Three Essays on Securitization

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by

Adi Mordel

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Dedications

To my parents, Rufa and Itzchak Mordel

To my wife, Rimma

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ABSTRACT

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Off-balance sheet financings and securitization in particular, are viewed by many as the culprits of the 2007 financial meltdown. In a securitization transaction, assets are sold to a special purpose entity that finances the acquisition by issuing debt securities at various seniority levels to investors. In theory, the transaction relies crucially on the assumption that the risks of owning the assets are truly separated from the securitizer and reside with investors. However, in reality financial institutions take advantage of accounting rules, regulatory capital requirements, and supervisors' indecisive actions and create a plethora of asset-backed securities (ABS) that do not completely remove the risks of owning the assets.

In my dissertation I show that securitizations negatively affect their parents, that investors do not consider ABS-deals separately from their sponsors, and that these transactions are more akin to financings than sales. Furthermore, I document that securitizers of downgraded ABS-deals face significant market discipline, as investors clearly understand the relation between ABS sponsors and their off-balance sheet deals. In addition, I find that internal control mechanisms mitigate some of the negative effects associated with securitization.

In light of the ongoing debt on the future of financial intermediation in general and securitization in particular, my dissertation offers a unique perspective on some of the contested issues. First, transparent reporting requirements should focus on the level of

retained risk and translate into on-balance sheet capital requirements. Second, ABS downgrades can serve as a valuable signal to regulators and allow them to link both on- and off-balance sheet conditions in the supervisory process. And finally, efficient corporate governance mechanisms can complement the supervisory process and attenuate the risks associated with securitization.

CHAPTER I: INTRODUCTION

Securitization, the process by which non-tradable assets are transformed into liquid securities via cash-flow repackaging, is classified by both accounting and regulatory rules as a "sale" of assets, therefore allowing the issuer to remove the assets from its books. This "off-balance sheet" treatment relies crucially on the concept of "true" sale, such that the assets are bankruptcy remote from the parent/securitizer. However, I document that this concept is violated and that according to investors these assets are not really separated from their parents. The transaction, which resembles secure borrowing, adversely affects the parent, and since the typical securitizer is a bank, the role of regulators and their ability to mitigate those effects are questioned.

My dissertation also highlights the existence of market discipline, triggered by an asset-backed security (ABS) downgrade, and its importance in complementing the regulatory process. An ABS downgrade signals potential problems and allows regulators to incorporate both on-and off-balance sheet positions within the supervisory framework. Finally, my dissertation emphasizes the importance of having proper internal control mechanisms in dealing with the aftermath of securitization. Effective corporate governance not only facilitates the supervisory process but also limits securitizer's risk and enhances firm value.

1. Securitization, Sale or Financing?

My first essay titled “Asset Sales, Recourse, and Investors’ Reactions to Initial Securitizations: Evidence why Off-balance Sheet Accounting Treatment does not Remove On-balance Sheet Financial Risk” (Higgins, Mason, and Mordel, 2009a) addresses the validity of both regulatory and accounting classification of securitization as a sale transaction, and provides empirical evidence against such treatment.

Securitization is based on the concept of a “true” sale. As originally envisaged under FASB140, the sale leaves no remaining link to the sponsor (or seller) whether through the possibility that the assets will be repurchased or guaranteed or that they will be available to general creditors of the firm in bankruptcy.

In practice, however, securitizations closely resemble typical firm financing arrangements. In the real world, sponsors of securitized assets maintain representations and warranties, servicing contracts, and repeated reliance on a relatively small market of buyers for future securitizations (monopsonistic qualities in a repeated game) that continually link buyer and seller, possibly precluding the sort of true sale originally envisaged under FASB140. Under such scenario, securitizations should be classified as financings. In a financing, the assets do not leave the firm’s books so the transaction is exclusively on-balance sheet. Important covenants related to the financing are disclosed and the assets used in the financing are always at risk of consolidation into the general estate by bankruptcy judges.

Both accounting and regulatory treatments classify securitizations as a sale of assets, allowing the issuer to remove the assets from its books and receive off-balance sheet treatment. But the debate continues regarding whether securitizations are sales or financings, and more fundamentally, whether they should be carried on- or off-balance

sheet. One way to distinguish whether securitizations are sales or financings from a financial-economics perspective is to examine how investors in the sponsor firm, themselves, react to securitizations. In such an exercise, the most important information about investors' reactions lies in their reactions to firms' *first* securitization announcements – follow-on transactions would confer little additional information.

This paper analyzes such investors' reactions. The systematic negative short-term equity returns and negative long-term operating performance following securitization are evidence that securitizations are viewed by investors in the sponsor firms as more similar to financings than sales. Additional analysis shows that securitization is also associated with increased systematic risk at sponsor firms, suggesting that the rapid firm growth fueled by securitization is similar to taking on substantial additional leverage. The results are strongest for banks, suggesting that regulatory capital arbitrage may create the incentive for greater leverage, and therefore greater increases in risk. Again, such results suggest for banks and non-banks alike, securitization is more akin to a financing than a sale.

The findings have implications for accounting and regulatory recognition of securitizations. While it is easy to argue that securitizations are not true asset sales, it is more difficult to argue how they should be correctly accounted for on firm balance sheets. If expected loss remains on balance sheet through residual interests, firm capital should not be reduced significantly compared to on-balance sheet treatment. On the other hand, if firms can justify some risk transfer, i.e., of unexpected loss, they should be awarded capital relief by investors and regulators alike.

2. The Role of Market Discipline

The second essay of the dissertation titled "The Information Content of Asset Backed Securities Downgrades and The Motivation behind Them" (Higgins, Mason, Mordel, 2009b) provides additional evidence against the bankruptcy remoteness of off-balance sheet assets.

Credit rating agencies (CRAs) have played an important role in the development of the securitization market.[1] Their intimate involvement in the financial engineering of ABS deals, coupled with investors' requirement of a rating agency "approval" affected the marketability of the issued securities, and along the way made CRAs look more like underwriters than passive, credit-quality opinion providers (Mason and Rosner, 2007b). The opacity and complexity of the various instruments contributed to CRAs status as the de facto regulators of that market, and

There is no doubt that securitization transformed financial intermediation. Banks could obtain cheaper funding, improve balance sheet management, and focus on activities in which they posses a comparative advantage.[2] Yet these benefits seem negligible in light of the 2007 panic, which was driven by the tremendous performance deterioration and the massive downgrades of numerous ABS deals. Voices criticizing securitization point out that it increases systemic risk in the financial system, due to banks' habit of retaining the equity portion of securitized deals, without having the adequate capital

[1] On the role of rating agencies see also Committee of Global Financial System (2005), and Lucchetti and Ng (2007).

[2] On the mechanisms and benefits of securitization, see Gorton and Souleles (2006), and Greenbaum and Thakor (2007). Calomiris and Mason (2004) provide evidence on the how securitization fosters efficient contracting.

levels on-balance sheet to support it.[3] In addition, CRAs have also been criticized, particularly regarding their inability to measure risk and appropriately rate the issued securities.

The negative sentiment on securitization raises important questions about markets functionality, discipline, and the CRAs' downgrade motivation. To summarize our results, we show that the market reaction to an ABS downgrade is significantly negative, indicating that investors do not treat the deal independently from the ultimate parent, and that the securitization's underlying "true sale" assumption was indeed violated. The most negative announcement returns are for downgraded ABS deals sponsored by troubled financial institutions (FIs), suggesting that investors are aware of sponsors' ability to support poorly performing deals through implicit recourse. In addition, market discipline is not limited to a loss of market share. Ultimate parents of downgraded deals experience significant delays in their ABS issuance cycles post downgrade, suggesting that an originator's ability to securitize depends on its credit quality. Such delays are not observed for "good" securitizers, those sponsors of ABS deals that did not suffer downgrades.

In light of the ongoing market turmoil that was driven by a myriad of complex securities (Gorton, 2008) and the numerous calls for comprehensive regulatory reforms, our results emphasize that markets were functioning even before the first signs of the upcoming panic in the summer of 2007. Investors incorporated new information promptly into a securitizer's stock price, and accurately understood changes in its condition as the securitizer's ability to issue ABS deals post-downgrade was sensitive to its credit quality.

[3] Moreover, since under certain conditions banks are required to absorb the losses generated by their failed ABS deals, critiques question the transactions' ability to truly separate assets from the originator and relocate risk (Stiglitz, 2008; Krugman, 2008).

Since an ABS downgrade provides valuable information on a securitizer's relation with its off-balance sheet deal, and since the downgrade exposes the securitizer to the market's disciplinary forces, regulatory reforms should consider incorporating such market signals into the supervisory process because any newly generated information can reduce uncertainty about a securitizer's condition, leading to a quicker and effective response by supervisors (Flannery, 2001, Caprio, Kunt, and Kane, 2008).

With regards to credit rating agencies (CRAs), our results indicate that the consideration behind some of the ABS downgrades is *not* independent of the ultimate parent's financial performance. Downgraded deals sponsored by non-FIs are associated with the sponsor's poor pre-event stock returns and deteriorating operating performance, suggesting that CRAs, just like investors, treat ABS deals as an integral part of the ultimate parent/sponsor. That is not the case for deals sponsored by FIs. There, CRAs tend to downgrade deals irrespective of the sponsor's pre-event performance, an indication of a downgrade driven by deal specific conditions, and potentially greater transparency.

3. Corporate Governance and Securitization

Finally, in my third essay titled "Governance and Firm Value: Evidence from Initial Securitization by Bank Holding Companies" (Mordel, 2009), I investigate the relation between various governance variables and the decision to securitized, in addition to studying whether governance mitigates any of the negative effects associated with off-balance sheet financing. To address this question, I study the governance mechanisms of

the largest most frequent securitizers, bank holding companies (BHCs), just prior to their first ever securitization transaction.

Based on my discussions with industry practitioners, it is assumed that if governance plays a role in a BHC's decision to securitize, then it is most likely to be observable when the BHC initiates its securitization program. Once securitization is introduced, the BHC would typically issue an ABS deal once every few months, making securitization part of its ongoing operation and as a result limiting the board of directors' involvement with successive deals.

I compare the governance characteristics of 44 BHCs prior to their first ever securitization transactions with those of a matching sample based on industry, size, and leverage. I show that securitizers have lower levels of insider stock ownership and that controlling for size, risk, and liquidity, BHCs with higher levels of insider ownership are less likely to securitize.

I also find that internal corporate control variables mitigate some of the negative effects caused by securitization. I show that post-securitization systematic risk tends to be higher for securitizers, yet it is lower for securitizers with higher levels of CEO equity based compensation. In addition, implied leverage obtained from the Hamada equation (being directly related to the amount securitized) is lower for BHCs with higher levels of insider ownership. Finally, post-event firm value (measured by Tobin's q) is positively related to the proportion of outside directors serving on the boards of securitizers.

CHAPTER II: ESSAY I
Asset Sales, Recourse, and Investor Reactions to Initial Securitizations: Evidence Why Off-Balance Sheet Accounting Treatment Does Not Remove On-Balance Sheet Financial Risk

Eric J. Higgins, Ph.D.
Joseph R. Mason, Ph.D.
Adi Mordel

1. Introduction

Securitization is based on the concept of a "true" sale. As originally envisaged under FASB140, the sale leaves no remaining link to the sponsor (or seller) whether through the possibility that the assets will be repurchased or guaranteed or that they will be available to general creditors of the firm in bankruptcy.

In practice, however, securitizations closely resemble typical firm financing arrangements. In the real world, sponsors of securitized assets maintain representations and warranties, servicing contracts, and repeated reliance on a relatively small market of buyers for future securitizations (monopsonistic qualities in a repeated game) that continually link buyer and seller, possibly precluding the sort of true sale originally envisaged under FASB140. Even the most fundamental concept of the "bankruptcy remoteness" principal by which the buyer has full title to the collateral has fared poorly before bankruptcy courts and now stands on the verge of being ruled irrelevant. In a financing, the assets do not leave the firm's books so the transaction is exclusively on-balance sheet. Important covenants related to the financing are disclosed and the assets used in the financing are always at risk of consolidation into the general estate by bankruptcy judges.

Both accounting and regulatory treatments classify securitizations as a sale of assets, allowing the issuer to remove the assets from their books and receive off-balance sheet treatment. But the debate continues regarding whether securitizations are sales or financings, and more fundamentally, whether they should be carried on- or off-balance sheet.

One way to distinguish whether securitizations are sales of financings from a financial-economics perspective is to examine how investors in the sponsor firm, themselves, react to securitizations. In such an exercise, the most important information about investor reactions lies in investor reactions to firms' *first* securitization announcements – follow-on transactions would confer little additional information.

The work that follows analyzes such investor reactions. The systematic negative short-term equity returns and negative long-term operating performance following securitization are classic evidence that securitizations are viewed by investors in the sponsor firms as more similar to financings than sales. Additional analysis shows that securitization is also associated with increased systematic risk at sponsor firms, suggesting that the rapid firm growth fueled by securitization is similar to taking on substantial additional leverage. Such results are again consistent with classifying securitizations as financings rather than sales, despite accounting and regulatory classifications to the contrary and off-balance sheet treatment.

The remainder of this paper first describes the kinds of recourse activities and bankruptcy events that have led analysts and policymakers to question the classification of securitizations as sales, rather than financings. Next, the paper shows how financings and sales differ, and why investors and regulators should therefore be concerned with

whether securitizations are sales of financings. The next section introduces out data sources and data construction, followed by empirical results. The final section summarizes and concludes.

2. Risk Transfer and Securitization

Early securitizations were limited by REMIC tax laws that maintained a strict boundary between the seller and the assets securitized. But as securitization was applied beyond Fannie Mae and Freddie Mac conforming mortgages to other assets like lease receivables, automobile loans, credit cards, and second-lien and non-conforming (subprime and Alt-A) first-lien mortgages in the early 2000s, those boundaries were relaxed significantly.

Some of the first relaxations came about in the credit card sector, which until 2004 was still the largest sector of securitizations outside of conforming mortgages. According to Higgins and Mason (2004), "…many loan sales (particularly those involving revolving collateral such as credit card loans) hinge upon an implicit understanding that recourse may be provided by the sponsor. Such understandings exist because sponsors wish to maintain their reputations for consistent credit quality over repeated sales (while still taking advantage of the ability, under a true sale, to remove the assets from the balance sheet)." (Higgins and Mason 2004, p. 858)

The 17 discrete recourse events examined by Higgins and Mason (2004) supported 10 different credit-card banks and propped up 89 domestic and three foreign securities issues with a combined value of about $35.5 billion, comprising almost 7.5% of

the $475 billion total public credit card asset-backed security domestic issuance reported on the Securities Data Corporation's New Issues Database through May 2002, the ending date of the study. All Higgins and Mason's (2004) events violate the true sale provision of GAAP and RAP, yet none of the events resulted in regulatory or accounting restatements that added loans back onto bank balance sheets as (supposedly) required under accounting and regulatory provisions.

The discreet recourse events in Higgins and Mason (2004) led analysts to question recourse practices as early as the mid-1990s. Lawrence Cohn, a Senior Vice President of Equity Research at PaineWebber, wrote that PaineWebber had already been of the opinion that:

> …securitizations are financing mechanisms rather than bona fide sales of assets… Clearly the risks of ownership have not passed to buyers of securitized paper. In theory, every securitization is supposed to stand on its own….In fact, if buyers and sellers miscalculate, the seller has always made up the difference rather than expose the buyers to risk. Thus the putative seller in fact passes on none of the risks of ownership. We don't know how long the fiction of sales treatment will last. ("Will Sales Treatment Survive a Recession?" 1997, p. 1)

The lack of risk transfer soon led to pressure for treating securitizations as financings in bankruptcy courts. On December 29, 2000, LTV Steel Corporation and its operating subsidiaries (LTV) filed for bankruptcy protection under Chapter 11 and requested the court allow LTV to use the cash generated from two of LTV's securitizations in order to stay in business. In support of its motion, LTV *itself* argued that the asset transfers in fact had been disguised financings and thus remained in its bankruptcy estate, thereby challenging the "bankruptcy remoteness" of its *own* securitizations. (Nomura 2002, p. 23)

The court issued an interim order on the same day as LTV's bankruptcy filing, granting LTV's motion for the use of cash collateral – the securitizations – and marking a later date on its calendar for a final determination of whether the asset transfers had been true sales or secured financings (Moody's 2001, p. 6). The Judge was loath to accept arguments that the securitized assets had truly been sold to the securitized pools. According to the Judge's follow-up Memorandum Opinion of February 5, 2001:

> [T]here seems to be an element of sophistry to suggest that Debtor does not retain at least an equitable interest in the property that is subject to the interim order. Debtor's business requires it to purchase, melt, mold and cast various metal products. To suggest that Debtor lacks some ownership interest in products that it creates with its own labor, as well as the proceeds to be derived from that labor, is difficult to accept. Accordingly, the Court concludes that the Debtor has at least some equitable interest in the inventory and receivables, and that this interest is sufficient to support the entry of the interim cash collateral order (Memorandum Opinion).

Even in its February 5 Opinion, however, the court did not make a determination that a true sale had or had not occurred. (Moody's 2001, p. 7) For better or worse, the controversy was settled without any judicial resolution of the issues. LTV withdrew its attack when the securitization investors agreed to supply replacement financing through another debtor-in-possession (DIP) loan. In essence, the securitization investors experienced a forced exchange of their securitization paper for DIP paper. (Nomura 2002, p. 23) Bankruptcy courts, therefore, have never ruled on the issue of true sale. Even regulators have left the issue open. In 2002, the FDIC announced only that they "may or may not" seize securitized pool assets in the event of a bank failure, which remains the policy stance today.

Without clear judicial or regulatory guidance, recourse became instituted in a more continuous fashion in the late 1990s and early 2000s. Most recently, recourse was

extended so that very little risk left sellers' balance sheets through securitization. By 2004, regulators memorialized continuous recourse in regulatory rules, explicitly moving away from requiring a transfer of a "majority" of risk to merely requiring a transfer of "some" of the risk (See, for instance, Office of the Comptroller of the Currency and Board of Governors of the Federal Reserve System 2003, p. 7). Regulatory rules allowing recourse for "operational issues," like failing to adhere to a homogenous set of underwriting standards, set the stage for the willful confounding of operational and credit risk and the present crisis when a preponderance of defaulted loans could be put back to the seller on the basis of subjectively-defined operational criteria. (See, for instance, comments from FannieMae and FreddieMac in Marra 2000 and Golding 2000)

Recourse is a continuing issue in today's market meltdown. On April 30, 2009, Advanta Corp. announced that it expects its credit card securitizations to enter early amortization despite the availability of "…tools at its disposal which the company believes will prevent early amortization if used."[4] According to Fitch, such tools could include "…charge-off sales, a yield supplement account, or receivable discounting, as seen recently at other large card issuers, [5] all of which have been identified by bank regulators as recourse events that should result in the consolidation of securitizations on-balance sheet.

Even the bankruptcy-remoteness conditions are being tested. On May 14, 2009, General Growth Properties Inc., a mall developer, filed the biggest real-estate bankruptcy in U.S. history to date and won court approval of a $400 million debtor-in-possession loan collateralized by its securitizations. Like LTV, General Growth sought (and this

[4] Advanta Corp 8-K filing, May 1, 2009.
[5] Business Wire, April 30, 2009.

time, won) court approval to use malls that it had securitized as cash collateral for a debtor-in-possession loan facility over objections from investors in the securitizations.

The investors in the securitizations argued that many of General Growth's malls shouldn't be in bankruptcy at all and the parent company shouldn't have access to those properties' cash flow. In an amicus brief filed with the U.S. Bankruptcy Court in New York on May 1, trade groups representing the commercial real-estate industry said allowing General Growth to include the special-purpose entities in its filing could set a dangerous precedent for securitization markets by calling into question the protection of the assets from other creditors – that is, calling into question true sale. As with LTV, commercial mortgage-backed securities (CMBS) market participants thereby view the court's decision as a threat to sales treatment.

The non-contractual nature of recourse means that implicit recourse is just that: implicit. There are no contractual terms dictating that recourse will be provided nor can there be, or the securitization will never be allowed off-balance sheet in the first place! Furthermore, there also remains no guarantee that collateral rights transferred via sales treatment will survive bankruptcy. In short, securitization is often a "sale" with little risk transfer away from the seller or bankruptcy-remoteness. If risk is not transferred, however, securitization is really just a disguised financing.

The rest of this paper investigates the financial economic nature of securitizations inferred from sponsor firm investor reactions to embarking upon such a strategy. The empirical evidence suggests investors in the sponsor firms view securitizations more like financings than sales, confirming the conjectural view of the lack of risk transfer and

bankruptcy-remoteness and calling into question accounting policies that maintain off-balance sheet treatment.

3. Literature Review

The classical literature on asset sales and financings is that of Lang, Poulsen, and Stulz (1995) and Kose and Ofek (1995), as well as that of Hite, Owers, and Rogers (1987). Lang, Poulsen and Stulz (1995) introduce the difference between asset sales and financings. According to Lang, Poulsen, and Stulz (1995) asset sales benefit investors because they allow the firm to obtain funds unfettered by additional investors who could attempt to jump the creditor queue in financial distress situations. Financings increase leverage more directly while exposing investors to the risk of appropriation.

The common view of securitization, therefore, is that securitization is thought to benefit firm financing costs by replacing a contractual hypothecation of assets with a complete legal sale into a bankruptcy remote structure. That way, general creditors have no possibility of seizing assets in the event of default or bankruptcy (Gorton and Souleles 2007). Securitization also lowers financing costs for the firm because the structure of securities used to finance the loans are rated based on the financial engineering rather than the underlying asset creditworthiness or the firm's own credit rating. Kose and Ofek (1995) illustrate similar benefits of asset sales in divestiture announcements. Hite, Owers, and Rogers (1987) postulate that operating asset sales promote efficiency by allocating assets to better uses. The analog to financial firms is selling assets with servicing rights attached.

Securitization is also thought to benefit firms, particularly, depository institutions, by reducing reserve and capital requirements (Rosenthal and Ocampo, 1988). Banks can also securitize long-term assets (such as mortgages), move them off-balance-sheet, and shorten the average maturity of their assets. Last, securitization enables firms to focus on activities in which they have comparative advantages such as originating, servicing, and monitoring.

Theoretical work focusing on information asymmetry reaches different conclusions. For instance, Greenbaum and Thakor (1987) introduce a model dealing with bank funding modes. Their initial assumption is that loans are funded either through emitting deposits (DFM) or selling the loans to investors (SFM). Due to asymmetric information relating to loan quality[6], SFM emerges as a superior way of resolving the borrower/investor conflict. Under DFM, depositors and banks incur screening costs which are born by the borrowers, while under SFM borrowers are permitted to partially insure their credit.[7] The choice of insurance coverage signals borrower's quality, and those of higher quality will choose higher levels of insurance because the interest on their loans will be lower. The important conclusion is that with an appropriately underpriced deposit insurance and asymmetric information, the best assets are securitized while the worst ones are funded with deposits, because banks liabilities can be transferred to the FDIC. Note that while this result is contrary to the media coverage of the credit crisis, it is largely correct.

Follow-on work by Instefjord (2005), Krahnen and Wilde (2006), Franke and Krahnen (2005), and Hansel and Krahnen (2007) shows that since banks in their models

[6] The common assumption is that borrowers posses private information not available to depositors, hence a natural conflict emerges.
[7] For instance, by purchasing a letter of credit, borrowers can lower screening costs for investors.

retain the first-loss piece of securitizations, banks retain the *expected* default losses and only sell the *unexpected* losses.

Instefjord (2005) shows how such arrangements can destabilize the banking sector because of incomplete risk transfer (in this case, from credit derivatives use). Krahnen and Wilde (2006) model the potential risk transfer from a bank's balance sheet through the use of collateralized debt obligations (CDOs), which replaced securitized residual and mezzanine debt holdings at US banks after 2002, when US banks were taxed on such arrangements with 100% capitalization of residual pieces and other remaining risky pieces of securitizations on their books. Franke and Krahnen (2005) show empirically that the lack of risk transfer corresponds with an increase in the bank's beta, while Hansel and Krahnen (2007) conclude that increase in equity beta is more significant if the issuing bank is financially weak.

Of course, incomplete risk transfer has the same economic effect as replacing a sale with a financing, as per the classical literature above, but masking the condition can disrupt market flow when the terms of the deals are unilaterally altered, such as when non-contractual recourse support is withdrawn.

4. Data

Our initial sample is all available securitization transactions from the Securities Data Corporation (SDC) database from 1970-2002. The SDC data base includes deal specific data such as issuer/entity, ultimate parent, amount being securitized, underlying asset, type of security issued, underwriter/book runner, deal ratings and issuance date. We

omit issues associated with ADRs, REITs, SBIs, and closed-end funds. We also omit issues that are classified as CDO's.

Our ultimate goal is to identify the first securitization transaction made by each unique issuing company in the SDC database. The identification of the first securitization transaction made by each unique issuer is crucial to our analysis. By identifying the first securitization transaction, we are able to isolate the market's reaction to the "new" event of securitization for each issuer, allowing us decompose whether the market is associating securitization with financing or leverage. Also examining the first securitization should allow the specific financial and market changes that take place as firms begin the securitization process to be identified. Since subsequent securitizations are likely to be continuations of the issuing firms' initial funding strategies, they are not likely to be informative.

