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Effects of Asset Securitization on Seller Claimants[1]

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This study analyzes effects on debt and equity claimants of asset sales into securitizations. Shareholders' returns are increasing in shareholder capitalization. Average losses to shareholders in mortgage-backed securities issuers are explained historically. First time issuance and increased securitization frequency are shareholder-wealth-increasing. Securitizers with actively traded bonds enjoy substantial and significant shareholder gains, which are greater the poorer the creditworthiness of the seller. Wealth transfer from bondholders to shareholders occurs in asset-backed securities among sellers with low credit ratings. Banks' claimants have benefited significantly more than other FIs' claimants, suggesting that securitization can alleviate regulatory burden. *Journal of Economic Literature* Classification Numbers: G14, G21.

I. INTRODUCTION

Securitization has enjoyed high growth over the last two decades. Annual issues are over $500 billion; current outstandings are $2.5 trillion and $5 trillion have been issued since the market's inception.[2] About one-half of mortgages and one-fourth of all US consumer credit are securitized.[3] Securitization gives to financial institutions (FIs) and non-FIs the opportunity to sell off large fixed income

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[2] The figures come from Bond Market Association (1999), which publishes aggregate data and other research on the Web. Aggregating Securities Data Corporation's transaction-by-transaction data, annual issuance was $659 billion in 1997 and total issuance from 1981 to 1997 was $4.7 trillion. These figures are in line with the $2.5 trillion outstandings reported by Silverman and Sparks (1998). To put these numbers into perspective, note that the aggregate assets of all U.S. banks are about $5 trillion.

[3] Federal Reserve Board (1999).

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portfolios, thereby obtaining financing potentially less expensively than through direct borrowing, and also possibly improving risk sharing (Benveniste and Berger (1987) and James (1988)). While so doing, however, securitization has the potential to alter the wealth and the risk of the securitizing corporation (Greenbaum and Thakor (1987)). Thus, different academic articles have suggested different effects of securitization. This raises the empirical question: what are the wealth and risk-altering effects of securitization?

The purpose of this paper is to address this important question. I do this by investigating the alteration of wealth and risk in publicly traded corporations that securitize assets. I exclude securitizations effected directly by Fannie Mae and Freddie Mac. Although, with shares listed on the NYSE, these agencies are legally publicly traded corporations, they are considered by the market to be equivalent to government agencies. I include, however, securitizations of agency-guaranteed mortgages by private sector bank and finance company asset sellers.

I find no average abnormal gains or losses to shareholders from securitization, but do find that shareholder returns are significantly increasing in shareholder capitalization. Average losses to shareholders in mortgage-backed securities (MBS) issues result from year effects, when mortgage bankers were under regulatory and market pressures. First-time issuance of MBS is rewarded by increased shareholder wealth. Moreover, increased frequency of securitization is also shareholder-wealth increasing. If one reduces the sample to those securitizers with actively traded bonds, one finds that those securitizers enjoy substantial and significant average shareholder gains upon securitization. These gains are greater the poorer the creditworthiness of the seller. Only in one subsample, the asset-backed securities (ABS) subsample, was there significant evidence of wealth transfer from bondholders to shareholders. This effect, however, was confined to sellers with low credit ratings. Finally, the study shows that banks' claimants have benefited significantly more than other FIs' claimants, suggesting that securitization can alleviate regulatory burden.

In the remainder of the paper, I provide the background to securitization in Section II and discuss the economics of securitization and existing empirical evidence in Section III. Methodology, data, and findings are presented in Section IV. Section V concludes the paper and suggests a direction for further research.

II. SECURITIZATION BACKGROUND

In a securitization, a seller sells fixed income assets—most commonly mortgage loans, consumer and home equity loans, credit card receipts, trade receivables, or auto loans and leases—to a bankruptcy-remote, special purpose vehicle (SPV) that finances the purchase through the issuance of new securities.[4] The first

[4] This definition of securitization is far narrower than that used by Greenbaum and Thakor (1987), Benveniste and Berger (1987), Berger and Udell (1993), and Stanton (1998), who use the term to

securitization programs were mortgaged backed securities (MBS) issued in the early 1970s and guaranteed by the US Government National Mortgage Association (Ginnie Mae) and the nongovernment agency, Federal National Mortgage Association (Fannie Mae). Initially only government and agency-guaranteed MBS existed, but with changes in US tax law in the early 1980s, the MBS market expanded to include nonguaranteed MBS and nonmortgage asset-backed securities (ABS).[5]

SPVs perform the trick of obtaining 100% debt financing where the debt securities issued achieve top bond ratings through the use of credit enhancements. Agency-guaranteed MBS' credit enhancements are principal and interest guarantees of the individual mortgage loans and service guarantees that the bank administering the mortgage loans will remit received funds completely and on time. In nonagency MBS and ABS, credit enhancements are typically more complex. The SPV may be the beneficiary of overcollateralization, with the excess collateral swept back to the asset seller upon maturity. The asset seller can continually replace short term assets being amortized in the SPVs. Where the tenor of the securities issued by the SPV exceeds that of the assets being funded, those securities can be subject to early amortization if the creditworthiness of the asset pool deteriorates. A seller of assets may extend a line of credit or provide or arrange for the provision of a standby letter of credit to an SPV in the amount deemed necessary by the rating agency to raise the quality of assets to a desired credit rating. Often, although the assets have been securitized without general recourse, the asset seller still retains some or all of the credit risk of the assets. Risk retention occurs, for example, if the asset seller provides a line of credit to be drawn in the event that the securitized assets' cash flow is insufficient to service the securities or if the asset seller undertakes to repurchase assets that fail, following the sale, to maintain their creditworthiness.[6]

describe a broad range of disintermediating and off-balance-sheet activities of banks including issuing standby letters of credit, extending loan commitments, and selling loans with and without recourse. The narrow definition is not restricted to banking activities and accords with current industry terminology (see ING Barings (1997), Kendall and Fishman (1996), Perry (1995), and Silverman and Sparks (1998)) and with legal usage (see Ellis (1999) and Cohn (1998)).

[5] This article does not investigate the market for collateralized mortgage obligations (CMO), also called real estate mortgage investment conduits (REMICs), although they are securitizations of securitizations. Prior to the early 1990s, CMO exceeded ABS issuance; however, after exceeding $300 billion per year in 1992 and 1993 the CMO market imploded to one quarter of its peak size, owing to the 1994 collapse of liquidity in the markets for CMOs with more exotic interest rate risk. I omit CMOs not because of this crash but because they are subsequent repackagings of MBS cash flows effected by investment and mortgage banks. Thus a CMO issue differs from the typical MBS and ABS issue which involves asset origination, sale and securitization. This distinction, however, is not definitive. Some investment banks without asset origination capability purchase and warehouse assets prior to selling them to SPVs funded by MBS and ABS.

[6] In cases where residual risk is retained by a seller, the securitization is not a true nonrecourse sale. Retaining of some portion of credit risk is very common. See, for example, Citicorp's 1999 annual report footnote 25, which discusses these continuing commitments. Bond credit rating agencies are aware of such credit risk retention. Foley and Foley (1997) report on Moody's efforts to create new

TABLE I
Securitization Transactions by Type and Year

	Total		MBS		ABS	
Year	Number	Amount	Number	Amount	Number	Amount
1983	5	856	5	856	0	0
1984	2	104	2	104	0	0
1985	30	3,329	26	2,356	4	973
1986	77	12,262	66	7,160	11	5,102
1987	170	49,427	149	42,834	21	6,593
1988	197	41,216	154	27,027	43	14,190
1989	116	42,710	75	22,819	41	19,892
1990	99	54,348	30	12,794	69	41,554
1991	124	75,143	56	38,487	68	36,656
1992	168	149,547	112	108,470	56	41,077
1993	86	161,043	51	106,035	35	55,007
1994	119	114,890	54	45,427	65	69,463
1995	81	132,029	16	27,693	65	104,336
1996	56	88,773	16	22,204	40	66,569
1997	86	192,593	31	107,063	55	85,530
Total	1,416	1,118,267	843	571,325	573	546,942

Notes. Table records all issues of SPV debt by publicly listed companies with share prices given on the CRSP data base. Multiple tranche issues on a single date are recorded as a single issue. Subsequent security issues by master trusts are recorded as separate issues. MBS = mortgage backed securities; ABS = asset backed securities. Amounts in millions of dollars.

