CONFLICTS OF INTEREST AND SECURITIZATION

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Abstract

Securitization typically involves the separation of duties, with several agents performing functions (for fees) that would alternatively be performed by a single lender with ownership of a whole loan. While this process enhances liquidity and transparency, securitization also creates the potential for appreciable principal-agent conflicts. We use new data on 357 commercial mortgage-backed securities (CMBS) deals with over 46,000 individual loans to examine these tradeoffs. We find that assigning ownership of the lowest rated tranches (the so-called first-loss position) to the special servicer, the party who is charged with handling delinquencies and defaults, helps to alleviate agency problems. When holding the first-loss piece, special servicers are less likely to make costly transfers of delinquent loans to special servicing and, once loans are in special servicing, are more likely to liquidate loans in an efficient manner. Spreads are lower on the low-rated tranches when the special servicer owns the first-loss position, despite the fact that these deals have higher expected delinquencies and worse (ex-ante) unobservable quality. Given these facts, one might be surprised to discover that the first-loss position is often owned by a party other than the special servicer. We pose a number of explanations, including conflicts of interest between junior and senior securities holders and risk aversion among special servicers. Consistent with these tradeoffs, we show that when special servicers hold the first-loss position in deals with more severe delinquency problems, loans appear to be handled less effeciently. We conclude with a discussion of the implications of these findings for future securitizations.

Introduction

Debt securitization is one of the most important financial innovations in recent decades, with mortgage- and asset-backed securities representing the largest portion of these fixed-income securities. As of the second quarter 2004, the value of outstanding of mortgage- and asset-backed securities was $7.2 trillion, $2.6 trillion more than the outstanding balances of the second largest class: corporate bonds[1]. According to the Federal Reserve Board, about one-half of mortgages and one-fourth of all US consumer credit are securitized[2].

The asset-backed securities market has developed along many dimensions. Once dominated by residential mortgage-backed securities, this market now includes securities backed by loans on cars, manufactured homes, credit card receivables, commercial real estate, leases, franchise debt, and student loans (Riddiough 1997). The deal structure has evolved from the simple pass-through securities to more complicated multi-tranche structures. These innovations create value by allowing underwriters to create securities that match better the preferences of investors for various positions along the risk/return frontier, are more liquid and more transparent.[3] That said, few empirical papers explore the economic tradeoffs associated with the increased complexity of securitizations.[4]

Traditionally, a lender such as a bank or insurance company would manage the entire lending process, making all decisions with regard to collecting payments, extending additional credit,

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[1] The outstanding levels of corporate and asset-backed bonds are Bond Market Association estimates. Data for other sectors come from U.S. Department of Treasury, Federal Reserve System, Federal National Mortgage Association, Government National Mortgage Association, Federal Home Loan Mortgage Corporation and Thompson Financial.
[2] Federal Reserve Board (1999).
[3] If markets were complete, transactions costs were low, and information were perfect, CMBS securities would not create value. See Gaur, et., al, (2003) for a further discussion of pricing securities in incomplete markets.
[4] One recent paper on the subject is Downing and Wallace (2005), although their focus is different than ours. The authors find that subordination levels for recent CMBS deals are below the optimal level of subordination as computed using a multifactor pricing models.

restructuring terms in the event of a delinquency, and foreclosing when it is economical to do so.[5] In contrast, securitizations involve multiple parties, often separating the ownership of the securities from control over most decisions with regard to collection, restructuring, and foreclosure.[6] Specialized parties called servicers usually handle the ongoing management functions. Securities are sold to buyers, where the economic claims to cash flows are divided (or "tranched") based on a strict priority system. Parties pay a premium to buy securities which are protected from losses by the existence of more junior positions that hold a first-loss position. This structure is similar to that of dividing up control of the firm between debt and equity holders, where equity holders have the first-loss position. However, securitizations usually involve many more layers than simple debt and equity, have stricter enforcement of the priority structure, and are managed by servicers who, at best, have a narrow stake in the equity of the firm. As such, securitizations have the potential for appreciable principal-agent conflicts.

In the commercial real estate securitizations that we examine in this paper, there are usually two major types of servicers.[7] A master servicer oversees the deal and monitors the timely collection of principal and interest payments and the distribution of these cash flows to investors. In the event of potentially serious problems, a special servicer takes over responsibility for managing a troubled loan. The special servicer's performance has a major impact on the return to the investors. Special servicers usually receive a fixed fee for monitoring the pool of loans, plus a percentage of the outstanding balance of any loans that under special servicing. These fees are

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[5] For larger debt amounts, lenders may syndicate a loan to multiple parties, but these parties will usually have equal claims to the proceeds in the event of a default.
[6] In some deals, the owner of the lowest rated tranche can choose the servicer or override the servicer's decisions, but may lack the information or skills to adequately make such decisions.
[7] In some cases, a subservicer, who originated the loans and retains the borrower relationship, provides the primary servicing activities (payment processing and loan administration). The master servicer is responsible for collecting debt service and information from the subservicers and then remitting and reporting to the trustee.

paid before investors receive any proceeds from a workout or foreclosure of a troubled loan. As with the managers of a corporation, special servicers may not always behave in the best interest of the investors who own the underlying securities. (Jensen and Meckling 1976, Fama 1980).

To better align the interests of the special servicers and investors, special servicers sometimes hold the most junior piece (usually called B-piece). Of course, such arrangements still do not necessarily achieve a first-best solution. **(CITE--TIROLE OR OTHERS)** Special servicers may be risk averse and unable to fully diversify their holdings, so they need to be compensated for holding portfolios with concentrated risk. In addition, when managers hold the first-loss position in a debt securitization, they may face incentives to extend loans or take other risks when the value of their equity position falls. This is analogous to the decisions made by savings and loan executives to extend loans when large losses on real estate loans impaired their capital in the late 1980s. More generally, equity holders always face incentives to take additional risks when the value of their equity is in jeopardy.

In this paper, we evaluate the effectiveness of assigning ownership of the B-piece to special servicers as means of aligning the interests of securities owners and managers. We consider loan servicing in two stages: transfer and work out. Agency conflicts may exist in both stages. When a loan is faces a possible delinquency, which can be triggered by late payments, low property cash flow, or diminished collateral value, the master and special servicers must jointly decide whether and when to transfer the loan to special servicing.[8] Since the special servicer receives a monthly fee that is based the total balance of loans under special servicing, she has incentive to encourage the transfer of loans to special servicing at an earlier stage than would otherwise be

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[8] Master servicers are not paid additional fees for managing loans that require additional work, so they usually do not object when the special servicer recommends that a loan be transferred to special servicing.

economical[9]. Once a loan is transferred to special servicing, the special servicer must exert effort to find the best work out strategy and eventually recover as much as possible of the loan balance in the case of foreclosure and liquidation. However, investors cannot observe the special servicer's effort, so she has incentives to shirk.

We examine these issues using a newly-constructed data base of 357 commercial mortgage-backed securities (CMBS) deals with over 46,000 individual loans. Our results are consistent with the existence of appreciable principal-agent conflicts in the securitization process.

To begin, we show that special servicers hold the B-piece for securitizations in deals with worse observable quality and, conditional on observable attributes, have higher ex-post delinquency rates. (Delinquency is typically an objective measure of loan performance in which servicers have less discretion.) These are deals where monitoring is difficult and thus agency conflicts are most severe. Nonetheless, despite the existence of lower quality loans, the special servicer is up to 14 percent less likely to transfer a delinquent loan to special servicing in deals where she holds the B-piece. Conditional on special servicing, the special servicer is five percent more likely to foreclose and liquidate a loan when the special servicer owns the B-piece. Thus the special servicer appears to put additional effort into identifying the most troubled to put into special servicing when she owns the first-loss position. All of these results hold in specifications where we include fixed effects for individual special servicers.

Data on initial bond prices for CMBS securities also support our agency interpretation. Prices are higher (yields are lower) for junior securities in deals in which the special servicer owns the

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[9] Fitch Ratings expressed the concern that some special servicers in the commercial mortgage backed securities (CMBS) market have been using "excessive litigation" to retrieve unpaid borrower funds or unnecessary transferring assets into special servicing. "Fitch Warns CMBS Servicers: Play Fair or Else" MBA (10/2/2003) Murray, Michael.

first-loss position. These securities are the most likely to be positively impacted by superior performance of the special servicer. Spreads on the most senior (investment-grade) securities appear unaffected by the ownership of the B-piece.