Each transaction in the SDC database is primarily identified by its issuer. The issuer, however, is in most cases not the ultimate parent company but a bankruptcy-remote intermediate trust subsidiary created by the ultimate parent company.[8]

SDC provides information on the ultimate parent of each issuer but this information is not always complete. In some instances, the information is just missing. In other cases, the information refers to a publicly-traded parent subsidiary which must be tracked down and linked with the publicly-traded parent. In yet other instances, merger activity affects the meaningfulness of the first recorded securitization. For example, consider the takeover of First Republic Bank of Dallas by Bank of America (BOA) in 1988. If First Republic securitized for the first time following that merger, we discard the

[8] Tax law dictates that securitized assets must be doubly-sold to sufficiently remove them from the sponsor firm and achieve bankruptcy remoteness sufficient to justify off-balance sheet treatment. Despite such provisions, relevant *de facto* bankruptcy treatment is covered above.

observation since BOA, which is the ultimate parent, securitized for the first time on September 21, 1977.

Once we have identified the first securitization transaction made by each unique ultimate parent company we then check the issuing firm's data availability on CRSP and Compustat. Many of the sponsor firms in the SDC database are firms that do not trade publicly. SDC provides data fields for stock exchange of the ultimate parent, the ticker symbol of the ultimate parent, and the CUSIP of the ultimate parent. Observations that have valid entries for stock exchange and ticker are included in our data. Observations that only have CUSIP available are screened through the CRSP database to see if they have at some point in time been publicly traded. Those that are found on CRSP are included in our data. Those observations without CUSIPS, tickers, and stock exchanges are excluded from the sample.

Having identified those observations to be included in our data set, we search CRSP and Compustat for valid data for each observation. Observations that have no data available from either CRSP or Compustat on the observed first issuance date are excluded.

To ensure that we have identified the first securitization and to identify the actual announcement of the first securitization, all events in the final data set are double-checked on Factiva. We search for the earliest news story relating to securitization around the SDC issuance date for each issuing company. The date of the earliest news story is used as the announcement date for the securitization. We also search prior to the issue date for any news stories that contain words such as securitization and asset-backed to ensure that there were no prior securitizations that did not show up on the SDC data base.

We did not find any observations where there was a securitization related news story prior to the first identified issuance on SDC. If no news stories at all are found, the SDC issuance date is used as the announcement date.

Finally, we identify an issuer as a bank if its first 2-digit SIC code is 60, and discard any bank that was insolvent prior to the first securitization or failed within the time period of 1989-1995, as these transactions might be RTC related. Our final sample has 119 observations.[9]

Table 1 contains summary statistics related to our final sample. Panel A of Table 1 introduces several facts regarding our sample. A typical firm that securitizes for the first time is large, with a median market capitalization just shy of $1 billion. The Compustat mean (median) size decile of our securitizers is 8 (9), and roughly 60% of our sample belongs to either decile 9 or 10.[10]

In addition, the first transaction appears to be an economically significant event, the average deal size being 71% of firm's market value of equity (13% in terms of asset size). The descriptive statistics for our sub-samples are reported in Panels B and C of Table 1. Banks tend to be larger than non-banks in terms of asset size, yet their market capitalization is smaller. Furthermore, the average deal accounts for 93% of the banks market value of equity (7.15% of asset size), and 51% of non-banks market value of

[9] While one might think that extending the sample beyond the end of 2002 might improve the sample size, there is not much to be had by doing so. First, there are vastly fewer initial securitizations after 2002 because the industry is already well-established. Second, after 2002, firms – especially banks – began securitizing and re-securitizing residual interests in ways that are even less transparent than previously. Even is one might hypothesize there exists a structural shift in the effects of securitization after 2002, there are too few observations upon which to estimate meaningful results and the investigation lies beyond the scope of the present topic.

[10] Size deciles are based on Compustat firms that report market value of equity one year prior to the transaction, where decile 10 is the largest and decile 1 the smallest.

equity (18% of asset size). In general, the sample's descriptive statistics support the view that securitization is associated with large firms that securitize substantial amounts.

The deal distribution by industry is presented in Panel D of Table 1. Depository institutions are by far the most frequent first-time securitizers, accounting for over 46% of the sample. Non-depository credit institutions, those that engage in extending credit in the form of loans but do not offer deposit banking, are the second most frequent securitizers (10%), with utilities such as electric and gas being third (8%).

5. Empirical Evidence on the Effects of Securitization

5.1. Short term market reaction

To investigate the short term effect of securitization, we conduct an event study around the date on which firms announce their first transaction. The market model is used to estimate market model parameters for an event window of (-1, 1), with the CRSP value-weighted return as the market return. The estimation period runs for 200 days, and ends 11 days before the announcement. We use Factiva to make sure that there are no confounding events during the time of the announcement. From Table 2 we observe that the market reaction for the full sample is negative, but not statistically significant.[11] Banks that securitize for the first time, however, experience on average a statistically significant decrease in shareholder's wealth of 0.75% over the period (-1, 1).[12] The short

[11] The sample size for the event study is larger (145) because we include all observations with available data on CRSP. However, in subsequent analyses we only include observations with data on CRSP and Compustat hence the sample size is smaller (118).
[12] Similar results were obtained with a (0, 1) event window.

run market reaction is stronger if we consider the 54 banks with data availability on both CRSP and Compustat. For the average bank in the sample, the negative reaction of 0.88% (t=-2.07) decreases the market value of equity by almost $14 million over the three-day period.[13]

5.2. Matching-sample selection

To facilitate the long term market and operating performance analyses, we compare the performance of our securitizers with that of matched non-securitizers, starting one year before and ending three years after the event (-1, +3). Since banks are inherently different from non-banks, we perform a separate matching procedure for each group. For the banking group, we match on industry, asset size, and performance, namely return on equity. We obtain similar results when we use ROA or market-to-book value of equity (MBE) instead of ROE. From the Compustat universe of depository institutions (SIC code 60), we choose the peer with the closest sum of absolute percentage differences in size and ROE. For our non-bank securitizers, we use all the firms on Compustat that are not depository institutions as potential matches. We follow a similar procedure as Billet et al (2006). We identify all peers that trade on the same venue (NYSE/AMEX vs. NASDAQ) as our issuers, and whose market value of equity falls

[13] While the documented results of a negative market reaction to the banks' announcement of securitization is comparable to Lockwood et al. (1996), their sample's time period of 1985-1992 is largely dominated by RTC transactions that they do not exclude from their data set (see Thomas 1999 for related criticism) and their sample includes repeat securitizations, making it difficult to test for any meaningful impact of securitization. As noted above, our sample covers a more exhaustive period, 1970-2002, we drop any banks that might have been forced to securitize due to RTC resolution, and we consider only the first act securitization.

within 10% of the issuer's (at year-end prior to the transaction)[14]. Finally, we choose the peer with the closest sum of absolute percentage differences in size and book-to-market value of equity. In addition to identifying a peer matched sample, we also construct an industry (2-digit SIC code) adjusted sample in which securitizers are excluded from their respective industry starting one year prior to securitization.

For both procedures, our peers are matched in the fiscal year before the transaction (i.e. year -1). We require any peer to show up in our matched sample only once, and that the peer did not securitize for up to three years following the matching. If a non-issuer is delisted from Compustat while the securitizer is still trading, the second-best nonissuing firm is added in on a point-forward basis. If the second peer is delisted, we continue with the third closest match, and so on. However, if the securitizer is delisted during any of the three years following the transaction, we terminate the performance adjusted computation during that year.

5.3. Long term market reaction

In order to investigate the long term market impact of securitization, we calculate the buy-and-hold return (BHR) for our first-time securitizers and their matched peers as

$$BHR_i = \left(\prod_{t=1}^{T_i}(1+R_{it})-1\right)\times 100\%,$$

where R_{it} is the *i*th firm's return on the *t*th day, and T_i is the number of trading days in the period following securitization. Once the BHR is calculated, we evaluate the difference between the two such that

[14] Barber and Lyon (1997) find that substantial size differences between the event firm and its matched peer would cause both to differ significantly in their equity performance. Hence we limit our size match to 10% or better.

$$DBHR_i = BHR_i^{Securitizer} - BHR_i^{Peer}$$

Table 3 presents the peer-adjusted BHR[15] results. The full sample's mean (-28.52%) and median (-9.42%) two-year DBHR are significantly negative, with 95% confidence. The underperformance, which is mainly driven by non-bank securitizers, persists to a lesser degree during the third year as well.

5.4. Long term operating performance

Next, we compare securitizers with non-securitizers in terms of ROA, equity to total assets (EQ/TA), equity to managed assets[16] (EQ/MA), ROE, and MBE. We construct the ratio of equity to managed assets (Equity/MA) and follow it for three years (-1, +1). If the transaction took place before June 30th, we define MA_0 as total assets in year 0 plus the securitization proceeds. Similarly, we define MA_1 as total assets in year 1 plus proceeds. If on the other hand the transaction took place after June 30th, MA_0 equals total assets, and MA_1 equals total assets plus proceeds. Under both scenarios, MA_{-1} equals total asset in that year. The MA calculation is a conservative estimation since any issuer is likely to continue securitizing following the first event, and as a result have a higher amount of managed assets after year 1.

Table 4A reports the median peer-adjusted performance measures (securitizer's performance minus peer's). Overall securitizers perform poorly before and after the transaction, mainly due to the underperformance of non-banks. In Table 4B we report an

[15] There are 118 observations in the event study because one of the banks, American Continental Corp, did not trade on an exchange at the time it securitized.

[16] Managed assets include both on- and off-balance sheet assets.

industry-adjusted operating performance measure.[17] We subtract the industry's median from the securitizer's ratio in order to obtain the industry-adjusted measure. The results for the full sample are similar to those presented in table 4B, yet this time the underperformance is attributed to banks. Their Equity/TA and Equity/MA are significantly lower then the industry's median before, during, and after the transaction. While banks tend to have a superior ROE in the year leading to the event, it deteriorates thereafter. Finally, MBE provides some evidence on the level of financial distress that banks experience. In the two years leading to the first securitization, banks outperform their industry. However, in the two years following the event, signs of distress appear as the ratio of MBE deteriorates, before it improves back again in the third year following the event.

5.5. Securitization and risk

Up to this point, we have established that the initiation of securitization is associated with a negative market reaction along with poor long-term stock and operating performance. This section investigates the impact of securitization on the issuer's level of risk. To this end, we compute three measures of firm risk as suggested by Anderson and Fraser (2000), and test whether they are significantly different following the transaction. We estimate each measure for a period of one year before and one year after the event, without including the 10-days surrounding the event. We define total risk as the standard deviation of the firm's daily stock returns. Firm specific risk is measured as the standard

[17] Cornett, Ors, and Teharanian (2002) examine industry-adjusted operating performance of BHC that established a Section 20 subsidiary to conduct investment banking activities. We include a similar industry-adjusted measure for comparison.

deviation of the residuals from the market model for each firm. Finally, systematic risk is the difference between firm's total and specific risk. It measures the influence of underlying economic and financial conditions that affect all firms. Specifically, our risk measures are obtained as follows:

$$Total\ Risk = \sqrt{\frac{1}{n}\sum (x_i - x)^2} = \sigma \qquad (1)$$

where x_i is the securitizer's daily return and x is the expected market return. Following from (1),

$$Firm\ specific\ risk = \sqrt{\frac{1}{n}\sum (\varepsilon_i - \varepsilon)^2} = \varepsilon \qquad (2)$$

where ε's are the residuals of the single-index market model, constructed using the CRSP equally-weighted returns so that:

$$R_i = \alpha_i + \beta_i (R_m) + \varepsilon_i$$

Firm systematic risk = Total risk – Firm specific risk (3)

The systematic risk, however, still needs to take account of leverage. While securitizing firms' accounting (on-balance sheet) leverage may not change (or may decline), the securitizing firm's *implicit* leverage (as measured by total assets under management) increased. In order to obtain implicit leverage, we utilize the Hamada (1969) equation such that

$$\beta_L = \beta_U + \frac{D}{E}(\beta_U - \beta_D)(1 - T) \qquad (4)$$

First we use the standard market model to estimate β prior to securitization for a period of one year, without including the 10-days prior to the event. This is essentially an estimation of the levered beta, or $\beta_{L,prior}$. Next, we obtain the unlevered beta, or β_U, from

equation (4) by using the estimated $\beta_{L,prior}$, the book value of debt-to-equity, and the appropriate corporate income tax bracket (T). We assume debt is risk-less. Finally, we use the market model to estimate the one-year post-event $\beta_{L,post}$. We use equation (4) and the information on $\beta_{L,post}$, β_U and T to calculate the implied D/E ratio after securitization and compare it to the accounting D/E ratio. An implied D/E ratio higher than the accounting D/E ratio indicates that the increase in systematic risk is due to implicit leverage rather than other factors.

From panel A of Table 5 we observe that for all securitizers there is a significant increase in all three risk measures following the first securitization. The mean (median) increase in firm's total risk is roughly 20% (7%), while the increase in systemic risk is more pronounced at about 35% (20%). The changes are highly significant in both the mean and median levels. The increase in systematic risk is even more profound for our banks sample. For the median bank that securitizes for the first time, systematic risk goes up by 66%, an increase that is highly significant at the 1% level. As an alternative measure of a change in systematic risk, we calculate the pre- and post- transaction beta for our securitizers using a standard market model, and test for the significance of the difference. The results for banks indicate that there is a significant increase in systematic risk, as proxied by the increase in their beta. Finally, non-banks exhibit a significant increase in total risk of 17% (6%), driven by an average increase in firm specific risk of 16%, yet neither their systematic risk nor their beta changes significantly.

If the documented increase in banks' systematic risk is due to securitization, then a natural prediction would be that systematic risk should remain unchanged for banks that do not securitize. To test this prediction, we perform similar analysis on our matched

non-securitizers. From panel B of Table 5 we learn that none of those risk measures changes during that time period.

While the first part of Table 5 introduces the differences in performance measures within each group, the second part introduces the differences between securitizers and non-securitizers before and after the event. Overall, panel C illustrates that pre-event securitizers are not riskier than non-securitizers. However, after securitization there are big differences between the two. Following the event, we observe in panel D that securitizers exhibit a significant increase across all risk measures as compared with non-securitizers. Specifically, systematic risk is higher for banks that securitize, whereas both systematic and firm specific risks are higher for non-banks that securitize, as compared with non-banks that do not securitize.

The conclusion from Table 5 is that first-time securitizers, specifically banks, experience a significant increase in systematic risk after securitization. Table 6 relates that finding with implicit leverage. By using the Hamada equation, we show that implicit leverage is higher than accounting leverage for securitizing firms. Banks have the most dramatic difference, with implicit D/E ratios higher than accounting D/E ratios by an average of 20%. Hence we can conclude that the increase in systematic risk for banks is driven by an increase in implicit leverage. Hence, securitization is more like a financing than a sale.

6. Multivariate Analysis

So far results have indicated that securitization has a negative impact on first time securitizers. Banks experience negative market reaction, perform poorly relative to their industry, and suffer from a significant increase in total and systematic risk. Non-banks underperform in terms of long-term BHR and peer-adjusted measures, and experience an increase in firm specific risk. One question that comes into mind is whether any firm or deal characteristics can explain the above results. To that end, we use a multivariate setting to investigate any residual relationships.

6.1. Sample selection bias

A firm's decision on whether to securitize may not be random. Sample selectivity bias can cause the error terms in a given model to be correlated, thus biasing the estimated parameters. We implement Heckman's (1979) two-stage procedure to overcome self-selection bias created by a firm's choice to securitize, by incorporating the securitization decision in to the econometric estimation. In the first stage the decision to securitize is estimated using a probit model. In the second stage we control for self selection by including the inverse Mill's ratio, obtained from the probit model. The potential securitization determinants that we control for are firm type (dummy=1 if bank), the ratio of equity/assets, an interaction term bank*(equity/assets), the three year pre-transaction (t-3 to t-1) average growth rate in assets, an interaction term bank*(Growth rate), and year dummies.

Banks are more likely to securitize because it allows them to meet regulatory requirements (Rosenthal and Ocampo, 1988), reduce interest rate risk, and focus on activities in which they have a comparative advantage. Firm size is expected to be positively correlated with securitization as well. Given the large fixed costs associated with each transaction, larger firms are more likely to afford them. The growth rate in assets is also expected to be positively correlated with securitization. Banks are required to maintain an adequate capital ratio. Since capital is expensive, banks that experience growth in assets are more likely to move them off-balance-sheet through securitization (Calomiris and Mason, 2004). The positive relation is also expected to hold for non-banks. The reason is that through securitization, non banks can diversify their asset funding sources, and obtain funds cheaper than through straight debt or stock issuance.

The equity/assets ratio is expected to be inversely related with the decision to securitize. Poorly capitalized banks are likely to securitize so that they can meet regulatory capital requirements. The negative relation should hold for non-banks as well, as equity/assets can proxy for excessive risk taking. According to Hill (1996), securitization should be more valuable for riskier companies, for which other sources of funds are more expansive.

We combine each first-time securitizer with all public firms in its respective industry (2-digit SIC code) in year t-1, and report the first-stage probit estimations on the decision to securitize in Table 7 for the full and sub-samples (banks and non-banks). Size is the most prominent variable affecting the first-time decision to securitize. Furthermore, the growth rate in assets is a significant determinant for banks. The bank dummy variable

is negative but insignificant, while the capital ratio has the expected negative signs, but it is not a significant determinant of securitization initiation

6.2. OLS estimation

In the second stage we use OLS estimation to investigate the relation between the documented poor performance and any firm or deal characteristics. At the same time, we control for selection bias by including the inverse Mill's ratio obtained in the first-stage probit model. The firm characteristics that we control for are firm type (bank or non-bank), the ratio of equity to total assets, the three-year average growth rate in assets, and firm size. We include the interaction term bank*(equity/assets) to control for the possibility that well capitalized banks perform better than others.

The deal characteristics that we control for are deal size, underwriter's rank, deal's rating, and the type of underlying asset. We use the natural log of the deal's proceeds to control for deal size. Other measures such as proceeds scaled by assets or proceeds scaled by market value of equity yield similar results. We employ a dummy variable, prestigious underwriter, which controls for underwriter reputation. It takes the value of 1 if the underwriter's rank is equal to or greater than the sample's median.[18] We use a dummy variable to control for the securitization's highest rated bond by either S&P or Moody's, which equals 1 for a triple-A rated senior tranche.[19] Finally, the mortgage-

[18] We use Jay Ritter's updated IPO underwriter reputation available on his website at http://bear.cba.ufl.edu/ritter .

[19] Converting credit rating by S&P (Moody's) into a numerical number such that AAA (Aaa) corresponds to a value of 23, AA+ (Aa1) is equal to 22, etc. and an unrated deal (NR) has a value of 1 does not change the results. We prefer the dummy indicator over the numerical specification because there is little rating variation. Almost 85% of our sample senior tranches are AAA rated.

related dummy controls for the type of transaction, specifically, if it relates to CMO, mortgage backed bond, or mortgage backed note.

The first set of regressions presented in table 8 relates stock performance with the various firm and deal characteristics. Similarly to the univariate analysis, banks experience a negative three-day CAR to their first securitization announcement. The bank coefficient of -0.064 is significant at the 1% level. However, the positive coefficient on the interaction term bank*(equity/assets) of 0.518 (t = 2.22), suggests that investors are aware of a bank's ability to engage in excessive risk taking, as the market reaction to the announcement by a well capitalized banks is more favorable. Furthermore, favorable market reactions are also associated with banks that exhibit higher growth rates (t=2.80), indicating the importance of capital relief for those banks.

There is also evidence that capital plays a significant role in the long-term stock performance of first-time securitizers, as observed in the 3 year peer-adjusted BHR results. Specifically, the coefficient on the bank*(equity/assets) term of 13.34 is significant at the 5% level (t=2.36). The coefficient's economic significance indicates that a one standard deviation increase in the capital ratio of first-time securitizing banks is associated with a 28% improvement in their long-term stock performance, relative to similar banks that do not securitize[20]. It is interesting to note that the initial decision to securitize is negatively related to the 3-year peer adjusted BHR and the self-selection indicator, lambda, is negative and marginally significant at the 10% level. Finally, the 3-year average post transaction industry adjusted market-to-book value of equity (MBE) is significantly lower for banks, but higher for well-capitalized banks.

[20] The standard deviation for our bank sample equity/assets is 0.021. Thus, the effect of a one standard deviation change in equity/assets ratio on the peer-adjusted BHR is 13.34*0.021=0.2803.

From the full sample regressions, it is obvious that the stock performance of banks differs significantly from that of non-banks. To better understand those differences, we run the same regressions on these sub-samples and report the results in panel B of table 8[21]. Under this setup, the capital ratio for banks is directly related to stock performance. A one standard deviation increase in that ratio is associated with a 1.20% increase in the three-day CAR. Given that the average market capitalization of our bank sample is $1.55 billion, this translates into an $18.6 million three-day announcement gain. The 3-year peer-adjusted BHR is significantly stronger for well capitalized banks, but higher-rated securitizations hurt long-term performance. The coefficients on both the Aaa deal rating and prestigious underwriter dummies are significantly negative at the 5% level. The rating dummy suggests that sponsor performance deteriorates with greater credit enhancement. The significance on the prestigious underwriter dummy can be explained similarly, as prestigious underwriters are likely to be involved with transactions with greater credit enhancements. Finally, the long-term industry adjusted MBE is significantly higher for well capitalized banks.[22]

In Table 9 we investigate the implication of securitization on risk. Post event beta is higher for banks, overall, but lower for well capitalized banks yet neither coefficient is statistically significant. Surprisingly though, the decision to securitize is associated with a lower beta (lambda = -0.531, t=-3.72). The sub-sample settings in panel B reveals that beta is marginally lower for well capitalized banks (t=-1.95). For non-banks, the growth rate is positively correlated with beta. For either sub-sample, lambda has no effect on

[21] For panel B in both tables 8 and 9 we use the self-selection indicator (lambda) that was estimated using the sub-samples in table 7.

[22] Using the peer-adjusted MBE instead of the industry adjusted ratio provides similar results regarding the importance of the capital ratio.

beta. Total risk, as measured by the standard deviation of daily stock returns for a period of one year following the event, is lower for well capitalized banks, with a highly significant coefficient of -0.244. Similarly, the systematic risk measure of implied D/E ratio (obtained from the Hamada equation) is inversely related to the equity/assets ratio. Finally, securitization significantly increases a bank's total risk and implied D/E ratio, as lambda is positive and significant at the 5% level.

7. Summary and Conclusion

The empirical work above analyzes investor reactions to firms' first securitization announcements, postulating that those first announcements are accompanied by investor reactions and changes to firm operating results that are not present in follow-on securitizations. The negative short-term equity returns and negative long-term operating performance following the beginning of securitization constitute classic evidence suggesting that securitizations are more similar to financings than asset sales.

Additional analysis shows that securitization is also associated with increased systematic risk, suggesting that the rapid growth fueled by securitization is similar to taking on substantial additional leverage. The results are strongest for banks, suggesting that regulatory capital arbitrage may create the incentive for greater leverage, and therefore greater increases in risk. Again, such results suggest for banks and non-banks alike, securitization is more akin to a financing than a sale.

The findings have implications for accounting and regulatory recognition of securitizations. While it is easy to argue that securitizations are not true asset sales, it is

more difficult to argue how they should be correctly accounted for on firm balance sheets. If expected loss remains on balance sheet through residual interests, firm capital should not be reduced significantly compared to on-balance sheet treatment.

On the other hand, if firms can justify some risk transfer, i.e., of unexpected loss, they should be awarded capital relief by investors and regulators alike. In that respect, proposed FASB policy of full on-balance sheet treatment goes too far. Nonetheless, the ability to analyze the subject further – for both investors and academics – is hampered by the dogmatic philosophy of dichotomously characterizing securitizations as *either* a true sale or a financing, where the "true sale" characterization relieves the issuing firm of *any* responsibility for reporting managed (securitized) assets. Simple reporting requirements, therefore, would go a long way toward furthering our understanding of the importance of securitization. Hence, there remains much work to be done to understand better the meaning of securitization in today's marketplace and the proper role for reporting and regulatory action in the future.

TABLE 1
Descriptive Statistics and Deal Distribution by Industry

Sample includes 119 first securitization events, as identified by SDC, between 1977 and 2002. Banks are firms with an SIC code that starts with 60. Non-banks are all the others. All variables are from the fiscal year prior to the transaction (i.e. year -1). Firm size (in total assets), market cap (market value of equity), and SEC size (transaction's principal) are CPI adjusted with 1998 as the base year.

