

# **Securitization and capital structure in nonfinancial firms: An empirical investigation\***

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We investigate the determinants and consequences of the use of securitization by nonfinancial firms. We find that securitization permits some firms access to investment-grade credit markets and high-quality commercial paper markets, which can reduce their total cost of capital. Firms using securitization are larger, have more accounts receivable (the primary source of collateral), have a credit rating near the investment-grade / speculative-grade border, and are more likely to have had their credit rating downgraded just prior to initiating the securitization. Following the start of a securitization program, firms do not experience further ratings downgrades and primarily use the securitization funds to repay existing debt. At the origination of the securitization program, firms experience abnormal stock returns on the order of 1 percent and experience no abnormal bond returns. Overall, the evidence paints a consistent picture that firms using securitization are able to lower their overall financing costs by exploiting segmentation in credit markets.

Key words: asset-backed securitization, ABS, capital structure, off-balance sheet, SPE, VIE

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# **Securitization and capital structure in nonfinancial firms: An empirical investigation**

## **Abstract**

We investigate the determinants and consequences of the use of securitization by nonfinancial firms. We find that securitization permits some firms access to investment-grade credit markets and high-quality commercial paper markets, which can reduce their total cost of capital. Firms using securitization are larger, have more accounts receivable (the primary source of collateral), have a credit rating near the investment-grade / speculative-grade border, and are more likely to have had their credit rating downgraded just prior to initiating the securitization. Following the start of a securitization program, firms do not experience further ratings downgrades and primarily use the securitization funds to repay existing debt. At the origination of the securitization program, firms experience abnormal stock returns on the order of 1 percent and experience no abnormal bond returns. Overall, the evidence paints a consistent picture that firms using securitization are able to lower their overall financing costs by exploiting segmentation in credit markets.

Asset backed securitization (ABS) has become a significant source of financing for a wide range of assets used by a large number of firms. For example, according to the U.S. Flow of Funds, the total credit market assets held by issuers of asset-backed securities approached \$4.5 trillion at the end of 2007, larger than the amount held by insurance companies, mutual funds, and pension funds.<sup>1</sup> Financial firms, including commercial banks, investment banks, and finance companies, are the largest originators of ABS, but nonfinancial industrial firms also use securitization as a form of financing. We show that about 3 percent of nonfinancial firms used securitization during the average year between 1996 and 2009, although usage was more than three times as high among large firms with a credit rating. Firms that relied on securitization obtained about 20 percent of total debt financing through securitization, and the total amount of securitized nonfinancial debt peaked at more than \$170 billion in 2006, before declining to less than \$80 billion by 2009 in the aftermath of the financial crisis. Despite this rather important source of financing, relatively little is known about the underlying economic motivation for the use of securitization by nonfinancial firms. We attempt to fill this gap by providing evidence on the determinants and consequences of ABS usage by nonfinancial firms.<sup>2</sup> Studying this unique form of financing can also enhance our knowledge of the underlying frictions that make corporate capital structure important.

Key to the economic motivation for securitization is the separation of the risks associated with the securitized assets from the risks associated with the originating firm. In a typical transaction by a nonfinancial firm, the originating firm removes some assets (e.g. accounts receivable) from its balance sheet by selling them to a bankruptcy remote special purpose entity

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<sup>1</sup> Source: <http://www.federalreserve.gov/releases/z1/current/> . The \$4.5 trillion figure excludes mortgage-backed securities issued by government sponsored entities. The amount of debt owned by ABS issuers fell significantly between 2008 and 2010, but ABS issuers remained a significant holder of debt as of year-end 2010.

<sup>2</sup> We use “ABS” and “securitization” interchangeably throughout the paper.

(SPE).<sup>3</sup> The SPE then sells an interest in these assets to a second SPE, which finances the purchase by issuing asset-backed commercial paper (ABCP).<sup>4</sup> The funds from the sale of ABCP ultimately are paid to the originating firm. Firms usually retain a subordinated interest in the assets sold to the SPE, which serves as an equity-like claim that can reduce the credit risk of the SPE. The details of the transaction will be governed by a contract that often spans multiple years and permits financing of certain assets up to a pre-specified limit. For nonfinancial firms that use this form of financing, securitization becomes a significant piece of their financing strategy.

ABS financing shares some similarities with traditional secured debt financing. In both cases, the firm uses existing assets as collateral for a loan. In contrast to secured debt, however, securitization involves the transfer of the assets to a legally separate SPE, which is bankruptcy-remote from the originating firm. If the firm files for bankruptcy, the assets that serve as collateral for the firm's secured debt are considered part of the bankruptcy estate and are subject to an automatic stay that restricts the creditor's right to seize the assets. The securitized assets that are transferred to the SPE, however, are not considered part of the bankruptcy estate and instead are used solely for the benefit of the investors in the SPE. Unlike investors in secured debt, SPE investors can be isolated from the risks associated with the originating firm. In a world with financing frictions, the extra degree of freedom provided by securitization can reduce the total cost of capital.

Several existing papers highlight the frictions that can be minimized through ABS financing. Consistent with practitioners' claims that ABS can reduce financing costs by

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<sup>3</sup> Special purpose entities are also commonly known as special purpose vehicles (SPV's) or Variable Interest Entities (VIE's).

<sup>4</sup> In practice, the SPE can be financed in a variety of ways, including issuance of asset-backed securities, asset-backed commercial paper, and loans from a bank. The term "securitization" typically refers to the financing of the SPE with securities. In the case of ABCP, the second SPE – usually referred to as a conduit – will purchase assets from a large number of originating firms. See Covitz, Liang, Suarez (2009) for more on the ABCP market.

providing access to highly-rated debt markets, Kisgen (2006, 2009) and Chen, Lookman, Schurhoff, and Seppi (2011) provide convincing empirical evidence that market segmentation has important effects on market prices and capital structure choices. Specifically, since some capital providers are restricted from holding speculative-grade bonds and lower-rated commercial paper, debt with a high credit rating is relatively cheaper. Chen et al. show that the segmentation results in investment-grade bonds trading at lower yields, and Kisgen (2006, 2009) shows that firms adjust their capital structures to avoid lower ratings.<sup>5</sup> Our results suggest that securitization is another means to exploit the market segmentation, as firms are able to issue off-balance sheet debt that is much less risky than their on-balance sheet debt.

Both Ayotte and Gaon (2011) and Gorton and Souleles (2007) show how securitization can reduce bankruptcy costs by removing some assets from the bankruptcy process. In a model based on the trade-off theory of capital structure, Leland (2007) shows that firms with assets that differ in their underlying riskiness can benefit from securitization. By setting the leverage of the firm separately from the leverage of the SPE, firms can choose the optimal capital structure for each asset separately, which creates what Leland (2007) calls “financial synergies.” In general, all of these theories offer predictions regarding the conditions under which asset securitization can lower a firm’s overall cost of financing, which is one of the main benefits of securitization cited by practitioners (Roever and Fabozzi (2003), Gangwani (1998)).

We test a number of predictions based on these theories using a comprehensive database of asset-backed securitizations by nonfinancial firms collected from firm’s 10k disclosures. Over the period 1996 through 2009, we identify 434 unique firms that engaged in ABS

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<sup>5</sup> Since the Chen et al. result is based on changes in the definition of “investment-grade”, their results are not due to differences in credit quality.

financing.<sup>6</sup> The firms in our sample span a variety of industries, but usage is most prevalent in industries that generate substantial accounts receivable, which is the most common asset that is securitized. In an average securitization, the firm securitizes about 7 percent of its total assets, which constitutes roughly 20 percent the firm's total debt. The typical firm utilizes only about one-half of the capacity available in the securitization program, so securitization programs provide a significant source of debt capacity for firms that have a program.