Despite these findings, the special servicer does not own the B-piece in more than one-third of all CMBS securitizations in our data. We discuss possible tradeoffs. For example, special servicers appear to own the B-piece in a smaller percentage of deals when total issuance of CMBS securities is highest, consistent with risk-averse special servicers having problems hedging exposure to aggregate risk. Finally, we provide evidence that conflicts of interest between junior and senior creditors play a role in these findings as well. In deals with a large percentage of delinquencies, a special servicer who owns the B-piece appears to reverse her behavior, slowing the foreclosure process for loans already in special servicing.

With a strong real estate market and relatively few defaults in recent years, the relative efficiency or inefficiency of special servicers has had little effect on the overall performance of the CMBS market. Yet, one might expect that the agency conflicts identified in this paper might become more important if the real estate market materially deteriorates.

The remainder of the paper is organized as follows: Section II provides the backgrounds and lays out the predictions for each questions based on the agency theories. In Section III, we describe the data and summary statistics. Section IV presents the results and Section V concludes the paper.

II. Theory and predictions

The discussion of managerial incentive problems dates back as far back as Adam Smith's "The Wealth of Nations." Articles such as Jensen and Meckling (1976), Harris and Raviv (1978), and Fama and Jensen (1983) suggest that managers do not always behave in the interests of owners, even with the existence of elaborate (and costly) contracts between managers and shareholders. Other market mechanisms such as the threat of takeover and "ex-post settling up" do not fully discipline managers (Fama 1980).

A second and related strand of literature examines how information asymmetries on the part of lenders impact the liquidity of loans and the benefits of securitization. Gorton and Pennacchi (1995) show that contract mechanisms such as implicit guarantees or partial sales of loans can mitigate moral hazard problems in which lenders do not exert enough effort investigating the risk associated with loans that they intend to sell. In a similar vein, DeMarzo (2005) shows that securitization allows sophisticated intermediaries with special skills in valuing assets to mitigate the "lemons" problem when selling assets to the market and thus maximize its return on capital. However, for CMBS securitizations, these mechanisms do not appear to operate, as neither originators nor underwriters hold the risks from loan failures once securities have been issued.[10] By contrast, our work examines the impact of effort and conflicts of interest in managing a securitization once it is created.

A principal-agent problem arises when one party, the principal, pays another party, the agent, to conduct some activity for her. The agent's effort (or expenditure or, more generally, her action) together with a random element determines the outcome. In the face of unobservable effort and asymmetric information about the firm's prospects, shareholders cannot obtain the first-best

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[10] Often, the servicer can require the originator and/or the underwriter to repurchase loans in the case of material misrepresentations of loan information. However, this is a very strict standard that does not account for the vast majority of delinquencies and defaults.

outcome for the firm. Similar problems exist in most securitizations. While junior security holders (who can be viewed as the equity holders in a corporation) have the right to choose and change the special servicer, they often lack the ability to monitor managerial effort and deal quality.

In the face of principal-agent conflicts, we begin by examining the conditions under which high powered incentives are important. Outcome-based (or performance-based) compensation can provide the better incentives for the agent (Eisenhardt 1989). However, if agents are more risk averse than the principals and their actions are not observable and verifiable, such compensation will be expensive and will not obtain the first-best outcome. (Shavell, 1979) The optimal compensation scheme will employ higher-powered incentive schemes when an agent's effort has a larger effect on profits, when asymmetric information problems make effort more difficult to observe by outsiders, and when agents are less risk-averse. In the case of the CMBS market, having the special servicer own the B-piece provides higher-powered incentives to optimally handle delinquent loans. However, if the special servicer is risk averse and cannot easily diversify risk, she will be willing to pay less to own the B-piece than to other possible purchasers of CMBS securities who can own a more diversified portfolio.

Special servicers have expertise in handling non-performing loans, but are exposed to appreciable risk associated with CMBS securities. The B-piece usually represents about 3% of the deal, but bears all of the losses from any loans in the securitization. The top 10 special servicers cover more than 80% of the CMBS market. It is quite difficult for them to be as well-diversified as other investors might be if the special servicers hold the B-piece in all deals that they service. Rating agencies require all servicers to have an above-investment-grade rating in order to perform their function, so special servicers must hold a large amount of (costly) capital

if they hold the B-piece on every deal. Other potential purchasers of low-rated CMBS securities may not face similar capital requirements.

The usual CMBS securitization is created by an underwriter, usually a large investment or commercial bank, who chooses the management structure (in conjunction with the rating agencies) and markets the securities to investors. Underwriters want to maximize the profits from each securitization, but also want to maintain their reputation for future securitizations. Underwriters may also have additional information about loans than investors and the rating agencies, especially since underwriters originate many of the loans in their portfolios. Thus, an underwriter trades-off possibly lower revenue associated with the special servicer purchasing the B-piece against the benefits of better-aligned incentives when the special servicer owns the B-piece.

H1: The special servicer is more likely to hold the B-piece in deals with (1) a higher expected delinquency rate and (2) lower ex-ante unobservable quality.

High-powered incentive schemes are more valuable in deals that require greater effort by the agents; i.e., in deals with loans that have a higher expected delinquency. However, not all the delinquencies are equal. Agency theory shows that information curbs agent opportunism. (See, for example, Fama 1980 and Fama and Jensen 1983). Thus the outcome-based compensation is also more attractive when the asymmetric information is greater.

We proxy for asymmetric information using the extent to which deals differ in realized delinquency rates after controlling for observable variables. Investors are able to assess the risks associated with well-known quality indicators such as the loan to value ratio (LTV) and the Debt Service Coverage Ratio (DSCR). However, when a seemingly high-quality loan (low LTV and

high DSCR) gets into trouble, investors may have a harder time predicting the loss recovery. If underwriters have additional information about the likelihood of delinquency that is not easily observable to investors, we would expect the underwriters to be more likely to sell the first-loss position to the special servicers when this private information suggests that a deal will have a higher delinquency rate.

Of course, it is also important to examine whether having the special servicer hold first-loss position is effective in alleviating agency problems. Usually, the deal prospectus specifies the conditions under which a delinquent loan should be transferred to the special servicer. While loan delinquency is based on clearly observable factors, in practice, the special servicer has some discretion in deciding whether and when to transfer the delinquent loans. As an agent, the special servicer might minimize costly effort in effectively identifying which loans have severe enough problems to justify being transferred. Also, since special servicers receive fees based on the number and dollar value of loans that are in special servicing, they face an additional incentive to transfer more loans into special servicing than is optimal from the perspective of the investors. If the special servicer owns the first-loss position, she is the residual claimant and thus pays all costs associated with transferring loans into special servicing. In this circumstance, the special servicer will choose the first-best solution.

For example, suppose that 20 out of each 100 delinquencies are due to temporary cash flow shortfalls that will disappear within two months. With some effort, the special servicer can perfectly identify the 80 problematic loans and transfer them into special servicing. Since effort is costly a special servicer might choose to transfer all 100 delinquent loans into special servicing and earn fees on all 100 loans. Even if she randomly transfers 80 loans, only 64 of those loans will face serious problems and the remaining 16 loans will come out of special servicing without

any additional effort. Of the 20 loans she does not transfer, 16 will get worse and eventually have to be transferred later. Thus, shirking on the part of the special servicer causes less accurate transfers into special servicing and more transfers than otherwise. In fact, Fitch, a major rating agency, expressed concern that special servicers in the commercial mortgage securities (CMBS) market use "excessive litigation" to retrieve unpaid borrower funds or unnecessarily transfer assets into special servicing (Mortgage Banker Association 10/2/2003).

H2: Controlling for observable quality, fewer loans will be transferred into special servicing when the special servicer holds the B-piece.

By aligning the interests of the special servicer and investors, we expect to see that the special servicer transfer fewer delinquent loans into special servicing when she owns the B-piece.

Next, we consider the work-out stage. Ideally, we would examine the effectiveness of aligning interests by measuring whether investors obtain smaller losses when the special servicer owns the B-piece. Unfortunately, we do not observe losses. Instead we have data on whether a loan is liquidated (either thru foreclosure or the special servicer acquiring ownership of the real estate) after the special the servicer's workout.

Under most circumstances, agency theory predicts that when the special servicer acts as the agent (as opposed to being the principal when she owns the B-piece), she will liquidate fewer loans than is optimal for the investors. Foreclosure is lengthy and involves costly effort for the special servicer, including intensive research in looking for potential buyers, negotiation with sophisticated players, and expensive legal procedures. Ciochetti and Riddiough (1998) report that the average elapsed time from the beginning of the foreclosure process to the date at which title to the property is obtained by the investor (or is sold by the courthouse) is approximately 9

months. By postponing this decision, there is a non-zero probability that the loan will become current without the special servicer exerting any effort. However, if the loan does not become current and has to be liquidated later, the recovery rate in present value terms may be lower because owners of severely distressed real estate are likely to take additional risks and to postpone necessary capital improvements and renovations. Therefore, under these conditions, the special servicer is less likely to liquidate than is optimal for investors and than a single lender would. (The appendix works out a simple numerical example.)