	Mean	Median	Min	MAX	STD	N
Panel A: Full sample						
Assets ($ millions)	13,679	5,708	20.76	103,786	17,917	119
Market cap ($ million)	3,330	979	5.39	92,399	9,744	119
SEC size ($ millions)	262	135	1.43	2,357	359	119
SEC/assets	12.94%	2.75%	0.03%	230%	30.12%	119
SEC/Market cap	71.04%	24.00%	0.29%	1,523%	194%	119
B/M equity	0.85	0.72	0.19	4.33	0.54	119
Panel B: Banks						
Assets ($ millions)	16,016	12,470	106	54843	15.631	55
Market cap ($ million)	1,553	906	5.39	7,692	1,910	55
SEC size ($ millions)	214	157	1.43	948	206	55
SEC/assets	7.15%	1.81%	0.03%	230%	31.13%	55
SEC/Market cap	93.45%	28.00%	0.29%	1,523%	268%	55
B/M equity	1.00	0.80	0.19	4.33	0.67	55
Panel C: Non-banks						
Assets ($ millions)	11,670	2,622	20.76	103,786	19,570	64
Market cap ($ million)	4,857	1,113	10.50	92,399	13,022	64
SEC size ($ millions)	303	124	1.82	2,357	450	64
SEC/assets	17.91%	7.34%	0.06%	163%	28.54%	64
SEC/Market cap	51.01%	22.00%	0.36%	529%	89.81%	64
B/M equity	0.72	0.64	0.19	2.08	0.38	64

Table 1 continued

Panel D: Deal distribution by industry

	SIC code	Frequency	%
Depository institutions	60	55	46.22
Non depository credit institutions	61	12	10.08
Electric and gas	49	9	7.56
Insurance carriers	63	6	5.04
Building construction	15	5	4.20
Transportation equipment	37	5	4.20
Security and commodity brokers	62	5	4.20
Business services	73	4	3.36
General merchandise stores	53	3	2.52
Other	-	15	12.60
Total		119	100

TABLE 2
Short Run Market Reaction to the First Act of Securitization

The market model is used to estimate market model parameters using daily stock returns with a 200-day estimation period ending 11 days before the announcement date. Market returns are proxied by the CRSP value-weighted returns. Cumulative abnormal returns are estimated over a 3 day period (-1, +1). Sub-samples are based on 2 digit SIC codes (60 for banks). T-statistics based on the standardized cross-sectional test statistics. Percent negative significance based on sign-statistics.*, **, *** indicates significance at 1%, 5%, and 10% levels respectively.

	Sample Size	Mean CAR (-1, +1)	T-test	Percent Negative
Panel A: securitizers with CRSP data				
Full Sample	145	-0.55%	-1.25	58*
Banks	65	-0.75%	-1.70	65**
Non Banks	80	-0.40%	-0.39	52
Panel B: securitizers with CRSP and Compustat data				
Full Sample	118	-0.48%	-1.09	59*
Banks	54	-0.88%	-2.07**	65**
Non Banks	64	-0.16%	0.09	54

TABLE 3

Peer-Adjusted Buy-and-Hold Return Following the First Securitization

This table reports the buy-and-hold return (BHR) difference between securitizers and their matched non-securitizers (peers). Banks are firms with an SIC code that starts with 60. Non-banks are all the others. Bank peers are chosen based on industry, size, and ROE. Non-bank peers are chosen on the basis of exchange, size, and B/M equity. Sample size reported in parentheses. Indications of significance of medians are based on Wilcoxon singed-rank tests. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively.

		1 Year Peer Adjusted BHR	2 Year Peer Adjusted BHR	3 Year Peer Adjusted BHR
Full Sample (118)	Mean	-9.66%*	-28.62%***	-26.35%*
	Median	-7.88%**	-9.42%**	-6.33%*
Banks (54)	Mean	-6.98%	-18.71%*	-23.28%*
	Median	-4.48%	-3.17%	-18.76%
Non Banks (64)	Mean	-11.78%	-37.00%**	-37.28%
	Median	-12.96%	-18.65%*	-10.73%**

TABLE 4A
Median Peer-Adjusted Measures

The table reports the median of peer-adjusted variables (sample firm minus peer firm values). Bank peers are chosen based on industry, asset size, and ROE. Non bank peers are chosen on the basis of exchange, size and B/M equity. The Compustat data items for the variables are: ROA is net income/assets (item172 / item6), Equity/TA is book value of equity to assets (item60 / item6), ROE is net income/equity (item172 / item60), MBE is market-to-book value of equity. Managed assets (MA) in year -1 equal TA_{-1} (i.e. TA in year -1). If the event is before 6/30, then $MA_0 = (TA_0 + \text{proceeds})$, and $MA_1 = (TA_1 + \text{proceeds})$. If the event is after 6/30, $MA_0 = TA_0$, and $MA_1 = (TA_1 + \text{proceeds})$. Year -1 values are from the fiscal year-end prior to the transaction, while year 0 represents year-end values of the transaction year. Indications of significance of medians are based on Wilcoxon singed-rank tests. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively

Year	N	ROA	Equity/TA	Equity/MA	ROE	MBE
Panel A: Full sample securitizers						
-1	118	-0.0002	-0.0070***	-0.0070***	0.0053	-0.0011
0	118	-0.0015*	-0.0177***	-0.0229***	0.0022	-0.0741
+1	108	-0.0020**	-0.0179***	-0.0235***	-0.0066	0.0019
+2	106	-0.0034***	-0.0191***	N/A	-0.0048	-0.1381
+3	102	-0.0032**	-0.0162***	N/A	0.0032	-0.0551
Panel B: Banks that securitize						
-1	54	0.0004	-0.0014	-0.0014	0.0061***	0.0533
0	54	0.0000	-0.0018	-0.0018	0.0046	-0.0023
+1	50	0.0004	0.0001	-0.0015	-0.0009	0.0976
+2	48	0.0008	-0.0019	N/A	0.0033	-0.0935
+3	48	-0.0008	-0.0010	N/A	0.0016	-0.0577
Panel C: Non banks that securitize						
-1	64	-0.0146*	-0.0889***	-0.0889***	0.0023	-0.0069
0	64	-0.0160**	-0.1242***	-0.1426***	-0.0107	-0.1408**
+1	58	-0.0204**	-0.1535***	-0.1660***	-0.0313*	-0.3188**
+2	58	-0.0343***	-0.1532***	N/A	-0.0090	-0.1715
+3	54	0.0134*	-0.1465***	N/A	0.0043	-0.0551

TABLE 4B
Median Industry-Adjusted Measures

The table reports the median of industry-adjusted variables (sample firm minus industry median). Industries are defined according to 2-digit SIC code. Banks are firms whose SIC code starts with 60. Securitizers are excluded from the industry starting one year before the transaction. The Compustat data items for the variables are: ROA is net income/assets (item172 / item6), Equity/TA is book value of equity to assets (item60 / item6), ROE is net income/equity (item172 / item60), MBE is market-to-book value of equity. Managed assets (MA) in year -1 equal TA_{-1} (i.e. TA in year -1). If the event is before 6/30, then $MA_0 = (TA_0 + \text{proceeds})$, and $MA_1 = (TA_1 + \text{proceeds})$. If the event is after 6/30, $MA_0 = TA_0$, and $MA_1 = (TA_1 + \text{proceeds})$. Year -1 values are from the fiscal year-end prior to the transaction, while year 0 represents year-end values of the transaction year. Indications of significance of medians are based on Wilcoxon singed-rank tests. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively

Year	N	ROA	Equity/TA	Equity/MA	ROE	MBE
Panel A: Full sample securitizers						
-1	118	0.0003	-0.0096**	-0.0096**	0.0127***	0.1131***
0	118	-0.0000	-0.0056***	-0.0057***	0.0256	0.0370*
+1	108	-0.0000	-0.0100***	-0.0118***	0.0084	0.0222
+2	106	-0.0011**	-0.0178***	N/A	0.0094	-0.0049
+3	102	-0.0007	-0.0163***	N/A	0.0060	0.0386
Panel B: Banks that securitize						
-1	54	0.0006	-0.0065***	-0.0065***	0.0170***	0.1225**
0	54	0.0000	-0.0060***	-0.0060***	0.0281	0.0717**
+1	50	0.0000	-0.0103***	-0.0119***	0.0121	0.0414*
+2	48	0.0002	-0.0121***	N/A	0.0127	0.0973*
+3	48	-0.0004	-0.0117***	N/A	0.0272	0.1962**
Panel C: Non banks that securitize						
-1	64	-0.0010	-0.0134	-0.0134	0.0006	0.0747*
0	64	-0.0019	-0.0173	-0.0411**	0.0007	0.0185
+1	58	-0.0045	-0.0644**	-0.0734***	-0.0055	-0.1038
+2	58	-0.0049*	-0.0520**	N/A	-0.0040	-0.1415
+3	54	-0.0030	-0.0573*	N/A	-0.0046	-0.1109

TABLE 5
The Impact of Securitization on Firm Risk

The table reports the mean [median] of various risk measures and their associated change within a year before and after the first act of securitization, not including the 10 days surrounding the event. Non securitizers are from the matched sample, in which banks are matched on industry, asset size, and ROE, whereas non banks are matched on exchange, size and BM equity. Banks are firms with a two digit SIC code of 60. Non banks are all the others. Total risk is the standard deviation of daily returns expressed as percent for each firm taken from CRSP. Systematic risk is the difference between total risk and firm specific risk. Firm specific risk is the standard deviation of the residual from the market model regression for each firm. Banks are firms whose SIC code starts with 60. Tests statistics for the differences are based on t-statistics for means and the Wilcoxon signed-rank test for medians. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively

	Full Sample (118)			Banks (54)			Non Banks (64)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
Panel A: Risk measures for securitizers									
Total risk	2.19	2.61	0.41***	1.94	2.36	0.41**	2.40	2.82	0.41**
	[2.10]	[2.19]	0.15***	[1.72]	[2.06]	0.17**	[2.35]	[2.41]	0.15*
Systematic	0.14	0.20	0.05**	0.13	0.19	0.05*	0.14	0.20	0.06*
	[0.10]	[0.12]	0.02**	[0.09]	[0.14]	0.06***	[0.12]	[0.12]	0.00
Beta	1.20	1.32	0.12**	1.16	1.29	0.12**	1.24	1.36	0.12
	[1.21]	[1.32]	0.15**	[1.05]	[1.29]	0.12**	[1.27]	[1.35]	0.15
Firm specific	2.05	2.41	0.35***	1.80	2.17	0.36*	2.26	2.61	0.35**
	[1.91]	[2.02]	0.11**	[1.60]	[1.88]	0.10*	[2.14]	[2.21]	0.13*

Table 5 – continued

	Full Sample (118)			Banks (54)			Non Banks (64)		
	Pre	Post	Δ	Pre	Post	Δ	Pre	Post	Δ
Panel B: Risk measures for non securitizers									
Total risk	2.16	2.19	0.03	1.89	1.94	0.05	2.37	2.39	0.02
	[1.91]	[1.97]	[0.04]	[1.62]	[1.77]	0.15	[2.19]	[2.06]	-0.01
Systematic	0.13	0.14	0.01	0.13	0.15	0.02	0.14	0.14	0.00
	[0.09]	[0.09]	[0.02]	[0.09]	[0.10]	0.03*	[0.09]	[0.07]	-0.00
Beta	1.04	0.99	-0.05	1.00	0.97	-0.03	1.06	1.00	-0.06
	1.05	0.97	[0.00]	[1.00]	[0.88]	-0.13	[1.07]	[1.01]	0.04
Firm specific	2.02	2.04	0.02	1.76	1.79	0.03	2.23	2.24	0.01
	[1.81]	[1.78]	[0.02]	[1.53]	[1.67]	0.09	[2.03]	[1.95]	-0.01

Table 5 – continued

	Full Sample (118)	Banks (54)	Non Banks (64)
Panel C: Differences in *pre* transaction risk measures (Securitizer-Nonsecuritizer)			
Total risk	0.04 [0.12]	0.06 [0.12]	0.03 [0.11]
Systematic	0.01 [0.01]	0.01 [0.00]	0.00 [0.02]
Beta	0.17** [0.13]**	0.16* [0.03]	0.17 [0.25]
Firm specific	0.03 [0.09]	0.04 [0.13]	0.04 [0.04]
Panel D: Differences in *post* transaction risk measures (Securitizer-Nonsecuritizer)			
Total risk	0.39*** [0.26]***	0.38* [0.31]**	0.43** [0.23]***
Systematic	0.06*** [0.04]***	0.04*** [0.04]***	0.04* [0.04]***
Beta	0.32*** [0.26]***	0.30*** [0.20]***	0.35*** [0.34]***
Firm specific	0.33*** [0.23]***	0.35* [0.26]*	0.38** [0.18]***

TABLE 6

Comparison of Post Transaction Implied and Actual Debt-to-Equity Ratios

The table reports the mean [median] of the difference between the post transaction implied D/E ratio and the actual D/E ratio. The implied D/E is obtained from the Hamada equation. The Actual D/E ratio is from the year end of the securitization year. N reported in parentheses. Banks are firms with a two digit SIC code of 60. Non banks are all the others. Tests statistics for differences are based on t-statistics for means and the Wilcoxon signed-rank test for medians. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively

Implied Debt/Equity	Actual Debt/Equity	Difference
Full Sample (118)		
20.62	13.10	7.51**
[12.74]	[10.04]	1.14***
Banks (54)		
24.75	19.67	5.08**
[17.24]	[15.08]	2.50***
Non Banks (64)		
17.13	7.56	9.57
[3.41]	[3.16]	0.50*

TABLE 7
Probit Estimation of a Firm's Decision to Securitize

The table reports coefficients from a probit model of the decision to securitize (dummy = 1), using a sample period of 1977-2002, which includes a total of 118 securitizers. Non-securitizers are all public firms within the same industry (2-digit SIC). Banks are firms with a two digit SIC code of 60. Growth in assets is the 3 year pre-securitization average (t-3 to t-1). Equity-to-assets is defined as book value of equity to total assets (item60 / item6). All variables are from the year end prior to the event (i.e. year t-1). Z-statistics reported in parentheses. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively.

	Expected sign	Full sample	Banks	Non-banks
Ln(assets)	+	0.260*** (9.61)	0.3000*** (5.44)	0.249*** (7.73)
Growth in assets	+	0.020 (1.03)	1.022** (2.13)	0.019 (1.01)
Equity / assets	-	-0.043 (-0.16)	-0.018 (-0.01)	-0.079 (-0.58)
Bank	+	-0.128 (-0.44)		
Bank*(equity/assets)	+/-	-2.853 (-0.81)		
Bank*(Growth in assets)	+	0.904** (2.15)		
Intercept		-2.290*** (-4.56)	-4.232*** (-5.13)	-2.263*** (-2.86)
Year Dummies		Yes	Yes	Yes
LR Chi squared		219.48***	128.47***	112.39***
Pseudo R^2		0.2043	0.2919	0.1890
N		4,174	1,690	2,484

TABLE 8
Regressions of Stock Performance on Firm and Deal Characteristics

The market model is used to estimate market model parameters using daily stock returns with a 200-day estimation period ending 11 days before the announcement date. Market returns are proxied by the CRSP value-weighted returns. Cumulative abnormal returns are estimated over a 3 day period. Peer-adjusted variables represent the difference between issuer and its matched non-issuer's. Bank peers are chosen based on industry, asset size, and ROE. Non-bank peers are chosen based exchange (NYSE/AMEX vs. NASDAQ), size (MVE) and B/M equity. Banks are firms with SIC code 60. Non-banks are all the others. MBE_{POST} is the 3 year post event average (t+1 to t+3) market-to-book value of equity. Equity/TA and assets are from year-end prior to the event. Asset growth rate is the pre-event 3 year average. Prestigious underwriter = 1 if the underwriter's rank is 9 or higher (the sample's median). Deal rating dummy =1 if the senior tranche is Aaa rated by either Moody's or S&P. Mortgage Related = 1 if the transaction is either CMO, mortgage backed note, or mortgage backed bond. Lambda is the inverse Mills ratio, obtained from a first-stage probit estimation in which the selection variable is 1 if a firm chooses to securitize. The probit's independent variables are from table 7. T-statistics based on robust standard errors are in parentheses. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively.

	CAR (-1, +1)	3 Year Peer Adj. BHR	Industry Adj. MBE_{POST}
Bank	-0.064***	-0.306	-1.238***
	(-3.03)	(-0.49)	(-2.65)
Equity/TA	-0.058	0.815	0.348
	(-1.13)	(0.63)	(0.39)
Bank*(equity/assets)	0.518**	13.348**	23.68***
	(2.22)	(2.36)	(3.51)
Growth in Assets	-0.002	1.181	-0.054
	(-0.25)	(1.41)	(-0.27)
Bank*(Growth in Assets)	0.084***	-1.953	-0.603
	(2.80)	(-1.56)	(-0.99)
Ln(Assets)	-0.003	0.069	-0.058
	(-0.68)	(0.59)	(-0.78)
Ln(Proceeds)	0.007	0.081	0.035
	(1.64)	(0.40)	(0.41)
Prestigious Underwriter	-0.004	-0.054	0.011
	(-0.46)	(-0.20)	(0.05)
Deal rating Aaa	0.022*	-0.193	-0.439
	(1.79)	(-0.98)	(-1.51)
Mortgage Related	0.003	-0.453	-0.108
	(0.23)	(-1.36)	(-0.41)
Lambda	0.001	-0.675*	-0.317*
	(0.08)	(-1.82)	(-1.75)
Intercept	-0.014	-0.302	1.434
	(-0.19)	(-0.19)	(1.54)
R^2	0.1391	0.1896	0.1687
F-statistics	2.57***	1.17	1.82*
N	118	118	108

Table 8 Panel B: Sub samples

	CAR (-1, +1)		3 Year Peer Adj. BHR		Industry Adj. MBE^{-}_{POST}	
	Banks	Non Banks	Banks	Non Banks	Banks	Non Banks
Equity/TA	0.575**	-0.060	17.15***	0.419	24.285***	0.015
	(2.49)	(-1.12)	(2.79)	(0.31)	(3.68)	(0.02)
Growth in Assets	0.090***	-0.005	-0.141	1.245	-0.692	-0.082
	(3.13)	(-0.56)	(-0.21)	(1.46)	(-1.23)	(-0.38)
Ln(Assets)	-0.004	-0.001	0.221*	0.017	0.168*	-0.071
	(-0.90)	(-0.25)	(1.71)	(0.11)	(1.80)	(-0.85)
Ln(Proceeds)	0.013***	0.004	0.133	0.062	0.220**	-0.047
	(2.68)	(0.77)	(1.02)	(0.20)	(2.13)	(-0.39)
Prestigious	-0.003	-0.003	-0.633**	0.313	-0.220	0.262
underwriter	(-0.27)	(-0.22)	(-2.37)	(0.71)	(-1.05)	(0.64)
Deal rating Aaa	0.000	0.039*	-0.547**	0.032	-0.861**	-0.057
	(0.06)	(1.85)	(-2.36)	(0.10)	(-2.19)	(-0.15)
Mortgage Related	0.016	0.001	0.300	-0.838	0.231	-0.077
	(0.85)	(0.09)	(0.86)	(-1.33)	(0.69)	(-0.20)
Lambda	-0.011	0.016	-0.182	-1.081	0.010	-0.108
	(-1.55)	(1.16)	(-0.81)	(-1.45)	(0.07)	(-0.42)
Intercept	-0.073	-0.062	-2.939*	0.680	-3.007***	1.150
	(-1.13)	(-0.77)	(-1.98)	(0.41)	(-2.96)	(1.25)
R^2	0.2787	0.1260	0.3277	0.2285	0.5659	0.0274
F-statistics	3.62***	1.33	3.40***	0.71	4.06***	0.39
N	54	64	54	64	50	58

TABLE 9
Regressions of Risk Measures on Firm and Deal Characteristics

The post transaction β is obtained from the one year market model, excluding the 10 days following the event. Post event total risk is the standard deviation of daily stock returns for one year, excluding the 10 days following the event. Implied D/E ratio is obtained from the Hamada equation (see table 6). Banks are firms with a two digit SIC code 60. Non-banks are all the others. Equity/TA and assets are from year-end prior to the event. Asset growth rate is the pre-event 3 year average. Prestigious underwriter = 1 if the underwriter's rank is 9 or higher (the sample's median).). Deal rating dummy =1 if the senior tranche is Aaa rated by either Moody's or S&P. Mortgage Related = 1 if the transaction is either CMO, mortgage backed note, or mortgage backed bond. Lambda is the inverse Mills ratio, obtained from a first-stage probit estimation in which the selection variable is 1 if a firm chooses to securitize. The probit's independent variables are from table 7. T-statistics based on robust standard errors are in parentheses. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively.

	Post Event β	Post Event total risk	Ln(Implied D/E)
Bank	0.460	0.008	0.758*
	(1.29)	(0.99)	(1.73)
Equity/TA	0.139	-0.024**	-5.483***
	(0.26)	(-2.09)	(-5.88)
Bank*(equity/assets)	-5.817	-0.244***	-7.346
	(-1.34)	(-2.68)	(-1.44)
Growth in Assets	0.332***	0.000	0.429
	(3.65)	(0.34)	(1.08)
Bank*(Growth in Assets)	-0.599	0.005	-0.300
	(-1.31)	(0.63)	(-0.54)
Ln(Assets)	-0.075	-0.001	0.119
	(-1.41)	(-0.85)	(1.11)
Ln(Proceeds)	-0.027	0.000	0.040
	(-0.42)	(0.83)	(0.30)
Prestigious Underwriter	0.000	-0.001	-0.131
	(0.00)	(-0.27)	(-0.63)
Deal rating Aaa	0.039	0.000	-0.115
	(0.28)	(0.14)	(-0.53)
Mortgage Related	0.256	0.000	0.506**
	(1.64)	(0.13)	(2.20)
Lambda	-0.531***	0.008**	0.421
	(-3.72)	(2.22)	(1.40)
Intercept	2.923***	0.022	1.029
	(3.72)	(1.13)	(0.72)
R^2	0.2325	0.1870	0.6031
F-statistics	4.63***	3.67***	12.74***
N	118	118	110

Table 9 Panel B: Sub samples

	Post Event β		Post Event total risk		Ln(Implied D/E)	
	Banks	Non Banks	Banks	Non Banks	Banks	Non Banks
Equity/TA	-9.51*	-0.019	-0.277**	-0.024*	-	-
	(-1.95)	(-0.03)	(2.54)	(-1.95)	18.402***	5.213***
					(-4.32)	(-5.30)
Growth in Assets	-0.387	0.311***	-0.002	0.001	-0.007	0.409
	(-1.04)	(3.08)	(-0.38)	(0.42)	(-0.02)	(0.97)
Ln(Assets)	0.060	-0.012	0.000	-0.002	-0.046*	0.184
	(0.80)	(-0.18)	(0.41)	(-1.56)	(-0.59)	(1.19)
Ln(Proceeds)	-0.058	-0.050	0.000	0.001	0.050	-0.045
	(-1.06)	(-0.43)	(0.04)	(0.87)	(0.79)	(-0.15)
Prestigious	0.046	0.021	-0.001	-0.001	-0.042	-0.232
underwriter	(0.25)	(0.10)	(-0.25)	(-0.16)	(-0.27)	(-0.67)
Deal rating Aaa	0.110	0.087	0.008**	-0.004	-0.043	-0.168
	(0.74)	(0.29)	(2.01)	(-0.60)	(-0.33)	(-0.40)
Mortgage Related	0.147	0.418**	-0.004	0.003	-0.025	0.652*
	(0.49)	(2.08)	(-0.94)	(0.73)	(-0.10)	(1.91)
Lambda	0.063	-0.193	0.007**	0.006	0.274**	0.549
	(0.62)	(-0.78)	(2.15)	(1.50)	(2.33)	(1.23)
Intercept	1.456	1.799	0.017	0.038**	3.962***	0.746
	(1.56)	(1.62)	(0.85)	(2.44)	(4.74)	(0.43)
R^2	0.2274	0.1567	0.1956	0.2300	0.3696	0.5337
F-statistics	1.48	2.75**	1.86*	2.31**	4.19***	9.89***
N	54	64	54	64	54	56

CHAPTER III: ESSAY II
The Information Content of Asset-Backed Securities Downgrades, and the Motivation behind Them

Eric J. Higgins, Ph.D.
Joseph R. Mason, Ph.D.
Adi Mordel

1. Introduction

Between 1996 and 2006, the asset-backed securitization (ABS) market grew by an astonishing 500%, from $456 billion to $2.8 trillion in outstanding securities (including non-agency mortgage backed securities, MBS). From 2004 to 2006 alone, special purpose vehicles known as collateralized debt obligations (CDOs), which issue liabilities in the form of rated tranches backed by various ABS, grew by 250%, totaling more than $550 billion.

Credit rating agencies (CRAs) have played an important role in the growth of the securitization market.[23] Their intimate involvement in the financial engineering of ABS deals, coupled with investors' requirement of a rating agency "approval", affected the marketability of the issued securities. In that process, CRAs moved away from their traditional role of passive credit-quality opinion providers, into the more active role of underwriters (Mason and Rosner, 2007b). As underwriters, CRAs gained superior knowledge about the opacity and complexity of the various ABS instruments, a knowledge that contributed to their status as the de facto regulators of the ABS market. Furthermore, regulators' reliance on credit ratings as risk measures limited the types of portfolios that financial institutions were allowed to hold. Since these regulated

[23] See Committee of Global Financial System (2005) and Lucchetti and Ng (2007) for an additional discussion on the role of credit rating agencies in the ABS market.

institutions desired investing in high-yielding ABS deals, CRAs faced an increased demand for grade inflation, and once risk was underestimated, CRAs could earn record profits by rating ABS deals (Cantor and Packer, 1994; Calomiris 2008).