Source. Securities Data Company New Issues Data Base 1998.

In this study, I analyze asset sellers in all of the MBS and ABS programs from 1983 to 1997 recorded by Securities Data Company in its New Issues Data Base for which shares were publicly listed and recorded in the CSRP data base. Table I shows the number of transactions and their sizes by year. An aggregate $1.1 trillion in financing is covered in this analysis—just over a fifth of all securitizations—with approximately equal amounts of MBS and ABS.

Although banks are the largest single securitizing group, as Table II shows, they are by no means dominant. In fact, if one aggregates nonbank FIs in one category and non-FIs in another, each of the three categories comprises about one-third of securitizations, with banks accounting for slightly over one-third by number and under one-third by amount. Explanations of the economics of securitization, then, should be applicable to corporations and nonbank FIs as well as banks.

techniques to analyze the creditworthiness of asset securitizers with ongoing risk from securitized assets. See Okobe (1998) and Cohn (1998) for a legal perspective. The motive for a securitization with little or no credit risk offlay is usually to tap cheaper funding sources and/or to alleviate liquidity problems. See Perry (1995). A potential securitizer tries to quantify two factors in determining whether or not to securitize: (1) funding costs and liquidity and (2) risk offlay. See Saunders and Thomas (2001, pp. 664–670).

TABLE II
Securitization Transactions' Percent Share by Asset Seller Type

	MBS		ABS		Total	
Asset seller type	Percent of number	Percent of amount	Percent of number	Percent of amount	Percent of number	Percent of amount
Bank or bank holding company	38.8	26.6	33.7	35.0	36.7	30.7
Nonbank FIs, made up of	42.7	42.4	33.2	27.4	38.9	35.0
Investment banks	15.9	14.1	8.7	3.5	13.0	8.9
Finance companies	14.1	14.8	18.7	21.4	16.0	18.0
Real estate investment companies	6.8	8.7	4.9	1.4	6.0	5.1
Insurance companies	5.9	4.8	0.9	1.1	3.9	3.0
Non-FI corporations	18.5	30.9	33.1	37.6	24.4	34.2
Total number or amount	843	$571,325	573	$546,942	1,416	$1,118,267

Notes. The non-FI category includes manufacturers (including car, equipment, and manufactured home manufactures), retailers, and railways. MBS = mortgage backed securities; ABS = asset backed securities. Amounts in millions of dollars.

Source. Securities Data Company New Issues Data Base 1998.

III. ECONOMICS OF SECURITIZATION, EXISTING EMPIRICAL EVIDENCE, AND UNANSWERED QUESTIONS

Securitization started with and is still deeply involved in the sale of large pools of FI loans that have verifiable and stable credit risk. When non-FIs securitize assets such as leases, trade receivables, and consumer credit, they usually use the proceeds to reduce the direct financing from FIs. Thus, securitization is a major part of disintermediation.

Disintermediation in general, and securitization in particular, raise the question, "why are FIs necessary in the first place?" Under fully efficient markets there is no role for FIs. To overcome this lacuna, academics have developed the theoretical FI literature, which models how transactions costs and informational asymmetries generate a need for banks (Bhattacharya and Thakor (1993) and Freixas and Rochet (1997)). Having demonstrated through models and empirical work that FIs are indeed needed, academics should also explain how securitizations alter the roles of FIs. There are three major explanations for securitization in the literature: signaling, avoiding underinvestment, and using comparative advantage. These explanations are neither mutually exclusive nor exhaustive. I review them to note their implications for this important market and the predictions they give us as to the wealth effects of securitization.

Signaling. Greenbaum and Thakor (1987) develop a signaling model to explain how projects suffering from informational asymmetries can be financed through securitizations. In these projects, borrowers know the risks of their own projects and banks have screening technologies that allow them to learn those risks. Borrowers

signal the risks of their projects by selecting proportionate insurance coverage. Competitive banks optimally securitize their best assets. The securitized assets have differing levels of insurance coverage with the safer projects having more insurance. Banks securitize less, the more their funding is subsidized by regulatory protection. Banks securitize more, the greater the regulatory burden they bear. From this model, one would predict that financial institutions would securitize their best assets and that the degree of securitization would be a decreasing function of regulatory subsidies and an increasing function of regulatory burdens.[7]

Avoiding underinvestment. Using optimal risk allocation models, Benveniste and Berger (1987) and James (1988)[8] show that securitization can improve risk sharing and increase project funding by avoiding the Myers (1977) underinvestment problem. In their models, securitization allows banks to issue debt claims senior to those of depositors (and deposit insurers). The risks borne by depositors can be reduced, in some cases (depending on the risk aversion of the bank and nature of deposit insurance), as new funds flow to projects that, in the absence of securitization, would not be funded because they would transfer wealth from shareholders to depositors. This is an optimal risk allocation result (the securitization buyers are risk averse) under fluctuating rate, fairly priced deposits (or, equivalently, actuarially priced deposit insurance). If the deposit rates (insurance) were insensitive to changing risk, however, there would be a transfer of wealth from depositor (or deposit insurers) to shareholders. Securitization, as modeled here, is a function of regulatory constraints on secured lending.[9] Regulatory constraints give incentives to moral hazard that may cause unsecured lenders' or deposit guarantors' losses.

The theory that securitization solves underinvestment problems does not give clear predictions of changes in wealth to debt and equity claimants. If the securitization allows the securitizer to profitably expand into an investment that it would otherwise have foregone, the securitization would be wealth-enhancing for shareholders and may be enhancing for bondholders. It would be wealth-enhancing for

[7] Greenbaum and Thakor (1987) use the broad definition of securitization (see footnote 4), including the commercial paper and junk bond markets within the term. While it is plausible to motivate the supplying of a standby letter of credit by a bank to a commercial paper issuer using an informational asymmetry model, it is less plausible to motivate the securitization of a pool of credit card receivables. The credit card portfolio has relatively stable, monitored, statistical properties, well known to the banks and rating agencies but unknown to the borrowers, who are also usually ignorant of the fact of securitization.

[8] Benveniste and Berger (1987) discuss securitization with recourse, which banks use as a substitute for secured lending. See footnote 5 on credit risk retention in securitizations. James (1988)' model does not actually discuss securitizations, only loans sales and standby letters of credit. But securitizations as defined in my paper can allow prioritizing of lenders' claims; hence, James' conclusions may be extended to securitizations.

[9] The prohibition of secured borrowing for deposit taking institutions is a general one, found in most banking jurisdictions. In the US, for example, the *National Deposit Preference Statute* of 1993 rules that deposits are second in priority to administration expenses of the receiver in a winding up. This rules out secured borrowing by banks, although they can circumvent this prohibition by sale and repurchase agreements and, as discussed in this article, securitization.

bondholders if the expansion in profitability were sufficient to offset the unsecured lenders' losses of first claims over securitized assets. If the securitization, however, caused no or little increase in the profitability of the business of the securitizer, then securitization would appropriate wealth from the unsecured bondholders to the shareholders by obtaining cheap financing from newly secured "lenders" in the securitization.

Using comparative advantage. FIs provide collections of services to issuers, investors, and those in need of financial information. The literature seldom addresses why a given FI provides a particular blend of services. Casual analysis leads to the conjecture that if an FI has a comparative advantage in supplying a service, it will indeed supply the service. Some models provide insights as to how those comparative advantages may arise. Millon and Thakor's (1985) model of FIs as coalitions of information gathering agents whose certification is needed by issuers is directly applicable to the role of rating agencies in securitizations (although not the securitization process itself). They model an explicit comparative advantage of the information gathering agents as an ability to share information within the coalition. In a related model, Ramakrishnan and Thakor's (1984) information producers' comparative advantage comes from their ability to costlessly monitor each other in coalitions. Either way, FIs as so modeled have comparative advantages in information production, independent of other functions.