For smaller potential losses, owning the B-piece aligns interests, so we would expect the special servicer to liquidate more when she holds the B-piece.[11] However, this structure does not align interests as perfectly as would occur if a single lender owned all of the loans in a securitization and made all foreclosure decisions. Securitization creates potential conflict of interests between senior and junior securities holders. When potential losses in a single securitization grow, the owner of the B-piece faces a risk that total losses would exceed the value of the B-piece. As such, when the special servicer owns the B-piece, she might optimally choose to extend troubled loans rather than foreclosing and ensuring that the losses eliminate the value associated with the B-piece. (Foreclosing wipes out the option to extend the loans. See Riddiough 1997).

H3: The special servicer will liquidate more quickly when holding the B-piece and facing small potential losses. However, when a deal faces serious possible delinquencies, a special servicer who owns the B-piece has an incentive to extend loan terms and delay foreclosure.

This is similar to the incentives for managers of a financial institution (or firm) to take additional risks when its capital is low (or its debt/value ratio is high).

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[11] Similarly, Argawal and Mandelke (1987) shows that managers who are given more stock or stock options as percentage of total compensation act more in line with the investors than mangers who holds less.)

III. Data

The data for this study comes from two main sources: Trepp Data Feed and Commercial Mortgage Alert (CMA) CMBS Data. Trepp is the leading data provider in commercial mortgage-backed securities and is used by most major investors in the CMBS market. Trepp Data Feed consists of four separate files: a loan file, a deal file, a bond file, and a property file. Each file includes both static data and dynamic performance data, including property cash flow, for all loans, deals, properties, and bonds. We observe the data once each year at the end of the year, rather than continuously. We obtain a number of important variables from Trepp Data Feed, including loan delinquency status, the date on which a loan was transferred to the special servicer, the date on which a loan was returned back to the master servicer, the date on which a loan was foreclosed or transferred to REO (Real Estate Owned by the special servicer), the loan-to-value ratio (LTV), and debt service coverage ratio (DSCR). The DSCR is the ratio of property cash flow to total debt payments. Thus a ratio of 1.25 implies that property cash flow is 1.25x required debt service payments, or that property cash flow could fall by 20% and still allow the debtor to make his loan payments.

CMA is a weekly newsletter and maintains a collection of data, including all new CMBS issuances and the initial prices of many bonds sold to investors at the time of the securitization. CMA lists the owner's name for many junior pieces[12], enabling us to identify the most important variable in our analysis: whether the special servicer (SPS) owns the B-piece. Initial bond prices include the yield and spread over benchmark for all tranches that are publicly placed at the time

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[12] There is no such as data field "B-piece buyer" in the data base itself. However, there is a short paragraph note for each deal and in many deals the B-piece buyer's name is listed. We add this field by going over all the notes.

of the initial securitization. Unfortunately, we are unable to obtain consistent pricing information for securities once a initial sale of securities takes place.

The Trepp data consists of an unbalanced panel of 839 deals with up to six years of observations (1998-2003), depending on when the deal was originated. We merge the files from Trepp and CMA by issuer name and serial number, successfully matching 702 of the 839 deals. Of these 702 deals, 588 have the name of the special servicer and 360 have B-piece ownership. Overall, our final sample has 357 deals (with 46,492 loans) that have both the B-piece ownership and special servicer information.

Table 1 lists these deals by the year that the deal closed. In recent years, the average deal size has varied between $786 million and $1,164 million, while the average number of loans per deal ranges from 105 to 232, with no clear pattern over time. Figure 1 shows the sharp increase in world-side CMBS issuance.

Of special interest to our analysis, Figure 2 shows that the percentage of deals in which the special servicer owns the B-piece in a given year appears inversely related to the total issuance of CMBS securities. This observation is consistent with the view that special servicers face a tradeoff between their exposure to aggregate risk and the extent to which special servicers own the B-piece (and thus have more closely aligned incentives), although with eight years of aggregate data, this analysis is hardly definitive.

Table 2 summarizes the percentage of deals that the special servicer owns the B-piece for all fifteen special servicers that service at least 5 deals in our sample. These special servicers manage deals that account for 89% of the number of deals and 92% of the loan balances in our sample, suggesting that the special servicing industry is relatively concentrated. Among the 317

deals that these special servicers manage, the special servicer owns the B-piece in 203 (64%) deals. Although most special servicers own the B-piece in at least some portion of their deals, special servicers show a strong "preference" for one type of structure or the other. This fact is especially true for the top 6 special servicers. We include special servicer dummies in all default and delinquency specifications to control for possible differences across special servicers.

IV. Results

A. When do special servicers hold the B-piece?

Table 3 compares selected characteristics for deals based on whether or not the special servicer holds the B-piece. We see two important observations. First, deals in which special servicer holds the B-piece have higher delinquency rates. For delinquencies of greater than 30 days, these differences are statistically significant at the 5% level. This finding is consistent with our expectation that aligning incentives through having the special servicer own the B-piece is more valuable in deals with higher expected delinquency rate. Equally important, there are no economically or statistically significant differences in ex-ante observable characteristics such as cutoff balance, cutoff loan count, LTV, DSCR, Weighted Average Coupon (WAC), and AAA subordination based on whether the B-piece is held by the special servicer. Together, these two pieces of evidence imply that deals in which the special servicer holds the B-piece are more likely to be delinquent, but do not differ on observable characteristics. Since this difference may be hard for investors to infer (at least relative to the underwriters who potentially have more information about the underlying loans), we refer it as unobservable quality.

To systematically explore this point, we examine the likelihood of delinquency in a deal in year t+1 conditional on information in year t. Note that delinquency is a relatively objective measure

of a troubled loan, with delinquencies typically being triggered by late payments or in some

cases, cash flow falling to very low levels. The results are presented in Table 4. The dependent

variable is the delinquency rate for each deal; that is, the ratio of the outstanding balance of loans

in delinquency as a ratio of the total outstanding of balances for the deal. Explanatory variables

include whether the special servicer owns the B-piece, loan-to-value ratio, DSCR, controls for

the percentage of each property type, and year dummy variables. LTV should have a positive

coefficient; as the loan balance approaches the collateral value, the borrower is less likely to pay

the loan and delinquency becomes more likely. Similarly, the coefficient on DSCR should be

negative, because the adverse cash flow shocks may cause immediate missed payments (Vandell

1984).[13]

To account for the strong non-linearity in the effects of LTV and DSCR, we use dummy

variables instead of the numerical values in columns 2, 4, and 6. In the first two columns, we

include only a sparse set of covariates, including whether the special servicer owns the B-piece,

LTV, and DSCR. Columns 3 and 4 add year dummies and property type controls. The last two

columns include dummy variables for each special servicer and thus rely on variation in deals for

individual special servicers based on whether or not they own the B-piece.

In all specifications, the SPS-Bbuyer dummy is positive and statistically significant at

conventional confidence levels, implying that special servicers hold the B-piece in deals that

have lower unobservable quality. In fact, the inclusion of firm fixed effects actually raises the

size of the coefficient on whether the special servicer owns the B-piece. These deals potentially

have the greatest information asymmetry between the special servicer and investors, because

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[13] Vandell 1984 is the first study on default risk assessment of commercial mortgages. Following works on this topic investigate further the endogeneity of LTV and DSCR and other related issues.

investors have much more experience with delinquency that is due to lower observable quality (higher LTV and low DSCR,etc). The coefficient on LTV is statistically insignificant (or marginally significant) in all the columns, while the coefficient on DSCR is negative and significant, as expected. [14] Deals with a high percentage of multifamily loans experience more severe delinquency, while deals with more warehouse and mobile home loans have lower delinquency rates.

Our results in this section are consistent with hypothesis H1. If the underwriter has better information on the true quality of deals, she will try to align the interests between the special servicer and the investors in deals where: (1) the expected delinquency rate is higher; and (2) the asymmetric information problems may be more severe.