Underestimation of risk contributed to the tremendous growth of the ABS market, which experienced its first major setback in November 2006. Amidst massive performance deteriorations of subprime mortgages (the underlying collateral for many of the securitization deals), Moody's acknowledged the associated risks and issued "early warnings" for potential future downgrades, and on July 10th 2007, Moody's downgraded more than 400 deals worth a total of $5 billion. Standard & Poor's (S&P) followed, only two days later, with 612 downgrades of more than $7.5 billion worth of ABS deals. As a matter of fact, half of all the downgrades that ever took place in the history of the Home Equity ABS market occurred in the first seven months of 2007 (Ashcraft and Schuermann, 2008). The first signs of the oncoming financial meltdown were evident, and by year end, almost every rated class of Residential Mortgage Backed Securities (RMBS) was downgraded.[24]

The fact that securitization has transformed financial intermediation is unquestionable. Through it, originators can manage interest rate risk, increase liquidity sources, focus on activities in which they possess a comparative advantage, and avoid burdensome regulation.[25] Calomiris and Mason (2004) indicate that as the securitization market evolves, it promotes efficient contracting mechanisms that reduce the need for equity capital to support the deal, mitigating adverse selection costs.

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[24] Herring Richard J. (2008). "The Darker Side of Securitization: How Subprime Lending Led to a Systemic Crisis", Presentation to the Shadow Financial Regulatory Committee.

[25] On the mechanisms and benefits of securitization, see Gorton and Souleles (2006), and Greenbaum and Thakor (2007).

Yet these benefits seem negligible in light of the 2007 panic. Voices criticizing securitization point out that it increases systemic risk due to banks' habit of retaining the equity portion of securitized deals, without having the adequate capital levels on-balance sheet to support it. Moreover, since under certain conditions banks are required to absorb the losses generated by their failed ABS deals, critics question the transactions' ability to truly separate assets from the originator and relocate risk (Stiglitz, 2008; Krugman, 2008). CRAs have also been criticized, particularly regarding their inability to measure risk and appropriately rate the issued securities.

The negative sentiment on securitization raises some important questions: was the market aware of the potential problems before the 2007 turmoil? Were ABS downgrades informative? Could the market discipline "bad" securitizers? Could investors distinguish between "good" and "bad" securitizers? Was the downgrade decision due to the deal's performance or due to the issuer's performance?

In this paper we attempt to shed light on the above issues. To that end, we construct a sample of ABS deal downgrades that occurred between 1986 and 2005 by either Moody's or S&P, and study the downgrade impact on the deal's ultimate parent. We specifically end our sample period in 2005 to avoid the recently troubled years. We focus on ABS deals for two reasons. First, we can easily identify their ultimate parents/sponsors whereas with CDOs, the identity of originators is unknown due to the CDOs' opaqueness and complexity. Second, an ABS deal can only be accomplished if the securitized assets are moved off-balance sheet in a "true sale" according to FASB 140. As such, an ABS downgrade can provide the optimal situation to test whether the benefits and risks of owning the assets are truly removed from the originator.

To summarize our results, we demonstrate that the market reaction to an ABS downgrade is significantly negative, indicating that investors do not treat the deal independently from the ultimate parent, and that the securitization's underlying "true sale" assumption is indeed violated. The most negative announcement returns are associated with downgraded ABS deals sponsored by troubled financial institutions (FIs), suggesting that investors are aware of sponsors' ability to support poorly performing deals. In addition, market discipline is not limited to a destruction of shareholders' wealth. Ultimate parents of downgraded deals experience significant delays in their ABS issuance cycles post- downgrade, suggesting that an originator's ability to securitize depends on its credit quality. Such delays are not observed for "good" securitizers, those sponsors of ABS deals that do not suffer downgrades.

In light of the recent market turmoil that was driven by a myriad of complex securities (Gorton, 2008) as well as the numerous calls for comprehensive regulatory reforms, our results emphasize that markets were functioning even before the first signs of the upcoming panic in the summer of 2007. Investors are able to incorporate new information promptly into a securitizer's stock price, and accurately understand changes in its condition as the ability to issue ABS deals post-downgrade is sensitive to the securitizer's credit quality. Since ABS downgrades provide valuable information and expose securitizers to market discipline, regulatory reforms should consider incorporating such downgrades into the supervisory process. The newly generated information can reduce uncertainty about the relation between securitizers and their off-balance sheet deals, leading to a faster and effective response by supervisors (Flannery, 2001, Caprio, Kunt, and Kane, 2008).

With regards to CRAs, our results indicate that the consideration behind some of the ABS downgrades is *not* independent of the ultimate parent's financial performance. Downgraded deals sponsored by non-FIs are associated with the sponsors' poor pre-event stock returns, suggesting that CRAs, just like investors, treat parents and their ABS deals as an integral part. That is not the case for deals sponsored by FIs. Here, CRAs tend to downgrade deals irrespective of sponsors' pre-event performance, an indication of downgrades driven by deal specific conditions, and potentially greater transparency.

The rest of the paper proceeds by introducing in section II the corporate finance literature on debt downgrades, the accounting treatment of securitization, the importance of implicit recourse, and the unique role carried out by rating agencies in the securitization process. Section III discusses the sample construction and its characteristics. Section IV examines investors' treatment of ABS deals by focusing on announcement returns and post event stock and operating performance. It continues with evidence on the market discipline faced by sponsors of downgraded ABS deals, and tries to address the question of whether or not investors could distinguish "good" securitizers form "bad" ones. Section V examines whether the rating agencies treat ABS independently from their ultimate parents by investigating the pre-downgrade long term stock performance. Section VI Summarizes and concludes.

2. Literature Review

2.1. Corporate debt downgrades and security returns

The earlier corporate finance literature has provided mixed results utilizing bond return data to investigate the impact of rating changes. Weinstein (1977), Wakeman (1978), and Pinches and Singleton (1978), have found no evidence of bond price reaction to rating changes whereas West (1973), Liu and Thakor (1984), and Ederington et al. (1987) have shown that after controlling for firm and issue characteristics, ratings do explain the cross-sectional differences in yield spreads. The strand of literature that study the impact of rating changes on stock returns has been more successful at establishing a relation between the two. Griffin and Sanvicente (1982), Holthausen and Leftwich (1986), Galscock et al. (1987), Cornell, Landsman, and Shapiro (1989), Hand et al (1992), and Dichev and Piotroski (2001) have shown in general that downgrades affect stock returns more significantly than upgrades.

Some researchers argue that the information content of downgrades might be a function of firms' tendency to release favorable information more readily than unfavorable one (Ederington and Goh, 1998). Others suggest that the value of rating changes is limited in regulated industries, since the monitoring and supervisory activities of regulators increase the flow of information to the capital market. However, Schweitzer, Szewczyk, and Varma (1992) show that negative abnormal returns are associated with unfavorable debt ratings, and that in fact, downgrades of bank holding companies are more pronounced than downgrades of unregulated industrial firms.[26]

The notion that all downgrades are necessarily negative events is challenged by Goh and Ederington (1993). The authors demonstrate empirically that some rating

[26] Schweitzer et al. (1992) note that regulators may withhold adverse information in order to sustain depositor confidence in a troubled bank, preserve its ability to raise capital, and conceal bad news out of concern for maintaining stability in the banking system as a whole. If regulators do inhibit the flow of information then downgrades should be particularly informative.

changes are anticipated by market participants, and only downgrades that are associated with deteriorating financial prospects convey new negative information. Kliger and Sarig (2000) employ a different methodology to address a similar question and find evidence consistent with the asset substitution hypothesis. They examine price reactions to rating changes that exclusively reflect rating information (i.e. ratings that are not triggered by fundamental changes in risk), and show that while bond prices react negatively to downgrades, stock prices react positively, leaving overall firm value unchanged.

2.2. FASB140 – true sale assumption

When a typical ABS transaction is initiated, the originator/sponsor sells assets to a bankruptcy-remote third party entity (special purpose vehicle/entity, SPE). In return, the SPE finances the assets by selling different types of securities, representing claims to the cash flows generated by those underlying assets. The Financial Accounting Standard Board Statement 140 (FASB140) provides the accounting and reporting standards for the transfer and servicing of financial assets, and the extinguishment of any related liabilities. Moving assets to the SPE (i.e. off-balance sheet) through securitization hinges crucially on the "true sale" assumption envisaged under FASB140.

To constitute a true sale, the asset/collateral must be sold to the SPE, and the asset's originator cannot retain the benefits and risks of owning the asset. More specifically, a true sale has no terms whereby the sponsor is responsible for the future performance or condition of the collateral. In case a true sale is deemed to have *not* occurred, such as if the originator maintains control over the asset or that the SPE is not

bankruptcy remote, FASB 140 stipulates that the collateral must revert to the sponsor's balance sheet. If the sponsor is a regulated financial institution, then it is required to hold regulatory capital against the full value of such collateral. Meeting the true sale assumption also affects the firm's financial statements. If the originator does not surrender control over the asset, the transaction resembles secured borrowing, under which the originator reclassifies the financial asset as pledged and records debt for the amount of cash received. If on the other hand control is surrendered, the originator derecognizes the financial asset and records cash for the amount received.[27]

In summary, the ABS structure stipulates that the underlying collateral was moved off-balance sheet and that it should pose no contingent risk to the ultimate parent. An ABS deal downgrade provides a unique setting to investigate whether the market truly considers the deal to be separated form its ultimate parent, and if there are any associated costs due to the downgrade decision.

2.3. Implicit recourse and securitization

Recourse in the banking industry was first discussed by Benvenista and Berger (1987) within the context of standby letters of credit (SLC), the earliest most widely used form of securitization. Securitized SLC offer its purchaser the option of trading in an asset claim for a general bank claim, should the purchased asset default. Hence securitization with recourse is viewed as means of issuing sequential claims on the bank's loan assets, yielding the same risk-sharing benefits of multiclass securities. That off-

[27] See also Dechow and Shakespeare (2009) and Chen, Liu and Ryan (2008) on the accounting for securitization under FASB140.

balance sheet activity which explicitly creates a contingent asset or liability stands in sharp contrast to loan sale activity, a no-recourse, off- balance sheet contract that grew dramatically in volume in the 1980s. Gorton and Pennacchi (1989, 1995) argue that loan sale activity could not have been achieved unless it contained implicit guarantees, allowing loan buyers to sell the loans back to the bank if the underlying borrower underperforms.

In an ABS deal, recourse can be thought of as an agreement between a securitizer/sponsor and investors such that the sponsor guarantees the performance of the securitized assets. Since any explicit agreement to support an underperforming deal beyond contractual obligation will violate the "true sale" assumption of FASB140 (which allowed the assets to be moved off-balance sheet), these guarantees are stated implicitly. The sponsor can provide implicit recourse by (1) selling assets to the SPE at a premium (2) buying assets from the SPE at a discount (3) exchanging performing assets for non-performing assets (4) extending credit enhancement beyond what was explicitly contracted.

Calomiris and Mason (2004) provide a theoretical rational for the existence of implicit recourse in ABS deals along the lines of efficient contracting. In their view, the combination of excessively high regulatory capital requirements, severe adverse selection problem of valuing credit card (CC) receivables, and strict institutional prohibition on non-bank CC intermediation, makes bank securitization with recourse the optimal solution to finance CC receivables. Furthermore, such a voluntary contracting mechanism signals the deal's credit quality and allows sponsors to maintain their reputation for consistent credit quality, while enjoying the benefits of off-balance sheet financing.

Gorton and Souleles (2006) take a similar view, noting that investors in CC ABS deals face two problems: the moral hazard problem, because investors cannot verify the effort level exerted by the sponsor in monitoring the underlying asset, and the strategic adverse selection problem, because the sponsor has an incentive to securitize risky assets. While the moral hazard problem is always present in securitization, the sponsor can mitigate the adverse selection problem by committing to subsidize a poorly performing ABS deal through implicit recourse. Furthermore, the authors show that the ability to provide implicit recourse is directly related to the sponsor's financial position, as indicated from the relation between the yield on the senior securitized tranches and the creditworthiness (measured by the senior unsecured bond ratings) of the sponsor.

Since implicit recourse cannot be formally stated, it is not a coincidence that only few events were ever documented, and on the rare occasion that implicit recourse is provided, it is done so in a subtle manner. Higgins and Mason (2004) identify only 17 recourse events by 10 banks relating to CC ABS deals between 1987 and 2001.[28] Even though these events violated FASB140, regulators did not force the banks to move assets back on-balance sheet, and the authors show that in general the market reacted positively to the recourse announcements. Vermilyea et al. (2008) use a more subtle approach to identify implicit recourse. Fraud losses on securitized CC-ABS are incurred by the deal's sponsor, whereas credit losses are borne by ABS investors, hence the classification of losses provides an avenue for implicit recourse. Vermilyea et al. (2008) find that deal underperformance is associated with fraud losses reported by the sponsoring bank.

[28] The implicit recourse literature focuses mainly on ABS deals backed by credit card receivables. These assets that have no fixed maturity, uncertain chargeoffs, and unpredictable payment rates, force the sponsor into an ongoing relationship with the SPE to maintain the collateral's outstanding principal amount at a predetermined level. Hence implicit recourse is more natural in such settings.

It is important to note that we do not observe whether our sample firms actually support their deals, yet the downgrade announcement puts the sponsor in a position where honoring implicit recourse and protecting its reputation, given its financial condition, might be necessary.

2.4. Rating agencies and the ABS market

Rating agencies perform a unique role in the securitization market, and their involvement goes far and beyond of just simply providing passive credit-quality certification. Instead, rating agencies take on a more active approach, controlling not only ratings, but also determining product design standards and security structure (Riddiough and Chiang, 2003). The 2005 report by the Committee on Global Financial System explains the role of CRAs in light of an ABS deal's unique rating requirement:

> …tranche rating reflects a judgment about both the credit quality of the underlying collateral asset pool and the extent of credit support that must be provided through the transaction's structure in order for the tranche to receive the rating targeted by the deal's arrangers. Deal origination thus involves obtaining implicit structuring advice by the rating agencies… [and] iterative dialogue with the agencies…This contrasts with traditional bond ratings, where pre-rating discussions between issuers and agencies play a more limited role. (p. 2).

The intimate involvement of rating agencies is not limited to the securitization process itself, but is also evident before hand, as sponsors engage in "ratings shopping", a process by which CRAs estimate how many AAA-rated bonds can be issued against an underlying pool of assets (Calomiris, 2008; Caprio, Kunt, and Kane, 2008). In fact,

Mason and Rosner (2007b) suggest that rating agencies can be considered as underwriters, due their influence on the marketability of a given ABS structure.

Regulation has also contributed to the pivotal role of rating agencies. Capital requirements for depository institutions are based on their assets' credit ratings, and generally, FIs are bound by their ability to hold risky debts. Calomiris (2008) notes that:

> By granting enormous regulatory power to rating agencies, the government encouraged rating agencies to compete in relaxing the cost of regulation, allowing them to realize huge profits from fees that they could earn from underestimating risk. (p. 31).

The practice of underestimating risk through grade inflation was concentrated in securitized products and was already evident in the early 1990s (Cantor and Packer, 1994). Moreover, institutional investors, who due to regulation can only invest in highly rated debt, encouraged grade inflation to make the menu of high-yielding securities available for them to purchase. Given the complicated task of rating an ABS transaction, CRAs could charge higher fees than those charged on standard, more traditional corporate debt ratings, and the demand-driven grade inflation was accompanied with record profits.[29]

In conclusion, the rating agencies' significant role in structuring ABS deals along with increased regulatory power lead to a demand-driven grade inflation. It was accompanied by a fast-growing, lucrative product area generating substantial fee-income. Since a financially troubled securitizer is (1) less likely to subsidies an underperforming ABS deal and (2) less likely to securitize future deals with the rating agency (depriving it of rating's fees-income), we conjecture that rating agencies, faced with a downgrade

[29] In 2006 alone, Moody's generated $667 million from structured finance ratings, representing 44% of revenues that year. Since S&P is a unit of McGraw-Hill Cos., data on fee-income generated of ABS-deal ratings is not available.

decision, might *not* treat an ABS deal independently from its ultimate parent/sponsor financial performance.

3. Data

We obtain data on ABS deal-downgrades from two sources, Moody's and S&P. A typical observation includes information on its downgrade date, deal and tranche size, sale/maturity date, old/new rating, collateral type, country of issuance, and the reason for the downgrade.[30] In addition, it includes unique identifiers such as a deal's cusip number and series/issuer name. Depending on collateral type, a typical ABS deal might have anywhere between 3 to 50 tranches, and as such a downgrade can be on a single or multiple tranches of the same deal. Furthermore, both agencies can downgrade the *same* tranche or tranches on the *same* date, or *different* tranches of the same deal on the *same* date. Thus for any given date, we should construct our sample such that each tranche represents one deal that is associated with an ultimate parent/sponsor (see Appendix I for detailed steps on sample construction).

Both rating agencies report over 8,300 tranche-downgrades between November 1986 and May 2005 (5,881 by Moody's and 2,461 by S&P). However, roughly 54% of the Moody's downgrades are for CDOs or tobacco settlement tranches issued by Federal/State agencies, for which we cannot obtain data on the tranches' ultimate parents. Screening out these observations reduces our sample to 5,138 tranches.

[30] The most frequent reason for a Moody's downgrade is a weak deal performance, representing over 60% of total deal downgrades. Another reason is a downgrade of the deal's credit enhancement, as in the case of JCPenny Master Credit Card Trust Series C. On April 30th, 1990, Moody's downgraded that deal because the long-term debt rating of Credit Swiss, the bank which provided the letter of credit to the JCPenny deal, was downgraded earlier that year.

Our analysis hinges on the identification of the ultimate parent (sponsor/originator) of each downgraded tranche. However, in our data the reported issuer in most cases is not the ultimate parent company but a bankruptcy-remote subsidiary. Usually, such a subsidiary is created by the ultimate parent company solely for the purpose of securitization, and as such will have no financial data available. To overcome this issue, we use Moody's Investors Services database and search for each tranche's ultimate parent.

Identifying the ultimate parent does not always guarantee a valid transaction. There are instances in which a downgrade occurs while the deal's originator (the tranche issuer) is either no longer in existence (it was acquired or went bankrupt) or has already sold the deal. For these observations we identify the ultimate parent as the parent's acquirer or the deal's purchaser.[31] In other instances the downgraded tranches are issued by a conduit, which purchases and securitizes (for a fee) assets of smaller institutions. For such conduit-downgrade tranches an ultimate parent cannot be identified. Finally, we require each parent to have data on CRSP and Compustat for at least one year prior to the downgrade. Overall, we are able to identify the ultimate parents of 1,604 tranches.

Since a typical ABS tranche is rated by at least two agencies, our data includes some downgrades by both Moody's and S&P that occur on the same day. Furthermore, there are observations in which multiple tranches of the same deal are downgraded on the same date.[32] Eliminating such cases reduces our sample to 392 tranches/deals. Finally,

[31] Consider the case of Conseco Inc. Any downgrade of a Conseco deal until August 2002 is accredited to Conseco Inc. However, since General Electric Co. (GE) bought Conseco Financial Corp on March 2003, any downgrade post that event is accredited to GE.

[32] For instance, on March 12, 2004, Moody's downgraded 3 tranches from the same deal, Global Franchise Trust 1998-I (ultimate parent - Deutsche Bank AG.). We include in the sample the largest downgraded tranche (Class A-2) of $115.1 million, representing about 23% of that deal.

since we employ an event study methodology, we keep observations of the same parent as long as they are at least one month apart. That requirement reduces our sample to 236 deals. The announcement date is defined as the earlier of (1) the date supplied by the rating agencies, or (2) the date on which a news story about the deal-downgrade appeared. To that end, we employ Factiva to verify the accuracy of each reported downgrade and that there are no confounding events.[33] That final screening reduces our sample size to 217 deal-downgrades by 57 ultimate parents.

Figure 1 traces the deal-downgrade distribution over time comparing the downgrade universe with our sample. Most downgrades occur in the latter stages of this time period. Between 1998 and 2005, Moody's (S&P) downgraded about 98% (90%) of its deals. Our sample is fairly similar, including about 80% of the downgrades during that period. The year with the most downgrades is 2004 representing almost 24% of our final sample.

Segregating the sample according to the underlying collateral type, we observe in Table1 that manufactured housing (MH) accounts for 28% of total deal downgrades. Residential mortgage backed securities (RMBS), home equity loans (HEL), and air craft leases account for 20%, 12% and 10%, respectively. Auto loans, credit cards, and franchise leases are about 5% each. Splitting up the sample by the ultimate parent's two-digit SIC code reveals that the most frequently downgraded deals are sponsored by non-depository (SIC code 61) and depository institutions (SIC code 60), accounting for 30% and 15% respectively.

[33] There are 9 deal-downgrades that occur within two days (-2, +2) of an ultimate parent downgrade. Even though they constitute a contaminated event, we do not discard these observations as they are consistent with our premise that rating agencies might not treat the ABS deal separately from the parent's financial condition. The following event study results are robust to the exclusion of these 9 observations. They are also robust when we conduct the analysis on the contaminated samples of 236 and 392 observations.

Overall, 65% of the downgraded deals are sponsored by financial institutions (1 digit SIC code 6). The remaining deals are mainly sponsored by ultimate parents from the following industries: 10% by non-classifiable establishments (SIC code 99), such as Berkshire Hathaway and General Electric Co., 8% by the transportation equipment industry (SIC 37, firms such as Ford and GM), 4% by the transportation services industry (SIC 47, GATX Corp), 3.6% by the lumber and wood products industry (SIC 24, Maxxam Inc.), and 2% by the air transportation (SIC 45, UAL Corp) and automotive repair (SIC 75, Avis Budget Group) industries, respectively.

Sample summary statistics are presented Table 2. A typical parent of a downgraded deal has an average market capitalization of $32.1 billion, while its average book-to-market value of equity (BME) in year-end prior to the downgrade is 0.67.[34] The typical downgraded tranche size of $92 million represents about 29% of the total securitized deal size, whereas the mean downgrade of 3 grades corresponds to an average post event credit rating of BB+. Furthermore, the average number of downgraded deals per parent is 3.80, while the average number of days between any two consecutive downgrades related to the same parent is 294.[35] Finally, the average number of days between the deal's issuance and downgrade is 1,291.

The fact that, on average, a downgrade occurs within 3.5 years of the deal's inception is not a coincidence. An important aspect of a typical ABS deal which provides protection to investors (in addition to the senior/subordinated structure) is credit

[34] There are two ultimate parents (accounting for 4 deals) with a year-end negative book value of equity (BVE). One deal by United Airlines was downgraded while it reported a negative BVE in 2002. Three deals by Maxxam Inc. were downgraded while it reported a negative BVE between 2002 and 2004.

[35] IndyMac has a total of 19 deal-downgrades where the underlying collateral is either sub-prime RMBS or MH. Between 4/26/1999 and 4/22/2005, IndyMac experienced on average a downgrade once every 3 months. Dropping the IndyMac observations from the analysis does not change the results. Washington Mutual had the longest difference between any two consecutive downgrades. Its first deal downgrade on March 3rd, 1995, was followed by a second one almost 10 years later, on December 21st, 2004.

enhancement (CE), which appears in two forms: overcollateralization, achieved when the deal's assets (collateral balance) exceed liabilities (bond balance), and excess spread, which is the difference between the interest paid by the collateral borrowers and the coupon paid to bond holders (net of servicing and administrative fees).[36] Since CE is a function of collateral performance, it accumulates during the life of the transaction until it reaches a predetermined level, and is usually available to investors during the first three years, after which it is paid out of the transaction to the residual holders (usually the deal's sponsor). Hence if an ABS deal performs well in its first three years, CE (and its associated protection) is no longer available afterwards, and deteriorating performance leads to a downgrade.

The analysis which follows is conducted along two categories. The first one distinguishes between FIs (1 digit SIC code 6) and non-FIs, since the former are by far the most frequent securitizers (FIs account for 75% of the reported ABS deals on the SDC database from 1970-2006). The second category controls for the ultimate parent's financial condition, which directly impacts its ability to support an underperforming deal or to securitize repeatedly (depriving CRAs of substantial fees, if the parent cannot securitize due to its underperformance). The ultimate parent's financial condition is based on whether the parent is downgraded within six months of the ABS downgrade. Data on an ultimate parent downgrade comes from two sources: the S&P Credit Ratings database and an online news search on Factiva (for those parents that we cannot match with the S&P database). A parent downgrade is defined as an event that occurs within six months

[36] In addition to over-collateralization and excess spread, monoline insurers provide secondary credit enhancement by guaranteeing the senior most tranches. Yet their representation in the ABS market has declined considerably. In 1999, almost 30% of ABS deals included an insurer, while by 2003, only 10% had one.

of an ABS deal downgrade, and includes either an actual ratings downgrade or an announcement in which the parent was put on the S&P negative credit watch list.

4. Investors' Treatment of ABS Deals

4. 1. Downgrade announcements

To investigate whether the market considers ABS deals to be separated from their sponsors, we conduct an event study around the date in which rating agencies announce a deal downgrade. The market model is used to estimate market model parameters for an event window of two and three days, with the CRSP value-weighted return as the market return. The estimation period runs for 250 days, and ends 11 days before the announcement.

