrid instruments, and loan loss allowances up to 1.25 percent of risk-weighted assets, less intangibles such as goodwill.

Regulatory reporting follows GAAP, but risk-based capital regulations include all off-balance-sheet exposures in risk-weighted assets, including assets securitized. Consequently, risk-based capital is held against the entire outstanding amount of securitized loans as long as the securitizer retains any interests.[12] Therefore, gains are the only effect of securitizations on regulatory capital.[13] Appendix 2 contains an example of the balance sheet impact of sales and secured borrowing treatments.

Securitization has mainly a timing effect on the regulatory capital ratio. Since any estimation errors in the valuation of retained interests will be reversed over the life of the loans the expected regulatory capital will be the same at maturity with or without securitization. Appendix 3 illustrates the expected path of the capital ratio without securitization and with securitization accounted for as a sale.

In summary, managers can use discretion in three aspects of loan transfers: timing, selection of loans, and valuation of retained interests if the loans are securitized. The financial statement impacts of loan transfers lead to testable implications based on the main hypothesis that the discretion in reported gains are used to manage regulatory capital and earnings.

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[12] To avoid double counting, if the seller's balance sheet includes any retained interest in the assets sold, the retained interest is not risk-weighted separately.

[13] A "low-level recourse" rule applies to transactions accounted for as sales in which a bank holding company contractually limits its risk exposure to less than the full effective minimum risk-based capital requirement. The rule limits the risk-based capital requirement to the lower of (i) a banking organization's maximum contractual exposure from the securitized assets and (ii) 8% of transferred assets. (Instructions for Preparation of Consolidated Financial Statements for Bank Holding Companies Reporting Form FR Y-9C).

III. Research Hypotheses

In this section, I discuss possible motivations for banks to transfer loans and develop my hypotheses on financial statement outcomes of loan transfers. Previous theoretical studies have argued that comparative advantages, funding, and risk management may lead banks to transfer loans. Controlling for these motivations, I hypothesize that banks influence the amount of gains in order to affect income statement and balance sheet outcomes.

Banks can have a comparative advantage in different aspects of lending. Lending can be viewed as three distinct activities: origination of loans, servicing, and managing the ownership of cash flows from the loans (Hess and Smith, 1988). These three activities can be separated by loan transfers and performed by their most efficient producers, if the costs of separating do not exceed its benefits. For example, those with a comparative advantage in origination can securitize the loans soon after origination. These costs include both transaction costs and contracting costs incurred to solve the moral hazard problem associated with loan transfers as described by Pennacchi (1988).

Banks may also transfer loans for financing, risk management, regulatory capital management, and earnings management purposes. The Modigliani-Miller (1958) capital structure irrelevance theorem establishes that in frictionless capital markets with no information asymmetries, and no agency and contracting costs, firm value is unaffected by financing choices. However, motivations for loan transfers may result from information asymmetry in capital markets, agency problems arising from bondholder-shareholder conflicts, and frictions such as taxes and regulation. Below, I discuss these factors in more detail.

Banks can finance loans either internally from deposits or externally from capital markets. Securitization can provide a cheaper form of external financing than equity or unsecured debt by reducing informational costs. Securitization of loans can economically be considered as secured debt where the collateral is a pool of loans. First, monitoring costs are

likely to be lower for securitization debt than for other forms of funding, because the cash flows to the debt are backed by the cash flows to the securitized assets (Minton et al, 1997). This makes asset-backed borrowing less prone to payouts and asset substitution by shareholders. Second, securitization can be used to solve the underinvestment problem (Myers, 1977). James (1988) argues that in the highly leveraged banking industry, solving the underinvestment problem is a major motivation for securitization.

Loan transfers may be used to manage interest rate risk and credit risk. When external funding is costlier than internal funding, hedging may be desirable so that funds are internally available when needed for investment opportunities. For example, Froot and Stein (1998) argue that banks should hedge risks that can be off-loaded at fair market value. Funding through securitization can perfectly match the duration of the expected loan receipts, hedging away the interest rate risk. In addition, securitization is also useful for managing credit risk. For example, banks with geographic, industry- or borrower-specific concentrations can diversify concentrations of risks by loan transfers (Demsetz 2000; Carlstrom and Samolyk 1993; Pavel and Phillis 1987).

Regulation has often been proposed as a motivation for loan transfers. The presence of deposit insurance in the U.S. creates a moral hazard problem by giving banks an incentive to take on risk. Since shareholders effectively have a put option on the assets of the firm, the value of their equity increases with the leverage and riskiness of bank assets. In response to this moral hazard problem, regulators impose capital requirements.

If the federal safety net insulates all counterparties from the full effects of a bank's default and monitoring by the regulators is not costly for the bank, market based incentives to maintain adequate capital would disappear and competition would drive profit-seeking banks to hold the minimum permissible capital level. This corner solution has been a standard feature in many academic studies of banking (Flannery and Rangan, 2002).

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However, the federal safety net does not fully insulate losses and prior research has argued that the regulatory requirements impose costs (e.g., Moyer 1990). Regulatory monitoring is costly, because it requires production of information and expends management time. Moreover, regulators supervise banks more closely if they judge that the regulatory capital is low. They can alter financing policies by demanding capital contributions or restricting distributions, and limit investment activities such as mergers and acquisitions when regulatory capital is low. Ultimately, when a bank is in severe violation of capital requirements, regulators can close the bank and possess its assets. Therefore, banks may hold regulatory capital exceeding the required minimums. In fact, decreases in the federal safety net following the Federal Deposit Insurance Corporation Improvement Act might have contributed to the increase in regulatory capital ratios over the last decade (Flannery and Rangan, 2002).

As discussed in Section II, banks can increase their capital by selling or securitizing loans and capitalizing expected future earnings. My first hypothesis formalizes the tests regarding the regulatory capital motive:

H1.a: Gains from loan sales and securitizations are negatively associated with regulatory capital ratio before the effect of gains.

Finally, bank executives have incentives to manage earnings using loan transfers for at least three reasons. First, managers can use reported earnings to convey private information. Second, managers may engage in earnings management to affect compensation or other contracts that rely on reported financial statement numbers.

Third, there is a large body of empirical evidence that suggests managers engage in earnings management to avoid losses or declines in earnings (e.g. Burgstahler and Dichev 1997). Matsumoto (2002) considers the motivations for such behavior and suggests that a firm's financial strength favorably affects the terms of trade with its stakeholders and may provide an incentive to meet earning targets because they are highly publicized. Financial institutions have

a large number of depositors, borrowers, and other stakeholders who might assess financial performance based on basic metrics such as earnings, because they have a limited ability or find it costly to conduct a full financial analysis. These stakeholders may assess earnings performance based on time-series or cross-sectional comparisons or relative to analysts' earnings targets.

Loan transfers can have a large effect on the income statement, because the present value of all earnings from a loan pool is recognized in a single period, instead of being received along the life of the loans. Shifting income across periods in this manner can increase income volatility. However, managers can time securitizations to recognize gains (losses) when other sources of income are lower (higher), to smooth earnings or to avoid declines in earnings. Therefore, I hypothesize that:

H2.a: Banks use gains from loan sales and securitizations to smooth earnings or to avoid earnings declines.

H2.b: Banks use gains from loan sales and securitizations to meet and exceed analysts' forecasts.