B. Agency conflicts in transferring loans to special servicing

Next, we investigate whether holding the B-piece mitigates agency problems when transferring loans to special servicing, a potentially costly process from the perspective of investors. Theory predicts that the special servicer is less likely to transfer a delinquent loan to special servicing when she owns the B-piece for two reasons: first, she exerts more effort in identifying the right loans to transfer; and second, she doesn't have the incentive to do unnecessary transfers to gain more fees since she is the residual claimant. To address this question, Table 5 panel A reports the results of a probit model in which the dependent variable equals one when a delinquent loan is transferred to special servicing within certain period of time and independent variables are SPS_Bbuyer and other explanatory variables. We examine transfers of delinquent loan that

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[14] Archer, Elmer, Harrison and Ling (2002) argue for the endogeneity in commercial mortgage underwriting in terms of LTV ratio, which would imply no empirical relationship between default and LTV because lender would require lower LTVs for high risk mortgages. They examine 495 multifamily mortgages securitized by the Resolution Trust Corporation (RTC) and the Federal Deposit Insurance Corporation (FDIC) and find no evidence of LTV effect on default.

occur between two to six months after delinquency. We do not have clear predictions for the coefficients on LTV and DSCR. While we would generally expect to see special servicers ransfer delinquent loans with higher LTV and lower DSCR more quickly, with agency conflicts, we have no clear predictions.

In addition, we might be worried about the possibility that if deals in which the special servicer owns the B-piece have unobservably worse quality, special servicers in these deals might justifiably transfer loans faster into special servicing, if all else were equal. We address this issue below when we examine overall loan pricing on deals in which the special servicer owns the B-piece.

The estimated coefficients on the dummy variable indicating that the special servicer owns the B-piece are negative and highly significantly different from zero. The coefficients are large, suggesting a 4.5 to 14 percent lower likelihood of transferring loans into special servicing when the special servicer owns the most junior tranche. These findings confirm our prediction that the alignment of interests alleviates the agency problem at the transfer stage (hypothesis H2). These findings are robust to various specifications, but are strongest (statistically and economically) for transfers over a longer six month period and when we control for special servicer fixed effects. The coefficients on LTV and DSCR are both negative and significant, which is a bit surprising[15]. Panel B confirms these findings for different time horizons when using fixed effects for special servicers.

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[15] One possible explanation is that LTV is not a consideration in special servicer's transfer decision. Since LTV and DSCR are compliments in origination, that is, the originator asks for high DSCR for high LTV borrowers, the negative coefficient on LTV is spurious due to the positive correlation between DSCR and LTV. However, the data does not support this hypothesis and DSCR and LTV are negatively correlated.

For completeness, we also examine the combined effect; that is, whether more loans are transferred to the special servicer in deals that the special servicer owns the B-piece. This specification combines the. The results in Table 6 suggest that negative effect of worse unobserved quality across deals dominates the potentially positive incentive effect of having the special servicer own the B-piece. Overall, transfer to special servicing is more likely in deals that the special servicer holds the B-piece. That is, using the incentive enhancing compensation scheme has the overall effect of making the special servicer work harder.

C. Agency conflicts in working out troubled loans

Once a loan reaches the special servicing stage, the special servicer must now exert additional effort to quickly and accurately decide whether to foreclose or renegotiate and extend the loan. In Table 7, we run a probit regression estimating the likelihood that a loan is liquidated within 6 months (or a year). We define liquidation based on whether the records indicate a foreclosure, a REO transaction, or a bankruptcy within a fixed period of time after the transfer to special servicing. As in other regressions, we control for other observable quality variables, including LTV, DSCR, deal type dummies, property type dummies, dummy variables for origination year, and special servicer dummies.

As discussed in Section II, we expect that the alignment of interests will cause the special servicer to liquidate sooner. However, as a larger percentage of the loans in a deal get in trouble, the likelihood grows that potential losses will exceed the size of the junior piece. At that point, having the special servicer own the B-piece creates conflicts between the junior and senior securities holders. As potential losses grow, a special servicer who also holds the junior piece has incentives to extend loan terms as opposed to immediately foreclosing. To examine these

predictions, we define the extent to which a deal faces serious delinquency based on whether the sum of all delinquent loan balances in a deal exceeds various thresholds. We include the measure of serious delinquency in the regression directly, as well as including an interaction term between this dummy variable and whether the special servicer owns the B-piece. We expect the interaction term to be negative if conflicts between securities holders are largest in seriously delinquent deals.

Table 7 presents basic results with our usual set of control variables. As predicted, loans in deals in which the special servicer owns the B-piece are between three and five percent more likely to be liquidated within six months or a year, a result that is statistically significant with at least 90 percent confidence in all specifications

The coefficients on other controls are consistent with expectations. LTV has a positive coefficient, consistent with previous literature. The rationale for this result is as follows: mortgage defaults are a put option for borrowers. The value of the put option increases as the market value of equity declines. Therefore, borrowers with high LTV are more likely to find the put option in the money and exercise the option, i.e. default. Specifications using dummy variables for LTV instead of the continuous value show that the main impact of LTV is for loans with an LTV higher than 80%. The coefficients on DSCR have the expected negative sign, although they are significant only in columns 4 to 6.

Table 8 confirms the possibility of conflicts between senior and junior tranches when a deal gets into serious trouble. The coefficient on the interaction term denoting that a deal has serious delinquencies and the special servicer owns the most junior tranche is negative and statistically different from zero with at least 95 percent confidence in all but the last specification. In the last

column, the coefficient on the interaction term is similar to the coefficient in other specifications, but has a larger standard error and is no longer statistically different from zero at conventional confidence intervals.

For deals without serious delinquencies, the special servicer appears to foreclose more quickly when she owns the most junior tranche. The coefficient on the dummy for serious delinquency is also positive and significant in most columns, suggesting either that the special servicer becomes more aggressive when the deal is in serious trouble, possibly due to concern with reputation, or that unobserved quality is worse when many loans in a deal get in trouble.

As mentioned above, lower transfer rates and higher liquidation rates for deals in which the special servicer owns the B-piece are consistent with the hypothesis that the special servicer exerts more effort in identifying the right loans to transfer. However, we are concerned that unobserved quality might be biasing our findings.

To address the issue of unobserved quality, we use the following test: if the exertion of the effort is the only reason for differences in the timing of liquidation, we would expect that the eventual liquidation of loans would be similar whether or not the special servicer owns the B-piece. For example, suppose there are 100 delinquent loans. Without exerting much effort, the special servicer might transfer the worst 70 loans and eventually liquidate 35 of those loans later on because those 35 loans are truly in trouble. Now suppose the special servicer exerts a lot effort and she can identify the truly problematic loans with a much higher accuracy rate. Therefore, she transfers only 50 loans and eventually liquidates the same 35 loans. Comparing these two cases, it is clear that additional effort in choosing the right loans to transfer to special servicing leads to a lower transfer rate and a higher liquidation rate, conditional on special servicing. Yet,

the liquidation rate for delinquent loans remains the same—35%. However, if unobserved

quality is correlated with special servicers owning the B-piece in a way that impacts eventual

loan liquidation, not just delinquency rates, we would observe appreciable differences between

the unconditional likelihood of liquidation based on whether or not the special servicer owns the

B-piece.

The results, presented in Table 9, show that, conditional on delinquency, liquidation rates are

higher for deals in which the special servicer owns the B-piece. Thus, if anything, deals in which

the special servicer owns the B-piece have lower unobserved quality. This suggests that the

special servicer is especially accurate when referring loans to special servicing when she owns

the B-piece. However, these findings are statistically different from zero in the first two columns

based on whether a delinquent loan is liquidated in 6 months. In the last two columns, when we

examine liquidation within one year, the coefficients drop in half and are not significantly

different from zero. As above, these findings suggest that the special servicer handles additional

delinquencies more quickly when she owns the B-piece.

D. Market prices of securities and agency conflicts

Finally, we take advantage of initial bond pricing data from CMA to examine whether bond

investors pay a premium for deals in which the special servicer owns the B-piece. The reasoning

is straightforward: if there is value created from this incentive enhancing structure, the market

should require lower yield in deals with the structure than in other deals, ceteris paribus. This

finding would be especially striking given that the deals in which the special servicer owns the

B-piece appear to be have appreciably worse unobserved quality. In the regressions, we control

for the bond rating assigned to each tranche, so unobserved quality will only matter to the extent

that the rating agencies do not take the unobserved quality into account. If the rating agencies perfectly accounted for observed and unobserved quality in their bond ratings, we should find no differences in premiums paid for tranches, whether or not the special servicer owns the B-piece. Table 10 panel A shows the results from these regressions. The dependent variable is the spread over the benchmark yield as reported in the CMA pricing data set (measured in basis points, or 0.01%). In addition to whether the special servicer owns the junior tranche, we include a complete set of dummy variables for each bond ratings category and year and quarter dummies. Since most of the deals are rated by more than one rating agencies, we use the best rating from among all ratings assigned in the odd columns and the worst rating among all ratings assigned in the even columns. We also restrict the sample to bonds which have a fixed rate and thus are easier to evaluate. This cuts our sample of bonds by about 10 percent.