We report the event study results in Table 3. For the full sample, the negative and significant two-day CAR of -0.81% (*p* value=0.016) indicates that ABS deals are not independent of their sponsors. The (-1, +1) CAR of -1.14% is significant as well at the 5 percent level. The statistically significant wealth losses are similar to those reported in the corporate finance literature, regarding the announcement returns to firms' debt downgrades. The negative market reaction to an ABS deal downgrade not only provides evidence in support of the "true sale" assumption violation (FASB140), but also indicates that the risks of asset ownership still reside with the sponsor.[37]

[37] A compelling explanation for the negative market reaction, which undermines the true sale assumption violation, relates to originators' practice of retaining the first loss position in their securitized deals. Financial institutions previously retained the junior tranches of their originated deals, the ones with the highest information asymmetry, to help align their origination incentives and alleviate the moral hazard

Segregating announcement returns by firm type and ultimate parent downgrade provides a clear view of investors' perceptions. First, downgrades of ABS deals originated by financial institutions account for the significant results, as the two (three) day CAR of -1.09% (-1.74%) is significant at the five (one) percent level). Second, a deal downgrade that occurs within half a year of a parent's downgrade is informative as well, since the CAR of -1.28% (-1.85%) is significant at the five (ten) percent level. Panel B of Table 3 provides the intersection of these two breakdowns. The majority of downgrades (116) are for ABS deals originated by FIs that did not experience a downgrade, yet the 24 ABS downgrades sponsored by downgraded FIs command on average the most negative three-day CAR of 4.48% (*p*-value=0.036).

The above results are in accordance with the theoretical rational and empirical evidence on implicit recourse. Since the ability to provide implicit recourse is directly related to the sponsor's financial position (Gorton and Souleles, 2006), and since FIs, which are the most frequent securitizers are also the most likely candidates to provide implicit recourse (Higgins and Mason, 2004), the market reacts most negatively to downgraded ABS deals that are sponsored by downgraded FIs.

4.2. Additional evidence on market discipline –post downgrade ABS activity

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issues faced by investors. However, starting in January 2002, regulatory changes raised minimum capital requirements for banks which retain those junior stakes, discouraging them from holding those assets. As such, one would expect the market reaction to be negative and significant for downgrades that occurred prior to 2002. However, the market reactions for the 89 downgrades in the pre-2002 period are not significant, whereas the market reactions for the 128 downgrades from 2002 onwards are large (-1.09% and -1.40% for the 2 and 3 day event windows, respectively) and significant at the 5 percent level.

The significant losses in shareholders' wealth upon the announcement of an ABS downgrade may not be the only means by which investors react. Higgins and Mason (2004) document that firms engaged in subsidization of their failed SPEs (via implicit recourse) face long delays before returning to the securitization market. Such evidence is in line with a "punishment period," where investors punish the sponsor by withholding investment in its ABS deals for a certain period if its previous deal performed poorly (Gorton and Souleles, 2006). If market discipline is well functioning, we would expect the ultimate parent of a downgraded ABS deal to face a similar exclusion period, and that the parent's ABS issuance activity will be sensitive to its credit quality.

We examine market access for ultimate parents by comparing the average time between ABS transaction issuances in the pre- and post- downgrade periods. We match our ultimate parents with their ABS activity as reported by the Securities Data Corporation (SDC). We require each parent to have issuance data prior to an ABS deal downgrade, and data on at least one ABS transaction after the deal downgrade. Out of our 217 deals by 57 parents, we are able to match 89 deals by 25 parents with SDC. Next, we calculate the average time, in days, between each consecutive ABS issuance in the pre-downgrade period, and compare that average with the difference (in days) between the first issuance post-downgrade and the last issuance pre-downgrade. For instance, SDC reports 8 transactions by Maryland National Corp. (MNC) before its ABS downgrade on June 6, 1991, with an average time of 152 days between each consecutive ABS deal. The last pre-downgrade reported deal is on November 2, 1990. The first post-downgrade reported deal is on September 18, 1992. The difference between these two of transactions of 676 days is compared with the pre event issuance frequency of 152 days.

In Table 4 (columns 1-3) we show the comparison of the pre- and post-downgrade market access results. Parents of downgraded deals (i.e., "bad" securitizers) face significant delays returning to the securitization market. For the full sample we observe that the average time laps between issues around the downgrade averages about *five times* the interval between issues prior to the downgrade. That delay is statistically significant at the 5 percent level (*p*-value = 0.039). Delays in market access are also observed for the two subgroups of FIs and downgraded parents, where FIs face a "punishment period" that averages over *five times* the interval between issues prior to the downgrade (*p* value= 0.087).

Additional evidence on market discipline is presented in panel C of Table 4. We repeat the analysis, only this time we match the downgraded deal type with the same issuance deal type. For example, if the MNC downgraded deal's collateral is credit cards, we include only the issuance of credit card ABS deals by MNC, as reported by SDC. Similarly to the previous full sample results, ultimate parents face significant delays in issuance activity post downgrade. The average time laps between issues around the downgrade averages about *seven times* (*p*-value = 0.005) the interval between issues prior to the downgrade.

Overall, the significantly negative market reaction to ABS downgrades, along with abnormal delays in issuance cycle support the view that investors treat ABS deals as an integral part of their ultimate parents, and that financial markets were functioning prior to the 2007 financial meltdown, as parents' ability to securitize depended on their credit quality. It is important to note that the documented exclusion periods represent conservative estimations, since our SDC matches are likely to be for the largest most

frequent securitizers, which almost always return to the ABS market. Smaller, less frequent securitizers (that do not have sufficient data on SDC) are likely to be excluded for longer periods (if not forever) following their ABS deal downgrades.

4.3. Could investors distinguish "bad" securitizers from "good" ones?

The fact that ultimate parents/sponsors of downgraded ABS deals return to the market only after experiencing significant delays in their issuance schedule provides compelling evidence in favor of market discipline. Yet this finding is incomplete, as it ignores any potential changes that might affect the overall securitization market. Our premise that investors punish "bad" securitizers will be more conclusive if "good" securitizers, i.e. those that did not experience a deal downgrade, do not face similar delays. Hence a comparison between the issuance cycles of "good" and "bad" securitizers is warranted.

The data on "good" securitizers comes from SDC. We construct a sample such that all active "good" securitizers have at least two deals prior to a downgrade, and at least one deal post-downgrade. To avoid discrepancy, we require the issuance activity for the "good" securitizers to be within the issuance range of the "bad" securitizers. For instance, Advanta Corp. experienced an ABS downgrade on August 13, 1990. Its earliest reported issuance on SDC is on March 25, 1988, while the first issuance after the downgrade was on August 22, 1990. Thus the sample of "good" securitizers includes all ABS issuers between these two dates. Once the sample is obtained, we follow the above

procedure and test if the industry (the good securitizers) experiences similar delays in issuance cycles.

The results presented in columns 4 to 6 of Table 4 complement the conclusion that markets were functioning prior to the recent financial turmoil (we do not conduct the analysis for the sample of delays based on asset type since there are not enough industry matches). Overall, the ABS industry does not exhibit major changes in its issuance cycles. "Good" securitizers access the market on average once every 48 days, and even though the post downgrade issuance frequency goes up to once every 61 days (*p* value=0.053), such a short delay is negligible compared with the significant delays exhibited by "bad" securitizers. A breakdown of the sample to its subgroups presents a similar pattern. Finally, the adjusted delay differences between "bad" and "good" securitizers (final column of Table 4) remain significant as well.

Thus our results are robust to any systematic changes that might have affected the issuance activity of the ABS industry. There is an indication that investors do not treat the ABS market in a systematic fashion, since "good" securitizers do not exhibit delays in issuance activity, and that investors are able to accurately identify and punish "bad" securitizers.

4.4. Punishment period: demand or supply driven?

Another explanation that undermines market discipline, as indicated through a punishment period, is that ABS sponsors experience delays not because investors are unwilling to provide funds, but rather because sponsors do not have securitizable assets.

In other words, it is the sponsors' inability to supply collateral rather than investors' lack of demand that causes delays in ABS issuance activity.

If delays are supply driven, then we would observe contraction in securitizable assets during the punishment period. The definition of securitizable assets depends on the parents' identity. For depository institutions, we define such assets as the sum of real estate, agriculture, and consumer loans, and the data is obtained from Call Reports. For non-depository institutions, we define securitizable assets as accounts receivables, and the data is obtained from Compustat.

We report the results in Table 4B. For the full sample, the average (median) quarterly change in securitizable assets of 10.11% (3.43%) during the punishment period is significant at the 1 (1) percent level. Positive and statistically significant changes are also documented for FIs, for parents that do not experience a downgrade, and for depository and non-depository institutions. All of the documented changes are highly significant. Overall, these results are consistent with a demand-driven punishment period since there is no evidence of contraction in the level of securitizable assets.

4.5. Cross sectional regression analysis

To investigate other potential determinants of the negative announcement returns and the post-event market access activity, we estimate regression models controlling for the following variables: *FI,* a dummy variable =1 if the sponsor is a financial institution (1 digit SIC=6), *Parent Downgrade,* a dummy variable =1 if the sponsor was downgraded within half a year of the deal's downgrade, *Risk,* firm's systemic risk

defined as the difference between firm's total and specific risk. Total risk is the standard deviation of daily stock return one year prior to ABS downgrade (excluding the 10 days prior to the event) and specific risk is the standard deviation of the residual from the market model regression, *Size,* measured as the natural log of market value of equity, *BBB rating,* a dummy=1 if the new deal's rating is BBB or lower, and *Tranche-to-deal,* to control for the relative significance of the downgraded tranche. In addition, we include the interaction terms *FI*(Parent downgrade)* and *FI*(Risk).*

The first set of regression results is reported in Table 5 and relates the 2-day CAR with the above control variables. We cluster standard errors by firm and year as there are some firms with multiple downgrades within the same year. Larger firms experience lower declines in their market value given the positive coefficient on *Size (p*-value=0.087), yet riskier FIs face significant shareholders' wealth destruction as the negative coefficient on the interaction term *FI*risk* is significant at the 5 percent level.

The second set of regression results relates the "punishment period" following the ABS downgrade with the various control variables. The coefficient on *FI* (-1.842) is highly significant at the 1 percent level indicating that FIs return faster to the ABS market presumably because they are larger and relative to non-FIs tend to securitize more frequently. Surprisingly, the coefficient on the *Parent Downgrade* dummy is negative as well, though only marginally significant at the 10 percent level (*p*-value=0.061). Finally, financially weak FIs face longer delays given the positive and significant coefficient on the interaction term *FI*(Parent Downgrade),* suggesting that investors are aware of their limited ability to support underperforming ABS deals.

In conclusion, there is evidence that rating agencies provide the market with valuable information, and although ABS transactions are originally designated to be off–balance sheet, their downgrades command significant costs to their sponsors. Such costs not only affect shareholders' wealth, but also impact the parents' securitization activity and potentially limiting liquidity.

5. Rating Agencies' Treatment of ABS Deals

5.1. Pre-event stock and operating performance

We turn to investigate whether rating agencies, in their decision to downgrade ABS deals, treat them separately from their parents' performance. Since a financially troubled sponsor is (1) less likely to subsidies an underperforming ABS deal and (2) less likely to securitize future deals with the rating agency (depriving CRAs from future rating fees), CRAs might *not* consider an ABS deal separately from its sponsor. To that end we study whether deteriorating financial conditions of ultimate parents precede deal downgrades. We hypothesize that if rating agencies treat deals independently, then parents' pre-downgrade performance should not matter. More specifically, we would expect poor pre-downgrade performance *only* when ABS downgrades coincide with parent downgrades.

In order to investigate the long term pre event performance, we calculate buy-and-hold abnormal returns (BHAR). First, we obtain the buy-and-hold return (BHR) for our ultimate parents such that

$$BHR_i = \left(\prod_{t=1}^{T_i}(1+R_{it})-1\right)\times 100\%,$$

where R_{it} is the *i*th firm's return on the *t*th day, and T_i is the number of trading days in the period following the downgrade. Once the BHR is obtained, we calculate the abnormal BHR as the difference between the ultimate parent and its matched peer

$$BHAR_i = BHR_i^{Parent} - BHR_i^{Peer}$$

Defining peers is crucial in long term analysis. Following the literature standards, our match is on industry (4 digit SIC code), size (market value equity) and book-to-market equity. We choose a peer within the same industry that has the smallest sum of absolute percentage difference in size and book-to-market equity, using financial data from the year preceding the downgrade. We complement the pre-event stock performance analysis by investigating the quarterly operating performance of ABS sponsors leading to and right after the downgrade, using the same matched sample as in the BHAR analysis. The sample size is reduced since we include only one downgrade by any sponsor occurring on the same quarter.

We present the mean and median long-term pre downgrade BHAR results in Table 6. On average, the ultimate parent underperforms its peer by 9% in the year prior to the ABS deal downgrade. The three year pre-event underperformance is more severe, at about 20%. The evidence for the full sample suggests that long-term stock performance might be related to ABS downgrades. The sub-samples reveal that the negative BHARs are driven by non-FIs and downgraded parents, which underperform their respective benchmarks by about 22% in the year prior to the ABS downgrade. The weak stock performance is evident even three years prior to the deal's downgrade, where non-FIs and downgraded parents experience BHARs of -46% and -57%, respectively.

In panel B of Table 6 we present the intersection between these two sub groups. While the weak stock performance of non-FIs is present regardless of a parent downgrade, the case is not the same for FIs, where the weak pre-event stock performance is *only* observable when the parent is downgraded. FIs that are not downgraded do not underperform relative to their matched peers in the period leading to the ABS downgrade. This is an indication of greater transparency for an ABS deal that is sponsored by a FI, suggesting that the downgrade is due to a poor deal performance, rather than a weak financial position of the parent. This is in sharp contrast to an ABS deal that is sponsored by non-FI. When such a deal is downgraded it is associated with the parent's underperformance, irrespective of a parent downgrade.

We complement the evidence on the pre-downgrade stock underperformance by examining sponsors' quarterly operating performance and capital ratios. These results are reported in Table 7 where adjusted measures correspond to the difference between a sample firm and its matched peer. In this analysis we limit the sample to include only one downgrade by each parent in any given quarter.

From panel A of Table 7 we learn that even though sponsor's raw ROA, ROE and capital ratio remain relatively unchanged in the four quarters leading to the ABS downgrade, the adjusted ROA and capital ratio are significantly weaker prior to the downgrade. Furthermore, the deterioration in the adjusted ROA and ROE measures is significant throughout the period. Panels B and C indicate that the underperformance is particularly sever for non-FIs and downgraded parents. Finally, the subgroups intersection performance measures and capital ratio results in panel D of Table 7 are consistent with the BHARs results reported in panel B of Table 6. These suggest that

deals sponsored by FIs are downgraded irrespective of the sponsor's performance, whereas for deals sponsored by non-FIs, deteriorating financial conditions are present prior to the ABS downgrade.

5.2. Robustness

The documented underperformance of non-FIs that sponsor downgraded ABS deals is relative to a matched sample, and as such may be driven by our selection process. To overcome this potential bias, we construct portfolios of all sponsors that experienced ABS downgrades, and follow their performance for a period of one- and three-years prior to the downgrade. Each sponsor's stock remains in the portfolio until one day before the downgrade date. Abnormal daily return performance is calculated as the intercept, α, from a Fama-French (1993) three factor model such that

$$(R_{pt} - R_{rf}) = \alpha + \beta(R_{mt} - R_{rf}) + sSMB_t + hHML_t + \varepsilon_t$$

where R_{pt} is the return on the portfolio of sample firms in day t, R_{rf} is the date t risk-free rate, R_{mt} is the date t return on the value-weighted market index, SMB_t is the date t return on a value-weighted portfolio of small-cap stock minus the date t return on a value-weighted portfolio of large-cap stocks, HML_t is the date t return on a value-weighted portfolio of high book-to-market stock minus the date t return on a value-weighted portfolio of low book-to-market stocks.

We report the estimated intercepts for our sample firms' portfolio abnormal returns in Table 8. Sponsors' daily returns average -0.009% (p =0.001) and -0.022% for the one- and three-year periods respectively. Sub-sample analysis indicates that FIs, non-

FIs, and downgraded parents underperform significantly. The sub-sample intersection results are consistent with the documented BHAR results. The weak stock performance of non-FIs is present regardless of a parent downgrade, as the average daily abnormal return in the three years leading to the deal downgrade (-0.01%) is highly significant (p = 0.000). Such poor performance is not exhibited by FIs, where the weak pre-event stock performance, as with the BHAR, is *only* observable when the parent is downgraded.

6. Conclusion

The structure of an ABS deal stipulates that the securitized assets are moved off-balance sheet in accordance with the "true sale" assumption envisaged by FASB 140, and as a result, the deal's sponsor maintains neither the benefits nor the associated risks of owning those assets. The results presented in this paper contradict that assumption. By studying the effect of an ABS deal downgrade on its ultimate parent, we show that risk resides with the parent. The significant wealth losses following the downgrade announcements are consistent with the view that investors treat ABS deals as an integral part of their sponsors, and when weak performance leads to downgrades, investors react and expect the ultimate parents to support their deals.

The market's disciplinary role is not limited to a significant loss in shareholders wealth, but is also manifested through a significant delay in the post-downgrade securitization activity. Such a "punishment period" is not observed for sponsors of ABS deals that did not suffer downgrades. On the other hand, Sponsors of downgraded deals experience long delays in their ABS issuance cycle. Similar delays have been previously

documented for sponsors who provide implicit recourse to their underperforming credit card ABS deals. Overall, these findings support the notion that a sponsor's ability to securitize depends on its credit quality, and that in fact, investors can distinguish a "bad" securitizer from a "good" one as the latter's ability to securitize is not hindered.

Our data also allows us to explore the motivation behind some of the downgraded deals. Since rating agencies serve as the de facto regulators of the ABS market and are intimately involved with the issuance process, they can earn substantial fees from structuring and rating those deals. Hence we conjecture that an ABS downgrade might *not* be independent of the ultimate parent's financial position since a financially troubled sponsor is (1) less likely to support an underperforming ABS deal and (2) less likely to securitize future deals with the rating agency (depriving rating agencies from expected fees). Our results confirm that conjecture as the long-term pre-downgrade stock performance of non-FIs that sponsor ABS deals is significantly negative. Deteriorating conditions are also observable in adjusted operating performance measures and capital ratios around the ABS downgrade. Thus rating agencies, just like investors, treat ABS deals as an integral part of their sponsors.

The recent economic crisis raises numerous proposals for changes in regulation, and brings into question the complex risk-shifting activities FIs were involved with, which evidently lead to the unprecedented financial meltdown in the summer of 2007. Proponents of stricter regulation stress that the proliferation of opaque securities financed through off-balance sheet transactions, has made transparency almost nonexistent and risk relocation questionable (Stiglitz, 2008; Krugman, 2008).

Yet tougher regulation is not always warranted. Financial historians point to the significant economic costs that were generated by the post-Depression regulatory changes. Chief among those are the separation of commercial and investment banks, the establishment of deposit insurance, and the entrenchment of entry barriers across regions (Calomiris, 2000). Moreover, tougher regulation that ignores market forces distorts supervisors' incentives and is bound to be inefficient (Caprio, Kunt, and Kane, 2008). If supervisors can incorporate in the monitoring process market signals related to a securitizer's risk, specifically if the signals identify an overlooked problem, then the supervisors' ability to react promptly and correctly is enhanced. Our results indicate that securitizers are *not* shielded from the market's disciplinary forces, and as such, regulatory reforms should consider incorporating ABS downgrades and link on-and-off balance sheet conditions in the supervisory process.

Figure 1: Yearly ABS Downgrade Frequencies

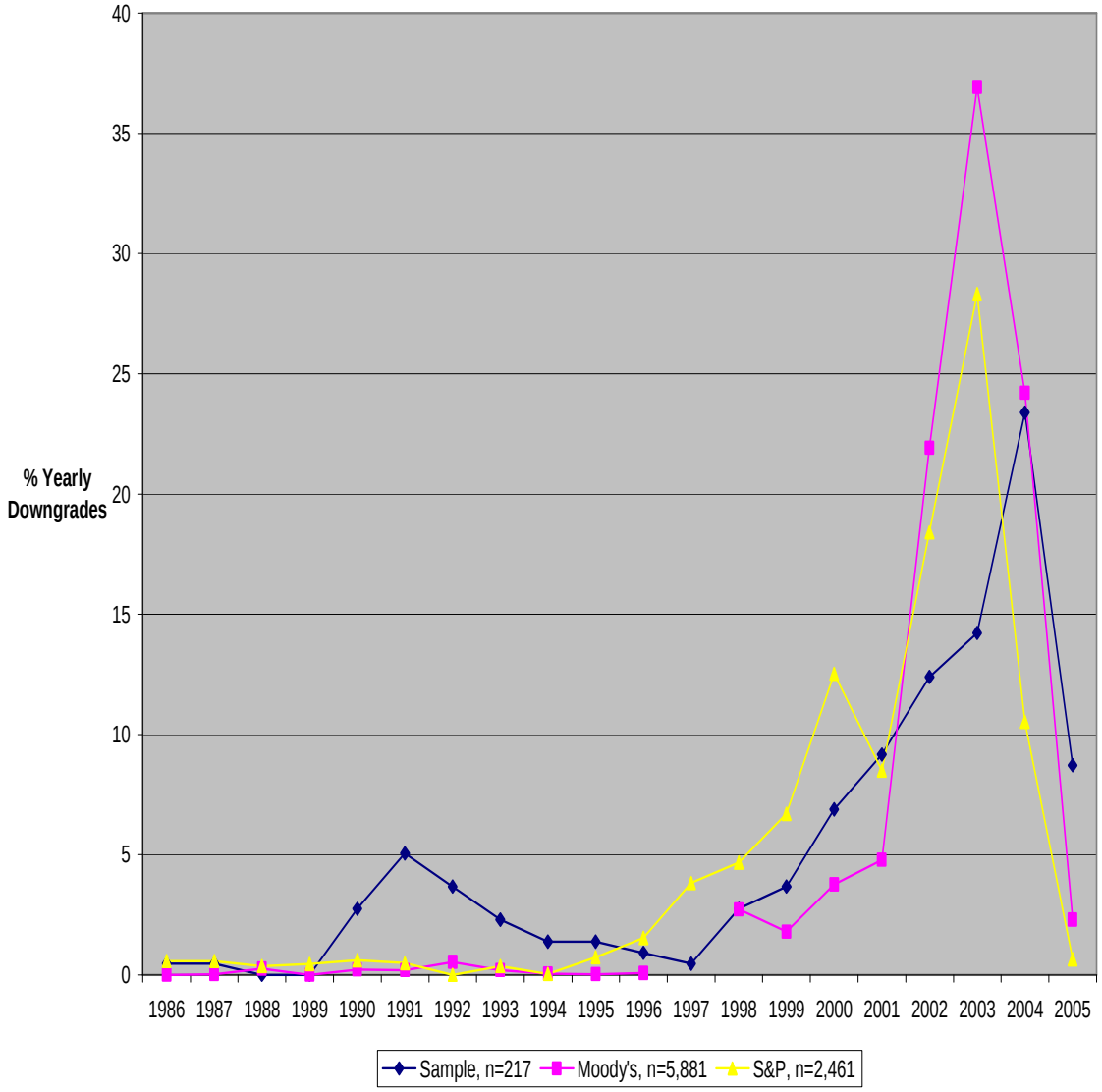

TABLE 1
Sample Characteristics

Panel A: sample breakdown by underlying collateral type

Collateral Type	Frequency	%
Manufactured housing	61	28.44
RMBS subprime	43	19.72
Home equity loans (HEL)	26	11.93
Aircraft leases	22	10.09
Auto loans	13	5.96
Credit cards	12	5.50
Franchise loans	11	5.05
Equipment leases	5	2.29
Trade receivables	4	1.83
Rental car	4	1.83
Recreational vehicle	3	1.38
Small business loans	3	1.38
Floorplans	1	0.46
Revolving loans	1	0.46
Trade receivables	1	0.46
Other	7	3.21
Total	217	100

Panel B: sample breakdown by Industry

2 digit SIC Industry Classification	SIC code	Freq.	%
Non-depository Credit Institutions	61	67	30.88
Depository institutions	60	34	15.67
Non-classifiable Establishments	99	22	10.14
Security & commodity brokers, dealers, exchanges & services	62	19	8.76
Transportation equipment	37	17	7.83
Holding and other investment offices	67	15	6.91
Transportation services	47	9	4.15
Lumber and wood products, except furniture	24	8	3.69
Transportation by air	45	5	2.30
Insurance carriers	63	5	2.30
Automotive repair, services, and parking	75	4	1.84
Motor freight transportation and warehousing	42	3	1.38
Chemicals and allied products	28	2	0.92
Ind. & Comm. Machinery and Computer equipment	35	2	0.92
Electric, Gas, and Sanitary Services	49	2	0.92
Miscellaneous retail	59	2	0.92
General merchandise stores	53	1	0.46
Total		217	100%

TABLE 2
Summary Statistics

Descriptive statistics for 217 ABS deal-downgrades by either Moody's or S&P between 1986 and 2005, for which the deal's ultimate parent is identified on CRSP and Compustat. An ultimate parent is either the deal's originator or the deal's acquirer, in case the originator went bankrupt or was acquired prior to the deal's downgrade. A total of 57 parents account for the 217 deals. Multiple deal downgrades of the same parent are within at least one month apart (20 trading days). Market value of equity (MVE) and Book to market equity (BME) are from year end prior to downgrade. Days-to-downgrade is the difference between the downgrade date and the deal's origination date.