Prospective asset sellers may have comparative disadvantages in funding relative to originating, on one hand, and servicing and monitoring, on the other. By outsourcing the activity of comparative disadvantage while maintaining the origination (and possibly servicing) functions where they excel, securitizers may increase shareholder wealth. The ability to specialize, as Berger and Udell (1993) point out, has been greatly facilitated by recent advances in information technology, leading to what they refer to as the "monitoring technology hypothesis" of securitization.[10] Such technological gains from specializing in niches of comparative advantage suggest economies of scale in those activities.

Viewed in this way, securitization allows companies—FIs as well as non-FIs—to specialize in the activities of their comparative advantage. Since non-FIs do not excel at funding, they would be more likely to sell off their fixed income claims in securitization if they could obtain an attractive implied cost of funding.[11] The

[10] This is a slight extension of Berger and Udell's use of the term. Their "monitoring technology hypothesis" relates to commercial and industrial loan sales. They note that loans sold without recourse are more feasible now that information technology has increased the transparency of these loans. Arguably their "monitoring technology hypothesis" is stronger concerning narrowly defined securitization. The certification, by rating agencies, of assets that continue to be monitored and serviced by the seller but are legally in an SPV is rendered easier by advances in information technology. The rating agencies assess loan (or receivable) origination and monitoring systems and statistically model default probability and severity of the fixed income portfolios, using models that are shared among and refined through the interactions of asset originators, rating agencies, and investment banks.

[11] Investment banks when approaching potential asset sellers concerning securitizations quote the cost of securitization in terms of the implied cost of funding the assets. See ING Barings (1997, pp. 33–35).

comparative advantage explanation is attractive in part because it transcends the boundaries between banks, nonbank FIs, and non-FIs, and explains why FIs have boomed only recently, with the advent of the information revolution.

Wealth effects on claimants. If addressing a comparative disadvantage in funding were a major motive for securitization, one would expect that share prices of the asset seller would be more positively affected in successful securitizations by institutions with a disadvantage in funding. This positive effect would be reinforced to the extent that the rating agencies perform a monitoring role for the corporation, certifying the value of assets. The more distressed a company, the higher the benefits to securitization. A comparative disadvantage of a securitizer in funding may be entwined with an underinvestment reason for securitizing. Either way, the wealth effect for securitizers should be decreasing in the creditworthiness of the asset seller.

Although the effects of securitizations on shareholders' wealth are likely to be positive, the effect on liability claimants—deposit insurers and bond holders—may be mixed. If the securitization contributes to the expected income of the firm sufficiently with no change in its risk, then bondholders' wealth will increase. But both signaling and the under-investment hypotheses noted above describe a moral hazard where the interests of bondholders and deposit guarantors can be sacrificed in a securitization for the wealth of the equity claimants. Historically, the legal and regulatory prohibitions on banks' issuance of secured debt[12] were designed precisely to stop such wealth appropriation.

Measuring the wealth effects of securitization is problematic. In this study, I attempt to measure them by using stock and bond returns in the weeks prior to the securitization. Yet many of the securitizers in this study frequent the ABS and MBS markets.[13] One would expect market surprise on the first entry of a securitizer into the market. If a subsequent securitization were less than fully anticipated, some surprise may occur. For a very frequent securitizer, however, stock and bond markets already would have priced the securitizer's equity and debt with the knowledge of the securitizer's ongoing activities. For such an issuer, once it has established its reputation, the wealth creation and/or appropriation by the securitization process effect would be invisible.

For frequent securitizers, however, another effect may be observable. A credit rating agency, whose favorable opinion is critical to the securitization, carefully examines the portfolio and the asset management system of the securitizer. The credit rating agency bases its ABS and MBS credit rating not only on the assets sold, but also on the continuing management of the asset pools, typically carried out by the securitizer. This certification role performed by the credit rating agency for a frequent securitizer may lead to a positive price response to the announcement enjoyed by both stock and bond holders.

[12] See footnote 9 above.

[13] For each observation, the average number of entries into the securitization market prior to the securitzation is 38, and the number ranges from 0 (every participant in the study has an initial entry into the market) to 216.

Existing empirical evidence. Direct tests of the effects of securitizations on the wealth of claimants in the literature have been few. Benveniste and Berger (1987) find support for their hypothesis that riskier banks tend to securitize, but they use a broad definition of securitization and restrict their sample to small banks.[14] Berger and Udell (1993) confirm Benveniste and Berger (1987) results but find no connection between commercial and industrial loan sales and bank riskness. James (1988) and Stanton (1998) also come to the conclusion that riskier banks—including banks with capital adequacy constraints, low liquidity, and high bad loan ratios—tend to do more off-balance-sheet activities.

Lockwood *et al.* (1996) and Thomas (1999) both look directly at the wealth effects of securitizations on asset seller claimants, but come to somewhat conflicting conclusions. In a study of 294 ABS securitizations from 1985 to 1992, Lockwood *et al.* find that securitization increases shareholder wealth in well-capitalized banks and finance companies but reduces shareholder wealth in weak banks. Thomas (1999), looking at 236 ABS securitizations from 1991 to 1996, concludes the opposite: significant positive returns are available to shareholders and the returns decrease with the creditworthiness of shareholders. The fact that these two studies used different data sets begs the question as to whether the effects are dependent on the year(s) under study.

Unanswered questions. From the review of the literature and conjectures concerning securitization, several empirical questions emerge:

(1) Is securitization wealth-creating or wealth-destroying for shareholders?

(2) To what extent are gains associated with offering size, surprise, and frequency?

(3) Are empirical findings dependent on the year of occurrence and do they vary with the capitalization, creditworthiness and identity of the seller?

(4) Does the wealth effect change with the regulatory status of the asset seller?

(5) To what extent do equity gains represent transfers of wealth from bond holders?

In examining these conjectures, I do not test the validity of any given model. Instead, I investigate the empirical characteristics of the market into which various models have given insights.

IV. EMPIRICAL STUDY DATA, METHODOLOGY, AND FINDINGS

Data. The total sample consists of 1,416 MBS and ABS securitizations listed by Securities Data Company from January 1983 to December 1997.[15] The total

[14] See footnote 4. Using issuance of standby letters of credit as a proxy for securitization, they find that riskier banks (in terms of capital asset ratios, poor CAMEL ratios, bond ratings, and jumbo CD rates) tend to securitize more. They restrict their analysis to small banks because all large banks are regular issuers of standby letters of credit.

[15] This sample is reduced from the 19,363 issues listed in by SDC by exclusion of agency issues, counting multiple same day issues by the same SPV as single transactions, and excluding all of the asset

sample is used to test for excess returns to stockholders. I test the effect of securitizations on debt claimants of asset sellers on a subsample by using monthly bond price data from the Lehman Brothers Fixed Income Data Base. Only 275 securitizations from among the 1416 were by asset sellers who had bonds with full prices listed in that data base. Index returns are also sourced from the Lehman Brothers Fixed Income Data Base.[16]

Methodology. I examine excess returns to stockholders and bondholders at the time that the securitization became public knowledge and analyze those excess returns to see whether they vary with firm and transaction characteristics as discussed above. The asset originator's total daily return for each event day is reduced by the CRSP value weighted market return to give a shareholder daily excess return. Excess bond returns were calculated by subtracting from bond's monthly return the return of the Lehman Brothers Intermediate Bond Index Return for Financial Corporations for the appropriate month. The excess returns are summed across the event window.

The event window presents a problem for two reasons. Firstly, I do not have an announcement date, but instead use the issue date. Previous studies by Lockwood *et al.* (1996) and Thomas (1999) used a combination of issue dates and announcement dates where available. Securitizations are arranged on a book-building basis. Due to the size of the issues, the need for rating agency approvals, and the relatively small clientele of institutional investors who buy the securities, investment banks structure securitizations and place paper subject to rating agency approval and market demand. There is no announcement of underwriting commitment, because there is no underwriting commitment. The market is aware of a securitization for the period from two weeks to two or more months in advance of the listing because the investment bankers are contacting institutional investors to determine appropriate amount, structure, and pricing. I used a 50-trading-day stock return window counting back from the day after the announcement and a 3-month bond event window starting from the month of the announcement.[17] To test for robustness, I also report the effects of wider event windows.[18]

sellers who did not have stocks whose returns are given in the CRSP files. Multiple same day issues are tranches of the same securitization which SDC reports individually because they involve issuances of different securities. Most securitizations have from one to three tranches. Neither using the number of tranches nor using a dummy to represent large numbers of tranches (eg., setting a dummy variable equal to 1 when the number of tranches exceed 3 and 0 otherwise) as additional independent variables adds any significant explanatory power to the regressions.