With all bonds, the coefficient on the special servicer owning the B-piece is negative and fairly small (about 8 basis points), and also not statistically different from zero at conventional confidence levels. However, these regressions include all rated tranches, while most of the benefits associated with the special servicer owning the B-piece go to the junior security holders who bear most of the credit risk. (Note: At the time of our last draft, there have been no losses to any CMBS securities with investment-grade ratings of BBB or above.) However, most junior pieces are privately placed and are not publicly priced, so the regression sample mainly consists of senior tranches. For example, almost 97% of all tranches in our data have investment-grade ratings. This weakens the power of this test dramatically.

Nonetheless, in columns 3 and 4, we keep only the tranches with speculative (non investment-grade) ratings. The sample drops appreciably to 78 (79) observations. Nonetheless, the coefficients deals in which the special servicer owns the B-piece becomes much more necative

and is highly significant. In the bottom row of Table 9, we list the average spread for each

regression sample. When all the tranches are included, the average effect of aligning the

interests is fairly small, because the majority of tranches are senior securities that bear very little

credit risk. When focusing only on the tranches with below investment-grade ratings, the

estimated effects are much larger in magnitude. For these tranches, the evidence suggests that

the underwriter is able to sell securities at a spread that is 23% to 29% percent lower when the

special servicer holds the B-piece (columns 3 and 4).

In panel B, we further explore the potential differential effect of the special servicer holding B-

piece for different rating categories, by adding interaction terms for each rating category. Given

the small size of the sample when we focus on the junior tranches, raw rating categories are used

instead of fine categories. At the bottom of the table, the p-values of the tests of equality are

reported. Interestingly, the hypothesis that deals in which special servicer holds the B-piece gets

the same spread as other deals is rejected for all raw rating categories.

These findings are consistent with underwriters facing a tradeoff in which they are able to sell

securities at a lower yield when the special servicer owns the B-piece, but that the special

servicer requires a premium to be willing to hold the B-piece. These findings are also striking in

that deals in which the special servicer owns the B-piece have identifiably worse observable and

unobservable quality.

IV. Conclusion

The asset-backed securities market has exploded in recent year, as underwriters add value by

creating securities that match buyers' specific preferences for risk and return, completing

markets and adding liquidity. This paper demonstrates that securitization also involves

potentially serious moral hazard and agency conflicts associated with the separation of ownership and management and conflicts of interest between junior and senior securities holders. These conflicts are similar to those faced by firms that finance with debt, but are more pronounced given the large number of debt tranches in most ABS securitizations and the stricter priority claims that are enforced by courts. Our findings suggest that securitization results in a second-best solution in dealing with troubled loans relative to a situation in which there is a single entity that owns a whole loan and manages potential delinquencies. More specifically, the special servicer, the agent in charge of the workout strategy for delinquent assets, plays an important role in the performance of the deal, but may not always behave in the best interests of security holders. To curb the agency problem, the special servicer often holds the most junior tranche (the so-called B-piece).

Using data on 357 CMBS deals involving over 46,000 loans, we find that the special servicer holds the B-piece in deals where asymmetric information and expected defaults are more severe. We further explore the effect of this incentive-enhancing structure by looking at the decisions to transfer a loan to special servicing and eventually liquidate a loan. We find that, when the special servicer owns the B-piece, the special servicer is less likely transfer delinquent loans to servicing and she is more likely to liquidate loans that are under special servicing. These findings are consistent with the predictions of agency theory. Furthermore, using the initial pricing data from CMA we confirm that the market values this structure by requiring 23% to 29% lower spread for tranches with non-investment grade ratings. However, the structure is not flawless. We find suggestive evidence that in deals with severe delinquency problems, a special servicer who is also the junior piece holder may be likely to extend loan terms beyond what is optimal, possibly because the downside loss can be shared with senior security holders.

The study leaves a number of issues and limitations that we would like to address in future research. First, we do not have data on loss severity (or recovery rate). Second, even though Trepp is the source of data most widely used by the investors, there may still be information that investors have, but is unobservable or unquantifiable to us. We simply attribute this information as unobservable quality. Nonetheless, this study provides evidence that securitization involves tradeoffs that may lead to a second-best outcome when handling troubled loans.

From a policy perspective, our finding that having the special servicer own the B-piece only alleviates conflicts when delinquency rates are relatively low is also a potential warning. Our results surely do not generalize to situations in which the number of delinquencies grows appreciably from where it is today. The lack of a downturn in the US as ABS securitizations have become popular does not provide the data to address what would happen to loss recoveries for securitizations in the event of a serious downturn in the market of underlying collateral. Nonetheless, this is an issue that is worthy of additional attention as regulated institutions rely more heavily on rated ABS securities to fund future lending activities.

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Appendix: A Numerical Example

```
                                           Current
                                           get 1m
                                        /
                                  p   /
  Foreclose   _____/
  get 0.9m                       \
                                   \
                            1-p     \
                                     Foreclose
                                     get 0.8m
```
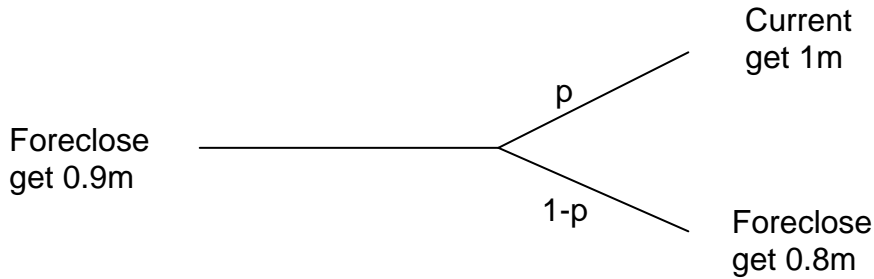
The problem a single lender is facing. The single lender will foreclose the loan now iff

$$P<=0.5$$

```
                                           Current
                                           Cost 0
                                        /
                                  p   /
  Foreclose   _____/
  Cost E                         \
                                   \
                            1-p     \
                                     Foreclose
                                     Cost E+R
```
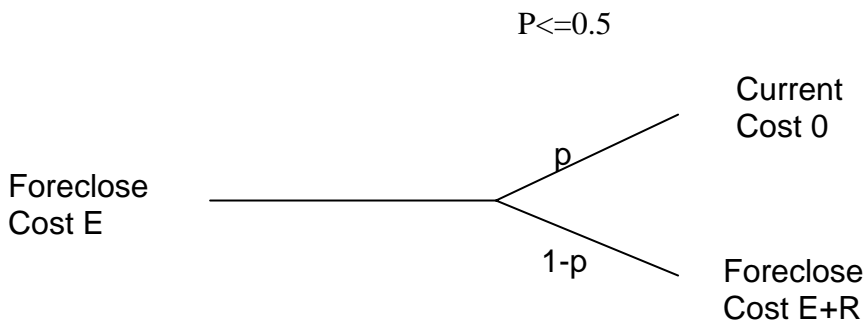
The problem a fee-compensated special servicer is facing. The special servicer will foreclose the loan now iff

$$P<=R/(E+R)$$

Under the assumption that the action of the agent is not observable to the investors and therefore investors can not distinguish whether a late foreclosure is due to the special servicer's shirking behavior or the bad quality of the underlying collateral. It is reasonable to assume the reputation cost (R) to the special servicer is fairly small compared to the effort (E). so $R/(E+R)<0.5$ and special servicer liquidate loans less often than a single lender would.

Table 1 Summary of CMBS Deals by Closing Year

This table lists all the deals in the final sample by closing year. The third-fifth columns summarize the number and percentage of deals based on whether or not the special servicer (SPS) holds the B-piece.

Year	Number of Deals	SPS Holds B-piece	SPS Not Hold B-piece	Pct in which SPS Holds B-piece	Total Issuance ($million)	Avg Deal Size ($million)	Avg # Loans Per Deal
1993	1	1	0	100%	$21	$21	197
1994	4	2	2	50%	$1,110	$278	90
1995	18	8	10	44%	$5,260	$292	80
1996	25	20	5	80%	$11,100	$442	140
1997	31	24	7	77%	$24,700	$796	145
1998	43	27	16	63%	$50,100	$1,164	210
1999	43	21	22	49%	$39,800	$925	232
2000	53	33	20	62%	$41,600	$786	130
2001	47	25	22	53%	$39,600	$842	124
2002	44	32	12	73%	$37,700	$858	105
2003	48	28	20	58%	$51,300	$1,069	106
Total	357	221	136	62%	$302,291	$847	144

Table 2 Summary of Deals by each Special Servicer

This table summarizes deals by the name of each special servicer (SPS). Only special servicers with at least 5 deals are included. This table includes 89% (92%) of the number of deals (cutoff loan balance) in the final sample.