In the following part of my analysis, I investigate how banks use discretion to affect earnings. I consider two possibilities: transaction structuring and reporting bias. First, managers can cherry-pick the loans that have appreciated either due to decreases in credit risk or interest rates. Second, it is also possible that managers' choice of loans to be securitized is unaffected by the financial statement management motives, but fair values of retained securities are reported with bias to achieve earnings objectives. To test for these possibilities, I take advantage of the main difference between how gains from loan sales and securitizations are reported. In loan sales, managers can use discretion only in the timing and selection of loans to be sold, because the loan sale prices are determined by the market and the gains equal the difference between this market price and book value. On the other hand, managers have additional discretion in

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calculating the financial reporting gains from securitizations, because as Section II explains the estimates of the fair values of retained interests are also important in the computation of the gains. Thus, in the third hypothesis I compare sale of whole loans which can involve only cherry-picking and securitizations which may involve both cherry-picking and biased reporting:

H3: The magnitudes of the regulatory capital and earnings effects in H1 and H2 are higher for securitizations than those for loan sales.

I further explore whether banks report biased fair values for securities that they retain from securitizations by comparing mortgage-backed and other asset-backed securitizations. The securitization of mortgages and other financial assets provide different degrees of latitude in fair value estimates and gains computation. Because the market for mortgage backed securities is significantly larger and substantially more liquid, less discretion is available for banks to provide biased estimates of fair values of retained interests. Thus, my final hypothesis is:

H4: Mortgage securitizations are less associated with regulatory capital and earnings management than securitizations of other assets are.

IV. Empirical Analysis

Data and Sample Selection

I use the financial statement data from the Y-9C forms filed quarterly by all bank holding companies in the U.S. (*banks* hereafter) that have total assets exceeding $150 million. The forms collect basic financial data from banks on a consolidated basis in the form of a balance sheet, an income statement, and detailed supporting schedules, including a schedule of off-balance-sheet items. These forms have been compiled in a database by the Federal Reserve Bank of Chicago since 1986. Since the securitized loan balance data-series started to be reported in 1997, my dataset covers the twelve quarters between 1997 and 2000, when SFAS 125 was effective.

In order to analyze capital market consequences, I merge the bank holding company database with CRSP and I/B/E/S. Stock price data are available in CRSP for 249 banks having 1,949 bank-quarter observations between 1997 and 2000. I analyze only gains from loans transferred by the consolidated entities, because loan sales within a group are not subject to the same informational problems as outside transactions and individual banks within a multi-bank organization have weaker incentives to manage financial statement information (Beatty, Ke, and Petroni, 2002).

There are 199 banks in the sample that have sold loans at least once with 1,247 bank-quarter observations. Given the nature of the dataset, multiple loan transfers within the same quarter appear as a single bank-quarter observation. The number of banks that have made a securitization at least once during the sample period is 58, with 206 bank-quarter observations. 17 banks securitized for the first time during the sample period.

Using regulatory filings for the purposes of this study has both advantages and disadvantages. The reporting requirements are uniform and apply to the whole universe of regulated depositary institutions in the U.S. Consequently, sampling biases are minimized. On the other hand, the securitization data in the regulatory filings have two limitations. First, the amount of loans securitized is reported only as a stock figure. Second, gains from all loan transfers are aggregated. I identify securitizations by increases in either the total securitized mortgage loans or the total securitized non-mortgage loans outstanding in each quarter. As a result, I will not be able to identify securitizations in periods when total outstanding securitized assets decline. However, this is a conservative approach. Since securitized assets are more likely to decline when the bank performs relatively poorly and that is when banks would more actively manage income and capital, this limitation would create a bias against finding evidence of regulatory capital and earnings management. This procedure also requires that I exclude the bank-quarters in which a merger took place. This again creates a bias against finding support for my hypotheses, because companies are more likely to manage earnings upwards in anticipation

of a merger transaction, particularly if they plan to pay partially in stock (Erickson and Wang 1999).

Measurement of Variables

I use the total risk-based capital ratio before the effect of gains, net of taxes, to proxy for the motivation to manage regulatory capital. Banks that are closer to the permissible minimum capital are more likely to engage in actions that will increase capital. I use the raw adjusted capital ratio instead of the difference from the minimum requirement, because regression estimates will be the same except for the intercept terms.

If the minimum permissible regulatory capital level is not binding, then banks may manage capital around other target capital levels. Therefore, for sensitivity analyses, I consider the mean capital ratio of all banks in a bank's size quartile as the proxy for the size-adjusted target capital ratio. Then, the difference between the current adjusted capital ratio and the target capital ratio provides a proxy for the motive to manage regulatory capital (SIZECAP). I construct the size quartiles and corresponding averages as of the beginning of each quarter.

I try to detect earnings management using two measures. The earnings smoothing incentive (ΔROA) is measured by the difference between the current period's adjusted net income and the previous period's net income. The incentive to meet the analyst forecasts is captured by the difference between the quarterly net income before the gains and the IBES mean analyst forecast during the second month of the quarter (ANALYST). Both measures are based on the quarterly net income before the effect of gains, net of taxes, scaled by the total assets at the beginning of the quarter (ROA).

I use three measures of risk. Two are market measures of risk, and the third one is a measure of loan concentration based on regulatory filings. The first measure is an estimate of the standard deviation of asset returns (RISK), similar to Flannery and Rangan (2002). In calculating the standard deviation of assets, I un-lever the equity standard deviation based on a

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simplifying assumption that the variance of the return on deposits and other liabilities is zero. Then, the implied asset standard deviation can be computed as the product of the observed standard deviation of equity returns and the market equity to asset ratio.

The second measure of risk that I use is the interest rate sensitivity of a bank's equity (IR). I estimate a two-factor market model using the changes in three-month Treasury bill rates, similar to Schrand (1997). This factor measures only the interest rate risk and not credit risk. I choose the sensitivity to the T-bill rate over the maturity mismatch measure often used to measure interest rate risk, because reporting requirements provide only a crude measure by using one-year as the cut-off for short- and long-term assets (James 1988).

The third risk management measure that I use is a Herfindahl index of loan concentration (DIV) by using the loan types such as e.g. real estate, commercial and industrial, credit cards.[14] This measure is close to one if a bank's loans are concentrated in a few categories. Using similar loan concentration measures, Pavel and Phillis (1987) find that loan concentration affects the sale decision, but not its amount.

In order to control for the funding motivations to securitize, I measure the need for external financing by the loan growth rate over the preceding quarter (GRW). In addition, I use the ratio of loans to deposits as a measure of the need to increase liquidity (LIQ). As this ratio increases, banks have a stronger need to raise external funds.

As discussed before, securitization is not the only source of funding available to banks, but it may be preferable for external financing, due to constraints on other funding methods. Banks that have both high growth opportunities and leverage are more likely to use securitizations for funding to solve the underinvestment problem. Therefore, I use the interaction of the debt-to-equity ratio with the market-to-book ratio (UND) as a proxy for the motivation to avoid underinvestment. This variable has been used in other research for the same purpose, e.g., Geczy, Minton, and Schrand (1997).

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[14] These categories are based on the Y-9C Schedule HC-B - Loans and Lease Financing Receivables.

As a measure of a bank's comparative advantage in loan origination (COMP), I use the ratio of the non-interest expense to total loans (on balance sheet and securitized combined) as Pavel and Phyllis (1987) do. The more efficient a bank is in originating loans, the lower this ratio would be. This proxy might have become less effective in measuring comparative advantage as banks' business models have expanded to non-traditional lines of business. Finally, I use the natural logarithm of total assets (SIZE) to control for the high scale of loan origination required to cover the fixed costs of initiating and continuing loan transfers.

In addition to controls for motivations to securitize loans, I use controls for profitability changes in the gains due to changes in interest rates (Δr) and changes in expected default rates. Specifically, for mortgages I use the change in FHA mortgage interest rate and for non-mortgage loans I use the change in short term interest rate. For expected default rates, I use the change in non-performing loans (ΔNPL) and changes in charge-offs ($\Delta CHOFF$) as proxies. I choose non-performing loans and charge-offs to loan loss reserves although the latter is forward looking and hence potentially a better proxy, because loan loss reserves are discretionary and previous research has shown that banks may bias the reserves to manage regulatory capital.