[16] The Lehman Brothers industry indices are value weighted across the industry sector and relate only to investment grade bonds.

[17] The 50 business day trading interval corresponds to approximately 2½ months prior to the date of issue. The three-month bond window also corresponds to an average 2½ months prior to the date of issue, since issuance could occur on any day during the month, but would on average, occur one half way through the even month. Note that, even if a precise event date were available, the use of monthly bond return data necessitates the use of a large and somewhat imprecise event window.

[18] I widen the stock excess returns window to 100 trading days, made up of 30 days following the issue plus 70 trading days prior to the issue and the bond window five months by including one month after the event month and the third month prior to the event month. This wider window was repeated for

Findings. I address question (1) first about the securitization wealth effects. Table III calculates the stock excess returns for subperiods of the event window and gives the *t*-statistics for the null hypothesis that the excess returns are zero. The null hypothesis of no excess returns in general can not be rejected, although there is some evidence that securitizations were associated with losses of 0.67% over the event window. This effect is wholly explained by the MBS subsample in the 10 days prior to the issue date.[19]

Next I turn to questions (2) and (3), the determinants of the excess returns. Table IV explains the pattern of excess returns by regressing, using ordinary least squares, a series of explanatory factors on the observed event window return. In a confirmation of results reported by Lockwood *et al*. (1996), the pattern of excess returns is most explained by one variable, the capitalization of the asset seller: securitization gains are more available to well-capitalized asset sellers.[20] A size effect—the larger the value of securitization, the greater the excess returns—is only significantly evident in the larger event window of 100 trading days. Frequent securitizers enjoy significant excess returns, while first-time issuers also enjoy excess returns on their first entry into the market, possibly because of a surprise effect. Occasional issuers are less rewarded.

I next turn to question (4), the extent to which the regulatory status of the seller impacts gains from securitization. Within the whole sample, there appears to be little explanatory power in the type of asset seller. The market greets the news of asset securitization virtually identically, whether the seller is a bank, a nonbank FI, or a non-FI. Contrary to the conjectures one would make based on models of regulatory arbitrage, there seems to be no regulatory effect in the total sample. As the last line in Table IV, Panel A shows, the intercepts for banks, nonbanks, and

the tests discussed below. Results in general were not substantially changed from those of the 50-day window, although significance often decreases in the subsamples. The reader should note, however, that in the wider window in the total sample, there is the *increase* in significance of some of the coefficients. This may call into question some of this study's conclusions as it suggests that they relate to the returns to claimants of securitizers in general—especially frequent securitizers—independent of the timing of securitization.

[19] In addition, significant (at the 5% level) excess returns are observed for auto securitizations in the post 20 day window, home equity securitizations (at the 1% level) in the post 30-day window and MBS (at the 1% confidence level) in the pre 70-day window. Some of the 10-day event sub-windows exhibit substantial kurtosis (ranging from 6.0 to 28.2), so one should not be surprised to see random occurrences of "significant" excess returns in a tableau of 91 numbers such as Table III. Note that the kurtosis of the summary total excess returns (50-day window) is a more reasonable 5.6. In obtaining my sample, I have not excluded excess return outliers.

[20] If one excludes the variable "Ln of Cap," the change between exclusion of the year effect and inclusion of the year effect is enhanced. If one substitututes the variable (Ln on Value)/(Ln of Cap) for the variable "Ln of Cap" the explanatory power of the regressions increases slightly (to $R^2 = 2.2$ in the base case and with similar increases in other regressions) and the new variable's sign is consistently negative. Here I report only the simpler Ln of Cap variable to facilitate interpretation, but this interactive effect suggests that the relative size of the capital base, not the capital base itself is important. I am grateful to an anonymous referee for pointing out the potential effects of the capitalization of the asset seller on abnormal returns.

TABLE III
Excess Returns to Stockholders in a Securitization: Full Sample of 1416 Observations

Type	No.	50 day total	100 day total	Post 30	Post 20	Post 10	Issue date	Pre 10	Pre 20	Pre 30	Pre 40	Pre 50	Pre 60	Pre 70
Total	1416	−0.67	−0.58	0.25	0.18	−0.08	−0.01	−0.25	−0.12	−0.08	−0.04	−0.18	0.11	−0.34
		−1.87*	−1.24	1.48	1.13	−0.51	−0.14	−1.54	−0.83	−0.52	−0.27	−1.15	0.72	−2.24***
MBS	843	−0.79	−1.12	0.14	0.02	−0.12	0.08	−0.56	−0.07	0.00	−0.15	−0.10	0.15	−0.48
		−1.72	−1.89*	0.62	0.10	−0.63	0.84	−2.72***	−0.38	0.00	−0.77	−0.49	0.72	−2.50***
ABS	573	−0.49	0.21	0.40	0.42	−0.02	−0.14	0.20	−0.19	−0.19	0.11	−0.28	0.04	−0.13
		−0.86	0.28	1.58	1.56	−0.08	−1.22	0.77	−0.81	−0.79	0.49	−1.16	0.18	−0.52
Credit Card	175	−0.30	0.13	−0.71	−0.05	0.23	−0.08	0.37	−0.26	−0.17	−0.09	−0.07	−0.07	0.02
		−0.34	0.10	−1.90*	−0.14	0.50	−0.41	0.80	−0.75	−0.48	−0.25	−0.18	−0.21	0.05
Home Equity	108	1.89	3.47	1.50	0.39	0.50	−0.13	0.74	−0.17	0.81	1.14	−0.50	0.10	0.70
		1.40	1.80*	2.38***	0.59	0.88	−0.57	1.43	−0.26	1.20	2.12**	−0.91	0.18	0.99
Auto	129	−1.20	−0.64	0.70	1.10	0.24	0.02	0.54	−0.13	−0.43	−0.35	−0.85	0.13	−0.75
		−0.98	−0.41	1.24	2.06**	0.44	0.08	0.84	−0.27	−0.91	−0.67	−1.47	0.25	−1.49
Other ABS	161	−1.70	−1.22	0.64	0.40	−0.86	−0.32	−0.62	−0.18	−0.68	0.01	0.09	0.06	−0.35
		−1.45	−0.84	1.27	0.63	−1.55	−1.30	−1.32	−0.38	−1.41	0.02	0.20	0.14	−0.77

Notes. No. shows number of securitizations in each category. MBS = mortgage backed securities; ABS = asset backed securities. *T*-statistics are below averages. *significant at the 10% level; **significant at the 5% level; ***significant at the 1% level. "50 Day Total" gives aggregate excess returns from 50 trading days prior to the issue date to the issue date. "100 Day Total" gives aggregate excess returns from 70 trading days prior to the issue date to 30 trading days following the issue date. "Issue date" gives excess returns on the issue date plus the date prior to the issue date. "Pre *x*" gives excess returns for the ten day period from *x*-10 to *x* trading days prior to the issue date. "Post *y*" gives excess returns for the ten trading days from *y*-10 to *y* trading days following the issue date.