	N	Mean	Median	Min	Max	STD
MVE (in 2005 $millions)	140	32,155	2,572	13.86	430,643.21	76,446.75
Book-to-market equity	140	0.67	0.64	-28.84	7.26	2.96
Tranche (in 2005 $millions)	217	92.92	28.44	0.76	1772.39	190.93
Deal (in 2005 $millions)	217	427.48	289.11	13.84	1772.39	376.14
Tranche / deal	217	0.2897	0.0876	0.0019	1.0000	0.3658
Post-downgrade Rating	217	BB+	BB+	D	AA+	-
Δ rating (# of downgrade notches)	217	3	2	1	15	2.31
Deals per ultimate parent	57	3.80	2	1	19	3.56
Days between downgrades	160	294	131	24	3,581	516
Days-to-downgrade	214	1,291	1,187	30	3,532	669.06

TABLE 3
Announcement Returns to ABS Downgrades

Cumulative abnormal returns for 217 ABS deal-downgrades by either Moody's or S&P, for which the deal's ultimate parent is identified on CRSP and Compustat. An ultimate parent is either the deal's originator or the deal's acquirer, in case the originator went bankrupt or was acquired prior to the deal's downgrade. A total of 57 parents account for the 217 deals. Multiple deal downgrades of the same parent are within at least one month apart (20 trading days). Financial institutions (FI) are firms with a one-digit SIC code of 6. A parent downgrade is an event that occurred within 6 months of a deal-downgrade in which a rating agency either downgrades the parent, or puts it on a negative watch for a possible downgrade. The market model is used to estimate parameters using daily stock returns with a 250-day estimation period ending 11 days before the announcement date. Market returns are proxied by the CRSP value-weighted returns. *P-values* reported in parentheses.

	N	CAR(-1, 0)	CAR (-1, +1)
Full sample	217	-0.81%** *(0.016)*	-1.14%** *(0.013)*
Announcement returns by firm type			
FI (one digit SIC code=6)	140	-1.09%** *(0.026)*	-1.74%*** *(0.008)*
Non FI	77	-0.31% *(0.358)*	-0.05% *(0.910)*
Announcement returns by parent downgrade			
Downgrade (within ½ year)	59	-1.28%** *(0.037)*	-1.85%* *(0.080)*
No downgrade	158	-0.63% *(0.115)*	-0.88%* *(0.076)*

Table 3 continued

Panel B: announcement returns by firm type and parent downgrade

	CAR(-1, 0)		CAR (-1, +1)	
	FI	Non-FI	FI	Non-FI
Downgrade (within ½ a year)	-1.99%*	-0.79%	-4.48%**	-0.05%
	(0.086)	*(0.245)*	*(0.036)*	*(0.959)*
	[n=24]	[n=35]	[n=24]	[n=35]
No downgrade	-0.90%*	0.09%	-1.18%*	-0.05%
	(0.097)	*(0.708)*	*(0.073)*	*(0.861)*
	[n=116]	[n=42]	[n=116]	[n=42]

***, **, * represents significance at the 1%, 5%, and 10% respectively.

TABLE 4
Market Access before and around ABS Downgrades

Average time (in days) between ABS issuances by a firm which experiences a deal downgrade, relative to the time difference between the two ABS issuances right before and after the downgrade. ABS deal-downgrades by either Moody's or S&P, for which the deal's ultimate parent is identified on CRSP and Compustat. Sample period between 1986 and 2005. An ultimate parent is either the deal's originator or the deal's acquirer, in case the originator went bankrupt or was acquired prior to the deal's downgrade. Multiple deal downgrades of the same parent are within at least one month apart (20 trading days). Panel A (B, C) includes 25 (24, 17) parents that account for 89 (70, 49) deals for which data on ABS activity is available on SDC. Financial institutions (FI) are firms with a one-digit SIC code of 6. A Downgrade is an event that occurred within 6 months of a deal-downgrade in which a rating agency either downgrades the parent, or puts it on a negative watch for a possible downgrade. *P-values* reported in parentheses. ***, **, * represents significance at the 1%, 5%, and 10% respectively.

		Sponsors with downgraded deals			Sponsors without downgraded deals			
	N	Pre downgrade ABS issuance frequency (1)	Days between issues around downgrade (2)	Difference (3)	Pre downgrade ABS issuance frequency (4)	Days between issues around downgrade (5)	Difference (6)	Industry Adj. Difference (3) – (6)
Panel A: all deal-downgrades with prior ABS issuances by ultimate parent								
Full sample	89	55	258	202** *(0.039)*	48	61	13* *(0.053)*	192** *(0.033)*
FI	63	51	268	217* *(0.087)*	42	57	15* *(0.088)*	205* *(0.088)*
Non FI	26	65	232	167 *(0.141)*	62	70	8 *(0.366)*	158 *(0.135)*
Downgrade	21	62	296	234* (0.073)	69	83	14 *(0.122)*	220* *(0.073)*
No downgrade	68	53	246	193 (0.104)	41	54	13 *(0.130)*	183 *(0.104)*
Panel B: deal-downgrades with at least 3 prior ABS issuances by ultimate parent								
Full sample	70	46	172	125** *(0.026)*	52	59	7 *(0.115)*	120** *(0.025)*
FI	50	38	131	92* *(0.088)*	44	51	7 *(0.129)*	87* *(0.093)*
Non FI	20	65	275	209 *(0.157)*	72	80	7 *(0.523)*	201 *(0.145)*
Downgrade	20	64	208	143 (0.124)	65	75	9 *(0.235)*	134 *(0.119)*
No downgrade	50	39	157	118* (0.093)	47	53	6 *(0.285)*	115* *(0.091)*

Table 4 continued

Panel C: deal-downgrades with prior ABS issuances of similar asset type by ultimate parent

Full sample	49	49	337	288*** *(0.005)*	-	-	-
FI	34	47	274	227** *(0.027)*	-	-	-
Non FI	15	53	480	427* *(0.093)*	-	-	-
Downgrade	13	39	296	256 (0.168)	-	-	-
No downgrade	36	52	352	300** (0.018)	-	-	-

TABLE 4B
Punishment Period: Demand or Supply Driven?

The table reports the quarterly growth rate in securitizable assets during the punishment period (documented in Table 4). The sample includes the 89 downgraded deals for which data on ABS activity of the parent is available on SDC. Downgrade is an event that occurred within 6 months of a deal-downgrade in which a rating agency either downgrades the parent, or puts it on a negative watch for a possible downgrade. For FIs that are classified as depository institutions (N=37), securitizable assets represent the sum of real-estate, agriculture, and consumer loans. Loan-level data is from Call Reports. For non-depository institutions, securitizable assets represent accounts receivables. Data for non-depository institutions is from Compustat. *P-values* reported in parentheses. Median significance based on Wilcoxon sign rank test statistics. ***, **, * represents significance at the 1%, 5%, and 10% respectively.

	N	Mean	Median
Full sample	89	0.1011*** *(0.000)*	0.0343*** *(<0.000)*
FIs (one digit SIC code=6)	63	0.0948*** *(0.000)*	0.0600*** *(<0.000)*
Non-FIs	26	0.1166 *(0.151)*	0.0157 *(0.277)*
Downgrade (within ½ a year)	23	0.2105* *(0.053)*	0.0214* *(0.066)*
No downgrade	66	0.0630*** *(<0.000)*	0.0394*** *(<0.000)*
Depository Inst (SIC=60)	37	0.0479*** *(0.004)*	0.0343*** *(<0.000)*
Non-Depository Inst.	52	0.1391*** *(0.005)*	0.0351*** *(0.000)*

TABLE 5
Determinants of Market Reaction and Post Downgrade Securitization Activity

Analysis of market reaction to 217 ABS deal-downgrades sponsored by 57 parents, and the respective securitization activity for 25 parents sponsoring 89 deals for which market access data is available on SDC. Delay in market access is the time difference, in days, between the two ABS issuances right before and after an ABS-deal downgrade (see TABLE4). Financial institution (FI) is a dummy variable equal 1for ABS deals sponsored by a firm with one-digit SIC code of 6. A parent downgrade is a dummy equal 1 if the deal's sponsor was downgraded within 6 months of the deal-downgrade, in which a rating agency either downgrades the parent, or puts it on a negative watch for a possible downgrade. Risk is firm systematic risk defined as the difference between firm's total and specific risk. Total risk is the standard deviation of daily stock return one year prior to ABS downgrade (excluding the 10 days prior to the event) and specific risk is the standard deviation of the residual from the market model regression. Size is the natural log of market value of equity. BBB rating is a dummy=1 if the new deal's rating is BBB or lower. Standard errors are clustered by firm and year. *P-values* reported in parentheses. ***, **, * represents significance at the 1%, 5%, and 10% respectively.

	CAR (-1, 0)	Ln. Delay Market Access
Financial institution	0.007	-1.842***
(dummy=1)	*(0.208)*	*(0.006)*
Parent downgrade (dummy=1)	0.001	-1.225*
	(0.856)	*(0.061)*
(FI)*(Parent downgrade)	-0.012	2.823***
	(0.418)	*(0.005)*
Risk	0.621	61.625
	(0.480)	*(0.343)*
(FI)*(risk)	-2.196**	-29.924
	(0.041)	*(0.697)*
Size	0.004*	-0.252***
	(0.087)	*(0.000)*
BBB rating (dummy=1)	-0.006	0.260
	(0.270)	*(0.460)*
Tranche-to-deal	-0.001	0.716
	(0.896)	*(0.172)*
Constant	-0.041	7.039***
	(0.128)	*(0.000)*
Adjusted R^2	0.0306	0.2439
F-statistics	1.77*	6.29***
N	217	89

TABLE 6
Long Term Pre ABS-Downgrade Stock Performance

Buy-and-hold abnormal returns (BHAR) for 217 ABS deal-downgrades by either Moody's or S&P, for which the deal's ultimate parent is identified on CRSP and Compustat. An ultimate parent is either the deal's originator or the deal's acquirer, in case the originator went bankrupt or was acquired prior to the deal's downgrade. Abnormal returns based on control firms that are matched on Industry (4 digit SIC), size and book-to-market equity. A total of 57 parents account for the 217 deals. Multiple deal downgrades of the same parent are within at least one month apart. Financial institutions (FI) are firms with a one-digit SIC code of 6. A parent downgrade is an event that occurred within 6 months of a deal-downgrade in which a rating agency either downgrades the parent, or puts it on a negative watch for a possible downgrade. *P-values* reported in parentheses. Median significance based on Wilcoxon sign rank test statistics. ***, **, * represents significance at the 1%, 5%, and 10% respectively.

		1 year pre event BHAR		3 year pre event BHAR	
	N	Mean	Median	Mean	Median
Full sample	217	-9.22%** *(0.041)*	-4.80%** *(0.036)*	-19.35%** *(0.039)*	-12.99%** *(0.010)*
FI (one digit SIC code=6)	140	-1.82 *(0.766)*	1.84 *(0.919)*	-4.53 *(0.736)*	-7.54 *(0.834)*
Non FI	77	-22.67*** *(<0.000)*	-16.83*** *(<0.000)*	-46.29*** *(<0.000)*	-29.80*** *(<0.000)*
Downgrade (within ½ year)	59	-21.49*** *(0.002)*	-18.42*** *(0.002)*	-57.83*** *(<0.000)*	-32.08*** *(<0.000)*
No downgrade	158	-4.64 *(0.408)*	-0.17 *(0.581)*	-4.98 *(0.669)*	-2.69 *(0.449)*

Panel B: mean {median} *pre* ABS deal downgrade buy-and-hold abnormal returns by firm type and parent downgrade

	1 year pre event BHAR		3 year pre event BHAR	
	FI	Non-FI	FI	Non-FI
Downgrade (within ½ a year)	-26.29%* {-25.75%}* [n=24]	-18.20%*** {-18.43%}** [n=35]	-70.42%*** {-34.29%}*** [n=24]	-49.20%*** {-25.82%}*** [n=35]
No downgrade	3.23% {7.46%} [n=116]	-26.40%*** {-11.17%}*** [n=42]	9.09% {19.69} [n=116]	-43.87%*** {-36.09%}*** [n=42]

TABLE 7

Quarterly Operating Performance and Capital Ratio

Median peer adjusted measures (sample firm minus matched peer) for 171 ABS deal-downgrades by either Moody's or S&P, for which the deal's ultimate parent is identified on CRSP and Compustat. An ultimate parent is either the deal's originator or the deal's acquirer, in case the originator went bankrupt or was acquired prior to the deal's downgrade. Adjusted measures based on control firms that are matched on Industry (4 digit SIC), size and book-to-market equity. A total of 54 parents account for the 171 deals. Multiple deal downgrades of the same parent are within at least one quarter apart. Financial institutions (FI) are firms with a one-digit SIC code of 6. A parent downgrade is an event that occurred within 6 months of a deal-downgrade in which a rating agency either downgrades the parent, or puts it on a negative watch for a possible downgrade. Significance based on Wilcoxon sign rank test statistics. ***, **, * represents significance at the 1%, 5%, and 10% respectively.

Panel A: raw and adjusted measures, full sample (n=171)

	ROA	ROE	Equity/assets	Adj. ROA	Adj. ROE	Adj. Equity/assets
-4	0.0033	0.0383	0.1028	-0.0008**	0.0034	-0.0300***
-3	0.0033	0.0382	0.0992	-0.0009***	0.0021	-0.0332***
-2	0.0032	0.0347	0.0924	-0.0010***	-0.0007	-0.0333***
-1	0.0033	0.0365	0.0888	-0.0010***	0.0014	-0.0366***
+1	0.0031	0.0374	0.0892	-0.0014***	-0.0006	-0.0370***
Δ (-1 to +1)	0.0000	0.0005	-0.0005**	-0.0002*	-0.0040**	-0.0025**
Δ (-4 to +1)	-0.0003***	-0.0029***	-0.0007	-0.0003***	-0.0030***	-0.0007

Table 7 continued

Panel B: adjusted measures, firm type

	Adj. ROA	Adj. ROE	Adj. Equity/assets	Adj. ROA	Adj. ROE	Adj. Equity/assets
	FI (n=114)			Non FI (n=57)		
-4	-0.0002	0.0032	-0.0056**	-0.0060**	0.0045	-0.2707***
-3	-0.0004	0.0018	-0.0072**	-0.0069***	0.0032	-0.2588***
-2	-0.0007**	-0.0021	-0.0047**	-0.0048	0.0087	-0.2588***
-1	-0.0006	0.0007	-0.0030**	-0.0054*	0.0087	-0.2583***
+1	-0.0009***	-0.0010	-0.0035**	-0.0095***	0.0007	-0.2620***
Δ (-1 to +1)	-0.0002	-0.0029	-0.0012	-0.0031	-0.0151*	-0.0093***
Δ (-4 to +1)	-0.0002*	-0.0006	-0.0001	-0.0014***	-0.0103***	-0.0092**

Panel C: adjusted measures, parent downgrade

	Parent downgrade (n=54)			No parent downgrade (n=117)		
-4	-0.0030**	-0.0064	-0.0440***	-0.0004	0.0054***	-0.0207***
-3	-0.0040**	-0.0087	-0.0573***	-0.0007*	0.0032	-0.0225***
-2	-0.0042**	-0.0052	-0.0583***	-0.0009**	0.0002	-0.0231***
-1	-0.0034***	-0.0116**	-0.0606***	-0.0006	0.0059**	-0.0252***
+1	-0.0097***	-0.0295***	-0.0842***	-0.0011**	0.0033	-0.0263***
Δ (-1 to +1)	-0.0015*	-0.0132*	-0.0073***	-0.0001	-0.0024	-0.0012
Δ (-4 to +1)	-0.0037***	-0.0295***	-0.0030*	-0.0000	0.0006	-0.0005

Table 7 continued

Panel D: adjusted measures, by firm type and parent downgrade

	Adj. ROA	Adj. ROE	Adj. Equity/assets	Adj. ROA	Adj. ROE	Adj. Equity/assets`
	FI, Parent downgrade (n=22)			Non-FI, Parent downgrade (n=32)		
-4	-0.0007	0.0006	-0.0128	-0.0056*	-0.0150	-0.1390***
-3	-0.0002	-0.0009	-0.0134	-0.0079**	-0.0270	-0.1555***
-2	0.0000	-0.0002	-0.0153	-0.0055*	-0.0182	-0.1555***
-1	-0.0008*	-0.0050	-0.0165	-0.0072**	-0.0291	-0.1783***
+1	-0.0017***	-0.0163***	-0.0068	-0.0110***	-0.0486	-0.1837***
Δ (-1 to +1)	-0.0007**	-0.0108**	0.0013	-0.0034	-0.0145	-0.0127***
Δ (-4 to +1)	-0.0008**	-0.0125***	0.0017	-0.0051***	-0.0385**	-0.0183***
	FI, No Parent downgrade (n=92)			Non-FI, No parent downgrade (n=25)		
-4	0.0000	0.0041*	-0.0042**	-0.0063	0.0115***	-0.2976***
-3	-0.0004	0.0027	-0.0055**	-0.0060	0.0105**	-0.3096***
-2	-0.0008**	-0.0021	-0.0026**	-0.0039	0.0218***	-0.3060***
-1	-0.0004	0.0031	-0.0020**	-0.0037	0.0173***	-0.2805***
+1	-0.0007	0.0020	-0.0034***	-0.0073*	0.0064*	-0.2904***
Δ (-1 to +1)	0.0000	-0.0014	-0.0012	-0.0031	-0.0151**	-0.0065
Δ (-4 to +1)	-0.0001	0.0009	-0.0005	-0.0000	-0.0040*	-0.0000

TABLE 8
Average Daily Abnormal Returns

We estimate the Fama-French model of daily portfolio returns

$$(R_{pt} - R_{rf}) = \alpha + \beta(R_{mt} - R_{rf}) + sSMB_t + hHML_t + \varepsilon_t$$

where R_{pt} is the return on the portfolio of sample firms in day t, R_{rf} is the date t risk-free rate, R_{mt} is the date t return on the value-weighted market index, SMB_t is the date t return on a value-weighted portfolio of small-cap stock minus the date t return on a value-weighted portfolio of large-cap stocks, HML_t is the date t return on a value-weighted portfolio of high book-to-market stocks minus the date t return on a value-weighted portfolio of low book-to-market stocks. We construct portfolios of all sponsors that experienced ABS downgrades, and follow their performance for a period of one- and three-years prior to the downgrade. Each sponsor's stock remains in the portfolio until one day before the downgrade date. Financial institutions (FIs) are firms with a one-digit SIC code of 6. A parent downgrade is an event that occurred within 6 months of a deal-downgrade in which a rating agency either downgrades the parent, or puts it on a negative watch for a possible downgrade. ***, **, * represents significance at the 1%, 5%, and 10% respectively.

	1 Year Before ABS Downgrade	3 Years Before ABS Downgrade
Full sample	-0.009%*** (*p=0.001*)	-0.022%*** *(p=0.001)*
FIs (one digit SIC code=6)	-0.005** *(0.027)*	*-0.007 (0.146)*
Non-FIs	-0.006*** *(0.007)*	-0.014*** *(<0.000)*
Downgrade (within ½ year)	-0.011*** *(<0.000)*	-0.016*** *(<0.000)*
No downgrade	-0.002 *(0.418)*	-0.006 *(0.287)*
Non-FIs, Non-Downgrade	-0.003 *(0.148)*	-0.011*** *(0.000)*
Non-FIs, Downgrade	-0.005*** *(0.000)*	-0.009*** *(<0.000)*
FIs, Non-Downgrade	0.000 *(0.831)*	0.000 *(0.989)*
FIs, Downgrade	-0.007*** *(0.000)*	-0.008*** *(0.000)*

Appendix I: Sample Construction	
No. of tranches	Steps
8,300	Initial sample of downgraded tranches between 1986-2005 by both Moody's and S&P
↓	➢ Eliminate tranches related to Tobacco Settlements or those sponsored by State/Federal agencies ➢ Eliminate tranches related to Collateralized Debt Obligations (CDOs)
5,138	
↓	➢ Eliminate tranches without an identified ultimate parent (such as Conduits) ➢ Eliminate tranches for which the identified parent has no CRSP and Compustat data from at least (t-1) relative to downgrade
1,604	
↓	➢ Eliminate double-counting: downgraded tranches of the same parent by both rating agencies that occur on the same day (i.e. retain the earliest downgrade on that day) ➢ Eliminate downgrades of different tranches from the same deal that occur on the same day (retain the largest downgraded tranche)
392	From this point, each tranche represents a deal
↓	➢ Eliminate downgraded deals related to the same parent that occur within less than 1 month apart
236	
↓	➢ Eliminate downgraded deals with an unverified date or with a confounding event
217 deals by 57 parents	Final sample

CHAPTER IV: ESSAY III
Governance and Firm Value: Evidence from Initial Securitizations by Bank Holding Companies

1. Introduction

The recent financial crisis exposes regulators' limited ability to monitor financial institutions. In addition, it highlights the importance of establishing alternative mechanisms that limit financial institutions' tendency to engage in excessive risk taking. Curbing such tendencies relies heavily on a supervisory system that is based on sound regulatory practices, which are complemented with effective corporate governance. This paper focuses on the latter point, namely the importance of governance, at the institutional level, in limiting moral hazard and contributing to the overall stability of the financial sector. The paper addresses the role of internal corporate control mechanisms in mitigating the negative effects of securitization.

Securitization, the process in which non-tradable assets (such as loans) are transformed into liquid securities (i.e. asset-backed securities, or ABS) via cash-flow repackaging, is considered the culprit of the recent financial crisis (Gorton, 2008). With almost $1.3 trillion in newly issued ABS securities in 2006 alone (Gorton, 2009), there were hardly any financial institutions that were not involved with these fixed-income instruments in one form or another. Once these assets experienced massive downgrades

in mid 2007, the financial system was on the verge of the most severe financial crisis since the great depression.

The theoretical rational suggests that securitization should benefit securitizers, as it provides an important liquidity source, reduces funding costs, allows valuable capital to be directed into more productive investments, and enables financial institutions to focus on activities in which they have a comparative advantage (Rosenthal and Ocampo, 1988; Gorton and Souleles 2007; Greenbaum and Thakor, 2007). However, recent empirical evidence indicates that securitization affects its sponsors negatively. More specifically, securitization is associated with shareholders' wealth destruction, long term underperformance, and increase in risk and leverage (Franke and Krahnen, 2005; Instefjord, 2005; Krahnen and Wilde, 2006; Hansel and Krahnen, 2007; Higgins, Mason, and Mordel, 2008).

As opposed to the recently growing empirical literature on securitization, the governance literature is well established with respect to the impact of internal corporate control mechanisms on firm value and risk. Jensen and Meckling (1976) suggest that the structures of variables such as board, ownership, and compensation directly influence firm conduct and performance. Hence a natural question arising from the recent financial crisis is whether securitizers differ from non-securitizers with respect to their governance mechanisms.

To address this question, I study the governance mechanisms of the largest most frequent securitizers, bank holding companies (BHCs), just prior to their first ever securitization transaction. Based on discussions with industry practitioners, I assume that if governance plays a role in a BHC's decision to securitize, then it is most likely to be

observable when the BHC initiates its securitization program. Once securitization is introduced, the BHC would typically issue an ABS deal once every few months, making securitization part of its ongoing operation and as a result limiting the involvement of governance with successive deals.

I compare the governance characteristics of 44 BHCs prior to their first ever securitization transactions with those of a matching sample based on industry, size, and leverage. I show that securitizers have lower levels of insider stock ownership and that in general, BHCs with higher levels of insider ownership are less likely to securitize.

Next, I find that internal corporate control variables mitigate some of the negative effects caused by securitization. I show that post-securitization systematic risk tends to be higher for securitizers, yet it is lower for securitizers with higher levels of CEO equity based compensation. In addition, implied leverage obtained from the Hamada equation (being directly related to the amount securitized) is lower for BHC with higher levels of insider ownership. Finally, post-event firm value (measured by Tobin's q) is positively related to the proportion of outside directors serving on the boards of securitizers.

These empirical results indicate that securitizers are systematically different from non-securitizers and that in fact, internal corporate control mechanisms affect post-securitization risk, leverage, and firm value. Yet it is important to emphasis a major limitation of the documented results. By mid 2007, when the first indicators of the oncoming financial crisis became evident, most BHCs were already securitizing for some time. Thus at the eve of the crisis, the typical frequent securitizers are not necessarily similar to my sample of first-time securitizers.[38]

[38] Utilizing a sample that includes multiple securitization deals by each company would address this concern, yet it is beyond the scope of this paper. However, the caveat of such a time-series analysis is the

Nevertheless, the cross-sectional results are still valid if we consider changes that took place recently. First, securitization activity (i.e. new deal issuance) between 2007 and 2009 came almost to a halt. Second, in June 2009 the Financial Accounting Standard Board (FASB) introduced significant changes to the accounting rules that govern securitization, potentially limiting the ability of BHCs to issue future ABS deals (Fitch Ratings, 2009). The drying-up of the securitization market along with future limitations on ABS issuances serve as a "breading ground" for creative financial solutions. If BHCs consider securitization as a major funding source, then they are likely to adapt to the new regulatory and accounting rules by creating funding modes that will maintain the benefits of off-balance sheet financing, while at the same time meet (or even by-pass) the new rules that are put in place to curb excessive risk taking. Since regulators have to be on the alert and react quickly to potential problems, having proper governance mechanisms in place will complement regulators' efforts in monitoring moral hazard and containing systemic risk.