We begin our analysis by conducting an event study around the initiation of a securitization program, which we measure using the origination date of the governing contract. Consistent with the view that securitization creates value, we find that the initiation of a securitization program is associated with positive abnormal returns to equity-holders, on the order of one percent, on average, over our 6-day event window. Mean and median abnormal returns are statistically significant and economically interesting in relation to typical event studies around announcements of new financing. Eckbo, Masulis, and Norli (2008) show that issuance of securities typically results in negative abnormal stock returns for the issuing firm.

We next provide convincing evidence that the returns accruing to equity-holders do not represent a wealth transfer from existing bondholders. In a standard event study of bond returns, we cannot reject the hypothesis that mean and median bond returns are zero in a variety of windows around the initiation date. Furthermore, we find no evidence that credit ratings deteriorate in the 90 days following the initiation date. We conclude that securitization is not a form of asset substitution that transfers wealth from existing bondholders. Rather, ABS creates value for the firm by reducing the cost of capital.

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<sup>6</sup> The exclusion of financial firms results in a much smaller sample of ABS users compared to some other papers, but one that allows us to focus directly on issues of capital structure in an environment less affected by regulatory capital requirements and other issues unique to financial firms.

Next we explore the firm-level factors that are associated with usage of ABS and find strong evidence that segmentation of credit markets plays an important role. Since ABCP is highly-rated short maturity debt (see Covitz, Liang, and Suarez (2009)), securitization provides firms access to those investors that are limited to buying short-term investment-grade debt, such as money-market mutual funds. We find that firms using ABS have credit ratings that cluster around the investment-grade boundary and that ABS users tend to experience rating downgrades prior to starting their ABS program. We view this evidence as consistent with securitization serving as an alternative form of financing for firms that are shut out – or may become – shut out, of investment grade credit markets.

We find two additional robust patterns in the data that provide additional insight into the economic role of securitization. First, firms tend to initiate securitization programs when their profitability has declined and their market-to-book ratio is low, suggesting that securitization is not a means to finance new growth opportunities. Moreover, we find no evidence that firms starting a securitization program increase investment in capital expenditures; repaying existing debt appears to be the primary use of funds from securitization. Second, we find that securitization users are much larger and much older than the average publicly-traded firm. Given that the securitization users are very likely to have a long-term credit rating and a commercial paper program, securitization does not appear driven by traditional measures of “financial constraints.” Rather, securitization appears a means for some firms to lower their total cost of debt capital. However, the strong correlation with firm size suggests that there are significant costs associated with setting up and maintaining an ABS program and that these costs likely limit the value of securitization to a wider set of firms.

Much of the prior work on securitization has focused on the accounting treatment of these transactions, including whether securitizations are used to manage earnings (Feng, Gramlich, and Gupta (2009)) or to window dress financial statements (Dechow and Shakespeare (2009)). In contrast, this paper is among the first to examine the economic benefits of asset-backed securitizations by nonfinancial firms. The most closely related paper is Minton, Opler, and Stanton (1997). Minton et al. examine a sample of 41 industrial firms with ABS transactions over the years 1987-1994 and focus mainly on the firm-level determinants of ABS usage. Despite the very different sample periods, Minton et al. also find that securitization usage is concentrated in relatively risky firms.

Our paper makes several contributions. First, we provide new descriptive evidence on the usage of securitization by nonfinancial firms and document the effects that securitization has on their balance sheets. Second, we show that securitization leads to increases in firm value, providing new evidence that capital structure decisions remain relevant for even the largest firms in the economy. Finally, we shed some light on the economic rationale for the use of securitization and add to the literature which shows that segmentation in credit markets can affect capital structure decisions. Overall, the evidence paints a consistent picture that firms using securitization achieve lower overall financing costs that is not at the expense of existing bondholders. These findings are particularly relevant as policy makers continue to debate the merits of securitization.

The remainder of the paper is organized as follows. Section I discusses the background of securitization transactions. Section II discusses the potential economic benefits associated with ABS financing and summarizes the testable hypotheses. Section III describes the data. Section IV examines the value impact of securitization; section V investigates the determinants

of securitization usage; and section VI analyzes the consequences to firms from starting a securitization program. Section VII concludes.

## **I. Background**

In order to highlight the potential economic benefits of securitization, we begin by describing the relevant institutional features of securitization as they relate to nonfinancial firms. The distinguishing feature of securitization is that assets are financed separately from the balance sheet of the originating firm. The process begins with the originating firm creating a wholly-owned, limited purpose, SPE whose sole purpose is to purchase assets from the originating firm.<sup>7</sup> The SPE finances the purchase partly with debt that does not have recourse to the originating firm and partly with a residual interest claim that is typically held by the originating firm.<sup>8</sup> In exchange for cash and the residual interest claim, the originating firm transfers legal ownership of the assets to the SPE. The structure of the financing offers the creditors of the SPE first priority on the SPE's assets and little to no exposure to the risk of the originating firm.<sup>9</sup> As discussed in Gorton and Souleles (2007), the primary goal of securitization is to separate the credit risk of the originating firm from the credit risk of the SPE, which is accomplished by legally transferring the assets off the balance sheet of the originating firm.

The nature of SPE debt means that securitization financing shares certain similarities with secured debt. Investors in the SPE are exposed almost exclusively to the credit risk of the SPE, which depends on the risk of the assets held in the SPE and the size of the subordinated interest held by the originating firm. Similar to very well collateralized debt, the creditors of the SPE are

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<sup>7</sup> For reporting purposes, the SPE may be consolidated or unconsolidated with the firm's balance sheet. The accounting rules governing the consolidation of the SPE's have changed over time and currently are detailed in *Statement of Financial Accounting Standards* No. 166 and No. 167.

<sup>8</sup> The residual interest claim may be held in whole or in part by a third party.

<sup>9</sup> Several papers have explored the question of whether the SPE is truly bankruptcy-remote. Gorton and Souleles (2007) and Higgins, Mason, and Mordel (2009) provide some evidence that the creditors of the SPE appear sensitive to the credit risk of the originating firm, suggesting some implicit recourse.

largely unaffected by distress of the originating firm. Despite the similarities with secured debt, however, there are important differences created by the non-recourse nature of SPE debt. Importantly, the securitized assets can generate cash flows independent of the originating firm's operations; the SPE relies only on the cash flows related to the securitized assets rather than the payment promise of the originator. Secured debt, on the other hand, retains at least some exposure to the firm's overall ability to repay the firm's total debt. Even highly collateralized on-balance sheet debt claims are subject to some bankruptcy costs, such as the automatic stay in Chapter 11, which limits the ability of creditors to acquire their assets, thus creating exposure to the originating firm. Institutionally, the legal separation of the SPE permits the debt raised through the securitization to obtain a separate credit rating, which typically is not available to secured debt.

The most common securitization by nonfinancial firms involves the financing of receivables, which includes primarily accounts receivables, but in some cases lease receivables or other receivables. The typical transaction works similarly to a revolving line of credit; the SPE is permitted to continually finance assets up to a pre-specified limit, under fixed terms, for a fixed period of time. In many cases, the SPE has a contractual agreement with an asset-backed commercial paper (ABCP) conduit that permits the SPE to sell an ownership interest in the SPE's assets.<sup>10</sup> The ABCP conduit purchases ownership interests from a variety of SPEs and finances the purchase largely with issuance of commercial paper.