TABLE IV
Explaining the Excess Returns to Shareholders of Asset Selling Companies in Securitizations

Panel A: Full regressions

	Base case (1416 obs)	100 day event window (1416 obs)	Base case with year effects (1416 obs)	Base case with year effects: MBS subsample (843 obs)	Base case with year effects: ABS (573 obs)
Bank	−10.00***	−15.39***	2.45***	0.93	3.72***
	−4.64	−5.48	2.48	0.65	2.62
Nonbank	−10.06***	−15.10***	1.94*	−0.29	4.52***
	−4.99	−5.75	1.81	−0.19	2.88
Non-FI	−11.92***	−18.24***	—	—	—
	−4.71	−5.53	—	—	—
No previous	2.21*	0.95	2.40*	3.81*	0.38
	1.66	0.55	1.85	1.88	0.22
Previous	0.01	0.02*	0.01	0.02**	−0.02
	1.40	1.67	1.01	2.12	−1.14
Ln of value	0.35	1.17***	0.17	0.47	−0.53
	1.46	3.80	0.67	1.43	−1.12
Ln of cap	0.92***	1.03***	0.86***	0.46	1.76***
	3.86	3.30	3.59	1.57	3.86
R^2	1.86	2.67	9.31	10.30	12.3
Asset seller intercept equality test	13.5	5.4	54.0	25.40	57.7

Panel B: Year effects

Year	Total	MBS	ABS
1983	−7.07	−4.44	—
1984	−12.65	−10.18	—
1985	−6.98	−4.25	−9.87
1986	−13.94	−11.04	−16.57
1987	−15.51*	−13.34	−18.00
1988	−9.12	−6.65	−11.90
1989	−13.24	−9.82	−18.21
1990	−19.15***	−16.06*	−21.87*
1991	−8.33	−10.00	−8.33
1992	−5.85*	−2.95	−10.74
1993	−8.45	−6.20	−11.60
1994	−12.91	−13.06	−14.39
1995	−9.54	−9.33	−11.76
1996	−9.16	−5.80	−13.06
1997	−11.28	−9.71	−14.19

Panel C: Pooled total sample: Excluding poor years (excludes 1987, 1988, 1989, 1991, and 1994)

	Total (715 obs)	MBS (381 obs)	ABS (334 obs)
Bank	−6.89*	−6.70	−5.37
	−1.75	−1.23	−0.89
Nonbank	−8.53***	−10.99**	−3.93
	−2.38	−2.18	−0.73
Non-FI	−11.28***	−10.06	−9.81
	−2.60	−1.56	−1.59

TABLE IV—*Continued*

	Total (715 obs)	MBS (381 obs)	ABS (334 obs)
No previous	3.82*	11.36***	−1.26
	1.82	2.72	−0.53
Previous	0.03***	0.04***	−0.01
	2.42	3.05	−0.32
Ln value	0.60*	1.30***	−1.27**
	1.69	2.79	−2.02
Ln capital	0.69*	0.14	2.02***
	1.68	0.24	3.25
R^2	3.1	7.3	5.5
Asset seller intercept equality test	1.2	0.0	7.4

Panel D: Subsamples of the pooled ABS sample: All years

	Credit card (175 obs)	Auto (129 obs)	Home equity (108 obs)	Other ABS (161 obs)
Bank	−19.18**	4.67	−13.04	−13.81
	−2.27	0.45	−1.14	−1.88
Nonbank	−20.37***	−2.27	−10.22	−8.19
	−2.46	−0.28	−0.96	−1.11
Non-FI	−24.03***	−5.98	−11.99	−14.08*
	−2.59	−0.61	−0.96	−1.75
No previous	2.22	6.06	−2.94	−1.43
	0.70	1.34	−0.60	−0.46
Previous	−0.04*	0.08	−0.01	−0.12**
	−1.90	1.10	−0.22	−2.07
Ln value	0.32	−2.01**	−0.39	−0.57
	0.46	−2.02	−0.34	−0.53
Ln capital	2.35***	1.59	2.03	2.01***
	2.43	1.58	1.57	2.71
R^2	4.82	10.89	3.88	6.68
Asset seller intercept equality test	9.92	2.90	79.62	10.22

Notes. Dependent variable is total excess returns to stockholders over the 50-trading-day event window for all except the column labeled 100-day event window. Independent variables: Bank = dummy variable taking 1 when asset seller is bank; Other FI = dummy variable taking 1 when asset seller is nonbank financial institution; Non-FI = dummy variable taking 1 when asset seller is a nonfinancial company; No previous = dummy variable taking value 1 when asset sale to create securitization is first securitization of asset seller recorded in data base; previous = number of previous securities issued by SPVs supplied by asset seller; Ln of value = natural log of the value of the sale of assets in millions of dollars; Ln of cap = natural log of the stock market capitalization of the originating company on the date of the securitization in millions of dollars. Obs = observations; MBS = mortgage backed securities; ABS = asset backed securities. *T*-statistics are given below coefficients; *significant at the 10% level. **significant at the 5% level; ***significant at the 1% level. Asterisk gives significant differences from 0 in Panel A and significant differences from the mean year effect in Panel B. When the year effects are included, the dummy variable for nonfinancial asset sellers is dropped to prevent multicollinearity with the year dummies. "Asset seller intercept equality test" gives the probability value of the F-test for the linear restriction that the two (or three) intercepts of bank and nonbank (and non-FI where applicable) are equal.

non-FIs generally are not significantly different from each other.[21] This conclusion, however, fails under more detailed analysis.

Table IV Panel A shows that a significant explainer of abnormal returns is the year in which the event occurred.[22]. The regression without year dummies explains less than 2% of the excess returns. Add the year effects and the proportion jumps to nearly 10%. These year effects support the conjecture that the differences reported between the Thomas (1999) and the Lockwood *et al*. (1996) studies were caused by their different samples.

A casual glance at the history of securitization will confirm the changing fortunes of securitization over time. In their discussion of MBS, Fabozzi and Modigliani (1992) note that the late 1980s were years when securitizing banks with inadequate capital exhibited poor performance. They report that MBS bankers faced economic difficulties in three areas in the late 1980s: loan production 1986–1988, warehousing of loans 1987–1989, and loan servicing 1987–1988. In addition, regulatory capital requirements imposed by the Financial Institution Reform Recovery and Enforcement Act (FIRREA) of 1989 caused sale of servicing rights by some weak securitizers. If these acts of selling off servicing rights were (plausibly) coincident with selling the loans themselves, then securitization news would have been greeted negatively in those years for those institutions. The collapse of the CMO market in 1994 had substantial negative effects on MBS issuance as well.[23] Large negative returns from the year effects dummies in Table IV Panel B corroborate the poor performance of these years.

With these year effects in mind, I exclude the five years 1987–1990 and 1994 from the sample, leaving a subsample of 715 observations whose average stock returns are significantly positive.[24] The last line in Table IV Panel C shows that in the subsample of 715 observations, the F -test that the dummies for banks, nonbank FIs, and non-FIs are all equal is rejected at the 1.2% confidence level while in the MBS subsample, it is rejected at the 0.1% confidence interval. Even

[21] The final row in Table IV Panel A shows the results of the F-statistic that the intercepts for the dummies for bank, other FI and non-FI are identical. One is unable to reject the null at all levels of significance, except in the 100 day window (where the probability at which the null is rejected is 5.4%). This inability of the type of asset seller to explain with statistical significance any of the excess returns occurs in all subsequent full sample regressions for shareholders and bondholders returns, regardless of whether or not one includes year dummies. It does not occur in the subsamples that exclude poor years (see below).

[22] The hypothesis that the year dummies add no explanatory power can be rejected at the 1% level. Panel B of Table IV shows the dummy values for years together with asterisks showing those years whose intercepts significantly differ from the mean year intercepts. Note that most year dummies individually are not significantly different from the mean although 1990 exhibits consistent significant negative performance.

[23] See for example Kendall (1995) for a discussion on the effects of the CMO market liquidity collapse on the MBS market.

[24] The average 50-day stock return for this reduced sample is 1.9%, significantly positive at the 1% level. While this elimination of 5 years of data may introduce a sample selection bias, such bias is based on market wisdom that the years eliminated were unusual, not by data mining.

in the ABS subsample, one can reject it at the 7.4% level. The returns to bank and nonbank FI shareholders were substantially better than that to non-FIs after the other independent variables were taken into consideration, lending credence to the importance of avoiding regulatory constraints in securitization.

Elimination of the poorly performing years leads to a substantial increase of the significance of the coefficients in the MBS subsample. As the coefficient of the "No Previous" dummy shows, the surprise effect of the first securitization is particularly strongly positive:11% excess return to shareholders of the asset seller. As in the full sample, large and frequent MBS securitizers are also rewarded with excess shareholder returns. The significant positive coefficient on the variable "Previous" (i.e., the number of securitizations prior to the observation) lends credence to the idea that substantial ongoing certification is being provided by the securitization process—at least in the MBS market. The regressions also indicate that, in the MBS subsample, the size of the securitization is strongly positively associated with shareholder excess returns.