Special Servicer	# of Deals	Total Balance ($ millions)	# of Deals in which SPS Holds B-piece	# of Deals in which SPS Not Hold B-piece
Lennar	80	$74,600	64	16
GMAC	67	$53,600	55	12
Midland	33	$27,800	2	31
Orix	25	$22,800	4	21
Criimi Mae	24	$23,700	23	1
ARCap	18	$20,500	16	2
Banc One	14	$13,200	6	8
Lend Lease	11	$10,100	7	4
Amresco	10	$9,430	8	2
Clarion	7	$6,850	6	1
J.E. Robert	7	$2,450	5	2
GE Capital	6	$3,260	5	1
First Union	5	$5,370	1	4
Gespa	5	$1,740	0	5
Wells Fargo	5	$3,590	1	4
Total	317	$278,990	203	114

Table 3 Comparison of Deals Based on Whether the Special Servicer Holds the B-piece

This table compares some basic characteristics of deals in which the special servicer (SPS) holds the B-piece or does not hold the B-piece. The fourth column presents t-statistics for the test of whether the means of each variable are equal in columns 2 and 3. All delinquency measures are the percentage of outstanding balance of delinquent loans over outstanding balance of all loans in a deal.

	Deals in which SPS Does Not Hold B-piece	Deals in which SPS Holds B-piece	T-stat for difference
Balance ($mil)	$819	$864	-0.84
Number of Loans	128	154	-1.38
Loan-to-Value Percent	67.1%	66.4%	-1.01
Debt Service Coverage Ratio	1.59	1.57	0.28
Weighted Average Coupon yield	7.58%	7.72%	1.02
AAA Subordination Level	23.4%	22.2%	1.33
Pct. of Loans more than 30 days delinquent	0.25%	0.34%	-1.02
Pct. of Loans more than 60 days delinquent	0.09%	0.19%	-1.90
Pct. of Loans more than 90 days delinquent	0.39%	0.74%	-1.95
Pct. of Loans with any delinquency	0.73%	1.95%	-2.21

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Table 4 Delinquency Regressions

This table presents the results from regressing the delinquency rate in year t+1 on explanatory variables in year t. Estimates are robust to unobservable heteroskedasity and correlation across years within each deal.

Dependent variable: Percentage of Loan Balance in a Deal that is Delinquent

	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**
SPS owns B-piece	0.92	0.94	0.81	0.82	1.09	1.02
	[2.86]**	[2.90]**	[2.40]**	[2.52]**	[2.07]**	[2.13]**
Loan-to-Value	-0.035		-0.047		-0.044	
	[0.53]		[0.60]		[0.61]	
DSCR	-1.77		-2.44		-1.67	
	[1.66]*		[1.75]*		[1.32]	
LTV is 0.60 to 0.80		-0.34		0.25		-0.03
		[0.25]		[0.16]		[0.02]
LTV > 0.80		-1.12		-2.33		-1.77
		[0.75]		[1.16]		[1.00]
DSCR < 1.2		1.50		0.66		-1.00
		[0.92]		[0.47]		[0.64]
DSCR is 1.2 to 1.6		0.49		0.73		0.52
		[1.22]		[1.58]		[0.98]
Pct fixed rate loans			-0.016	-0.017	-0.004	-0.004
			[1.30]	[1.62]	[0.26]	[0.26]
Constant	6.06	0.96	10.27	3.05	8.34	2.64
	[1.06]	[0.89]	[1.39]	[2.10]**	[1.36]	[1.74]*
Prop Type Controls			Y	Y	Y	Y
Year Dummy Vars			Y	Y	Y	Y
SPS Dummy Vars					Y	Y
Observations	895	895	895	895	895	895
R-squared	0.02	0.01	0.11	0.1	0.15	0.15

Table 5 Transfer to Special Servicing Conditional on Delinquency

The estimates are robust to unobservable heteroskedasity and correlation across loans within each deal. The table reports partial effects.

Panel A

The dependent variable is a dummy variable that equals 1 if a delinquent loan was transferred to special servicing in 3 (6) months and 0 otherwise.

	Transfer to Special Servicing in 3 Months			Transfer to Special Servicing in 6 Months		
SPS owns B-piece	-0.044	-0.045	-0.075	-0.044	-0.045	-0.138
	[1.59]	[1.60]	[1.62]	[1.41]	[1.41]	[2.60]**
LTV	-0.002			-0.003		
	[2.44]**			[3.69]**		
DSCR	-0.066			-0.109		
	[2.85]**			[4.33]**		
LTV is .60 to .80		0.009	0.01		0.051	0.048
		[0.26]	[0.28]		[1.27]	[1.16]
LTV > 80		-0.11	-0.11		-0.16	-0.16
		[2.49]**	[2.35]**		[3.09]**	[3.12]**
DSCR < 1.2		0.06	0.06		0.12	0.12
		[1.55]	[1.59]		[2.85]**	[2.81]**
DSCR is 1.2 to 1.6		-0.011	-0.012		0.009	0.004
		[0.31]	[0.34]		[0.23]	[0.10]
Deal Type Dummy	Y	Y	Y	Y	Y	Y
Property Type Dummy	Y	Y	Y	Y	Y	Y
Year Dummy	Y	Y	Y	Y	Y	Y
SPS Dummy			Y			Y
Observations	1,353	1,353	1,329	1,353	1,353	1,342
Pseudo-R square	0.047	0.050	0.059	0.053	0.060	0.075

Panel B

The dependent variable is a dummy variable that equals 1 if a delinquent loan was transferred to special servicing in a given number of months and 0 otherwise.

	Transfer to Special Servicing within:				
	2 Months	**3 Months**	**4 Months**	**5 Months**	**6 Months**
SPS owns B-piece	-0.092	-0.075	-0.131	-0.125	-0.138
	[2.43]**	[1.62]	[2.53]**	[2.43]**	[2.60]**
LTV is .60 to .80	0.02	0.01	0.036	0.036	0.048
	[0.64]	[0.28]	[0.88]	[0.89]	[1.16]
LTV > 80	-0.043	-0.107	-0.156	-0.155	-0.158
	[1.12]	[2.35]**	[3.15]**	[3.11]**	[3.12]**
DSCR < 1.2	0.06	0.06	0.12	0.11	0.12
	[1.82]*	[1.59]	[2.90]**	[2.76]**	[2.81]**
DSCR is 1.2 to 1.6	-0.003	-0.012	0.005	0.004	0.004
	[0.11]	[0.34]	[0.13]	[0.11]	[0.10]
Deal Type Dummy	Y	Y	Y	Y	Y
Property Type Dummy	Y	Y	Y	Y	Y
Year Dummy	Y	Y	Y	Y	Y
SPS Dummy	Y	Y	Y	Y	Y
Observations	1,327	1,329	1,342	1,342	1,342
Pseudo-R square	0.056	0.059	0.067	0.067	0.075

Table 6 Which Loans Are Ever Transferred to Special Servicing?

The estimates are robust to unobservable heteroskedasity and correlation across loans within each deal. The table reports partial effects.

Dependent variable: Dummy that equals 1 if the loan was ever transferred to special servicing and 0 otherwise.

	Ever Transferred to Special Servicing			
SPS owns B-piece	0.003	0.003	0.006	0.007
	[1.85]*	[1.66]*	[2.52]**	[2.59]**
Loan-to-Value	0		0	
	[4.19]**		[3.44]**	
DSCR	-0.009		-0.01	
	[3.06]**		[3.57]**	
LTV is .60 to .80		0.011		0.011
		[4.66]**		[4.58]**
LTV > .80		0.018		0.017
		[2.50]**		[2.35]**
DSCR < 1.2		0.012		0.013
		[2.94]**		[3.01]**
DSCR is 1.2 to 1.6		0.004		0.004
		[1.82]*		[1.79]*
Deal Type Dummy	Y	Y	Y	Y
Property Type Dummy	Y	Y	Y	Y
Year dummy	Y	Y	Y	Y
SPS dummy			Y	Y
Observations	24,655	24,655	23,622	23,622
Pseudo-R square	0.1123	0.1157	0.1215	0.1208

Table 7 Default Conditional on Special Servicing

The estimates are robust to unobservable heteroskedasity and correlation across loans within each deal. The table reports partial effects.