Cross-sectional Test Procedure

The sample is an unbalanced panel dataset of varying number of banks over 15 consecutive quarters. Initially, I model gains from loan transfers as a function of regulatory capital and earnings management motives, and other motives including risk management, funding, and comparative advantage. I also include controls for changes in profitability. The resulting base model is as follows:

$$
\begin{aligned}
Gain = \alpha &+ \beta_1 CAP + \beta_2 \Delta ROA + \beta_3 ANALYST + \beta_4 LIQ + \beta_5 RISK + \beta_6 IR + \beta_7 DIV + \\
&\beta_8 GRW + \beta_9 UND + \beta_{10} SIZE + \beta_{11} COMP + \beta_{12} \Delta ChOff + \beta_{13} \Delta NPL + \beta_{14} \Delta ir + \varepsilon
\end{aligned}
\tag{1}
$$

In Eq. (1), IR and COMP are predicted to have negative coefficients, while all other control variables are predicted to have positive coefficients. The financial statement management proxies CAP and ΔROA are hypothesized to have negative coefficients.

I estimate Eq. (1) as a panel using clustered standard errors (Rogers, 1993). The clustered standard errors are more accurate in the presence of a firm effect than standard errors estimated by its alternatives such as OLS, Fama-MacBeth and its modified version corrected for first order auto-correlation, or modified Newey-West standard errors for panel data sets. Moreover, the clustered standard errors are robust to different specifications of the dependence in the standard errors (Petersen 2005).

Next, I conduct a two-stage analysis to address the selection bias that is introduced by the fact that only those banks for which benefits –both financial statement and other benefits– exceed costs sell or securitize their loans. Following Heckman (1979), I model the decision to sell or securitize and the amount of gains recognized as a simultaneous system. The first-stage equation is a probit model for the loan transfer decision, while the second-stage equation is a linear regression model for the amount of gains recognized conditional on that decision:

Securitize* = $X_1\beta_1 + \varepsilon_1$ (2)

Gain = $X_2\beta_2 + \varepsilon_2$ (3), if loans are sold or securitized and 0 otherwise

A bank securitizes when the latent variable Securitize* that measures the net benefits of a loan transfer is positive in Eq. (2). Conditional on having decided to make a loan transfer, I assume that the bank picks the loans that it wants to transfer and reports gains based on the model shown in Eq. (3). In my model, X_1 in Eq. (2) includes the regulatory capital and earnings management variables as well as other motivations for loan transfers. X_2 in Eq. (3) again includes regulatory capital and earnings management variables as well as the profitability controls for changes in interest rates and credit-worthiness.

Results

Descriptive Statistics

Table 1 presents sample descriptive statistics. Panel A describes the observations from the 249 U.S. banks that are publicly traded and have analyst following. Panels B and C describe the sub-samples of banks that transfer or only securitize loans, respectively. The 199 banks in the sample that transfer loans are on average larger than the remaining 50 banks that do not. Further, the 58 banks that securitize loans are larger than the average bank that sells loans but does not securitize them. The mean (median) total assets of banks that either sells or securitizes loans is $15.217 billion ($1.646 billion), while the mean (median) total assets of a bank that both sells and securitizes loans is $43.034 billion ($6.475 billion). The mean (median) total assets of banks that do not sell or securitize any loans are $2.132 ($0.658 billion) and $3.344 (1.039 billion) respectively. Each of these groups is highly skewed since the average bank's assets are almost ten times larger than the median bank's. The amount of securitized loans outstanding also has a skewed distribution with some outlier banks having securitized loans as much as 1.83 times of their on balance sheet assets.

Table 2 presents comparisons of non-sellers vs. sellers, non-securitizers vs. securitizers, and non-securitizers vs. first-time securitizers. I report Wilcoxon rank-sum test statistic which is non-parametric and robust to outliers and the skewness in the data.

When seller banks are compared to non-seller banks (Panel A), there are several differences consistent with the predicted motivations for selling and securitizing. Sellers have higher concentrations of certain loan types than non-sellers (23.09 percent vs. 19.66 percent), higher need for liquidity (loans to deposits ratio of 87.89 percent vs. 79.96 percent), higher growth opportunities (market to book ratio of 1.89 vs 1.64), and stronger motives to avoid underinvestment (20.50 vs. 16.67), as predicted. Finally, the median adjusted capital ratio of non-sellers is 14.39 percent, as opposed to the 12.82 percent of the seller group consistent with

the regulatory capital motivations. However, the median adjusted return on assets, is approximately equal at 0.30 percent and 0.28 percent (per quarter).

When securitizing banks are compared to non-securitizing banks (Panel B), the results are similar to above, except that (i) the asset risk is significantly higher for securitizers as predicted, (Hereafter, I use *statistical significance* to refer to the five percent level, unless stated otherwise) (ii) loan concentration is now significantly lower contrary to the predictions. As predicted, securitizers have higher need for liquidity (loans to deposits ratio of 94.44 percent vs. 84.21 percent), higher growth opportunities (market to book ratio of 2.23 vs 1.71), and stronger motives to avoid underinvestment (23.92 vs. 17.81) than non-securitizers. The median adjusted capital ratio of non-securitizers is larger (13.43 percent) than that of the securitizer group (12.03 percent), but the median adjusted return on assets is statistically indistinguishable.

The analysis of first time securitizations strengthens the above conclusions. First time securitizers have higher need for liquidity, higher growth opportunities, and stronger motives to avoid underinvestment. Moreover, they have a significantly higher loan growth rate. However, they are not riskier and do not have higher need for liquidity contrary to predictions.

In Table 3, I tabulate the correlations between the test variables. Consistent with the earnings and regulatory capital management hypotheses, gains have a Pearson correlation coefficient of -0.31 with adjusted net income and -0.36 with the shortfall from analyst forecast, both significant at the ten percent level. The correlation of gains with the adjusted total capital ratio is also negative, but not statistically significant. Not surprisingly, the Tier 1 and total risk based capital ratios are highly correlated with a coefficient of .92. Because of the high correlation between the two ratios, I base the following discussion only on the total risk based capital ratios, but similar results obtain using the Tier 1 capital ratio.

The correlations in Table 3 are also consistent with the funding and risk management motivations to securitize. The total amount of loans outstanding from securitizations (SECOUT) is significantly positively correlated (0.44) with the market-to-book ratio. This suggests that

banks with more growth opportunities use securitizations as a funding source. Amount of loans outstanding from securitizations is also significantly correlated with asset risk having a coefficient of 0.37. Finally, amount of loans outstanding from securitizations is also positively significantly correlated with size (0.19) indicating that securitization activity is dominated by larger institutions. This is consistent with the large fixed costs of securitization making small pools of loans uneconomical to securitize.

In summary, the univariate statistics from correlations and comparison of subsets of securitizing vs. non-securitizing banks are consistent with regulatory capital management, as well as with funding and risk management motivations to securitize. In addition, the ranking between the capital ratios of each group is consistent with the costs and benefits of securitizations for these groups. Since first-time securitizations are costlier than subsequent ones, regulatory capital motivations must be stronger to trigger a first-time securitization. For subsequent securitizations, organizational fixed costs have already been incurred; therefore, securitization may be used in response to smaller shortfalls in capital. Consistent with this reasoning, non-securitizers have the highest median and mean capital ratios. The first-time securitizations have the lowest capital ratios among all groups.