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<sup>10</sup> See Moody's Investor Service (2003) and Fitch (2001) for a description of the Asset-Backed Commercial Paper market. So-called general purpose "multi-seller" and "hybrid" ABCP programs will buy assets from a variety of firms. As described by Moody's (2003), "these programs generally provide working capital financing to the sponsoring bank's corporate clients" (page 7). According to "The ABC's of ABCP" (Société Générale, 2008), 14 percent of multi-seller and hybrid ABCP programs were comprised of trade receivables as of July 2007, and 61 percent of all ABCP was issued by multi-seller and hybrid programs. Based on \$1.9 trillion of ABCP outstanding as of year-end 2006 (source: <http://www.federalreserve.gov/releases/CP/>), we estimate that approximately \$160 billion of ABCP was funding trade receivables as of year-end 2006. This number is quite close to the \$174 billion of

As an example of a typical securitization, consider the following excerpt from the 2006 10-K of Raytheon Company, a large producer of defense-related industrial goods:<sup>11</sup>

“In 2006, we sold \$67 million of general aviation finance receivables to a qualifying special purpose entity (QSPE) which in turn issued beneficial interests in these receivables to a commercial paper conduit, and retained a subordinated interest in and servicing rights to the receivables. The sale was non-recourse to us ... At December 31, 2006 ..., the outstanding balance of securitized accounts receivable held by the third party conduit totaled \$173 million ..., of which our subordinated retained interest was \$60 million...

The assets of the QSPE are not available to pay the claims of the Company or any other entity.... We retained responsibility for the collection and administration of receivables. We continue to service the sold receivables and charge the third party conduit a monthly servicing fee at market rates.”

This passage highlights several important issues related to securitization financings. First, Raytheon asserts that the assets transferred to the SPE are unavailable to the creditors of Raytheon. Raytheon’s creditors, however, do have access to the residual interest in the SPE, meaning that once the SPE’s creditors are repaid, Raytheon receives the remainder. As of year-end 2006, Raytheon had received \$113 million of financing through the securitization and had a \$60 million residual interest in the SPE. In terms of accounting, Raytheon removed the entire \$173 million of receivables from its balance sheet but included the \$60 million retained interest as an asset, recorded as a receivable. Of course, Raytheon received roughly \$113 million in cash from the SPE, which was financed from the sale of the beneficial interest to the commercial paper conduit.<sup>12</sup>

It is instructive to compare the off-balance sheet transaction with the alternative of on-balance sheet secured borrowing. For Raytheon, this would mean leaving the entire \$173 million of receivables on the balance sheet and obtaining a \$113 million loan collateralized by the

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nonfinancial ABS that we find for the 2006 fiscal year, suggesting that the vast majority of nonfinancial ABS is funded through ABCP.

<sup>11</sup> Taken from <http://www.sec.gov/Archives/edgar/data/1047122/000119312507037249/d10k.htm>.

<sup>12</sup> The sale price was likely less than \$113 million, with the difference reflecting the cost of financing.

receivables. This would increase Raytheon's assets and debt each by \$113 million as compared with the off-balance sheet transaction. Although Raytheon's hypothetical secured lenders would have a well collateralized claim with roughly 50 percent over-collateralization, they would be more exposed to the credit risk of Raytheon as a whole, and in the event of a bankruptcy, the secured lenders would be a participant in the Chapter 11 workout.

Second, the Raytheon anecdote illustrates the importance of retained interest for a securitization transaction. As discussed in Niu and Richardson (2006), retained interest is a form of over-collateralization that provides a credit enhancement to the creditors of the SPE. The \$60 million residual interest means that Raytheon has a first loss position in the underlying receivables and will absorb any losses on the assets before the creditors of the SPE. Compared with leaving the receivables on the balance sheet, the securitization creates a leveraged exposure to the underlying assets. The over-collateralization also permits Raytheon to adjust the credit quality of the SPE independently from Raytheon's on-balance sheet credit quality. At the time of the securitization, Raytheon had a Baa2 long-term debt rating and a P-2 short-term debt rating from Moody's, which is below the highest rating offered by Moody's. Through the over-collateralization of the SPE, Raytheon likely gained access to investors with a preference for P-1 rated commercial paper.<sup>13</sup>

Finally, the example points out several issues related to the accounting treatment of securitizations. As of 2006, accounting and disclosure requirements related to off-balance sheet financing were governed by the *Statement of Financial Accounting Standards No. 140* (FAS 140). FAS 140 clarified the conditions under which off-balance sheet financing should be accounted for as a true sale or not. If the transaction does not qualify as a true sale, the SPE must

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<sup>13</sup> We do not know the name (or rating) or the commercial paper conduit that financed the securitization. However, Covitz, Liang, and Suarez (2009) show that the vast majority of ABCP is rated P-1.

be fully consolidated on the balance sheet of the originating firm. If the transaction does qualify as a true sale, the SPE is deemed “qualified,” and the originating firm needs only account for any retained interest in the SPE. For our purposes, we track the accounting treatment of SPEs only so we can properly adjust accounting variables, whenever necessary, to be consistent across firms. We make two types of adjustments. For any firm not consolidating the SPE, we create a set of accounting variables to be as if the SPE were consolidated; and for firms with consolidated SPEs, we create a set of accounting variables exclusive of the SPE. We do this to facilitate comparisons across firms and make it clear which types of variables we are using.

## **II. Theoretical background and testable hypotheses**

In this section, we discuss the existing research that motivates our subsequent empirical analysis. The unifying theme is that the bankruptcy-remote nature of the SPE separates the credit risk of the SPE from the credit risk of the originating firm. This structure can create value by alleviating some of the frictions associated with debt financing and permit certain firms access to the market for highly-rated corporate debt and commercial paper.

The fundamental question of interest is why would a firm use securitization rather than traditional on-balance sheet debt financing. Firms that use securitization typically point to lower cost financing as the reason for using securitization. For example, United Stationers Inc.’s 2007 10-K report states: “The (Receivables Securitization) Program typically is the Company’s preferred source of floating rate financing, primarily because it generally carries a lower cost than other traditional borrowing”.<sup>14</sup> Practitioners often cite the low interest cost associated with securitized debt as well (e.g. Roever and Fabozzi (2003), Gangwani (1998), and Stone and Zissu (1997)). In the absence of frictions in financial markets, creating a low risk SPE so as to obtain

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<sup>14</sup> Taken from: <http://www.sec.gov/Archives/edgar/data/355999/000104746908002036/a2182993z10-k.htm>

low cost financing should result in higher financing costs for the remainder of the firm; if everything is fairly valued, the weighted-average financing costs should remain unchanged (Modigliani and Miller (1958)). Of course, frictions in financial markets can undo this logic, leading to several theories for how securitization can create value.

#### *A. Market segmentation*

Institutional features in credit markets lead to a notable segmentation based on the probability of default of the underlying issuer, particularly at the boundary between investment-grade and speculative-grade (between BBB- and BB+, using the nomenclature of S&P). By permitting firms to create two classes of debt with very different probabilities of default, securitization can allow firms to take advantage of this segmentation. Kisgen (2006, 2009) finds evidence that concern about credit ratings affects firms' financing decisions, particularly near the investment-grade border. Firms near the border make equity and debt financing decisions to achieve or maintain the higher rating.

There are several reasons for the observed market segmentation. Regulations in several industries have relied on credit ratings as a means to control investment risk. For instance, some financial institutions, such as regulated commercial banks, are prohibited from owning bonds with a speculative-grade rating; U.S. regulated insurance companies are required to hold capital against bonds based on the bond's credit rating; pension fund guidelines often incorporate credit ratings into prudent investing rules. In each case, higher ratings are favored at the expense of lower ratings, meaning that firms with a lower rating face additional costs that can increase the cost of capital.

Securitization typically also provides nonfinancial firms with access to the commercial paper (CP) market. Due to legal restrictions on money market funds, which account for a sizable

share of commercial paper investment, nearly all commercial paper carries the highest short-term rating of A-1/P-1. Kahl, Shivdasani, and Wang (2010) note that firms with a long-term debt rating below A- are very unlikely to receive the highest short-term rating, which means that a long-term rating of A or better is necessary for access to the commercial paper market. For many firms, achieving such a high rating creates other costs that make it unattractive, which is why relatively few firms use commercial paper (see Kahl, Shivdasani, and Wang (2010)). Securitization, however, creates a mechanism that permits some firms to fund a portion of their assets with commercial paper, which otherwise would be funded in other credit markets. Moreover, securitization can help minimize the rollover risk that is associated with on-balance sheet CP funding. By placing very short maturity assets, such as receivables, in the SPE, the originating firm can isolate the firm's other assets from any rollover risk.