The reminder of the paper first describes the various internal corporate governance mechanisms that serve as the basis for my analysis. Next, I introduce the data and methodology used in this study. Univariate and cross-sectional regression results are provided in the following section. In the final part I discuss the results and conclude.

2. Literature Review – Internal Corporate Governance Mechanisms

possibility of insignificant results. For instance, BHCs typically securitize dozens of deals in any given year. As such, the board of directors is less likely to be involved with deals' approval beyond the first one.

Numerous studies have established that internal corporate governance mechanisms affect firm value, performance, and risk. Some of the common variables include board size and composition, CEO age and tenure, director and managerial share ownership, CEO equity based compensation, and institutional/blockholder's ownership. I discuss each of the above in turn.

Jensen (1993) and Yermack (1996) document that board size is inversely related to firm value, and that CEOs tend to have better control over larger boards which limits their monitoring effectiveness. Board composition, just as size, serves as an important indicator of the board's monitoring effectiveness. Dunn (1987) concludes that outsider-dominated boards are effective monitors, while Fristenberg and Malkiel (1980) stress that it is the outsiders' independence and expertise which contribute to their superior monitoring capabilities. Outsider-oriented boards are also more likely to replace entrenched CEOs following firm's poor performance (Weisbach, 1988, Bryd and Hickman, 1992, Bhagat et al. 1994). Overall, firm value appears to be positively related to the number of outside directors.

CEO age and tenure are also assumed to be directly related to firm value. Increased CEO experience is associated with improved firm performance as the CEO's knowledge and understanding of the firm and its industry improve (Bacon and Brown, 1973, Alderfer, 1986, Brown and Maloney, 1999).

Finally, the literature documents extensively the governing role of institutional investors. These investors, who have the ability to monitor and the incentive to discipline, affect managerial behavior by forcing managers to focus on firm-performance (McConnell and Servaes, 1990, Nesbitt 1994, Smith 1996, Hartzell and Starks, 2003).

More recently, Cornett et al. (2007) refine this finding and conclude that improvements in operating performance are observed when institutional investors do not have business relations with the firms they monitor.

3. Data

My initial sample includes all the available securitization transactions reported by the Securities Data Corporation (SDC) database from 1985-2005. The SDC data base includes deal specific data such as the identity of the issuer/entity, ultimate parent, amount securitized, underlying asset, type of security issued, underwriter/book runner, deal ratings and issuance date. I omit issues associated with ADRs, REITs, and closed-end funds. I also omit issues classified as CDO's since the identity of their ultimate parent is unknown.

My ultimate goal is to identify the first securitization transaction made by each unique issuing Bank Holding Company (BHC) in the SDC database. By identifying the first securitization transaction, I am able to study the "clean" effect governance has on BHC that start securitizing since subsequent securitizations are likely to be continuations of the issuing firms' initial funding strategies. Furthermore, the board of directors is less likely to be involved once securitization becomes part of the ongoing financing operation of the BHC, and as such follow-on deals are less likely to be informative as the first one.

Each transaction in the SDC database is primarily identified by its issuer. The issuer, however, is in most cases not the ultimate parent company but a bankruptcy-remote intermediate trust subsidiary created by the ultimate parent company. SDC

provides information on the ultimate parent of each issuer but this information is not always complete. In some instances, the information is just missing. In other cases, the information refers to a publicly-traded parent subsidiary which must be tracked down and linked with the publicly-traded parent.

Once I have identified the first securitization transaction made by each unique ultimate parent company I then check the issuing firm's data availability on CRSP. Many of the sponsor firms in the SDC database are firms that do not trade publicly. SDC provides data fields for stock exchange of the ultimate parent, the ticker symbol of the ultimate parent, and the CUSIP of the ultimate parent. Observations that have valid entries for stock exchange and ticker are included in the data. Observations that only have CUSIP available are screened through the CRSP database to see if they have at some point in time been publicly traded. Those that are found on CRSP are included in the data.

Financial variables for the publicly-traded BHCs come from year-end call reports. The financial data includes total assets, capital ratio, equity growth rate, liquidity ratio, and non-performing loan ratio (see Appendix I for variable construction detail). I collect governance data from proxy statements published one year prior to the banks' securitization initiation activity. The governance variables control for board size and independence, CEO characteristics and compensation, director and block-holder stock ownership.

To ensure that I have identified the first securitization and to identify the actual announcement of the first securitization, all events in the final data set are double-checked on Factiva. I search for the earliest news story relating to securitization around

the SDC issuance date for each issuing company. The date of the earliest news story is used as the announcement date for the securitization. I also search prior to the issue date for any news stories that contain words such as securitization and asset-backed to ensure that there were no prior securitizations that did not show up on the SDC data base. I did not find any observations where there was a securitization related news story prior to the first identified issuance on SDC. If no news stories at all are found, the SDC issuance date is used as the announcement date.

The final sample of 44 observations is reported in Appendix II. To facilitate the analysis, a control sample of non-securitizers is matched based on industry, size, and capital ratio in the year prior to securitization initiation. Once a peer is matched in any given year, it is dropped from the potential sample of non-securitizers starting that year onward.

Summary statistic results are reported in Table 1. The asset size of the average BHC is about $28 billion. 28% of these assets are classified as liquid, while the sample's average capital ratio is 6.7%. The typical deal is large ($270 million), representing about 2.6% of total on-balance sheet assets. Table 2 compares securitizers' with their matched peers. Since securitizers tend to be large companies with relatively constrained equity growth rates and liquidity positions, it is not surprising that non-securitizers are smaller, with a stronger equity growth rate and a higher liquidity level. The governance characteristics of the groups are fairly similar, except for the level of stock ownership. Banks that securitize for the first time have significantly lower levels of managerial and director stock ownership.

4. Risk, Leverage, and Operating Performance

This section investigates the impact of securitization on the issuers' level of risk. To this end, I compute β as a systematic risk measure and compare it before and after the securitization initiation. In addition, I compare the post event β between securitizers and their matched peers.[39] Since systematic risk and leverage are related, I also compare the debt-to-equity ratio (book value leverage ratio) with the implicit leverage ratio for securitizers following the event. While securitizing firms' accounting (on-balance sheet) leverage may not change (or may decline), the securitizing firm's *implicit* leverage, as measured by total assets under management (i.e. both on- and off-balance sheet), may increase. In order to obtain implicit leverage, I utilize the Hamada (1969) equation such that

$$\beta_L = \beta_U + \frac{D}{E}(\beta_U - \beta_D)(1-T) \qquad (1)$$

First I use the standard market model to estimate β prior to securitization for a period of one year, without including the 10-days prior to the event. This is essentially an estimation of the levered beta, or $\beta_{L,prior}$. Next, I obtain the unlevered beta, or β_U, from equation (4) by using the estimated $\beta_{L,prior}$, the book value of debt-to-equity, and the appropriate corporate income tax bracket (T). I assume debt is risk-less. Finally, I use the market model to estimate the one-year post-event $\beta_{L,post}$. I use equation (1) and the

[39] As a robustness test, I compute two other measures of systematic risk. According to the first one, systematic risk is the difference between total risk and firm specific risk. Total risk is the standard deviation of daily returns and firm specific risk is the standard deviation of the residual from the market model regression. The second measure, the likelihood of insolvency, is a function of capital ratio, expected ROA, and σ_{ROA}. Results based on these measures are similar to the ones reported.

information on $\beta_{L,post}$, β_U and (T) to calculate the implied D/E ratio after securitization and compare it to the accounting D/E ratio. An implied D/E ratio higher than the accounting D/E ratio indicates that the increase in systematic risk is due to implicit leverage rather than other factors.

Table 3 reports the systematic risk results. Beta increases significantly following securitization initiation. The median change in beta (one year after *minus* one year before) is significant at the 5% level. The adjusted median systematic risk measure (securitizer *minus* peer) in the year following the event is significant as well. Post event, the average implied leverage is about 36% higher relative to the actual leverage, an indication that the increase in systematic risk is driven by an increase in leverage. Finally, Table 4 introduces adjusted operating performance measures for a period of 4 years before and after the initiation of a securitization program, however none of the adjusted measures is significant.

5. Governance and Securitization – Multivariate Analysis

5.1. Determinants of securitization initiation

Bank holding companies that begin securitizing experience a significant increase in systematic risk, which is driven by an increase in leverage. This section investigates whether board independence, CEO compensation, insider and institutional stock ownership affect the decision to securitize and mitigate. In addition, I explore whether these variables mitigate the ex-post negative effects documented so far.

First, I estimate a probit model for the determinants of securitization initiation, where the dependent variable equals 1 for BHCs that start securitizing and zero otherwise (for sample of matched-peers). Table 5 presents the coefficients from the regression where I control for both firm and governance characteristics. Following Gorton and Soloules (2006), I include size squared to control for the possibility of a non-monotonic relation between securitization and firm size. The probability of securitization increases with size as the size squared coefficient (0.39) is highly significant. Liquidity, defined as (cash + federal fund sold + book value of securities available for sale) divided by total assets, is a significant determinant of the securitization probability as well. Liquidity-constraint BHCs are more likely to securitize as the negative coefficient (-5.75) is significant at the 5 percent level (*p*-value = 0.012).

In the second part of Table 5, I control for various governance variables as potential determinants of securitization initiation. I control for board independence by identifying outside directors. Following the literature convention, I define outside directors as non-employees of the corporation, without business ties to it, and that do not serve as director on the board of any of the BHC's subsidiaries. I define insiders as directors employed by the BHC. Finally, I control for institutional ownership by identifying the largest blockholder's stock ownership as reported in the 13-F fillings. Overall, the only significant governance variable that affects a BHC's decision to begin securitizing is insider ownership. BHCs with a more concentrated insider ownership are less likely to securitize as the insider stock ownership coefficient is negative and significant at the 5 percent level.

5.2. Internal corporate governance mechanisms and securitization

In this section I investigate whether the documented increase in post securitization systemic risk is affected by the BHC's ownership structure, managerial compensation, and board composition. Furthermore, I study whether the driving force underlying the increase in systemic risk, i.e. implied leverage, is related to these indicators. I also investigate the relation between these various governance mechanisms and securitizers' value, measured by Tobin's q.

I adjust for self-selection bias in the data by including the BHC's predicted securitization probability (PSP) value obtained from the regression in Table 5. This increases the number of observations to 88 and improves the power of the statistical inferences. I control for the pre-securitization level of risk by including the standard deviation of non-performing loans. In addition I include size (natural log of total assets) and on-balance sheet leverage (the ratio of equity-to-risky assets) as potential explanatory variables.

The first column in Table 6 relates the post securitization beta with the various governance variables. Securitizers exhibit an increase in systemic risk following their securitization initiation (positive PSP coefficient, *p*-value = 0.038), yet BHCs with higher levels of CEO equity based compensation that are more likely to securitize (interaction term, PSP*CEO equity compensation) exhibit a decrease in systemic risk, though the coefficient is only marginally significant (*p-value*=0.057). Riskier and larger BHCs (measured by standard deviation of non-performing loans and total assets, respectively)

exhibit higher levels of systematic risk one-year following the BHCs' securitization initiation.

The second column introduces the relation between leverage and the various governance variables. I use the measure of implied leverage (obtained from the Hamada equation) as the dependent variable since this is the appropriate measure for a securitizer (as opposed to book value leverage) given the off-balance sheet financing. The interaction term between securitization probability and insider stock ownership (PSP*insider stock ownership) is negative (-9.06) and significant at the 5 percent level. This suggests that potential securitizers with higher levels of insider ownership are more cautious about managing both on-and off-balance sheet assets, as their implied leverage is lower post-securitization.

Finally, the third column in Table 6 introduces the effect of internal governance mechanisms on firm value. I use Tobin's q to proxy for firm value[40]. On the one hand, q is lower for potential securitizers with larger blockholders. On the other hand, it is higher when potential securitizers have boards that are more independent, as the coefficient PSP*(percent outside directors) is positive and significant at the 5 percent level.

6. Discussion

The fact that securitization has transformed financial intermediation is unquestionable. Through it, originators can manage interest rate risk, increase funding and liquidity sources, focus on activities in which they possess a comparative advantage,

[40] I follow the definition by Adams and Meheran (2003) where Tobin's q is the ratio of (book value of assets plus market value of equity minus book value of equity)/ book value of assets.

and avoid burdensome regulation.[41] Calomiris and Mason (2004) indicate that as the securitization market evolves, it promotes efficient contracting mechanisms that reduce the need for equity capital to support the deal, while mitigating adverse selection costs.

Yet these benefits seem negligible in light of the 2007 financial crisis. Voices criticizing securitization point out that it increases systemic risk due to banks' habit of retaining the equity portion of securitized deals, without having the adequate capital levels on-balance sheet to support it. Moreover, critics question the transactions' ability to truly separate assets from the originator and relocate risk since under certain conditions banks are required to absorb the losses generated by their failed ABS deals, (Stiglitz, 2008; Krugman, 2008).

The documented results highlight the role of managerial incentive-alignment in ameliorating the negative effects securitizers face, particularly those related to systemic risk, implied leverage, and firm value. However, it is important to remember that the results pertain to a cross-sectional sample of first-time securitizers, and as such there are legitimate concerns regarding the applicability of the above results. Two such concerns relate to the scope of the sample and to the results' validity when one considers the proposals for regulatory overhaul following the 2007 crisis.

The first argument undermining the applicability of the results is that by the time of the 2007 financial crisis, most BHCs were already securitizing frequently, and as such the mitigating governance effects following the first transaction are unrelated. The second argument relates to the anticipated regulatory changes following the 2007 financial crisis. It is likely that bank supervisors will pay closer attention to securitization, being the

[41] On the mechanisms and benefits of securitization, see Gorton and Souleles (2006), and Greenbaum and Thakor (2007).

preferred funding mechanism of most BHC and the impetus of the 2007 meltdown, as evident by recent proposal for regulatory changes that would limit the ability to move assets off-balance sheet (Fitch special report, 2009). Hence not only that the relation between governance structure and the post securitization initiation risk, leverage, and firm value is limited in scope (being only observed for first time securitizers when in fact by the time of the crisis most BHCs are already frequent securitizers), the results may also be irrelevant as the ability to securitize might change under a stricter regulatory regime.

Yet history has shown that financial institutions adapt to regulatory changes and operate in ways that maximize their incentives. Furthermore, if securitization is a preferable funding mechanism, then financial institutions will engineer new transactions in such a way that will enable them to meet regulatory requirements, while at the same time enjoy the benefits of off-balance sheet financing (Scism and Smith, 2009; Anderson, 2009). With that respect, having effective governance mechanisms that curb risk-taking is as valuable today (in the newly regulated financial environment) as it was at the time when securitization was first introduced.

The recent crisis also highlights the shortcomings of prudential regulation, especially relating to supervisors inability to accurately measure bank risk and regulators adherence to the too-big-to-fail doctrine which undermines any effective market discipline (Calomiris, 2009). Relying on internal corporate control mechanisms such as managers' equity based compensation, insider stock ownership, and board independence can promote stability in the financial system by curbing excessive risk taking and boosting firm value.

The results also highlight the limited influence institutional investors have over BHCs. Potential securitizers face no discipline from their largest blockholders as their effect on the securitizers' systematic risk and leverage is negligible. At the same time, blockholders have a surprisingly negative effect when considering BHCs' value following securitization initiation. Regulatory limitations on the ownership concentration in financial institutions (the Bank Holding Company Act) hinders bank disciplining from those investors who would benefit most from monitoring managerial decision making. Furthermore, these limitations buffer mismanaged BHCs from the market of corporate control, thereby perpetuating moral hazard. Adjusting these ownership limitations and introducing the threat of hostile takeovers would establish effective monitoring from informed investors and would curb excessive risk taking.

7. Conclusion

The recent financial crisis highlights the difficulties regulators face while trying to monitor financial institutions. Such difficulties can be attenuated by encouraging alternative mechanisms that limit the institutions' tendency to engage in excessive risk taking. Previous literature has shown that corporate governance limits moral hazard and contributes to the overall stability of the financial sector, stability that was seriously hindered during the recent crisis due to the financial sector's reliance on off-balance sheet financing (i.e. securitization).

The theoretical rational suggests that securitization should benefit securitizers. Yet recent empirical evidence indicates that securitization is associated with

shareholders' wealth destruction, long term underperformance, and increase in risk and leverage. Since the corporate governance literature suggests that variables such as board composition, ownership concentration, and compensation structures directly influence firm conduct and performance, a natural question arising from the recent financial crisis is whether securitizers differ from non-securitizers with respect to their governance mechanisms.

To address this question, I hand-collect governance data on the largest most frequent securitizers, bank holding companies (BHCs), just prior to their first ever securitization transaction. I assume that if governance is related to the securitization decision, then it is most observable when the BHC initiates its securitization program. The reason is that once securitization is introduced, most BHCs would typically issue ABS deals on an ongoing basis, making securitization part of their operation and as a result governance involvement (for instance, getting board approval) with successive deals would be limited.

I compare the governance characteristics of 44 BHCs prior to their first ever securitization transactions with those of a matched sample based on industry, size, and leverage. I show that securitizers have lower levels of insider stock ownership and that in general, BHCs with higher levels of insider ownership are less likely to securitize. In addition, I find some evidence that internal corporate control variables mitigate some of the negative effects caused by securitization. I show that post securitization systematic risk tends to be higher for securitizers, yet lower for securitizers with higher levels of CEO equity based compensation. Furthermore, implied leverage (as obtained from the Hamada equation) is lower for BHCs with higher levels of insider ownership. Finally,

post event firm value (Tobin's q) is positively related to the proportion of outside directors serving on the boards of securitizers.

Understanding the role of governance with respect to financial institutions' tendency to engage in risk shifting activities would contribute greatly to the monitoring abilities of regulators. This study provides initial evidence on the importance of governance as a complementary mechanism to the supervisory system. Future research should focus on the long term relation between the two and extend the results beyond the cross-sectional analysis.

Table 1
Summary Statistics

Descriptive statistics for 44 bank holding companies (BHC) that were engaged in securitization activity between 1985 and 2005. Securitization data are obtained from SDC. Firm level data are obtained from year-end Call Reports, and are aggregated for all banks within the same BHC. All variables are as of year-end prior to the initiation of securitization (i.e. t-1). Growth in equity is the percentage change from t-2 to t-1. Liquidity ratio is (Cash + Fed Funds Sold + BV. securities) / assets. Capital ratio is book value of equity to total assets. Risky assets are total assets adjusted for cash, federal funds sold, and securities. Non-performing loans ratio defined as loans 90 days past due but still accruing interest plus non-accrual loans to total loans.

	Mean	Median	Min	Max	Std. dev.
Bank characteristics					
Total assets (in millions of 1997 $)	28,166	18,056	631.424	187,297	33,565
Capital ratio	0.0669	0.0616	0.0447	0.1182	0.0173
Capital to risky assets	0.0854	0.0831	0.0541	0.1838	0.0209
Growth equity	0.1380	0.0981	-0.1637	1.0457	0.2109
Liquidity ratio	0.2806	0.2836	0.1713	0.4446	0.0671
Non performing loans ratio	0.0207	0.0174	0.0043	0.0637	0.0146
Deal characteristics					
Securitization proceeds (in millions of 1997 $)	269.478	214.278	2.229	966.327	212.430
Proceeds-to-assets	0.0267	0.0153	0.0001	0.2106	0.0374

TABLE 2
Median Firm and Governance Characteristics for BHCs Prior to their First Securitization Transaction

Sample includes 44 bank holding companies (BHC) that were engaged in securitization activity between 1985 and 2005. Securitization data for the first transaction are obtained from SDC. Non-securitizers are matched on industry, total assets, and capital ratio from year t-1. Firm level data are obtained from year-end Call Reports, and are aggregated for all banks within the same BHC. All variables are as of year-end prior to the initiation of securitization (i.e. t-1). Capital ratio is book value of equity to total assets. Growth in equity is the percentage change from t-2 to t-1. Liquidity ratio is (Cash + Fed Funds Sold + BV. securities) / assets. Non-performing loans ratio defined as loans 90 days past due but still accruing interest plus non-accrual loans to total loans. Governance data obtained from proxy statements one year prior to securitization initiation. Outside directors are not employees of the company, have no business ties to it, and do not sit on the board of a subsidiary. Insiders are board members employed by the BHC. Equity based compensation is the ratio between the value of granted options to salary, bonus and option value. Blockholder's ownership is for the largest equity holder obtained from 13-F filings. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively.

	Non Securitizers	Securitizers	Two sided Z stats p-value
Financial variables			
Total assets (in millions)	$11,304.9393	$18,056.176	*0.0161*
Capital ratio	0.0667	0.0615	*0.4755*
Growth equity (%Δ from t-2 to t-1)	0.1431	0.0980	*0.0734*
Liquidity ratio	0.3089	0.2835	*0.0310*
Non-performing loan ratio	0.0151	0.0169	*0.2911*
Governance variables			
Board size	16.5	17	*0.4103*
% Insiders	17.16	15.69	*0.2180*
% Gray	22.42	21.82	*0.8477*
% Outsiders	61.25	58.85	*0.9499*
CEO tenure (years)	5	6	*0.7473*
CEO age	55	55	*0.7794*
Director & Exec. stock ownership	3.81%	2.09%	***0.0708****
Director stock ownership	2.42%	1.26%	***0.0224***
Insider stock ownership	1.13%	0.54%	***0.0210***
CEO stock ownership	0.48%	0.31%	***0.0833****
CEO equity based compensation (option value / total comp)	0.4977	0.4628	*0.5636*
Largest block holder	0.0389	0.0364	*0.6788*

TABLE 3
Comparison of Median Measures of Systematic Risk (β) and Leverage

The sample includes 44 BHCs. Part A reports the pre- and post-securitization median systematic risk measure defined as β. Beta is obtained for a period of one year before and after the first act of securitization, not including the 10 days surrounding the event. Adjusted Δ is the defined as the post-event difference between a securitizer and its matched non-securitizer. Non-securitizers are based on a matched sample of industry, total assets, and capital ratio from year (t-1).

Part B reports the median of the difference between the post transaction's implied D/E ratio and the actual D/E ratio. The implied D/E is obtained from the Hamada equation. The Actual D/E ratio is from year end t=0 (i.e. the securitization year).

Tests statistics for differences are based on t the Wilcoxon signed-rank test for medians. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively

Part A: Pre- and post-securitization comparison of systematic risk

	Pre	Post	Δ	Adjusted Δ
β	0.87	1.05	0.11**	0.09**

Part B: Post securitization (i.e. year end t=0) comparison of implied vs. actual leverage

	Implied Debt/Equity	Actual Debt/Equity	Difference
Leverage	16.26	14.03	1.62**

TABLE 4
Median Peer-Adjusted Measures For BHCs that Securitized for the First Time

The table reports the median of peer-adjusted variables (sample firm minus peer firm values). Bank peers are chosen based on industry, asset size, and capital ratio. Year -1 values are from the fiscal year-end prior to the transaction, while year 0 represents year-end values of the transaction year. Indications of significance of medians are based on Wilcoxon singed-rank tests. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively

Yr	N	ROA	ROE	Profit margin	Net Int. Inc. / assets
-3	39	-0.0001	0.0020	0.0016	-0.0002
-2	41	-0.0009	0.0014	-0.0061	-0.0004
-1	44	0.0000	0.0009	-0.0060	0.0005
0	44	0.0001	0.0006	-0.0115	0.0010
+1	44	0.0004	0.0003	0.0045	0.0003
+2	40	0.0013	0.0270	0.0137	-0.0006
+3	33	0.0005	0.0105	0.0044	0.0001

TABLE 5
Probit estimation of securitization initiation

Sample includes 44 securitizers from 1985 to 2005. Matched non-securitizers (based on industry, size, and capital ratio) for which governance data is available are from year t-1 relative to securitization. Firm level data are aggregated for all banks within the same bank holding company (BHC), and are based on t-1 year-end Call Reports. Fee-income growth rate is the percent change from year t-2 to t-1. Liquidity ratio is (cash + federal funds sold + BV of securities) / assets. Non-performing loans ratio defined as loans 90 days or more past due but still accruing interest plus non-accrual loans to total loans. Governance data collected from proxy statements in the year prior to securitization initiation. Outside directors are not employees of the company, have no business ties to it, and do not sit on the board of a subsidiary. Insiders are board members employed by the BHC. Equity based compensation is the ratio between the value of granted options to salary, bonus and option value. Blockholder's ownership is for the largest equity holder obtained from 13-F filings. *p*-values for z-statistics reported in parentheses. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively

Firm characteristics	
Ln. Assets	-12.78***
	(0.001)
[Ln. (Assets)]^2	0.39***
	(0.001)
σ non-performing loans	-1.82
	(0.927)
Liquidity ratio	-5.75**
	(0.012)
Governance variables	
% outside directors	0.76
	(0.160)
CEO equity based compensation	0.29
	(0.604)
Insider stock ownership	-7.17**
	(0.017)
Block holder stock ownership	-1.05
	(0.766)
Constant	104.24***
	(0.001)
Wald χ^2	17.11**
Pseudo R^2	0.216
N	88

TABLE 6

Post securitization effect of governance on firm risk, leverage, and value

The table reports the coefficients from a cross-sectional regression of systematic risk (β), leverage, and firm value (Tobin's q) on governance and firm control variables. β and implied leverage are defined similarly as in Table 3. Tobin's q defined as (book value assets + market value equity – book value equity) / (book value assets). Sample includes 44 securitizers from 1985 to 2005 and 44 matched non-securitizers (based on industry, size, and capital ratio) for which governance data is available are from year (t-1) relative to securitization. Firm level data are aggregated for all banks within the same bank holding company (BHC), and are based on (t-1) year-end Call Reports. Governance data collected from proxy statements in the year prior to securitization initiation. Outside directors are not employees of the company, have no business ties to it, and do not sit on the board of a subsidiary. Insiders are board members employed by the BHC. Equity based compensation is the ratio between the value of granted options to salary, bonus and option value. Blockholder's ownership is for the largest equity holder obtained from 13-F filings. Non-performing loans ratio defined as loans 90 days or more past due but still accruing interest plus non-accrual loans to total loans. Risky assets are total assets adjusted for cash, federal funds sold, and securities. *p*-values reported in parentheses. ***, **, * indicates significance at 1%, 5%, and 10% levels respectively.