Univariate statistics may be misleading if there are systematic differences between the capital levels and other characteristics of banks. For example, larger banks are known to have lower capital ratios and we see in Table 3 that secondary securitizations are made by larger banks. Therefore, the large differences in capital ratios may be driven by size and possibly other bank attributes, rather than being a securitizer. The multivariate analysis in the next section addresses such issues.

Regulatory Capital and Earnings Management with Gains

I first estimate Eq. (2) for gains from loan transfers as a function of only the control variables that relate to funding, risk management, comparative advantage, and shocks to

profitability. The first column in Table 4 reports the cross-sectional, time-series panel estimates for this model with standard errors corrected for clusters. The control variables explain 10.3 percent of the total variation in the cross-section of gains. The external funding needs proxied by growth rate of loans are significant at the seven percent level.

Next, I re-estimate the equation with variables for regulatory capital and earnings motivations, namely adjusted capital ratio and adjusted return on assets (Column II). The adjusted R^2 increases to 14 percent. While the growth rate of loans loses significance, the remaining coefficient estimates roughly retain the same values and significance levels.

In addition, I find that adjusted regulatory capital level (CAP) is significantly negatively associated with gains, as hypothesized in H1 and the coefficient of adjusted income (ΔROA) is significantly negative, as hypothesized in H2.a. Gains decrease as the difference between this quarter's pre-gain income and the previous quarter's net income increases.

I further analyze the earnings management incentive by including the shortfall of adjusted earnings from the mid-quarter consensus analyst forecast. I first replace ΔROA variable with the ANALYST variable (Column III). The coefficient increases to -0.14, but the p-value decreases to 10.7 percent. Interestingly, when I include both variables in the regression they both enter with slightly reduced coefficient estimates and ΔROA is still significant (Column IV). This suggests that managers engage in earnings management for different purposes. The negative coefficient of ΔROA indicates earnings smoothing whereas the negative coefficient on the earnings shortfall from the consensus analyst forecast indicates earnings management due to the capital market pressure to meet analyst forecasts.

Next, I explore whether the earnings smoothing finding above is driven by avoidance of earnings decreases only or whether banks realize both gains and losses to smooth earnings as they fluctuate. Consequently, I re-estimate Eq. (2) by decomposing ΔROA to its negative and positive parts (Columns V and VI). I find that both the shortfall and excesses from last quarter's income are significantly negatively associated with gains, the latter only at the eight percent

level. However, when the analyst variable is included in the regression equation (Column VI), the significance of the shortfall from last quarter loses significance. This may not be surprising given the high correlation between the analyst forecasts and prior period earnings as benchmarks.

The results in Table 4 indicate that banks are likely to affect reported gains to smooth income and to meet analysts' forecasts and to increase regulatory capital.

Two-stage Model for Gains with Selection Bias

In this part of the analysis, I take into consideration the potential selection bias that may be introduced due to the costs of loan transfers. The sample has effectively censored observations for those banks whose benefits from loan transfers did not exceed the costs. To account for this potential bias, I use the Heckman two-stage estimator. The first stage equation predicts whether a firm is likely to sell or securitize based on all economic motivations. The second stage analyzes the association of gains with earnings and capital management motivations after controlling for changes in interest rate and credit risk. I conduct this analysis for the entire sample of loan transfers, securitizations only, mortgage securitizations, and non-mortgages securitizations (Table 5). The inverse Mills ratios for all estimations except for securitizations-only sub-sample (Panel B) indicate that the first-stage selection is significant.

In Panel A, all gains from loan transfers are included as the dependent variable. In the first stage, total risk based capital ratio, change in net income, and shortfall from analyst forecasts are statistically significant with hypothesized signs. Liquidity and comparative advantage are also significant. In the second stage, regulatory capital and analyst forecasts are significant after controlling for the changes in interest rates. These results suggest that banks undertake loan transfers when their regulatory capital is low, in order to increase earnings when their pre-transfer income is not meeting the analyst forecasts, and to smooth earnings. Then, given that the loan transfer is performed, meeting analyst forecasts is a significant motivation after controlling for recent changes in interest rates.

In Panel B, I only include the gains from securitizations and not those from loan sales. In the first stage, regulatory capital is again significant, but not earnings smoothing or analyst forecast variables. Loan growth rate, liquidity, and size have significantly positive coefficients as well as asset risk and loan growth rate. The shortfall from analyst forecasts has the hypothesized negative sign, but it is insignificant. In the second stage, only income smoothing has the hypothesized significantly negative coefficient. Regulatory capital and analyst forecasts are negative as hypothesized, but not significant.

A comparison of Panel A and Panel B reveals two significant differences between whole loan sales and securitizations. For the securitization only sub-sample, the earnings smoothing and analyst forecast variables are not significant anymore. However, the coefficient for the regulatory capital variable remains to be significant and has roughly the same magnitude. Size, need for liquidity, as well as growth rate of loans are also significant determinants of the decision to securitize as modeled in the first-stage equation. In the second stage equation, only the earnings smoothing variable is significantly negative, once again suggesting the relevance of earnings management motivations in the calculation of gains from securitizations.

The difference in significance levels of the earnings management variables is consistent with the main difference between loan sales and securitizations as hypothesized in H3. The gains from whole loan sales are determined by the market and conditional on selling a given loan or loan-pool, management does not have additional discretion in the reported amount of gains. In securitizations, however, management has additional discretion in the calculation of reported gains, even after the transaction is completed. Thus, if loan transfers are structured to manage earnings, the gains are likely to play a more important role in the decision to sell loans than securitize them where management has discretion later in the second stage. The results in Panels A and B support this.

I further explore the use of discretion in the second stage by comparing mortgage securitizations with non-mortgage securitizations, as hypothesized in H4. Mortgage

securitizations are more homogenous, mortgage- backed securities are more liquid, and residual securities from mortgage securitizations are more tradable than their counterparts for other asset securitizations. Therefore, the latitude in fair value estimation for these securities is more limited than for non-mortgage securitizations.

I find support for the hypothesis that banks use biased discretion in fair value estimates to manage earnings and capital when they have more latitude (Panels C and D). In the first stage equations, the regulatory capital is significant (p-value = 1 percent for mortgages; p-value = 7 percent for non-mortgages) for both mortgage and non-mortgage securitizations, but earnings smoothing and analyst variables are not significant. For mortgage securitizations, asset riskiness, growth rate of loans, need for liquidity, and size also enter the model significantly with their predicted signs (Panel C). For non-mortgage securitizations, asset riskiness, growth rate of loans, need for liquidity, and size also enter the model significantly with their predicted signs (Panel D).

In the second stage, only earnings smoothing is significantly negative for mortgage securitizations, while for non-mortgage securitizations all of the regulatory capital, earnings smoothing, and analyst forecast variables are significantly negative. Thus, managers seem to be using more discretion with non-mortgage asset securitizations, conditional on securitization.

In addition, the overall results in Table 5 suggest that earnings management is not a primary part of the decision to securitize, while both earnings smoothing and analyst forecast variables are a part of the loan sale decision. Thus, the additional latitude in the calculation of gains conditional on a securitization may affect how transactions are structured and prevent distortions of real actions in order to manage earnings.

V. Conclusions

I have presented evidence that gains from loan transfers are used to manage regulatory capital and earnings in the banking industry. The capital ratio and deviations from the prior quarter's earnings explain a large portion of the cross-sectional variation in the gains. By comparing loan sales to securitizations, I also presented evidence that the source of the realized gains from securitizations is not only the selection of appreciated loans relative to their historical costs, but also the biased valuations of retained interests from securitizations. Evidence from the comparison of mortgage securitizations to non-mortgage securitizations is also consistent with the use of retained residual interest valuations for financial statement management. In particular, managers seem to be using their discretion in a biased manner when it is more difficult to gather objective market data to challenge their accounting estimates.