In practice, firms often point to securitization as a source of financing and liquidity following a downgrade of their credit rating. For instance, both General Motors and Ford Motors were downgraded from investment-grade to speculative-grade during 2005, which led them both to increase their reliance on securitization. In their 2005 10-K, Ford Motor writes, "Recent lowering of credit ratings for Ford and Ford Credit has increased borrowing costs and caused Ford Credit's access to the unsecured debt markets to become more restricted. In response, Ford Credit has increased its use of securitization and other sources of liquidity."<sup>15</sup> Similarly, GM writes in their 2005 10-K, "While the aforementioned ratings actions have increased borrowing costs and limited access to unsecured debt markets, these outcomes have been mitigated by actions taken by GM and GMAC over the past few years to focus on an increased use of liquidity sources other than institutional unsecured markets that are not directly affected by ratings on unsecured debt, including secured funding sources beyond traditional asset

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<sup>15</sup> Taken from: <http://www.sec.gov/Archives/edgar/data/37996/000003800906000031/fmc10k2005.htm>

classes and geographical markets, automotive whole loan sales, and use of bank and conduit facilities.”<sup>16</sup> These statements highlight the segmentation in markets that both GM and Ford exploited following their downgrades.

### *B. Bankruptcy costs*

Securitization also may create value by reducing the costs associated with financial distress or bankruptcy. By separating certain assets into the SPE, Gorton and Souleles (2007) show that securitization can reduce the total deadweight costs of financial distress, since fewer assets managed by the firm would be subject to bankruptcy proceedings. Since even highly collateralized on-balance sheet debt claims are subject to bankruptcy costs created through the automatic stay, attorney fees, and other economic costs, securitization can result in a lower cost of capital for firms that face high expected bankruptcy costs.

Ayotte and Gaon (2011) provide a model demonstrating how securitization can limit inefficient continuation following a bankruptcy reorganization. Since debtor-in-possession (DIP) financing receives special priority status in a reorganized firm, the ability to subjugate existing claims creates a bias towards excessive continuation. By moving assets off the balance sheet of the originating firm, securitization can limit this possibility and result in a lower cost of capital. This effect is particularly strong for assets that are not essential to running the business, such as accounts receivable. Ayotte and Gaon (2011) use their model to explain the securitization of accounts receivable rather than other types of assets. Both the Gorton and Souleles (2007) and Ayotte and Gaon (2011) models show that securitization can create value when the costs associated with bankruptcy are particularly high.

### *C. Financial flexibility*

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<sup>16</sup> Taken from: <http://www.sec.gov/Archives/edgar/data/40730/000095012406001534/k03376e10vk.htm>

Leland (2007) provides a model of capital structure that can be used to explain securitization, among other capital structure decisions. By creating a separately capitalized SPE, off-balance sheet financing provides an extra degree of freedom to trade off the costs and benefits of debt financing. Because the leverage of the SPE can be set separately from the leverage of the originating firm, the tax benefits of debt and expected costs of financial distress can vary across the two entities, permitting a more optimal tradeoff. Leland (2007) shows that this effect is largest when the assets of the SPE are very different than the assets remaining on the balance sheet of the originating firm. Although Leland (2007) focuses on taxes and financial distress as the frictions that make capital structure relevant, we suspect that similar logic can justify using an SPE to minimize other frictions. In particular, firms may value the flexibility of an SPE when faced with segmentation in credit markets that makes investment-grade debt or commercial paper particularly attractive.

#### *D. Debt overhang and the value of collateral*

As an extremely secured form of borrowing, securitization can create value in the same way that collateral can create value. Myers (1977) sets the groundwork for exploring the usefulness of secured financing to overcome problems of debt overhang, which is explored further in Stulz and Johnson (1985). When existing debt is sufficiently risky, debt overhang may limit the attractiveness of new investment because many of the gains accrue largely to existing creditors. Secured debt, and off-balance sheet financing, can mitigate this problem by separating the collateral assets from the rest of the firm, which prevents existing creditors from benefiting from the new investment. The benefit to the firm is lower cost to finance additional investment. Under this view of off-balance sheet financing, we would expect to see financially constrained firms with limited access to on-balance sheet financing as heavy users of securitization.

### *E. Wealth transfer*

A final hypothesis is that securitization permits shareholders to transfer wealth away from existing bondholders. By selling high quality assets to the SPE, shareholders may be increasing the risk of existing debt in order to increase the value of their option to default. The securitization process may leave more volatile assets and higher leverage on the balance sheet of the originating firm, which could increase the likelihood of default and reduce the recovery available to bondholders in the event of default. Since the value of equity would increase at the expense of debt, shareholders prefer such a transaction even though no value is created for the firm as a whole. Of course, bondholders continually are concerned with activities that increase the risk of their debt claim, and securitization is just one possible means.

### *F. Hypotheses*

The theories posited above lead to several hypotheses that guide our empirical tests. First, all of the theories predict that securitization creates value for the equity-holders of the firm. Although this hypothesis seems obvious, a variety of existing research has shown that new security issuance generally leads to negative abnormal returns for existing stockholders, particularly issuance of convertible debt and equity.<sup>17</sup> We use a standard event study for stock returns around the initiation of a new securitization program to test the following hypothesis.

*H1: The initiation of a securitization program leads to positive abnormal equity returns.*

If securitization is driven by a transfer of wealth from bondholders to shareholders, we would still expect to see positive equity returns but would also expect to see negative returns to existing bondholders. In order to test this theory, we also perform an event study for bond returns around the initiation of a securitization program, which allows us to test our second hypothesis.

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<sup>17</sup> Eckbo, Masulis, and Norli (2008) summarize much of the existing literature.

*H2a: If securitization is a means to transfer wealth from bondholders, the initiation of a securitization program will lead to negative abnormal bond returns.*

Since bond event studies are difficult to implement due to limited data and infrequent trading, we augment the second hypothesis using the opinions of rating agencies. Specifically, we use the credit rating assigned to long-term senior unsecured debt as an alternative measure of the value of bonds. Under the assumption that rating agencies quickly update their ratings to reflect changes in the probability of default or the expected recovery rate, the wealth transfer hypothesis suggest that ratings should worsen following the start of securitization. We supplement our second hypothesis accordingly.

*H2b: If securitization is a means to transfer wealth from bondholders, the initiation of a securitization program will lead to more credit rating downgrades and worse average ratings.*

Differences between types of firms that choose to use securitization and other firms can also shed some light on the underlying motives for securitization. Accordingly, we investigate the correlation between firm characteristics and the propensity to use securitization.

Segmentation in corporate credit markets provides a clear motivation for firms near the boundary of an investment grade to be more likely to use securitization. As in Kisgen (2006), we expect firms with a BBB and BB rating to be enticed by the opportunity to acquire access to the highly-rated commercial paper market. Additionally, firms with a BB rating can access the investment-grade bond market through securitization. This leads to the following hypothesis.

*H3a: Segmented credit markets suggest that firms with BBB and BB ratings are more likely to use securitization.*

Kisgen (2009) documents that changes in credit ratings, particularly downgrades, lead firms to reduce leverage, particularly if the downgrade leads to a speculative-grade rating or

affects access to commercial paper markets. Since securitization is an alternative means to gain access to investment-grade or commercial paper markets, we also expect firms that have experienced a downgrade to be more likely to initiate a securitization program. This leads to a modification of our third hypothesis, which is a test whether the experiences of GM and Ford generalizes to other firms.

*H3b: Segmented credit markets suggest that firms that recently experienced a rating downgrade are more likely to initiate a securitization program.*

Finally, we incorporate the insights from the financial flexibility and debt overhang theories by asking whether standard measures of financial constraints and growth opportunities are correlated with the use of securitization. In particular, we hypothesize that firms which are more likely to be financially constrained and with more opportunities to grow will be more likely to use securitization. We test the following hypothesis using a number of proxies for financial constraints and growth options, which are described in Section III.