	β_{POST}	Implied Leverage	Tobin's q
Insider stock ownership	1.81	2.39	1.11
	(0.239)	*(0.162)*	*(0.250)*
CEO equity based comp.	0.26	-0.71	0.2
	(0.199)	*(0.152)*	*(0.428)*
Largest Blockholder stockownership	3.57**	5.18	2.74*
	(0.048)	*(0.136)*	*(0.098)*
Percent outside directors	0.09	0.82**	-0.49**
	(0.721)	*(0.042)*	*(0.019)*
Predicted securitization probability (PSP)	0.66**	0.41	-0.16
	(0.038)	*(0.559)*	*(0.428)*
PSP* (insider stock ownership)	-3.42	-9.06**	-0.76
	(0.273)	*(0.025)*	*(0.696)*
PSP* (CEO Equity based comp.)	-0.82*	-0.24	-0.18
	(0.057)	*(0.804)*	*(0.600)*
PSP* (Largest Blockholder ownership)	-4.02	-4.84	-4.78*
	(0.335)	*(0.513)*	*(0.068)*
PSP* (Percent outside directors)	-0.15	-0.68	0.69**
	(0.752)	*(0.385)*	*(0.017)*
σ (non-performing loans) $_{t-1}$	27.41***	21.78*	0.11
	(0.003)	*(0.087)*	*(0.965)*
Ln. (total assets)	0.23***	-0.03	0.01
	(0.000)	*(0.839)*	*(0.867)*
capital-to-risky assets	-0.80	-8.18*	1.06
	(0.708)	*(0.051)*	*(0.228)*
Constant	-3.30***	3.72*	1.01***
	(0.000)	*(0.080)*	*(0.001)*
F-statistics	11.27***	5.30***	2.87***
Adjusted R^2	0.4412	0.15	0.2493
N	88	88	88

Appendix I
Variable Definition Using Call Reports Data
(as defined by Kashyap and Stein AER 2000)

Variable	Definition	Call report item
Total assets		rcfd2170
BV equity	Book value of equity	rcfd3210
Total loans	Prior to 1984: (loans and leases net unearned income, allowance and reserves + lease finance receivables)	(rcfd2125 + rcfd2165)
	From 1984: loans and leases net unearned income, allowance and reserves	rcfd2125
Liquidity ratio	(cash + fed funds sold + BV securities) / assets	(rcfd0010 +rcfd1350 + rcfd0390) / rcfd2170
Capital ratio	BV. Equity / total assets	rcfd3210 / rcfd2170
Capital to risky assets	BV. Equity / (assets - cash - fed funds sold - BV securities)	rcfd3210 / (rcfd2170 – rcfd0010 - rcfd1350 - rcfd0390)
ROA	Net income / assets	riad4340 / rcfd2170
ROE	Net income / BV equity	riad4340 / rcfd3210
Large deposits ratio	(CDs above $100K + Open time deposits above $100K) / total deposits	(rcon6645+rcon6646) / rcfd2200
Non-performing loans ratio	(Loans 90 days past due but still accruing interest + non-accrual loans) / total loans	(rcfd1407 + rcfd1403) / total loans

Appendix II

First Securitization Activity by a BHC and its Respective Special Purpose Entity

(Note: the list includes only those BHCs for which a proxy statement was available)

Year	Issuer	BHC	Matched Non-Securitizer
1985	Citibank NA	Citicorp	Chemical New York Corp
1985	Manufacturers Hanover Mortgage	Manufacturers Hanover Corporation	Bankers Trust Corp
1987	Security Pacific National Bank	Security Pacific Corporation	WFC Holdings Corp
1987	Bank Boston Cars Trust 1987-A	Bank of Boston Corporation	Continental Illinois Holding Corp
1987	First Chicago Cards Tr 1987-1	First Chicago Corporation	Mellon Bank Corp
1987	MBNA Credit Card Trust 1987-A	MNC Financial, Inc.	Boatmens N.B. of St. Louis
1988	Shawmut National 1988-A	Shawmut Corporation	Ameritrust Corp
1988	UST Fastbacs 1988-B Grantor Tr	UST Corp	Summcorp
1988	Huntington Grantor Tr 1988-A	Huntington Bancshares Incorporated	Michigan National Corp
1988	J.P. Morgan Mortgage Pass-Thru	J.P. Morgan & Co. Incorporated	First Union Corp / Wachovia
1988	First Security 88-A Grantor Tr	First Security Corporation	Equitable Bancorp / Maybaco
1988	Chase Manhattan Grantor 88-A	Chase Manhattan Corporation	Citizens & Southern Corp GA
1989	Banc One Grantor Trust 1989-A	Banc One Corporation	First Union Virginia Corp
1989	Valley Natl. Grantor Tr 1989-A	Valley National Bancorp	Associated Banc Corp
1989	Hibernia Natl-1989-A Trust	Hibernia Corporation	United Banks of Colorado
1989	Bank Of New England 1989-A	Bank Of New England Corporation	First Fidelity Bancorp NJ
1990	National City Bank, Cleveland	National City Corp	Union Bank
1990	Midlantic Auto Grantor Trust	Midlantic Corporation	Ameritrust Corp
1990	Norwest Master Trust	Norwest Corporation	US Bancorp OR
1990	Signet Credit Card Tr 1990-1	Signet Banking Corporation	Comerica Inc
1990	FBS Mortgage Corp	First Bank System	First City Bancorp TX
1990	First Interstate Bank Of Ca	First Interstate Bancorp	First of America Bank Corp MI
1991	Meridian Automobile Tr 1991-A	Meridian Bancorp, Inc.	State Street Boston Corp
1991	BNY Master Credit Card Trust	Bank of New York Company, Inc.,	UJB Financial Corp
1991	Pittsburgh National Bank	PNC Financial Corp	Baybanks Inc
1991	Velco 1991-A Grantor Trust	Banponce Corporation	Whitney Holding Corp
1992	OSCC Home Equity Ln Tr 1992-1	NBB Bancorp, Inc.	Trustco Bank Corp NY
1992	Fleet Mortgage Securities	Fleet Financial Group, Inc	First Fidelity Bancorporation
1993	Corestates Home Eq Trst 1993-1	Corestates Financial Corp	Southtrust Corporation.
1993	NationsBank Of Delaware	NationsBank Corporation	Bancorp Hawaii Inc
1994	Society Student Loan Trust	Society Corporation	Firstar Bk Milwaukee Na
1995	EQCC Home Equity Ln Tr 1995-1	Barnett Banks, Inc.	Regions Financial Corp
1995	Wachovia Cdt Cd Mstr Tr 1995-1	Wachovia Corporation	Mercantile Bancorporation Inc
1996	Fifth Third Auto Grantor Trust	Fifth Third Bancorp	BB&T Corp
1996	Irwin Home Equity Corp Trust	Irwin Financial Corporation	First Oak Brook Bancshares Inc
1997	Mid-State Trust Vi(Wilmington)	Wilmington Trust Corp	Capital One Financial Corp
1997	Provident Bank Home Eq 1997-2	Provident Financial GRP Inc	United Missouri Bancshares Inc
1997	First Nbc Cc Mstr Trust 1997-1	First Commerce Corporation	Commerce Bancshares Inc
1997	Crestar Student Loan Tr 97-1	Crestar Financial Corporation	MBNA Corporation
1998	Union Planters Mortgage 98-1	Union Planters Corp	M&T Bank Corp
1998	Compass Bank Auto Rec 1998-A	Compass Bancshares, Inc.	Old Kent Financial Corporation
1998	Greenpoint MH 1998-1	Greenpoint Financial Corp	Zions Bancorp
1999	United National Home Loan 99-1	United National Bancorp	Mid America Bancorp KY
2000	Amsouth Auto Trust 2000-1	Amsouth Bancorporation	Marshall & Ilsley Corp
2002	First Horizon Mgt 2002-Ar2	First Tennessee National Corporation	BankNorth Group Inc New
2005	SunTrust 2005-1F	SunTrust Banks INC	Webster Financial Corp

List of References

Adams, R., Mehran, H., (2003). "Is Corporate Governance Different for Bank Holding Compnaies?" Rederal Reserve Bank of New York Policy Review (April), 123-142.

Alderfer, C.P., (1986). "The Invisible Director on Corporate Boards." Harvard Business Review 64, 38–52.

Anderson, J., (2009). "Wall Street Pursues Profit in Bundles of Life Insurance." September 6.

Anderson, R.C.; and D.R. Fraser (2000). "Corporate Control, Bank Risk Taking, and the Health of the Banking Industry." *Journal of Banking and Finance*, 24, 1383-1398.

Ashcraft, Adam, and Til Schuermann (2008). "Understanding the Securitization of Subprime Mortgage Credit." Staff Working Paper no. 318, Federal Reserve Bank of New York.

Bacon, J., Brown, J.K., (1973). "Corporate Directorship Practices: Role, Selection and Legal Status of the Board." The Conference Board, New York.

Barber, M.B.; and J.D. Lyon (1997). "Detecting Long-Run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics." *Journal of Financial Economics*, 43, 341-372.

Bhagat, S., Brickley, J.A., Coles, J.L., (1994). "The Costs of Inefficient Bargaining and Financial Distress: Evidence from Corporate Lawsuits." *Journal of Financial Economics* 35, 221–247.

Billett, M.T.; M.J. Flannery; and J.A. Garfinkel (2006). "Are Bank Loans Special? Evidence on the Post-Announcement Performance of Bank Borrowers." *Journal of Financial and Quantitative Analysis*, 41, 733-751.

Boehmer, E.; J. Masumeci; and A.B. Poulsen (1991). "Event –Study Methodology Under Conditions of Event Induced Variance." *Journal of Financial Economics*, 30, 253-272.

Benveniste, Lawrence M. and Allen N. Berger (1987). "Securitization with Recourse: An Instrument that Offers Uninsured Bank Depositors Sequential Claims." *Journal of Banking and Finance* 11, 403-24.

Brown, W.O., Maloney, M.T., (1999). "Exit, Voice, and the Role of Corporate Directors: Evidence from Acquisition Performance." Claremont Colleges Working Paper.

Bryd, J., Hickman, K., (1992). "Do Outside Directors Monitor Managers? Evidence from Tender Offer Bids." *Journal of Financial Economics* 32, 195–222.

Calomiris, Charles W. (2000). *U.S Bank Regulation in Historical Perspective,* Cambridge University Press.

Calomiris, Charles W. (2008). "The Subprime Turmoil: What's Old, What's New, and What's Next, Working Paper, Columbia University.

Calomiris, Charles W. (2009). "Financial Regulation, Innovation, and Reform." The Cato Journal, 65-91.

Calomiris, Charles W. (2009). "Prudential Bank Regulation: What's Broke and How to Fix It." Working paper.

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

Cantor, Richard, and Frank Packer (1994). "The Credit Rating Industry." *Federal Reserve Bank of New York Quarterly Review*, Vol. 19, Summer-Fall, 1-26.

Capiro, Gerard, Asli Demirguc-Kunt, and Edward J. Kane (2008). "The 2007 Meltdown in Securitized Assets: Searching for Lessons, Not Scapegoats." Working Paper No. 4756, World Bank.

Chen, Weitzu, Chi-Chun Liu, and Stephen G. Ryan (2008). "Characteristics of Securitizations that Determines Issuers' Retention of the Risks of the Securitized Assets." *The Accounting Review* 83, 1181-1215.

Committee of Global Financial System (2005). "The Role of Ratings in Structured Finance: Issues and Implications." http://www.bis.org/publ/cgfs23.htm.

Cornell, Bradford., Wayne Landsman, and Alan Shapiro (1989). "Cross-Sectional Regularities in the Response of Stock Prices to Bond Rating Changes." *Journal of Accounting, Auditing, and Finance* 4, 460-79.

Cornett, M.M. E. Ors, and H. Teharanian. (2002) "Bank Performance Around the Introduction of a Section 20 Subsidiary." *Journal of Finance,* 1, 501-521.

Cornett M.M, ,Alan J. Marcus, A. Saunders and H. Tehranian, (2007). "The Impact of Institutional Ownership on Corporate Operating Performance." *Journal of Banking and Finance*, 31, 1771-1794.

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

Dichev, Illia D., and Joseph D. Piotroski (2001). "The Long Run Stock Returns Following Bond Rating Changes." *Journal of Finance* 56 (January), 173-203.

Dunn, D.J. (1987). "Directors Aren't Doing Their Jobs." Fortune (March), 117–119.

Ederington, Louis H., Jess B. Yawitz, and Brian E. Roberts (1987). "The Informational Content of Bond Ratings." *Journal of Financial Research* 10, 211-26.

Falkenstein, E.G., (1996). "Preferences for Stock Characteristics as Revealed by Mutual Fund Portfolio Holdings." *Journal of Finance* 51 (March), 111–135.

Fama, E. and K. French (1993). "Common Risk Factors in the Returns on Stocks and Bonds." *Journal of Financial Economics* 33, 3-56.

Fitch Ratings, (2009). "Off-Balance Sheet Accounting Changes." June 22.

Flannery, Mark J. (2001). "The Faces of Market Discipline." *Journal of Financial Services Research* 20, 107-19.

Franke, G. and J.P. Krahnen. (2005) "Default Risk Sharing Between Banks and Markets: The Contribution of Collateralized Debt Obligations." *The Risks of Financial Institutions*.

Glascock, John R., Wallace N. Davidson, and Glenn V. Henderson (1987). "Announcement Effects of Moody's Bond Rating Changes on Equity Returns." *Quarterly Journal of Business and Economics* 26, 67-78.

Goh, Jeremy C. and Louis H. Ederington (1993). "Is a Bond Rating Downgrade Bad News, Good News, or no News for Stockholders?" *Journal of Finance* 48, 2001-08.

Golding, E., 2000. Comments on Joint Interagency Proposed Regulation entitled "Risk-Based Capital Standards; Recourse and Direct Credit Substitutes: Proposed Rule; 65 Fed. Reg. 12320.

Gorton, Gary (2008). "The Panic of 2007", Working Paper, Yale University.

Gorton, G., Metrick, A., (2009). "Securitized Banking and the Run on Repo." Working paper, Yale School of Management.

Gorton, Gary B., and George G. Pennacchi (1989). "Are Loan Sales Really Off-Balance Sheet?" *Journal of Accounting, Auditing, and Finance* 4, 125-45.

Gorton, Gary B., and George G. Pennacchi (1995). "Banks and Loan Sales Marketing Nonmarketable Assets" *Journal of Monetary Economics* 35, 389-411.

Gorton, Gary, and Nicholas S. Souleles (2006). "Special Purpose Vehicles and Securitization", with chapter in The Risks of Financial Institutions, edited by Rene Stulz and Mark Carey, University of Chicago Press.

Greenbaum, S., Thakor, A., (1987). "Bank Funding Modes Securitization versus Deposits. Journal of Banking and Finance 11, 379-401.

Greenbaum, Stuart, and Anjan Thakor (2007). *Contemporary Financial Intermediation*, Second Edition Academic Press.

Griffin, Paul and Antonio Z. Sanvicente (1982). "Common Stock Returns and Rating Changes: A Methodological Comparison." *Journal of Finance* 37 (March), 103-19.

Hamada, R. (1969). "Portfolio Analysis, Market Equilibrium, and Corporate Finance." *Journal of Finance*, 24, 13-31.

Hand, John R. M., Robert W. Holthausen, and Richard W. Leftwhich (1992). "The Effect of Bond Rating Agency Announcements on Bond and Stock Prices." *Journal of Finance* 47 (June), 733-52.

Hartzell, J.C., Starks, L.T., (2003). "Institutional Investors and Executive Compensation." *Journal of Finance* 58, 2351–2374.

Hansel, D. N. and J.P. Krahnen (2007) "Does Credit Securitization Reduce Bank Risk? Evidence from the European CDO Market." Working Paper.

Heckman, J. (1979) "Sample Selection Bias as a Specification Error" *Econometrica*, 47, 153-161.

Herring Richard J. (2008) "The Darker Side of Securitization: How Subprime Lending Led to a Systemic Crisis", Presentation to the Shadow Financial Regulatory Committee, May 4.

Higgins, Eric and Joseph R. Mason (2004). "What is the Value of Recourse to Asset Backed Securities: A Study of Credit Card ABS Recourse." *journal of Banking and Finance* 28 (April), 857-74.

Hill, C.A. (1996). "Securitization: A Low Cost Sweetener for Lemons" *Washington University Law Quarterly*, 74.

Hite, G.L.; J.E. Owers; and R.C. Rogers (1987). "The Market for Interfirm Asset Sales: Partial Sell-offs and Total Liquidations." Journal of Financial Economics, 18, 229-252.

Holthausen, W. Robert and Richard W. Leftwhich (1986). "The Effect of Bond Rating Changes on Common Stock Prices." *Journal of Financial Economics* 17 57-89.

Instefjord, N. (2005). “Risk and hedging: Do Credit Derivatives Increase Bank Risk?” *Journal of Banking and Finance*, 29, 333-345.

Jensen, M., (1993). “The Modern Industrial Revolution, Exit, and the Failure of Internal Control Systems.” *Journal of Finance* 48, 831–880.

Jensen, M., Meckling, W., (1976). “Theory of the Firm: Managerial Behavior, Agency Costs and Ownership Structure.” *Journal of Financial Economics* 3, 305-360.

Kliger, Doron and Oded Sarig (2000). “The Information value of Bond Ratings”. *Journal of Finance* 6 (December), 2879-902.

Kose, J.; and E. Ofek (1995). “Asset Sales and Increase in Focus.” *Journal of Financial Economics*, 37, 105-126.

Krahnen, J.P., and C. Wilde (2006). “Risk Transfer with CDOs and Systemic Risk in Banking.” Working Paper.

Krugman, Paul, (2008). “Partying like It’s 1929.” New York Times, March 21.

Lang, L.; A. Poulsen; and R. Stulz (1995). “Asset Sales, Firm Performance, and the Agency Costs of Managerial Discretion.” *Journal of Financial Economics*, 37, 3-37.

Liu, Pu, and Anjan Thakor (1984). “Interst Yields, Credit Ratings and Economics Characteristics of State Bonds: An Empirical Analysis.” *Journal of Money, Credit and Banking* 16, 344-51.

Lockwood, L.J.; R.C. Rutherford; and M.J. Herrera (1996). “Wealth Effects of Asset Securitization.” *Journal of Banking and Finance*, 20, 151-164.

Lucchetti, Aaron and Serena Ng (2007). “How Rating Firms’ Calls Fueled the Subprime Mess” The Wall Street Journal, August 15.

Marra, A. F. (2000). Comments on Joint Interagency Proposed Regulation entitled, “Risk-Based Capital Standards; Recourse and Direct Credit Substitutes,” Comments Submitted to Regulators by Fannie Mae, June 7.

Mason, Jospeh R., and Joshua Rosner (2007b). “Where Did the Risk Go? How Misapplied Bond Ratings Cause Mortgage Backed Securities and Collateralized Debt Obligations Market Disruption.” Working Paper, Drexel University.

McConnell, J.J., Servaes, H., (1990). “Additional Evidence on Equity Ownership and Corporate Value.” *Journal of Financial Economics* 27, 595–612.

Memorandum Opinion (2001), U.S. Bankruptcy Court for the Northern District of Ohio Feb. 5.

Moody's Investors Service, (2001). "True Sale Assailed: Implications of In re LTV Steel for Structured Transactions," April 27.

Nesbitt, S.L., (1994). Long-term Rewards from Shareholder Activism: A Study of the 'CalPERS Effect'. *Journal of Applied Corporate Finance* 6, 75–80.

Nomura, (2002). "ABS Credit Migrations," March 5.

OCC Guidance (2002). "Interagency Guidance on Implicit Recourse in Asset Securitization".

Office of the Comptroller of the Currency and Board of Governors of the Federal Reserve System (2003). Interpretive Letter #988, July 28, 2003 April 2004, 12 CFR 3, version of July 28.

Pinches, George E. and Clay J. Singleton (1978). "The Adjustment of Stock Prices to Bond Rating Changes." *Journal of Finance* 33 (March), 29-44.

Riddiough Timothy J., and Risharng Chiang (2003). "Commercial Mortgage Backed Securities: An Exploration into Agency, Innovation, Information, and Learning in Financial Markets." Mimeograph, University of Wisconsin.

Robert, Schweitzer, Samuel Szewczyk S., and Raj Varma (1992). "Bond Rating Agencies and Their Role in Bank Market Discipline." *Journal of Financial Services Research* 6, 249-63.

Rosenthal, J.A. and J.Ocampo (1988). "Securitization of Credit." New York, NY: Wiley.

Thomas, H. (1999). "A Preliminary Look at Gains from Assets Securitization." *Journal of International Financial Markets, Institutions and Money*, 9, 321-333.

Scism, L., Smith, R., (2009). "Wall Street Wizardry Reworks Mortgages." October 1.

Smith, M., (1996). "Shareholder Activism by Institutional Investors: Evidence from CalPERS." *Journal of Finance* 51, 227–252.

Stigliz, Joseph, (2008). "Unfettered Market Do Not Lead to Social Well Being."

Vermilyea, Todd A., Elizabeth Webb R., and Andrew A. Kish (2008). "Implicit Recourse and Credit Card Securitizations: What Do Fraud Losses Reveal?" *Journal of Banking and Finance* 32, 1198-1208.

"Will Sales Treatment Survive a Recession?" (1997). Asset Sales Report, 11:13 (March 31, 1.

Wakeman, L. (1978). "Bond Rating Agencies and the Capital Markets." Working Paper, University of Rochester.

Weinstein, Mark I. (1977). "The Effect of a Rating Change on Bond Prices." *Journal of Financial Economics* 5 (October), 329-50.

Weisbach, M.S., (1988). "Outside Directors and CEO Turnover." *Journal of Financial Economics* 20, 431–460.

Yermack, D., (1996). "Higher Market Valuation of Companies with a Small Board of Directors." *Journal of Financial Economics* 40, 185–211.

VITA

Adi Mordel

Experience:

Senior Analyst, Bank of Canada
Financial Stability Department, Regulatory Policy Division
July, 2010

Education:

LeBow College of Business, Drexel University
Ph.D., Finance, 2010
Dissertation Title: Three Essays on Securitization
Committee Members: David Becher, Jacqueline Garner, Michael Gombola, Eric Higgins, Joseph R. Mason (Chair)

College of Business Administration, Kansas State University
M.B.A., 2005

College of Business Administration, Kansas State University
B.S., Finance, Cum Laude 2004

Invited Talks and Conferences:

Bar-Ilan University, European Business School, European Central Bank, University of Exeter, Bank of Canada, Victoria University of Wellington, the 46th annual Conference on Bank Structure and Competition, 2010, FMA Doctoral Consortium, 2009, FMA Special Ph.D. Student Paper Presentation Session, 2009, SFA Annual Meeting, 2009, FMA Annual Meeting, 2008, EFA Annual Meeting, 2008, Mid Atlantic Research Conference in Finance, 2008

Academic Honors:

Graduate Assistantship, Drexel University Department of Finance, 2005-2009
LeBow College Outstanding Ph.D. Teaching Assistant Award, Drexel University 2008
Graduate Assistantship, Kansas State University, Department of Finance, 2004
Adult Student Academic Excellence Award, Kansas State University, 2004
Academic Scholarship, Kansas State University, College of Business Administration 2002-2003
Athletic Scholarship (NCAA Sanctioned), Kansas State University, 2000-2002
All-Academic First Team, Big 12 Conference, 2001-2002