Further, my two-stage analysis suggests that banks engage in costly securitization activities due to contracting motivations as opposed to capital market motivations. This is an important contribution because prior research obtains mixed results on whether firms engage in value decreasing activities solely to improve financial statement outcomes. My results suggest that costly actions may seem to be motivated by market related incentives when in fact they have net benefits indirectly through regulation or contracting.

The results in this paper have important implications about the reliability of the reported fair values in the absence of liquid markets that provide reference prices. Fair value accounting may substantially lower the reliability of financial statement numbers in situations where market prices are not available, e.g. for revenue recognition on long-term contracts, non-traded derivatives. Separately, from a bank regulation perspective, the evidence of the biased reporting in this paper raises concerns about the reliability of bank risk disclosures that will be generated by internal models under Basel II.

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Appendix 1. Institutional Structure of a Typical Securitization Transaction

The often conflicting objectives of preserving lender-borrower relationships, providing credit protections to avoid moral hazard, and obtaining different outcomes for financial reporting and tax purposes lead to complex institutional structures for securitizations. The most common structure of securitization involves two steps (Figure 1). In the first step, the originator transfers the loans in a legal sale to a special purpose entity that is owned by the originator. The legal sale isolates the assets beyond the reach of the transferor and its creditors. Therefore, the first step meets the SFAS 125 & 140 isolation criterion without causing a taxable event, because the transferee is a part of the consolidated tax return of the transferor.

In the second step, the loans are transferred to a special purpose entity (SPE) with credit enhancements that protect investors from loan losses. Therefore, this step would not legally be considered a sale, yet GAAP allows the whole transfer to be accounted for as a sale, if it meets the criteria stated in Section 2.

Figure 1. Institutional Structure
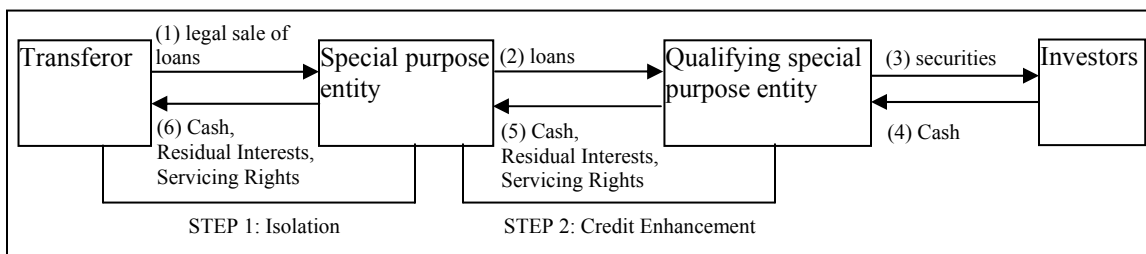
The second step determines whether the securitization is a sale or a borrowing for tax purposes. For tax purposes, asset-backed securities are generally characterized as the transferor's debt independent of the accounting treatment (Coopers & Lybrand 1997).[15] Instead of control, the tax code focuses on risks and rewards of the securitized loans and determines that

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[15] Two attributes generally support the debt characterization. First, the timing and amount of the cash flows paid for the securities are generally different from the timing and amount of payments received from the securitized loans. Second, it can be argued that the transferor, as opposed to the SPE and the ultimate investors, retains substantially all the burdens and benefits of owning the financial assets.

transferor retains the risks and rewards. Therefore, the transferor continues to be the owner of the assets for tax purposes.

After receiving the loan pool, the SPE issues debt securities that are backed by cash flows from transferred assets. Debt securities issued by the SPE usually have multiple seniority classes and different cash flow patterns from the underlying loan pool. The SPE also arranges for a servicer to collect the loan receipts from borrowers over the life of the securitization. Often, the transferor services the loans.

Appendix 2. Example of Financial Reporting for Securitizations[16]

Suppose Company C originates $1,000 of loans yielding 12 percent and later sells the $1,000 principal plus the right to receive interest income of 8 percent to another entity for $1,000. Assume further that Company C receives half of the interest income not sold as compensation for servicing the loan. The remaining half of the interest income not sold is considered an interest-only strip receivable and is a residual interest. Assume that at the date of the transfer, the fair value of the loans, including servicing, is $1,100, which equals the present value of the loans' expected cash flows discounted at the appropriate risk-adjusted rate. Further, assume that the transferor is fairly compensated for its services so that the fair value of the servicing asset is zero. Then, the fair value of the interest-only strip receivable is $100. The carrying amount of the loan is allocated at the relative fair values of each component shown in Figure 2

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[16] Adapted from SFAS 125 Appendix A, Implementation Guidance.

Figure 2. Carrying Amount Based on Fair Values

	Fair Value	% of Total Value	Allocated Carrying Amount
Loans sold	$1,000	90.90%	$909.09
Interest-only strip receivable	100	9.09%	90.90
Total	$1,100	100%	$1,000

Gain from securitization is the $90.90 difference between the $1,000 fair value and the $909.09 allocated carrying amount. Following the transfer two journal entries are made:

To record transfer			To measure interest-only strip receivable as available-for-sale	
Cash	$1,000		Interest-only strip receivable	$9.09
Interest-only receivable	$90.90		*Equity (comprehensive income)*	*$9.09*
Loans		$1,000		
Gain on sale		*$90.90*		

The balance sheet effects of the securitization example given above are demonstrated in Figure 3 for both secured borrowing and sale accounting. In this example, securitizing ten percent of the loan portfolio increases the equity to total assets ratio of the bank to 10.9 percent from 10 percent if accounted as a sale, whereas it decreases to 9.1 percent when accounted as a secured borrowing.

Figure 3. Analysis of Balance Sheet Before and After Securitization

	Before Transfer	After Sale	After Secured Borrowing
Cash	-	1,000	1,000
Loans [*]	10,000	9,000	9,000
Pledged loans to Securitization	-	-	1,000
Interest-only strip	-	100	-
Total Assets	**10,000**	**10,100**	**11,000**
Debt	9,000	9,000	9,000
Secured Borrowing	-	-	1,000
Shareholder's Equity	1,000	1,100	1,000
Total Liabilities and Shareholders' Equity	**10,000**	**10,100**	**11,000**

[*] Assume that the bank had $9,000 of net loans, in addition to the $1,000 of loans transferred.

I illustrate the risk-based capital calculations using the previous example. The capital ratio for the firm after the sale is 1,100/10,000=11 percent up from ten percent. Figure 4 illustrates this calculation.