*H4: Securitization usage will be concentrated in firms that are financially constrained and have large growth options.*

### **III. Data and summary statistics**

This section describes in detail the dataset we construct and the design of the empirical analysis we use to test the above hypotheses. Appendix A contains additional details on the procedure used to collect the data on securitization usage.

#### *A. Sample construction*

Our full sample begins with all firms in the *Compustat* database from fiscal years 1996 through 2009, excluding financial firms (SIC codes between 6000 and 6999) and regulated

utilities (SIC codes between 4900 and 4999). Since *Compustat* does not include information on securitization usage, we supplement the standard *Compustat* data with information taken directly from firms SEC filings.<sup>18</sup> We merge each *Compustat* observation with the 10-K filing that generated the observation and use the 10-K to determine if the firm used securitization during the year. If a securitization program is in place, we collect details on the program, including: how much borrowing is done through the SPE, what is the value of the assets held in the SPE, what is the borrowing limit of the program, and the contractual start date of the program. The result is a firm-year panel dataset of nonfinancial *Compustat* firms with an indicator of securitization usage and details on the nature of the program. Appendix A describes in detail exactly how we acquire this information from SEC filings.

#### *B. Summary statistics on securitization by nonfinancial firms*

Table I reports a variety of summary statistics related to the use of securitization by nonfinancial firms. Panel A shows the number of firms using securitization by year. As of 1996, 113 firms were using securitization, which was less than 2 percent of all nonfinancial firms. The number of firms using securitization increased steadily until 2002, when nearly 4 percent of firms reported using securitization. The frequency of firms initiating a program also accelerated in the late 1990's and early 2000's but has slowed markedly in more recent years. The uptick in reported use of securitization may owe, in part, to changes in disclosure requirements. In September 2000, the Financial Accounting Standard's Board released Statement Number 140 (FAS140), which required firms to report any gain or loss related to off-balance sheet activities. As reported in Dechow, Myers, and Shakespeare (2010), this rule required firms to report any

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<sup>18</sup> As explained in Appendix A, we also explored Securities Data Corporation's (SDC) New Issue database. However, the observations in SDC are based on the entity issuing the securities, which is the SPE rather than the originating firm. Moreover, the funding of the SPE is often through commercial paper, which is a private transaction that does not trigger the same disclosure requirements necessary for issuance databases to capture the data.

gain or loss related to securitization activity. The disclosure requirements were further expanded by the Sarbanes-Oxley Act of 2002, so it is possible that our search algorithm identifies more users in later periods.<sup>19</sup>

Although only a small share of firms use securitization, usage frequency is considerably higher in certain subsets of firms. Panel A shows that, within firms with a credit rating and within relatively large firms, usage frequency is much higher than for the sample as a whole. For firms with a credit rating, the usage frequency has varied from about 8 percent to almost 15 percent in 2003. Within relatively large firms – those with over \$350 million in assets – usage frequency peaked at nearly 10 percent in 2002 and has always been above 5 percent during this period. Although securitization is not a large source of financing for most nonfinancial firms, securitization is important for a relatively sizable share of large firms and rated firms.

The last column in Panel A reports the aggregate amount of debt borrowed through special purpose entities. Since 2001, the total debt issued through SPE's has averaged roughly \$150 billion and peaked in 2006 at \$175 billion. For comparison, the amount of securitized debt issued by financial firms is much greater than the amount issued by nonfinancial firms. For 2006, the Securities Industry and Financial Markets Association reports that total asset-backed debt stood at \$2.6 trillion, meaning that nonfinancial securitization accounted for only about 6 percent of the total.<sup>20</sup>

Panel B of Table I reports the sample distribution of securitization firms across the Fama and French (1997) 38 industry groups. Industries, excluding financials and utilities, are listed in descending order by the number of unique firms. The distribution across industries reflects, at least in part, the creation of receivables by firms. It is not surprising that the highest incidence of

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<sup>19</sup> All of our subsequent analysis is robust to the inclusion of calendar year dummies that control for any time trends in securitization usage.

<sup>20</sup> Total asset-backed debt taken from <http://www.sifma.org/research/statistics.aspx>.

usage occurs among wholesale, services, and retail stores. Industries with few or zero firms using securitization include nonmetallic minerals, tobacco products, steam supply and irrigation systems.

Table II provides summary statistics on the extent to which firms rely on securitization as a source of funding. The top row in the table shows that SPEs tend to be significantly over-collateralized, on average. The ratio of securitized debt (SPED) to securitization assets (SPEA) has a mean of 57 percent and median of 65 percent and is below 90 percent for at least three-quarters of SPEs. This means that debt-holders of the SPE have a sizable cushion of equity that limits their risk in the case the value of the assets deteriorates. In addition to funding relatively low risk assets, this equity cushion helps the SPE debt achieve very low default risk.

The next two rows highlight how accounting for the SPE debt affects the reported leverage of firms. Excluding the SPE debt, firm leverage ( $FirmD/FirmA$ ) is around 30 percent, on average, and largely varies from 10 percent to 50 percent. When we consolidate the SPE debt onto the firm's balance sheet, total leverage ( $TotalD/TotalA$ ) rises to almost 35 percent, on average, and ranges from 15 percent to 58 percent. This change reflects the fact that securitized debt represents a significant portion of firm's total debt. Although SPE debt averages only about 7 percent of total assets, it accounts for about 20 percent of total firm debt.

The contractual agreements that govern the securitization commonly set an upper limit for the amount of borrowing permitted through the SPE. On average, this limit represents about 10% of a firm's total assets, meaning that the ability to finance assets through the securitization is relatively limited. Moreover, firms typically do not use the entire limit available to them; on average, firms borrow only about one-half their permitted limit.

#### **IV. The valuation impact of securitization by nonfinancial firms**

We start our empirical tests by documenting the impact of securitization initiation on the valuation of the originating firms' equity and debt securities. We perform standard event studies around the initiation of securitization by examining short-run abnormal stock and bond returns for the subset of firms for which we can identify the exact start day of the program. Of the 434 firms using securitization during our sample period, we are able to identify the exact start date for 231 of the firms.

As described in detail in Appendix A, we identify the start dates of the programs from SEC filings, typically the contractual start date of the program.<sup>21</sup> Since investors may not be aware of the program on the contractual start date, stock and bond prices may not immediately reflect investors' opinions about the securitization. Indeed, as reported in Appendix B, we are only able to find reported news of the securitization in major publications for about one-quarter of our sample firms. This could create a significant bias towards zero for our event studies.

We address this issue in two ways. First, in addition to conducting the event studies on the full sample, we also perform the event studies for the sub-sample of firms that initiated the program following Financial Accounting Standard's Board Statement Number 140 (FAS140). Among other changes, FAS140 clarified the rules regarding disclosure of securitizations by making it much harder for firms to hide their securitization activities. Given that firms would eventually have to report the securitization, we hypothesize that immediate disclosure of securitization would increase following the release of FAS140 in September 2000. Under this hypothesis, investors would be much more likely to become aware of securitizations initiated after September 30, 2000.

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<sup>21</sup> In some cases the firm reports announcing the program on a specific date, which we use as the event date.

Second, we measure abnormal returns across a relatively large window around the event date. This provides a longer time period for the information to become public following the contract initiation date. Our preferred window is six days, from the event day through five days subsequent. However, using such a large window raises a concern about the systematic release of other news in the same window which could be the source of any abnormal returns we observe.

Appendix B reports the results of a simple test for the presence of confounding news events. We collect data from major publications on the release of other news in the days around the initiation of the securitization program. Across a wide range of news categories – including earnings releases, other security issuance, and acquisitions – we do not find any evidence that news is more common in the 6-day window that we examine. Specifically, within each of the eight news categories we examine, we cannot reject the hypothesis that the frequency of news is constant in the six 6-day windows around the event date. Based on this result, and the fact that the results are at least as strong in the post-FAS140 sample, we believe that our event studies provide a clean measure of the valuation impact of securitization.