The ABS subsample, however, presents a different picture. Size of the issue is *negatively* associated with returns. The ABS subsample itself is disparate. To further investigate the subsample, I divide it into four types of transactions: credit card, auto (including receivables, auto leasing, and equipment leasing), home equity loans, and Other ABS. Table IV Panel D shows that the ABS sample's negative correlation between the size of the securitization and the returns to shareholders can be traced to the Auto subsample. The Auto subsample is also the subsample where one can most strongly reject the hypothesis that banks, nonbanks, and non-FIs share the same average effects of securitization: banks perform substantially better than finance companies, which perform better than non-FIs.

The auto subsample is dominated by the big three automakers, Ford, Chrysler, and GM, making up 76 out of 129 issues. Their securitizations are large, averaging $1.135 billion. The remaining 53 issues' average size is $384 million. Although that includes a few large bank issues, the most frequent issuer outside the big three automakers is a finance company, Westcorp, which had 11 small securitizations averaging $122 million, generally associated with positive returns. In this sample, then, the size of the issue may be capturing some of the effects of the type of securitizer and, indeed, the individual identity of the asset seller.

Finally, I turn to question (5): to what extent do equity gains represent a wealth transfer from bondholders? As noted above, these tests can be carried out only on a much reduced sample of securitizers whose bonds are listed in the Lehman Brothers Fixed Income Data Base.

The underinvestment, regulatory arbitrage, and moral hazard hypotheses all imply that the sale of assets into SPVs may cause a transfer of value from bondholders to shareholders. Although a test of the degree of the transfer can not distinguish between these hypotheses, it is nonetheless important to establish the magnitude and conditions under which such appropriation occurs.

Table V shows the breakdown by year and securitization type of the 275 transactions in the reduced sample that includes only those issuers who have publicly

TABLE V
Reduced Sample Including Only Securitizers with Quoted Bond Issues

							Made up of							
	Total		MBS		ABS		Credit card		Auto		Home equity		Other	
Year	No	Amt	No	Amt	No	Amt	No	Amt	No	Amt	No	Amount	No	Amount
1986	3	250	3	250	—	—	—	—	—	—	—	—	—	—
1987	1	500	—	—	1	500	1	500	—	—	—	—	—	—
1988	1	500	—	—	1	500	1	500	—	—	—	—	—	—
1989	44	20,549	12	2,116	32	18,433	24	14,645	1	1,258	1	506	6	2,024
1990	49	21,790	20	5,954	29	15,836	15	9,561	5	3,833	4	361	5	2,081
1991	71	33,183	49	21,315	22	11,869	8	5,160	3	2,700	8	2,799	3	1,209
1992	29	38,722	14	22,585	15	16,137	6	11,500	1	1,097	3	1,323	5	2,217
1993	33	26,459	10	5,688	23	20,771	10	15,051	4	1,160	6	4,365	3	196
1994	39	59,928	4	6,182	35	53,746	15	35,569	4	3,505	3	1,546	13	13,126
1995	5	2,416	1	54	4	2,362	1	218	1	1,581	1	168	1	395
Total	275	204,297	113	64,144	162	140,153	81	92,704	19	15,134	26	11,067	36	21,248

Note. Amount columns may not add exactly because of rounding. MBS = mortgage backed securities; ABS = asset backed securities; No = number of securitizations; Amt = the sum of the principal of the securitizations in millions of dollars.

TABLE VI
Securitizers in the Reduced Sample

Company	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	Total
Citicorp	200	—	—	8,717	4,691	11,580	8,463	1,002	16,017	—	50,669
Sears Roebuck & Co	50	—	—	4,644	5,798	5,660	—	11,714	9,868	—	37,734
Chase Manhattan (old)	—	—	—	799	4,615	4,498	6,500	750	2,138	—	19,298
Green Tree Financial	—	—	—	—	—	1,150	4,676	3,884	3,710	—	13,419
Ford Motor Co	—	—	—	1,258	2,389	2,700	1,097	1,160	2,471	1,581	12,656
Salomon Inc	—	—	—	—	759	911	3,413	5,314	182	—	10,579
Chase Manhattan (New)	—	—	—	—	—	—	—	—	9,274	—	9,274
Signet Banking Corp	—	—	—	450	—	—	3,000	1,636	842	—	5,928
Paine Webber Group Inc	—	—	—	—	156	500	4,121	364	—	—	5,141
First Union Corp	—	—	—	—	—	—	—	—	5,000	—	5,000
Nationsbank Corp	—	—	—	—	—	450	750	—	2,234	—	3,434
M B N A Corp	—	—	—	—	—	500	2,750	—	—	—	3,250
U S Bancorp Del	—	—	—	—	—	779	1,838	—	—	395	3,012
Security Pacific Corp	—	—	—	675	2,059	275	—	—	—	—	3,009
Arcadia Financial Ltd	—	—	—	—	—	—	—	—	3,000	—	3,000
Household International	—	—	—	—	—	2,122	647	—	—	—	2,769
M N C Financial Inc	—	500	500	1,100	—	657	—	—	—	—	2,757
Morgan Stanley DWD	—	—	—	—	750	750	—	39	—	—	1,539
Chemical Banking Corp	—	—	—	798	101	—	141	146	—	—	1,186
Fleet Financial Group Inc	—	—	—	506	162	408	—	—	—	—	1,076
First Chicago N B D C	—	—	—	—	—	—	—	—	1,000	—	1,000
Morgan J P & Co Inc	—	—	—	—	—	—	1,000	—	—	—	1,000
S L M Holding Corp	—	—	—	—	—	—	—	—	965	—	965
Penny J C Inc	—	—	—	800	—	—	—	—	—	—	800
Federated Dept Stores	—	—	—	—	—	—	—	—	546	218	764
Beneficial Corp	—	—	—	—	—	—	—	—	736	—	736
Wachovia Corp	—	—	—	—	—	—	—	391	290	—	681
Dean Witter Discover & co	—	—	—	—	—	—	—	—	600	—	600
Comdisco Inc	—	—	—	—	312	243	—	—	—	—	555
First Interstate Bancorp	—	—	—	454	—	—	—	—	—	—	454
Caterpillar Inc	—	—	—	—	—	—	—	—	441	—	441
Dayton Hudson Corp	—	—	—	—	—	—	—	—	400	—	400
National City Corp	—	—	—	350	—	—	—	—	—	—	350
C S X Corp	—	—	—	—	—	—	300	—	—	—	300
Crestar Financial Corp	—	—	—	—	—	—	—	—	214	—	214
Transamerica Corp	—	—	—	—	—	—	—	—	—	168	168
Equitable Cos Inc	—	—	—	—	—	—	—	—	—	54	54
Phillips Petroleum Co	—	—	—	—	—	—	—	35	—	—	35
I B M Corp	—	—	—	—	—	—	25	—	—	—	25
I T T Industries Inc	—	—	—	—	—	—	—	25	—	—	25
Grand Total	250	500	500	20,549	21,790	33,183	38,722	26,459	59,928	2,416	204,297

traded bonds whose monthly prices are recorded in the Lehman Brothers Fixed Income Data Base for the five months wide event window around the securitization. The requirements of this sample restrict the observations substantially, so that only 40 issuers—listed in Table VI—of the original 141 are left. One company, Citicorp,

accounts for a quarter of the issues.[25] This fact leads me to investigate whether or not a company effect exists in our sample over and above other effects.

Table VII shows the excess returns to stockholders and bondholders in the reduced sample. In this subsample, there are strong positive significant excess returns to stockholders, results driven by the MBS subsample. While this appears to be in direct contradiction to the results of the full sample, one should note that, while in the full sample approximately 50% of issues were in the years showing poor returns, in the subsample, that fraction drops to 37%. Further, it will be recalled that frequency of issue of the asset seller was shown to be rewarded in Table IV. The average previous number of transactions has jumped from 38 to 59.