Figure 4. Risk-based Capital Ratio after Securitization

	Before Transfer	After Sale	After Secured Borrowing
Assets Sold with Retained Interests	-	$1,000	-
Maximum Exposure from Retained Interests	-	$100	-
Other Risk-weighted Assets	$10,000	$9,000	$10,000
Total Risk-weighted Assets	$10,000	$10,000	$10,000
Total Risk Based Capital	$1,000	$1,100	$1,000
Total Capital Ratio	10.0%	11.00%	10.00%

Appendix 3. Impact of Securitization on the Regulatory Capital Ratio

CAPITAL

Fair Value > Book Value:
······ No Securitization
——— Securitization

Fair Value < Book Value:
– · – No Securitization
– – Securitization

t = 0   t = T
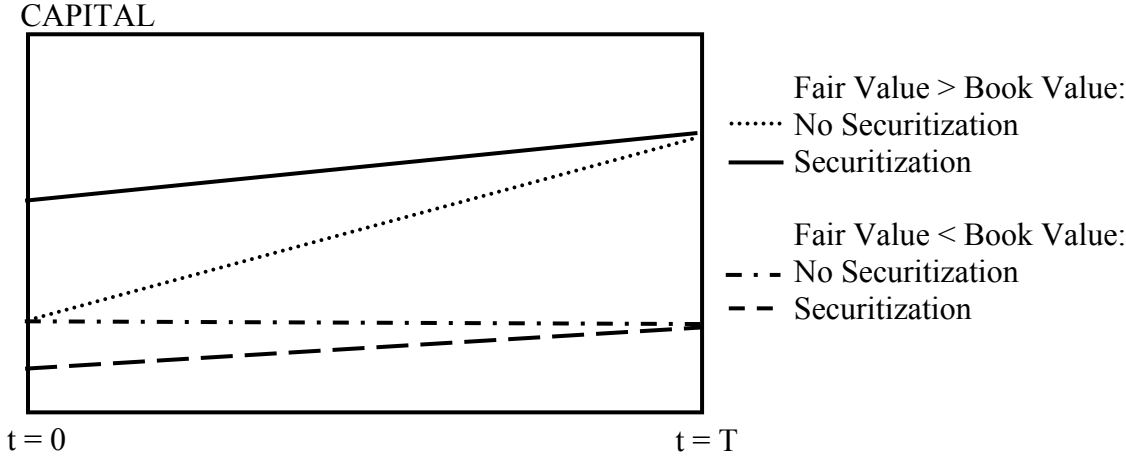
Assumptions: t=0 is the securitization date and t=T is the maturity date of the loans and the securitization. Proceeds are invested in risk-free government securities. The securitized loans are interest-only and their principal is paid back at maturity.

Table 1. Descriptive Statistics

A. All Banks (n=249)

Variable	Mean	std	min	Q1	median	Q3	max
TA	12,589,635	64,338,421	160,011	640,028	1,308,390	4,693,448	731,208,571
SECOUT	1.58%	12.00%	0.00%	0.00%	0.00%	0.13%	183.15%
GAIN	0.03%	0.07%	-0.01%	0.00%	0.01%	0.02%	0.70%
CAP	14.05%	4.13%	8.41%	11.83%	13.07%	14.85%	46.15%
ROA	0.30%	0.16%	-0.69%	0.23%	0.29%	0.35%	1.72%
Gain/CAP	0.20%	0.57%	-0.11%	0.00%	0.06%	0.17%	6.53%
Gain/NI	-12.85%	306.82%	-4797.50%	0.00%	1.29%	5.65%	458.06%
LIQ	86.71%	18.14%	6.65%	77.40%	86.96%	96.18%	140.65%
RISK	1.96%	1.07%	0.23%	1.31%	1.70%	2.34%	7.48%
IR	-5.52	18.87	-167.08	-11.55	-4.19	2.50	64.63
DIV	24.04%	11.86%	0.10%	16.31%	22.07%	28.87%	66.29%
GRW	4.09%	6.81%	-4.93%	1.78%	3.08%	5.01%	92.40%
MB	1.97	0.88	0.58	1.44	1.84	2.31	6.86
UND	21.62	12.57	1.41	13.97	19.71	26.60	110.87
SIZE	14.48	1.53	11.98	13.35	14.08	15.36	20.48
COMP	3.93%	7.75%	1.16%	2.68%	3.20%	3.92%	122.43%

B. Banks that Sold or Securitized Loans (n=199)

Variable	mean	std	min	Q1	median	Q3	max
TA	15,217,137	71,722,842	160,011	758,317	1,646,242	5,632,471	731,208,571
SECOUT	1.96%	13.40%	0.00%	0.00%	0.00%	0.30%	183.15%
GAIN	0.04%	0.08%	-0.01%	0.00%	0.01%	0.03%	0.70%
CAP	13.51%	2.93%	8.41%	11.77%	12.83%	14.59%	28.08%
ROA	0.30%	0.17%	-0.69%	0.24%	0.29%	0.35%	1.72%
Gain/CAP	0.25%	0.63%	-0.11%	0.03%	0.08%	0.24%	6.53%
Gain/NI	-16.08%	343.31%	-4797.50%	0.34%	2.36%	6.90%	458.06%
LIQ	88.51%	16.46%	22.17%	79.22%	87.89%	97.51%	139.49%
RISK	1.95%	1.06%	0.23%	1.31%	1.70%	2.31%	7.48%
IR	-5.58	17.98	-167.08	-11.43	-4.19	2.50	48.13
DIV	24.58%	11.62%	0.48%	16.85%	23.09%	30.03%	66.29%
GRW	4.28%	7.48%	-4.93%	1.82%	3.11%	5.06%	92.40%
MB	2.01	0.85	0.58	1.50	1.89	2.35	6.86
UND	22.39	11.38	3.53	14.76	20.50	27.88	84.73
SIZE	14.67	1.56	11.98	13.51	14.29	15.53	20.48
COMP	3.45%	1.83%	1.16%	2.70%	3.19%	3.90%	22.18%

C. Banks that Securitized Loans (n=58)

Variable	mean	std	min	Q1	median	Q3	max
TA	43,034,254	128,717,628	433,509	2,115,643	6,475,674	26,956,927	731,208,571
SECOUT	6.62%	24.34%	0.01%	0.28%	0.88%	5.22%	183.15%
GAIN	0.04%	0.06%	-0.01%	0.00%	0.02%	0.05%	0.32%
CAP	12.52%	2.11%	8.50%	11.04%	12.09%	13.08%	19.77%
ROA	0.30%	0.20%	-0.69%	0.27%	0.32%	0.36%	0.91%
Gain/CAP	0.27%	0.41%	-0.11%	0.04%	0.12%	0.32%	2.20%
Gain/NI	16.95%	68.46%	-57.06%	0.71%	2.96%	10.94%	458.06%
LIQ	95.00%	12.15%	58.15%	87.27%	94.44%	102.89%	125.39%
RISK	2.24%	1.07%	0.51%	1.60%	2.12%	2.53%	7.48%
IR	-3.43	14.14	-39.36	-9.87	-3.51	2.29	48.13
DIV	21.05%	9.53%	0.57%	14.42%	19.73%	25.86%	43.58%
GRW	4.50%	4.72%	-4.93%	2.09%	3.29%	6.08%	29.16%
MB	2.32	0.89	0.66	1.86	2.23	2.55	6.86
UND	25.77	10.27	6.42	20.37	23.92	29.26	61.60
SIZE	15.94	1.70	13.00	14.62	15.73	17.12	20.48
COMP	3.37%	1.67%	1.54%	2.60%	3.05%	3.55%	13.71%

Sample contains all banks that have reported net income, total assets, and loans and leases in the Bank Holding Company Database between first quarter 1997 and fourth quarter 2000. First quarter 1997 observations are lost due to differencing and growth rate computation. Securitizers have had an outstanding balance of securitized loans anytime during the sample period. Secondary securitizations are observations by banks that had securitized before. Non-securitizers have never sold assets with retaining interests. TA= Total Assets; SECOUT=Total outstanding securitized receivables scaled by beginning of period total assets; GAIN=Gain from securitization scaled by beginning of period total assets; CAP=Total capital ratio adjusted for after tax gain from sale; ROA=Net income adjusted for after tax gain from sale scaled by beginning of period total assets; Gain/CAP = After tax gain divided by the total regulatory capital before the gain; Gain/NI= After tax gain divided by the net income before the gain; LIQ=Loans to deposits ratio adjusted for the loans securitized; RISK=Standard deviation of asset returns; IR=Interest rate sensitivity of equity returns; DIV=Loan concentration (Herfindahl) index; GRW=Growth rate of on balance sheet and outstanding securitized loans; MB=Market-to-book ratio; UND=Interaction of the debt-to-equity ratio with the market-to-book ratio; SIZE=Natural logarithm of total assets including securitized loans; COMP=Non-interest expense to total on-balance sheet and outstanding securitized loans.