#### *B. Stock return event study*

For each of 231 firms for which we have the exact date when the program started, we conduct a standard stock price event study using the method of Brown and Warner (1985).<sup>22</sup> We begin by estimating the parameters of a market model for each firm's stock return during a 210 day window before the event that ends 46 days before the event. Based on the estimated market model, we compute expected returns using the realized returns on the factors and compute abnormal returns as the difference between actual returns and expected returns. We accumulate returns over various windows to produce cumulative abnormal returns (CARs) for each stock in

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<sup>22</sup> We conduct the stock price event study using the Eventus software available in Wharton Research Data Services.

the sample. As stated above, we do not know the exact day the information about the financing becomes known to market participants, so we examine various windows around the event date.

The results of the event study are presented in Table III (panel A) and Figure 1. In the 30 days preceding the event, mean and median CARs are positive but not significantly different from zero. Beginning right around the event date, average abnormal returns move sharply positive, as shown in Figure 1, and are not reversed in the subsequent 30 days. The bottom three rows of Panel A in Table III show mean and median CARs for three windows beginning on day 0 and ending on days +1, +5, and +30. CARs during the 2-day window are not significantly different from zero. However, the point estimates of the mean and median CARs during the 6-day window from 0 to +5 range from 0.74% to 1.49% and are significantly different from zero at the 5% level.<sup>23</sup> CARs are slightly larger during the post-FAS140 period, but the difference does not suggest a large change in reporting patterns. As shown in Figure 1 and the bottom row of Table III, abnormal returns are not reversed in the weeks after the initial positive abnormal returns. At least through one month following the initiation of a securitization program, equity investors view the news as positive and bid up the value of the average stock by 1 to 1.5 percent. Based on this evidence, we find strong support for our first hypothesis: securitization appears to create value for equity-holders.

#### *B. Bond return event study*

For the subset of firms with publicly-traded bonds, we conduct a bond event study using the guidance provided by Bessembinder, Kahle, Maxwell, and Xu (2009). We begin by collecting daily bond quotes from Datastream, who gather the data from Merrill Lynch and Barclays bond dealers. The daily frequency is very useful since it increases the power of our

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<sup>23</sup> Note that reported statistical significance is based on a two-sided test. A one-sided test whether returns are positive would yield lower p-values.

tests (Bessembinder, Kahle, Maxwell, and Xu (2009)), but an important disadvantage of the data is that we use quotes rather than actual transaction prices. However, since we examine a fairly wide window around the event date, we are not particularly worried about stale quotes.<sup>24</sup> We are able to find quoted prices around announcement dates for 185 non-convertible bonds related to 65 firms. We search Datastream using bond CUSIPs that we generate by merging Compustat and the Mergent Fixed Income Securities Database. See Appendix A for more on the bond data collection.

As in Bessembinder, Kahle, Maxwell, and Xu (2009), we compute the abnormal return as the simple difference between the actual return and the return on an index with similar credit risk and time-to-maturity. We use six indexes provided by Lehman Brothers: short-, medium- and long-term maturity for each of investment-grade and a below investment-grade.<sup>25</sup> For each time horizon, we first compute returns for each bond and then compute the un-weighted mean across bonds of the same firm. Statistics reported in Table III are based on the sample of returns across 65 firms.

In Figure 1, the dashed line shows cumulative mean abnormal bond returns for the 61 day window centered on the event date. Similar to stock returns, bond returns are largely positive around the start of securitization. However, as summarized in Table III, there is less statistical support that mean or median bond returns are significantly positive in the windows we examine.

Panel B of Table III shows that there is no evidence that average realized returns or abnormal returns are significantly different from zero around the initiation of a securitization program. In the window from day 0 to day +5, mean and median bond returns range from 0.08%

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<sup>24</sup> As covered in the Appendix A, we explored using the TRACE data, which provides actual transaction data rather than quotes. However, because TRACE does not provide full coverage until 2004, it does not have data around many of our event dates.

<sup>25</sup> We use cutoffs of 5 years and 10 years to determine which maturity index to match each sample bond.

to 0.38 percent, and none is statistically different from zero. The point estimates are larger over longer windows, however, perhaps suggesting that bonds take longer to process the good news. Due to the relatively small sample size, it is perhaps not surprising that returns are not significantly different from zero; we cannot rule out positive or negative mean returns. However, the point estimates are small in magnitude, particularly median abnormal returns, suggesting bond prices show little reaction to the announcements. Moreover, the reported point estimates and standard errors let us rule out large negative mean returns. For example, with 95 percent confidence, we can reject the hypothesis the mean cumulative total return for the 0 to +5 window is below -0.23%.<sup>26</sup> Given this evidence, we find no support for the second hypothesis that bondholders view securitization as a negative for their expected returns.<sup>27</sup>

### *C. Credit rating event study*

In order to provide additional evidence on how securitization affects bondholders for a broader sample of firms, we also conduct an event study of credit ratings around program initiation. Using daily data on long-term issuer ratings from S&P, we examine average ratings and downgrade frequency in the 181 days around securitization initiation. We focus on a broader window in case ratings are slower to adjust to the new information.

We find a usable ratings history for 91 firms, and we examine average ratings and downgrade frequency of securitization users as compared with a matched sample of non-users. For each firm using securitization, we find the five non-user firms with closest leverage ratios from the same industry and size decile. If there are not five firms in the industry-size group, we

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<sup>26</sup> In other words, we obtain a p-value of 0.05 for the one-sided test of the null hypothesis that the mean CAR is -0.23% versus the alternative that it is greater than -0.23%.

<sup>27</sup> In unreported results, we have also conducted an event study using credit default swap quotes provided by Markit. We find usable CDS spreads for 35 firms around the origination dates. Similar to the bond return results, we find no evidence that 5-year or 1-year CDS spreads increase over the event window. Given the small sample size and similarity with the bond returns, these results are omitted but available upon request.

use as many as possible. This results in a set of 200 firms that do not use securitization but are similar in terms of industry, size, and leverage to the firms using securitization. We match on size and leverage, because, as shown in the next section, users of securitization tend to be large firms with fairly high leverage. For each non-user, we conduct an event study around the same date as the matched securitization user.

With the daily history of ratings, we first convert the letter ratings to numbers using a linear scale for each rating tick: AAA=1, AA+=2, ... D=20. This permits us to examine mean ratings across firms and days. Since the linear scale may not be the most appropriate way to convert letters to numbers, we also examine the frequency with which firms are downgraded, which is defined as any change in rating to a higher number. We use the non-users as the control group and examine the difference between securitization-users and non-users.

Figure 2 plots the average ratings and the cumulative downgrade frequency for the 181 days around the securitization initiation, with the solid line showing firms using securitization and the dashed line showing matched non-using firms. Most notable is the worsening in ratings that happens during the period from about 45 days to 20 days *before* day 0; average ratings deteriorate about one-quarter of a rating grade, and about 15 percent of firms experience a downgrade. The rate of downgrades is much less in the matched firms, and the average rating does not worsen. However, in the days *after* day 0, there is no evidence that ratings worsen for firms using securitization relative to their matched peers. Average ratings drift upwards only very slightly, and the rate of downgrades matches that of the matched non-using sample.

Table IV formally confirms this inference by reporting mean rating changes and downgrade frequency for the sample of users and non-users in six 30-day windows. Based on the reported p-value for the test for a difference in means, the only significant difference is in the

window from 60 days before to 30 days before the initiation date. During that window, the mean rating increases by 0.187 for securitization users but only by 0.033 for non-users. Similarly, the downgrade frequency for users is 8.8 percent for users but only 2.9 percent for non-users. In all of the other windows, including all of the periods after the initiation of the program, there is no evidence that the credit ratings of securitization users deteriorate relative to the matched sample. Indeed, although securitization users experience slightly more downgrades, the average rating of users *improves* relative to the matched sample. We view this evidence as corroborating the bond return event study. There is no evidence that securitization is bad news for bondholders.