Dependent variable: Dummy that equals to 1 if a loan was liquidated (default) in 6 months (or 1 year) after transfer to special servicing and 0 otherwise

	Liquidated in 6 Months			Liquidated in 1 Year		
SPS owns B-piece	0.03	0.031	0.032	0.051	0.052	0.059
	[2.54]**	[2.65]**	[1.70]*	[2.66]**	[2.71]***	[1.84]*
Loan-to-Value	0.002			0.003		
	[7.08]**			[6.46]**		
DSCR	-0.004			-0.03		
	[0.35]			[1.99]**		
LTV is .60 to .80		-0.015	-0.017		-0.026	-0.025
		[0.79]	[0.88]		[0.96]	[0.86]
LTV > 80		0.139	0.139		0.197	0.198
		[4.67]**	[4.59]**		[5.05]**	[4.83]**
DSCR < 1.2		0.013	0.017		0.068	0.068
		[0.73]	[0.94]		[2.43]**	[2.35]**
DSCR is 1.2 to 1.6		0.003	0.003		0.061	0.046
		[0.15]	[0.17]		[2.28]**	[1.66]*
Deal Type Dummy	Y	Y	Y	Y	Y	Y
Property Type Dummy	Y	Y	Y	Y	Y	Y
Year Dummy	Y	Y	Y	Y	Y	Y
SPS Dummy			Y			Y
Observations	1,532	1,532	1,372	1,532	1,532	1,372
Pseudo-R square	0.111	0.122	0.142	0.088	0.094	0.121

Table 8 Default Conditional on Special Servicing for Serious Delinquent Deals

Serious delinquency equals 1 if there are more than X% of the deal in delinquency and 0 otherwise. The regressions also include an interaction term of SPS owns B-piece and deal is seriously delinquent. The estimates are robust to unobservable heteroskedasity and correlation across loans within each deal. The table reports partial effects.

Dependent variable: Dummy that equals to 1 if a loan was liquidated in the 6 months after transfer to special servicing and 0 otherwise.

	Level of Serious Delinquency (pct of deal that is delinquent)					
	>2%	>3%	>4%	>5%	>6%	>B-piece pct
SPS owns B-piece	0.036	0.040	0.042	0.040	0.041	0.036
	[1.85]*	[2.16]**	[2.25]**	[2.17]**	[2.17]**	[1.89]*
(SPS owns B-piece)* (Deal is seriously Dlq)	-0.050	-0.068	-0.068	-0.064	-0.063	-0.053
	[2.02]**	[2.56]**	[2.75]**	[2.90]**	[2.45]**	[1.06]
Deal is Seriously Delinquent	0.083	0.124	0.129	0.173	0.222	0.162
	[2.97]**	[2.55]**	[2.57]**	[3.10]**	[2.52]**	[0.89]
LTV is .60 to .80	-0.016	-0.014	-0.014	-0.014	-0.016	-0.018
	[0.89]	[0.77]	[0.77]	[0.77]	[0.85]	[0.92]
LTV > .80	0.138	0.140	0.139	0.139	0.142	0.136
	[4.74]**	[4.71]**	[4.71]**	[4.69]**	[4.69]**	[4.50]**
DSCR<1.2	0.014	0.016	0.016	0.017	0.014	0.016
	[0.84]	[0.93]	[0.92]	[0.97]	[0.80]	[0.90]
DSCR is 1.2 to 1.6	0.002	0.002	0.002	0.002	0.000	0.002
	[0.13]	[0.14]	[0.12]	[0.14]	[0.02]	[0.12]
Deal Type Dummy	Y	Y	Y	Y	Y	Y
Property Type Dummy	Y	Y	Y	Y	Y	Y
Year Dummy	Y	Y	Y	Y	Y	Y
SPS Dummy	Y	Y	Y	Y	Y	Y
Observations	1,372	1,372	1,372	1,372	1,372	1,372
Pseudo-R square	0.1521	0.1504	0.1511	0.1529	0.1479	0.1433

Table 9 Default (or Liquidation) Conditional on Delinquency

The estimates are robust to unobservable heteroskedasity and correlation across loans within each deal. The partial effects, instead of the coefficients, are reported.

Dependent variable: Dummy that equals to 1 if a loan was liquidated in 6 months (or 1 year) after the date on which the loan was recorded as in delinquency and 0 otherwise.

	Default in 6 Months		Default in 1 Year	
SPS owns B-piece	0.53	0.54	0.26	0.27
	[2.37]**	[2.36]**	[1.28]	[1.32]
Loan-to-Value	0.01		0.006	
	[3.42]**		[1.95]*	
DSCR	0.033		-0.035	
	[0.37]		[0.41]	
LTV is .60 to .80		-0.034		-0.136
		[0.20]		[0.95]
LTV > .80		0.53		0.24
		[2.73]**		[1.39]
DSCR < 1.2		-0.029		0.08
		[0.16]		[0.49]
DSCR is 1.2 to 1.6		0.00		0.13
		[0.00]		[0.84]
Constant	-2.26	-1.75	-1.85	-1.44
	[2.77]**	[2.17]**	[2.28]**	[1.82]*
Property Type Dummy	Y	Y	Y	Y
Year Dummy	Y	Y	Y	Y
SPS Dummy	Y	Y	Y	Y
Observations	1,301	1,301	1,332	1,332
Pseudo-R square	0.1453	0.1523	0.1749	0.1788

Table 10 Initial Bond Pricing Regression

Panel A: Dependent variable: The spread over benchmark (basis points, or .01%)

	Fixed Rate Only		Fixed Rate, BB or less	
	(3)	(4)	(5)	(6)
SPS owns B-piece	-8.2	-8.9	-136.7	-109.7
	[1.28]	[1.40]	[3.46]**	[2.66]**
AA+	17.5	10.0		
	[3.64]**	[2.36]**		
AA	18.5	18.8		
	[12.32]**	[13.01]**		
AA-	22.2	20.2		
	[10.36]**	[7.31]**		
A+	25.5	24.0		
	[7.22]**	[6.53]**		
A	37.9	38.2		
	[20.98]**	[20.43]**		
A-	41.5	39.0		
	[18.26]**	[18.89]**		
BBB+	74.5	74.0		
	[25.51]**	[23.87]**		
BBB	95.4	94.8		
	[30.37]**	[30.40]**		
BBB-	144	142		
	[35.83]**	[35.20]**		
BB+	263	263		
	[8.49]**	[7.90]**		
BB	263	249	49.3	49.1
	[12.68]**	[13.00]**	[3.05]**	[2.48]**
BB-	280	288	111	108
	[7.04]**	[8.73]**	[5.25]**	[4.05]**
B+	525	522	261	246
	[5.88]**	[6.10]**	[6.00]**	[5.50]**
B	550	534	295	281
	[15.94]**	[14.69]**	[12.88]**	[10.09]**
B-	741	686	503	444
	[12.79]**	[15.15]**	[22.96]**	[10.18]**
CCC	1,758	1,752	1,418	1,403
	[31.87]**	[32.25]**	[22.62]**	[22.06]**
Constant	132	121	667	621
	[8.19]**	[10.62]**	[9.79]**	[11.35]**
Observations	2,271	2,271	78	79
R-squared	0.85	0.85	0.99	0.99
Average Spread	123.1	123.1	474.3	471.7

Estimates are robust to unobservable heteroskedasity and correlation across tranches within each deal. All regressions contain year dummies

Panel B: Dependent variable: The spread over benchmark (basis points, or .01%)

	(1)	(2)	(3)	(4)
AAA*(SPS owns B-piece)	-0.8	-0.9		
	[0.14]	[0.15]		
AA	21.1	20.5		
	[9.63]**	[9.31]**		
AA*(SPS owns B-piece)	-3.5	-3.4		
	[0.55]	[0.54]		
A	43.3	43.0		
	[15.77]**	[15.92]**		
A*(SPS owns B-piece)	-7.9	-8.2		
	[1.22]	[1.29]		
BBB	122.0	121.7		
	[21.67]**	[21.73]**		
BBB*(SPS owns B-piece)	-18.8	-18.6		
	[2.00]**	[2.00]**		
BB	314	313		
	[6.15]**	[6.13]**		
BB*(SPS owns B-piece)	-63.6	-69.0	-135.2	-74.3
	[1.18]	[1.28]	[2.85]**	[1.45]
B	672	672	255	262
	[24.73]**	[25.03]**	[9.44]**	[10.76]**
B*(SPS owns B-piece)	-119	-118	-109.5	-56.5
	[2.18]**	[2.27]**	[2.02]**	[1.02]
CCC	1,711	1,711	1,289	1,293
	[120.00]**	[120.15]**	[95.29]**	[106.15]**
CCC*(SPS owns B-piece)	99.6	98.8	-15.4	41.5
	[5.26]**	[5.34]**	[0.33]	[0.83]
Constant	126.7	114.7	680	557
	[7.57]**	[9.78]**	[7.86]**	[5.88]**
Year Dummies	Y	Y	Y	Y
Quarter Dummies	Y	Y	Y	Y
Observations	2,271	2,271	78	79
R-squared	0.83	0.84	0.97	0.97