Table 2. Comparisons of Securitizer v Non-Securitizer Characteristics

Variable	Non-Seller	Seller		Non-Securitizer	Securitizer		NonSecuritizer	Firsttime	
TA	$ 657,605	$ 1,646,242	***	$ 1,283,362	$ 6,475,674	***	$ 1,283,362	$ 5,130,378	***
SECOUT	0.00%	0.00%	***	0.00%	0.88%	***	0.00%	1.29%	***
CAP	14.39%	12.82%	***	13.43%	12.03%	***	13.41%	11.70%	***
ROA	0.30%	0.28%		0.27%	0.29%		0.29%	0.33%	
Gain/CAP	0.00%	0.08%	***	0.04%	0.12%	***	0.00%	0.10%	***
Gain/NI	0.00%	2.36%	***	0.52%	2.96%	***	0.05%	3.15%	***
GAIN	0.00%	0.01%	***	0.01%	0.02%	***	0.00%	0.02%	***
LIQ	79.96%	87.89%	***	84.21%	94.44%	***	83.59%	89.49%	
RISK	1.68%	1.70%		1.60%	2.12%	***	1.66%	1.91%	
IR	-4.41	-4.19		-4.52	-3.51		-4.13	-1.05	
DIV	19.66%	23.09%	**	22.83%	19.73%	**	21.25%	20.24%	
GRW	2.96%	3.11%		2.89%	3.29%		2.67%	4.99%	***
MB	1.64	1.89	***	1.72	2.23	***	1.86	2.38	**
UND	16.67	20.50	***	17.81	23.92	***	18.94	27.62	***
SIZE	13.39	14.29	***	14.07	15.73	***	14.07	15.47	***
COMP	3.26%	3.19%		3.26%	3.05%		3.14%	2.94%	

Sample contains all banks that have reported net income, total assets, and loans and leases in the Bank Holding Company Database between first quarter 1997 and fourth quarter 2000. First quarter 1997 observations are lost due to differencing and growth rate computation. Securitizers have had an outstanding balance of securitized loans anytime during the sample period. Wilcoxon rank-sum test is performed to test for the equality between bank characteristics in each group. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level. GAIN=Gain from loan sales and securitizations scaled by beginning of period total assets; SECOUT=Total outstanding securitized receivables scaled by beginning of period total assets; CAP=Total capital ratio adjusted for after tax gain from sale; ROA=Net income adjusted for after tax gain scaled by beginning of period total assets; Gain/CAP = After tax gain divided by the total regulatory capital before the gain; Gain/NI= After tax gain divided by the net income before the gain; TA=Total assets; RISK=Standard deviation of asset returns; COMP=Non-interest expense to total on-balance sheet and outstanding securitized loans; UND=Interaction of the debt-to-equity ratio with the market-to-book ratio; DIV=Loan concentration (Herfindahl) index; GRW=Growth rate of on balance sheet and outstanding securitized loans; IR=Interest rate sensitivity of equity returns; LIQ=Loans to deposits ratio adjusted for the loans securitized; MB=Market-to-book ratio; SIZE=Total assets including securitized loans.

Table 3. Pearson Correlation Coefficients of Explanatory Variables and Gains from Securitization

	GAIN	SECOUT	T1	CAP	ROA	ANALYST	LEV	LIQ	RISK	IR	DIV	GRW	MB	UND	SIZE
SECOUT	0.16														
T1	-0.10	-0.02													
CAP	-0.13	0.01	0.92***												
ROA	-0.31*	0.26·	0.17*	0.15											
ANALYST	-0.36*	0.17	0.08	0.08	0.75***										
LEV	0.02	0.29**	0.74***	0.69***	0.35***	0.12									
LIQ	0.22	0.16	-0.23	-0.20	0.00	-0.15	0.12								
RISK	0.10	0.37***	0.07	0.06	0.38***	0.12	0.28**	0.00							
IR	-0.02	0.00	-0.08	-0.06	-0.02	0.01	-0.05	0.01	-0.03						
DIV	0.25*	0.00	0.10	0.01	-0.11	-0.12	0.15	0.56***	-0.08	0.02					
GRW	0.09	0.11	-0.07	-0.08	-0.07	-0.04	0.00	0.06	0.06	-0.05	0.00				
MB	0.04	0.44***	-0.14	-0.11	0.41***	0.22*	0.07	-0.02	0.72***	0.02	-0.22*	0.08			
UND	0.04	0.27	-0.29*	-0.23*	0.12	0.12	-0.25*	-0.13	0.46***	0.03	-0.26**	0.11	0.85***		
SIZE	-0.01	0.23**	-0.33***	-0.17	0.19	0.10	-0.22*	0.11	0.25	0.05	-0.38***	-0.05	0.45***	0.42***	
COMP	-0.01	-0.02	0.04	0.04	-0.12	0.00	-0.17*	-0.46***	0.15	-0.01	-0.33***	0.01	0.26*	0.44***	0.17

The correlation coefficients and their p-values are averages over the 15 available quarters. *** denotes significance at the 1% level, ** at the 5% level, and * at the 10% level. Sample contains all banks that have reported net income, total assets, and loans and leases in the Bank Holding Company Database between first quarter 1997 and fourth quarter 2000. First quarter 1997 observations are lost due to differencing and growth rate computation. Variables are defined as follows: GAIN=Gain from sale or securitization scaled by beginning of period total assets; SECOUT=Total outstanding securitized receivables scaled by beginning of period total assets; T1=Tier 1 capital ratio adjusted for after tax gain from sale; CAP=Total capital ratio adjusted for after tax gain from sale; ROA= Net income adjusted for after tax gain scaled by beginning of period total assets; ANALYST= Shortfall of net income (before the after-tax gains) from IBES consensus forecast in the second month of the quarter; LEV=Leverage ratio adjusted for after tax gain from sale; LIQ=Loans to deposits ratio adjusted for the loans securitized; RISK=Standard deviation of asset returns; IR=Interest rate sensitivity of equity returns; DIV=Loan concentration (Herfindahl) index; GRW=Growth rate of balance sheet and outstanding securitized loans; MB=Market-to-book ratio; UND=Interaction of the debt-to-equity ratio with the market-to-book ratio; SIZE=Natural logarithm of total assets including securitized loans; COMP=Non-interest expense to total on-balance sheet and outstanding securitized loans.