Table VIII repeats the analysis shown in Table IV to explain excess returns to shareholders, with two noteworthy additions. I include another variable, the Moody's bond rating for the asset seller. The variable takes the value 1 for an "Aaa+" bond issuer, 2 for an "Aaa" issuer, and so on down to 23 for a "D" and 24 for "Not Rated." Within the sample, 14 of the observations involved noninvestment grade bonds (i.e., 12 or above). A second change is that, in addition to showing the results controlled for years, I also show the effects controlled for companies by giving a separate dummy variable to each of the 14 issuers who issued more than five times in the reduced sample. The remaining issuers are grouped into a 15th category. Although there is some evidence of a company effect over and above the other independent variables, the evidence is not strong: the null hypothesis that the company dummies add no explanatory power can only be rejected only at the 6.1% confidence level in the stock returns test. One cannot reject the hypothesis at all in the bond returns tests.

As in the larger sample, the year control variables explain far more of the variance in returns than the other independent variables. Once again, the most significant determinant of excess returns (aside from the year effect) is the capitalization of the asset seller, with larger equity firms having better excess returns. In addition, the table offers evidence that those sellers whose ratings are poorer show higher excess stock returns. If one drops from the sample the 14 observations where the securitizer's bonds were non-investment-grade, this stock price maintains its significance at the 1% level, suggesting that the credit rating effect for stock holders is not being driven by the riskier securitizers. The significance of this effect, however, disappears if one introduces year panel control variables.

An interesting reversal in this subsample concerns the effect of the number of previous transactions. In the MBS subsample in Table IV Panels A and C, the higher the number of previous securitizations, the greater the returns to shareholders. In the subsample in Table VIII, this effect disappears for MBS and one observes an opposite effect in the ABS securitizations. Here, the greater the previous number

[25] Citicorp, clearly, is a case where bond and stockholders would not be surprised at the announcement of a new securitization. Notwithstanding the participation of Citicorp on both the buy and sell side in trading ABS and MBS, however Citicorp is a massive *net* issuer with, for example, $49 billion in credit card receivables sold in 1999. Citicorp uses securitizations as a major source of liquidity.

TABLE VII
Excess Returns to Stockholders and Bondholders: Reduced Sample

A. To Stockholders

Type	No.	50 day total	100 day total	Post 30	Post 20	Post 10	Issue date	Pre 10	Pre 20	Pre 30	Pre 40	Pre 50	Pre 60	Pre 70
Total	275	2.15**	3.38***	−0.16	0.17	0.17	0.02	0.95***	−0.19	0.58	0.58	0.2	−0.26	−0.04
		2.25	2.77	−0.49	0.45	0.51	0.11	2.46	−0.55	1.38	1.62	0.47	−0.79	−0.10
MBS	113	4.57***	5.54***	−0.30	0.19	0.26	0.15	0.57	−0.29	1.71***	1.11*	1.32	−0.38	0.18
		2.79	2.91	−0.57	0.41	0.51	0.64	1.05	−0.56	2.47	1.81	1.63	−0.74	0.30
ABS	162	0.45	1.87*	−0.06	0.16	0.10	−0.07	1.21**	−0.11	−0.21	0.22	−0.59	−0.17	−0.19
		0.40	1.18	−0.14	0.29	0.22	−0.28	2.27	−0.24	−0.40	0.51	−1.35	−0.39	−0.33

B. To Bondholders

Type	No	Total 5 months	Total 3 months	Month following	Event month	Month prior to event month	Month two months prior to event month	Month three months prior to event month
Total	275	0.15	−0.05	0.08	−0.16	0.02	0.10	0.12
		0.61	−0.21	0.84	−1.34	0.16	0.96	1.25
MBS	113	0.74**	0.54	0.16	−0.17	0.31	0.40***	0.04
		1.99	1.48	0.87	−0.81	1.68	2.48	0.25
ABS	162	−0.27	−0.46	0.02	−0.16	−0.18	−0.12	0.17
		−0.87	−1.63	0.21	−1.09	−1.11	−0.92	1.56

Notes. I refrain from providing a breakdown of ABS securitizations by ABS types because none of the coefficients is significant. No. shows number of securitizations in each category. MBS = mortgage backed securities; ABS = asset backed securities. *T*-statistics are below averages: *significant at the 10% level; **significant at the 5% level; ***significant at the 1% level. "50 day total" gives aggregate excess returns from 50 trading days prior to the issue date to the issue date. "100 day total" gives aggregate excess returns from 70 trading days prior to the issue date to 30 trading days following the issue date. "Total 5 month" gives the aggregate excess returns to bondholders from three months prior to the issue month through the month following the issue month. "Total 3 month" gives the aggregate excess returns to bondholders from two months prior to the issue month through the issue month. "Issue date" gives excess returns on the issue date plus the date prior to the issue date. "Pre *x*" gives excess returns for the ten day period from *x*-10 to *x* trading days prior to the issue date. "Post *y*" gives excess returns for the ten trading days from *y*-10 to *y* trading days following the issue date.

TABLE VIII
Explaining the Excess Returns to Shareholders of Asset Selling Companies in Securitizations

	Base case (275 obs)	100 day event window (275 obs)	Base case with panel year effects (271 obs)	Base case with company panel effects (275 obs)	MBS (113 obs)	ABS (162 obs)	CCD (81 obs)	Total good years (196 obs)	MBS good years (91 obs)	ABS good years (105obs)	Credit card good years (45 obs)
Bank	−53.10***	−94.38***	—	—	−61.17**	−49.36***	−117.47***	−51.71***	−44.50	−58.39***	−57.97
	−4.34	−4.79	—	—	−2.02	−3.69	−4.02	−3.08	−1.02	−3.22	−1.27
Nonbank	−50.87***	−89.17***	—	—	−59.90**	−48.08***	−114.72***	−49.47***	−44.12	−57.25***	−49.52
	−4.30	−4.81	—	—	−2.11	−3.62	−4.14	−3.08	−1.09	−3.21	−1.16
Non-FI	−60.19***	−104.77***	—	—	−66.90**	−56.60***	−129.22***	−60.02***	−52.54	−66.00***	−59.54
	−4.54	−5.09	—	—	−1.98	−3.93	−4.15	−3.34	−1.08	−3.43	−1.25
No prev	−0.24	−2.62	0.82	0.82	−9.93	0.93	−4.21	3.56	−13.47	5.98	−4.27
	−0.06	−0.33	0.21	0.18	−0.92	0.24	−0.65	0.75	−1.05	1.25	−0.47
Previous	−0.02	−0.04	−0.00	−0.02	−0.01	−0.06***	−0.13***	0.00	0.03	−0.05*	−0.09**
	−1.33	−1.50	−0.08	−0.34	−0.26	−2.61	−3.89	0.19	0.91	−1.77	−2.13
Ln value	0.06	0.39	0.11	0.24	1.31	−0.55	0.65	−0.20	1.83	−1.46	1.81
	0.10	0.37	0.16	0.36	1.19	−0.67	0.59	−0.25	1.53	−1.21	0.96
Ln capital	5.74***	9.30***	2.04*	7.38***	5.67	5.90***	13.05***	5.96***	0.39	7.45***	4.75
	4.45	4.34	1.88	4.37	1.60	4.55	4.33	3.35	0.77	4.17	1.04
Rating	1.12***	2.38***	0.37	1.07**	1.36**	0.87*	1.31	0.98**	0.86	1.19**	1.56
	2.91	3.63	0.92	2.18	2.04	1.80	1.41	2.30	1.20	2.21	1.10
R^2	7.9	15.8	17.2	12.3	8.0	13.0	24.9	8.1	11.1	17.5	15.0
Asset seller intercept equality test	1.4	0.3	—	—	62.0	2.6	1.0	1.7	47.0	5.8	44.9

Note. Independent variables are the excess returns to stockholders aggregated over 50 trading days for all columns except the column labeled 100-day event window. Independent variables: No Prev = dummy variable taking value 1 when asset sale to create securitization is first securitization of asset seller recorded in data base; Previous = number of previous securities issued by SPVs supplied by asset seller; Ln of Val = natural log of the value of the sale of assets in millions of dollars; Rating = the bond rating applied by Moody's with 1 being the highest rated bond and 24 being not rated. MBS = mortgage backed securities; ABS = asset backed securities. Year effects shows model calculated with a dummy variable for each year in the data. Company effects shows model calculated with a dummy variable for each asset seller with more than five securitizations in the sample. Coefficients are not reported in this paper but are available from the author. T-statistics are given below coefficients. *significant at the 10% level; **significant at the 5% level; ***significant at the 1% level. Prob of F-test gives the probability at which the hypothesis that the three dummy intercept terms for bank, nonbank FI and non-FI are identical can be rejected. "Asset seller intercept equality test" gives the probability value of the F-test for the linear restriction that the two (or three) intercepts of bank and nonbank (and non-FI where applicable) are equal.