Combined with the stock price results, we conclude that announcements of securitization financing programs by nonfinancial firms are good news for investors. The evidence suggests that securitization creates real value rather than simply creating a transfer from bondholders to stockholders. Finally, the evidence from ratings changes is also consistent with the anecdotal evidence that some firms turn to securitization when their overall creditworthiness deteriorates.

## **V. The determinants of securitization usage and initiation**

In this section, we examine the firm characteristics that are correlated with usage of securitization. We examine a variety of firm characteristics in order to shed light on several of our hypotheses.

We focus primarily on measures of firm credit quality in our analysis, using both accounting measures and credit ratings. We measure the leverage of the firm as the ratio of the book value of debt to the book value of assets (D/A) and construct a measure of profitability the ratio of operating earnings to assets (EBITD/A). In addition to firm credit quality, we also examine several proxies for financial constraints and investment opportunities. As proxies for

financial constraints, we include a measure of firm size (the natural logarithm of total assets,  $\text{Ln}(A)$ ) and a measure of the age of the firm (the natural logarithm of the number of years the firm has reported data in *Compustat*,  $\text{Ln}(\text{age})$ ). Hadlock and Pierce (2010) provide convincing evidence that larger and older firms are less likely to report being financially constrained in their annual statements. As proxies for investment opportunities, we explore the market-to-book ratio and several measures of actual investment.

#### *A. Summary statistics*

We first report summary statistics for the key accounting variables used in the subsequent regressions, shown in Table V. We split the sample into firm-years with securitization (Panel A) and firm-years without (Panel B). Several notable differences are immediately obvious.

First, firms using securitization have a large share of receivables on their balance sheet. The ratio of accounts receivable to total assets is 19 percent for firms using securitization and only 15 percent for non-users, on average. The assets of securitization users are comprised of about 20 percent more receivables than non-users. Additionally, the difference in accounts receivables is much larger at the 10<sup>th</sup> percentile, showing that firms with very low levels of receivables do not use securitization. Combined with a large difference in assets, we conclude that securitization users have large volumes of receivables that help make securitization attractive.

Second, compared with the non-securitization firms, firms using securitization show no evidence of being financially constrained, at least based on standard measures. Securitization-users are much larger, much older, and much more likely to have a short-term and long-term credit rating. Firms using securitization are more than an order of magnitude larger than non-users; the mean of the natural log of assets for the securitization firms is 8.1, and the mean for

the non-users is only 4.9. In terms of age, firms using securitization are about twice as old as non-users, and there are almost no very young firms that use securitization. Similarly, over three-quarters of firms using securitization have a long-term credit rating, and more than a quarter have a short-term credit rating; the comparable fractions for non-users are 17 percent and 5 percent. Finally, firms using securitization have higher average earnings and are much less likely to have negative earnings. By nearly all standard measures of financial constraints, securitization-users do not appear constrained.

Third, there is some evidence to suggest that securitization firms have lower growth opportunities than non-users. The mean market-to-book ratio of securitization firms is much lower (2.68) than that of non-users (3.87), however sample medians are much closer. In terms of actual investment, the mean ratio of R&D expenses to total assets is smaller for securitization firms (0.01 versus 0.06), although more than half of both groups have zero R&D expenses. Similarly, the ratio of capital expenditures to property, plant, and equipment is lower for users than non-users (0.10 versus 0.16).

Fourth, securitizing firms carry more debt and have less liquid assets than their peers. The average securitization-user has a leverage ratio (32 percent) that is about one standard deviation larger than that of the average non-user (19 percent). Although this difference reflects the fact that no securitization-user carries zero debt, the differences in leverage are evident at all points in the distribution. The ratio of cash to assets – a measure of corporate liquidity – is more than three times as high for non-users as compared to users, on average. The difference in liquidity is particularly large at the upper end of the distribution; very few firms using securitization carry large cash balances.

Although average credit ratings are slightly lower for securitizing firms, the mean of the numeric scale masks important differences. For additional detail, Figure 3 provides a histogram of long-term ratings for securitization users and non-users. Panel A uses the full sample, including firms with and without a rating, and panel B uses only firms with a long-term rating. The black solid bars represent users, and the red hollow bar represents non-users. Compared with non-users, the ratings of securitization-users are more concentrated in the center of the distribution. Whereas about three-quarters of securitization users are rated BBB or BB, only about half of non-users carry these ratings. Non-users are much more likely to carry very high ratings of A or above and more likely to carry very low ratings of B+ or worse. Table V confirms that the standard deviation of ratings is much lower for securitization-users. Comparing the two panels in Figure 3 highlights the much greater likelihood that firms using securitization have a credit rating. The rating distributions provide support for the prediction of hypothesis 3 that firms using securitization are more concentrated in BBB and BB ratings. We now confirm these observations with a multivariate analysis.

#### *B. Regressions for securitization usage*

We next run probit regressions to analyze the multivariate determinants of securitization usage and more formally test our hypotheses. In our firm-year panel data, we create a dependent variable that is set to one for a firm-year observation with securitization, and zero otherwise. The explanatory variables include our proxies for financial constraints, growth opportunities, and credit quality, along with other controls. All the variables are measured as of the fiscal year-end prior to the securitization indicator.

We implement the regressions on four different samples: the complete sample of all firms, a rated-firm sample, a large-firm sample, and a large- and rated-firm sample. The rated-firm

sample includes only firms with a long-term rating as of the fiscal year-end, and the large firm sample includes only firms with total assets larger than \$350 million, which is around the first quartile of the asset distribution. Results are reported in regression (1) to (4) of Table VI. In addition to estimated coefficients and associated standard errors, the table also reports estimated marginal effects. We compute estimated marginal effects as the change in the predicted probability caused by a one standard deviation change in a continuous variable or the impact of changing a dummy variable from zero to one, while holding all other variables at their sample means. The table also reports the unconditional probability of securitization usage.

As with the univariate comparisons, it remains the case that larger and older firms are more likely to use securitization. In all four samples, the coefficient on the logarithm of assets is positive and statistically significant, confirming that large firms are more likely to use securitization. In terms of economic magnitudes, firm size is a very important determinant of securitization usage. For the full sample, a one standard deviation change in the log of assets results in a 0.61 percentage point increase in the likelihood that a firm uses securitization, which is about at 20 percent increase. In the subsamples of large and rated firms, firm size has an even larger impact. In the sample of rated firms, firm age is nearly important as firm size. Given the established evidence that larger and older firms are much less likely to face financial constraints, we reject the hypothesis (H4) that securitization is used to relax financial constraints.

In all four samples, firms with lower credit quality are significantly more likely to use securitization. The coefficient on leverage is positive and statistically significant in all regressions, and the economic impact is about half as large as the impact of firm size. Similarly, the coefficients on the BBB and BB dummy variables are significantly positive in all regressions, confirming that firms with these credit ratings are significantly more likely to use securitization.

In the sample of firms with ratings, BBB-rated firms are twice as likely to use securitization as other firms, and BB-rated firms are more than 80 percent more likely to use securitization. These results support the hypothesis (H3) that segmented credit markets encourage firms to use securitization.<sup>28</sup>

The negative coefficient on the short-term rating dummy shows that firms with access to commercial paper markets are less likely to use securitization. In addition to creating debt with very high credit quality, securitization also provides access to CP markets that otherwise would not exist.