Table 4. Incentives to Manage Regulatory Capital and Earnings and Gains from Loan Sales and Securitizations

$$Gain = \beta_0 + \beta_1 CAP + \beta_2 \Delta ROA + \beta_3 ANALYST + \sum_{i=4}^{14} \beta_i ControlVar_i + \varepsilon$$

	I.	II.	III.	IV.	V.	VI.	VII.
CAP		-0.002	-0.002	-0.002	-0.002	-0.002	
		(0.001)**	(0.001)**	(0.001)**	(0.001)***	(0.001)**	
SIZECAP							-0.002
							(0.001)**
ΔROA		-0.065		-0.030			-0.030
		(0.027)**		(0.014)**			(0.014)**
ANALYST			-0.140	-0.110		-0.118	-0.111
			(0.086)	(0.082)		(0.083)	(0.082)
ΔROA⁻					-0.079	-0.023	
					(0.036)**	(0.019)	
ΔROA⁺					-0.021	-0.041	
					(0.012)*	(0.016)**	
Δr	-0.016	-0.014	-0.013	-0.013	-0.013	-0.013	-0.011
	(0.008)	(0.007)**	(0.006)**	(0.006)**	(0.006)**	(0.006)**	(0.006)
ΔCHOFF	0.006	0.080	0.002	0.036	0.096	0.028	0.036
	(0.009)	(0.034)**	(0.011)	(0.019)*	(0.043)**	(0.024)	(0.019)*
ΔNPL	-0.005	0.029	-0.002	0.014	0.036	0.010	0.014
	(0.007)	(0.016)	(0.009)	(0.011)	(0.021)*	(0.013)	(0.011)
LIQ	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)	(0.000)
RISK	0.004	0.006	0.006	0.006	0.006	0.006	0.006
	(0.006)	(0.006)	(0.006)	(0.005)	(0.006)	(0.005)	(0.005)
IR	-1.190	-1.330	-1.600	-1.560	-1.400	-1.550	-1.550
	(1.000)	(0.990)	(1.000)	(0.990)	(1.010)	(0.990)	(0.990)
DIV	0.002	0.002	0.002	0.002	0.002	0.002	0.002
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
GRW	0.001	0.000	0.001	0.000	0.000	0.000	0.000
	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)	(0.001)
UND	3.350	1.970	2.770	2.740	2.360	2.680	2.350
	(3.710)	(3.520)	(3.550)	(3.540)	(3.610)	(3.550)	(3.490)
SIZE	12.350	-5.480	-5.590	-7.430	-6.160	-7.370	2.970
	(36.410)	(32.550)	(31.180)	(31.160)	(32.380)	(31.110)	(32.010)
COMP	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)	(0.000)
# obs	1,934	1,916	1,916	1,916	1,916	1,916	1,916
Adj R-sq	10%	14%	16%	16%	14%	16%	16%

Robust standard errors in parentheses
*** significant at 1% level; ** significant at 5% level; * significant at 10% level
There are 1,916 observations in each panel. Sample contains all banks that have reported net income, total assets, and loans and leases in the Bank Holding Company Database between first quarter 1997 and fourth quarter 2000. First quarter 1997 observations are lost due to differencing and growth rate computation. GAIN=Gain from loan sales and securitizations scaled by beginning of period total assets; CAP=Total capital ratio adjusted for after tax gain from sale (Columns I-VI)– Deviation from size adjusted total capital ratio before the after-tax gains (Column VII); ΔROA= Difference between net income before the after-tax gains and last quarter's net income scaled by beginning of period total assets; ANALYST= Shortfall of net income (before the after-tax gains) from IBES consensus forecast in the second month of the quarter; Δr = Change in short-term interest rates (FHA mortgage rate for mortgage securitizations); ΔCHOFF=Change in the charge off rate; ΔNPL=Change in non-performing loans normalized by total assets; LIQ=Loans to deposits ratio including outstanding securitized loans; RISK=Standard deviation of asset returns; IR=Interest rate sensitivity of equity returns; DIV=Loan concentration (Herfindahl) index; GRW=Growth rate of on balance sheet and outstanding securitized loans; UND=Interaction of the debt-to-equity ratio with the market-to-book ratio; SIZE=Natural logarithm of total assets including securitized loans; COMP=Non-interest expense to total on-balance sheet and outstanding securitized loans.

Table 5. Gains from Loan Sales and Securitizations with First Stage Selection Model

$$Sec = \alpha_1 + \beta_1 CAP + \beta_2 \Delta ROA + \beta_3 ANALYST + \beta_4 LIQ$$
$$+ \beta_5 RISK + \beta_6 IR + \beta_7 DIV + \beta_8 GRW + \beta_9 UND + \beta_{10} SIZE + \beta_{11} COMP + \varepsilon$$
$$Gain = \alpha_2 + \beta_{12} CAP + \beta_{13} \Delta ROA + \beta_{14} ANALYST + \beta_{15} \Delta NPL + \beta_{16} \Delta ChOff + \upsilon$$

	A. Loan sales and securitizations		B. Only securitizations		C. Only Mortgage securitizations		D. Only Non-mortgage securitizations	
	Sec	Gain	Sec	Gain	Sec	Gain	Sec	Gain
CAP	**-5.216**	0.003	**-6.346**	-0.006	**-10.032**	-0.007	**-5.09**	**-0.01**
	(0.890)***	(0.002)	**(2.122)*****	(0.004)	**(2.533)*****	(0.007)	**(2.831)***	**(0.005)****
ΔROA	**-45.136**	-0.017	0.53	**-0.271**	0.429	**-0.322**	7.716	**-0.235**
	(19.852)**	(0.018)	(2.537)	**(0.070)*****	(3.575)	**(0.100)*****	(33.029)	**(0.099)****
ANALYST	**-79.585**	**-0.100**	-23.074	0.017	-49.067	0.13	-18.006	**-0.348**
	(37.891)**	**(0.033)*****	(26.051)	(0.082)	(28.544)	(0.114)	(39.268)	**(0.146)****
Δr		-0.031		-0.044				-0.049
		(0.012)***		(0.029)				(0.041)
ΔCHOFF		0.026		-0.114				-0.052
		(0.029)		(0.101)				(0.153)
ΔNPL		0.003		-0.063				-0.137
		(0.018)		(0.055)				(0.115)
RISK	-0.322		6.784		3.269		11.816	
	(2.727)		(3.854)		(4.312)		(4.694)**	
COMP	-2.074		-0.157		-7.596		1.363	
	(1.097)		(1.916)		(2.942)***		(1.410)	
UND	0.004		-0.001		-0.002		-0.009	
	(0.003)		(0.004)		(0.004)		(0.006)	
DIV	0.607		-2.124		-0.143		-2.345	
	(0.364)		(0.578)***		(0.558)		(0.748)***	
GRW	-0.467		2.171		1.897		1.873	
	(0.536)		(0.608)***		(0.629)***		(0.702)***	
IR	-0.001		0.002		0.000		0.003	
	(0.001)		(0.002)		(0.002)		(0.002)	
LIQ	0.788		2.476		0.193		2.558	
	(0.218)***		(0.318)***		(0.142)		(0.360)***	
SIZE	0.074		0.181		0.238		0.204	
	(0.026)***		(0.038)***		(0.037)***		(0.048)***	
λ (inv. mills)	**-0.00044*****		**(0.00029)**		**-0.00034*****		**-0.00150*****	
# uncensored		669		206		124		110

Standard errors in parentheses
*** significant at 1% level; ** significant at 5% level; * significant at 10% level

There are 1,916 observations in each panel. Sample contains all banks that have reported net income, total assets, and loans and leases in the Bank Holding Company Database between first quarter 1997 and fourth quarter 2000. First quarter 1997 observations are lost due to differencing and growth rate computation. GAIN=Gain from loan sales and securitizations scaled by beginning of period total assets; CAP=Total capital ratio adjusted for after tax gain from sale; ΔROA= Difference between net income before the after-tax gains and last quarter's net income scaled by beginning of period total assets; ANALYST= Shortfall of net income (before the after-tax gains) and IBES consensus forecast in the second month of the quarter; Δr = Change in short-term interest rates (FHA mortgage rate for mortgage securitizations); ΔCHOFF=Change in the charge off rate; ΔNPL=Change in non-performing loans normalized by total assets; LIQ=Loans to deposits ratio including outstanding securitized loans; RISK=Standard deviation of asset returns; IR=Interest rate sensitivity of equity returns; DIV=Loan concentration (Herfindahl) index; GRW=Growth rate of on balance sheet and outstanding securitized loans; UND=Interaction of the debt-to-equity ratio with the market-to-book ratio; SIZE=Natural logarithm of total assets including securitized loans; COMP=Non-interest expense to total on-balance sheet and outstanding securitized loans.