TABLE IX
Explaining Excess Returns to Bondholders Asset Selling Companies in Securitizations

Total	Base case (275 obs)	Five month event window (275 obs)	Base case with year effects (271 obs)	Base case with company effects (275 obs)	MBS (113 obs)	ABS (162 obs)	Credit cards (81 obs)	Total good years (196 obs)	MBS good years (91 obs)	ABS good year (105 obs)	Credit card good years (45 obs)
Bank	1.31	1.78	—	—	−6.09	5.04	−5.39	7.21	7.54	8.66	16.46
	0.38	0.47	—	—	−0.42	1.55	−0.53	1.37	0.82	1.55	1.15
Nonbank	0.32	0.67	—	—	−6.52	4.02	−8.38	5.14	4.54	7.77	14.92
	0.10	0.19	—	—	−0.50	1.31	−0.86	1.08	0.55	1.52	1.12
Non-FI	1.46	2.38	—	—	−6.42	5.17	−6.46	7.13	7.33	8.94	17.29
	0.42	0.60	—	—	−0.40	1.48	−0.58	1.35	0.62	1.52	1.17
No prev	−0.18	0.46	−0.25	−0.84	−0.04	−0.68	−0.19	0.07	1.70	−0.85	0.49
	−0.17	0.45	−0.29	−0.01	−0.02	−0.54	−0.17	0.04	0.72	−0.41	0.41
Previous	0.01**	0.01**	0.01***	0.01	0.01	0.01	0.00	0.02***	0.02	0.02***	0.02
	2.11	2.31	3.08	0.86	0.52	1.19	−0.22	3.85	1.30	2.72	1.38
Ln of value	−0.11	−0.11	−0.02	−0.14	−0.06	−0.16	−0.42	−0.02	−0.11	0.15	0.11
	−0.51	−0.47	−0.15	−0.91	−0.19	−0.66	−1.09	−0.09	−0.34	0.42	0.10
Ln of capital	−0.06	−0.20	−0.18	0.60	0.61	−0.24	1.28	−0.71	−0.77	−0.87	−1.91
	−0.17	−0.49	−0.73	1.57	0.34	−0.64	1.12	−1.44	−0.49	−1.37	−1.21
Rating	−0.07	0.01	−0.23	−0.08	0.14	−0.30**	−0.32	−0.14	−0.03	−0.32**	−0.15
	−0.43	0.06	−1.56	−0.69	0.51	−1.99	−0.69	−0.40	−0.09	−2.30	−0.56
Stock	8.20***	9.21***	5.70***	8.37***	10.98***	4.96	14.57**	2.78	6.53***	−1.35	2.16
	3.04	3.59	4.19	5.91	4.28	1.05	2.31	1.57	3.69	−0.41	0.53
R^2	16.5	24.1	25.4	19.3	27.5	11.7	33.6	23.6	38.1	20.3	16.8
Asset seller intercept equality test	23.6	0.19	—	—	91.7	53.1	26.8	1.9	0.9	64.8	39.0

Notes. Independent variables are the excess returns to bondholders aggregated over 3 months for all columns except the column labeled five month event window. Dependent variables: No prev = dummy variable taking value 1 when asset sale to create securitization is first securitization of asset seller recorded in data base; Previous = number of previous securities issued by SPVs supplied by asset seller; Ln of val = natural log of the value of the sale of assets in millions of dollars; Rating = the bond rating applied by Moody's with 1 being the highest rated bond and 24 being not rated; Stock = the residuals from the appropriate regression reported in Table VIII. MBS = mortgage backed securities; ABS = asset backed securities. Year effects shows model calculated with a dummy variable for each year in the data. Company effects shows model calculated with a dummy variable for each asset seller with more than five securitizations in the sample. Coefficients are not reported in this paper but are available from the author. T-statistics are given below coefficients: *significant at the 10% level; **significant at the 5% level; ***significant at the 1% level. "Asset seller intercept equality test" gives the probability value of the F-test for the linear restriction that the two (or three) intercepts of bank and non-bank (and non-FI where applicable) are equal.

of transactions, the more negative the effect on stock returns. Further investigation shows that the effect is driven by credit card securitizations. It is noteworthy, however, that this effect is company specific: it is nullified in a panel regression using company dummies.[26]

Turning to bond returns, I introduce two new independent variables: the "Rating" variable discussed above and "Stock," the orthogonalized excess stock market returns variable.[27] Holding other factors constant, bond returns indisputably move in the same direction as stock returns over the event windows.[28] A 4% stock return (such as MBS issuers in this sample achieve on average) is associated with anywhere from a 0.23% to a 0.58% bond return: on balance, good news for the stockholders is good news for the bondholders. Second, the number of previous transactions is positively associated with bondholder gains. The more that an asset seller is associated in the markets with issues of existing securitized paper, the more that the entry into the markets with another issue is greeted positively by bondholders. Response of the market to a bondholder with 10 previous issues would be a 0.1% return. Moreover, this effect is greatly enhanced if one excludes the five years when securitizers experienced difficulty.

Credit ratings only affect bond returns in ABS subsample: when one controls for other factors, the poorer the credit rating (i.e., the higher the "rating" variable) the more adverse the reaction. For non-investment-grade bonds, this significant effect is greater *in magnitude* than the other effects combined. It is noteworthy, however, that while the effect of credit ratings on stock performance is maintained if one drops the non-investment-grade bonds from the sample (see above), the effect on bondholders returns of credit rating is reduced to insignificance once one drops the non-investment-grade bond issuers.

V. CONCLUSION

This empirical investigation has attempted to shed light on a number of issues left unresolved in the literature. Securitization on balance has been neutral with respect to shareholder and bondholder wealth since its inception, but that "average neutrality" breaks down under examination. In certain years, when the market has been under pressure, securitization has been associated with losses to the asset seller. When the market has been calm, it has been associated with shareholder

[26] More dramatically, in fact, by introducing a *single* dummy for Citibank in the credit card securitization subsample one can eliminate the significance of this coefficient. This fact illuminates the problem of drawing general conclusions from data where a limited number of issuers dominate the sample.

[27] The stock market returns variable is the residual from the appropriate stock market equation, so that each is orthogonal to the other independent variables in the appropriate regression. In this and following two stage regressions, to correct the OLS covariance matrix for bond returns tests, I use the Newey–West estimator.

[28] When a one month window is used to calculate bond excess returns, none of the variables (except for the orthogonalized stock returns) retains significance although signs of coefficients are unchanged.

gains. For the larger and more frequent securitizers, the act of securitizing has been wealth-increasing and there is some evidence that securitization serves a certifying role. In "normal" years, FIs appear to benefit more from securitizations than non-FIs. Although the most significant and consistent effect on bondholders is the increase in value associated the unexplained factors leading to share price rises, there is scope for securitizations to appropriate wealth of bondholders among the less creditworthy securitizers, especially in ABS markets.

Although this study has addressed some issues of securitization, it has done so tentatively. Its findings suggest that securitization facilitates specialization and avoidance of regulatory constraints. These findings do more to highlight the effects of securitization than to uncover the motives for it. One could obtain deeper insights from modeling the decision to securitize. Companies may have comparative advantages in originating fixed income assets but may be constrained by liquidity or regulatory strictures. Securitization—especially through a master trust that permits a series of securitizations—may be used as an alternative funding method. Modeling liquidity, regulatory constraints, and the different funding responses to such constraints and testing the models by predicting the decision to securitize may well be a promising avenue for future research.

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