Tests				
AA=AA*(SPS owns B-piece)	0.0009	0.0012		
A=A*(SPS owns B-piece)	0.0001	0.0001		
BBB=BBB*(SPS owns B-piece)	0.0001	0.0001		
BB=BB*(SPS owns B-piece)	0.0003	0.0003		
B=B*(SPS owns B-piece)	0.0001	0.0001	0.0001	0.0001
CCC=CCC*(SPS owns B-piece)	0.0001	0.0001	0.0001	0.0001

Figure 1 Worldwide CMBS Issuance

Wourldwide CMBS Issuance
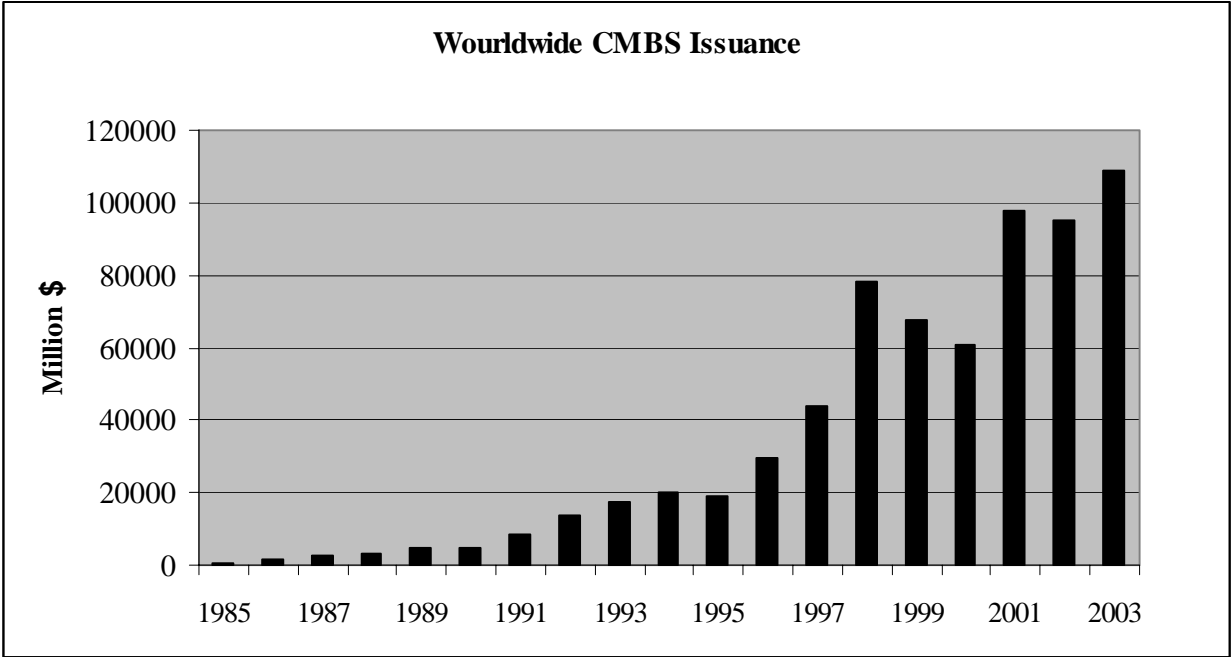
Source: Commercial Mortgage Alert CMBS data set (2004).

Figure 2 Total Issuance Vs. Percentage of Deals in Which SPS Holds the B-piece
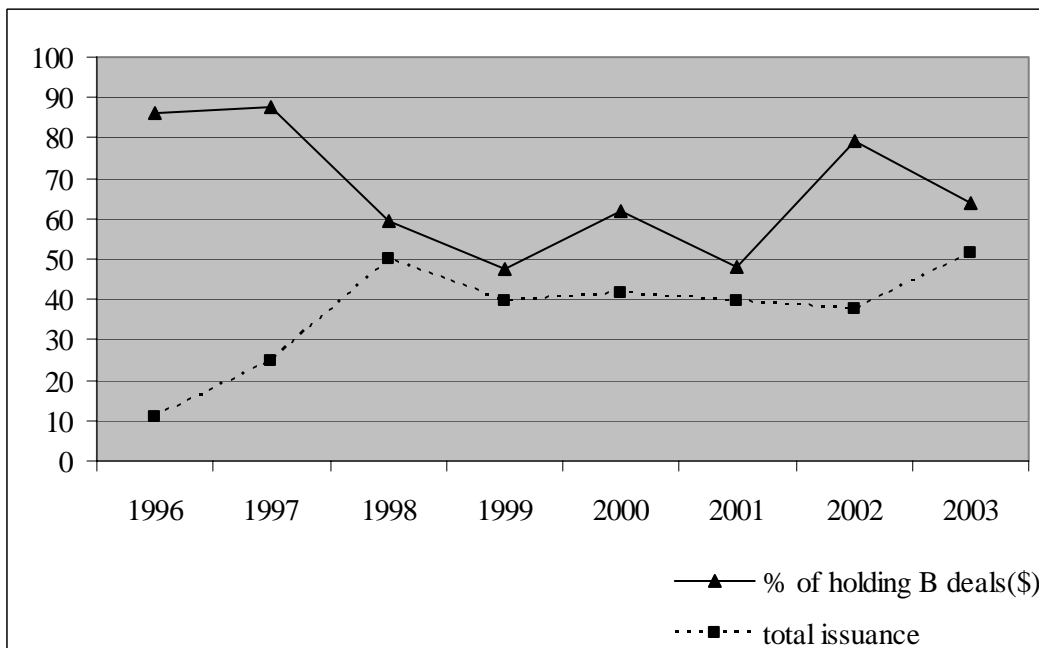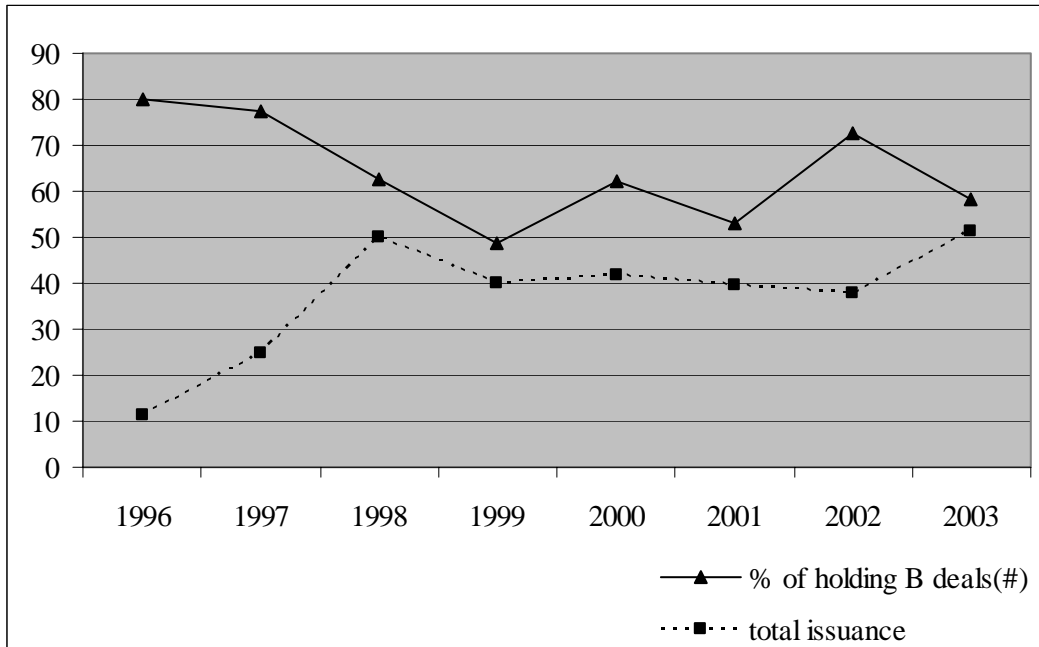
Notes:

The top (bottom) figure shows the total issuance versus the percentage of deals in which the SPS holds the B-piece measured by number of deals (issue size in U.S. $) in our final sample. Total issuance is in million U.S. dollars.