### *C. Regressions for securitization initiation*

We next examine the firm characteristics that are correlated with the initiation of a securitization program, reported in Table VII. We use quarterly data and limit the sample to firms that have never used securitization prior to the current quarter.<sup>29</sup> The dependent variable is an indicator variable that takes the value 1 only in the first quarter that a firm initiates a securitization program. All the explanatory variables are measured at the beginning of the quarter.<sup>30</sup> We use the same set of explanatory variables as in Table VI but add an indicator variable to indicate that the firm's credit rating was downgraded during the prior four quarters (Downgrade). Because we are examining the quarterly frequency of securitization initiations, the unconditional probability is much smaller in Table VII than in Table VI.<sup>31</sup>

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<sup>28</sup> Note that the construction of the variables used in the regressions use debt and receivables as reported in Compustat, which represents the amount on the consolidated balance sheet. However, all of the results remain qualitatively and quantitatively unchanged if we adjust the independent variables by consolidating the SPE back to the balance sheet for unconsolidated ABS firms or by taking out SPE debt from balance sheet for consolidated ABS firms.

<sup>29</sup> That is, once a firm starts using securitization, it is dropped from the sample.

<sup>30</sup> For stock variables such as  $\ln(A)$ ,  $AR/A$ ,  $MB$ ,  $D/A$ ,  $PPE/A$ , if data from the prior quarter is missing, we use data from the last year.

<sup>31</sup> The conclusions drawn from Table VII are identical if we instead estimate a hazard model for the probability of initiating a program.

The estimated coefficients in Table VII are largely similar in magnitude and statistical significance as those in Table VI. Firm size, the ratio of accounts receivable to total assets, and leverage all have positive coefficients, and the BBB and BB dummy variables are large and statistically significant.

There are important differences between Tables VI and VII, however. The coefficients on the market-to-book ratio and profitability are both negative and statistically significant. A one standard deviation decrease in the market-to-book ratio results in about a 25 percent increase in the likelihood that a firm begins using securitization. The impact of profitability is not quite as large, but the results suggest that firms are more likely to initiate a securitization program when profitability falls. We view this as additional evidence that securitization is not alleviating financial constraints for firms with substantial investment opportunities (H4).

The estimated coefficient on Downgrade shows that the initiation of a securitization tends to follow rating downgrades. For the sample of firms with a credit rating, a rating downgrade increases the likelihood that a firm starts a program by 0.22 percentage points, which is almost a 75 percent increase relative to the unconditional probability. The reported coefficients suggest that the combined impact of a rating downgrade from A to BBB would dramatically increase the probability that a firm initiates a program. The estimated probability that a rated firm starts a program in a quarter increases by about four-fold, from about 0.25% to about 1%.<sup>32</sup> Combined with the results on profitability and market-to-book, the evidence suggests that firms that are experiencing poor performance are much more likely to begin using securitization. The experiences of GM and Ford generalize to the broader sample.

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<sup>32</sup> These estimates are based on the estimated regression coefficients using the mean values for all explanatory variables.

## VI. The consequences of securitization usage

In this section, we examine changes in firm outcomes following the initiation of a securitization program. We focus on changes in leverage and ratings, cash holdings, profitability, and investment. We analyze both the assets and debt held on the balance sheet of the originating firm and the assets and debt of the firm including the SPE. For firms that already report a consolidated balance sheet, we remove the debt associated with the SPE to create “firm only” debt and assets, termed FirmD and FirmA. For firms with unconsolidated accounts, we add back the debt associated with the SPE to create combined amounts, termed TotalD and TotalA. We then create two measures of leverage, one excluding the debt in the SPE (FirmD/FirmA) and one including the debt in the SPE (TotalD/TotalA). We also track cash holdings (Cash/A), profitability (EBITD/A), investment (INV/PPE), and ratings. Because we know the extent of debt held in the SPE only annually, we examine annual changes in all ratios. However, in order to capture higher frequency changes in ratings, we examine ratings quarterly. All variables are defined in Appendix Table A1.

We compare changes among securitization-users against a control group of non-users. As in part C of section IV, we match (with replacement) each securitization firm to at most five non-user firms in the same industry and the same size decile. We select the five firms with the closest leverage ratios measured at the beginning of the initiation year.<sup>33</sup> For each securitization firm, we take the mean of the corresponding matching firms as our control and examine the mean difference between the two as our estimate of the impact of securitization. Panel A in Table VIII shows unadjusted means for just the securitization firms, and Panel B shows the difference between users and matched non-users.

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<sup>33</sup> There are 8 securitization firms for which we cannot find a match. We drop these firms from the analysis.

The first column in Table VIII reports the levels of variables as of two years (quarters) before the start of securitization. Panel B shows that our matching firms provide a good control group; the differences generally are not significantly different from zero. However, firms that subsequently use securitization do have slightly less cash and a worse credit rating, on average.

In the quarter immediately before and the quarter of initiation of a securitization program, firms are downgraded frequently and their average rating worsens. Compared with their matched peers, downgrades are about 7 percentage points more common for securitization users in each of the two quarters before usage. This leads to average ratings worsening by about a tenth in each of the two quarters. This evidence is consistent with the event study results reported in Table IV that show securitization users experience rating downgrades in advance of starting a program. Importantly, ratings show no abnormal deterioration in the quarter after a securitization program starts, providing more corroborating evidence that securitization is not bad news for bondholders.

Two years prior to initiating a securitization program, firms have an average leverage ratio of 28 percent, and it increases by about 3 percentage points during the year prior to initiation. This change is 2 percentage points larger than the control group, and the difference is statistically significant, contributing to the deterioration in credit quality. In the year the securitization begins, firm leverage falls while total leverage increases slightly, suggesting that the securitization is largely a movement of debt from on-balance sheet to off-balance sheet. This pattern remains after comparing with matching firms, suggesting that firms use the proceeds from securitization to retire existing debt. Anecdotal accounts from firms' 10-K filings confirm that firms often intend to use the proceeds from securitization to retire existing debt. For example, United Stationer's writes in their 1998 10-K, "These proceeds (from the securitization)

were used to repay a portion of the Tranche B Facility and certain other indebtedness under the Credit Agreement.”<sup>34</sup> More directly, IMCO Recycling Inc. reports in their 2000 10-K that their line of credit was reduced in connection with receiving permission to initiate a securitization program. They write, "The Restated Credit Agreement ... permitted the Company to sell, convey or otherwise contribute up to \$100,000,000 in certain accounts receivable to a Qualifying Special-Purpose Entity ..., with a simultaneous reduction in the maximum credit facility commitment from \$250,000,000 to \$175,000,000."<sup>35</sup>

We find little evidence of other significant changes in firm outcomes. Cash holdings, investment, and profitability are largely unchanged following the initiation of a securitization program.

To summarize, we find that prior to securitization, firms experience lower profitability, an increase in leverage, and a higher frequency of rating downgrades. Combined with the initiation results shown in Table VII, the evidence suggests that deterioration in credit quality triggers a firm to start a securitization program. This result is consistent with the hypothesis that losing access to the high-grade bond market or commercial paper market encourages firms to use securitization. Upon initiating a program, firms largely use the proceeds to pay down existing debt, with total leverage and credit ratings showing no additional signs of deterioration in credit quality.

## **VII. Conclusion**

Securitization has been at the center of the turmoil in financial markets during the recent recession and financial crisis. Our study focuses on the small share of the market that is directly

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<sup>34</sup> See Appendix A for details.

<sup>35</sup> Taken from: <http://www.sec.gov/Archives/edgar/data/202890/000093066101000670/0000930661-01-000670-0001.txt>

related to nonfinancial firms. Using a comprehensive dataset regarding the usage of securitization by publicly-traded nonfinancial firms over the period 1996 through 2009, we show that securitization has had a positive impact for the select group of nonfinancial firms that used securitization.

Firms using securitization tend to be larger, have substantial amounts of accounts receivable to finance, are more leveraged, and are more likely to have a credit rating around the investment-grade border. We also find that firms are more likely to initiate a program following a decrease in earnings and a credit rating downgrade. Firms appear to turn to securitization in response to losing access to the high-grade bond market and the commercial paper market.

We find that the initiation of a securitization program is associated with positive equity returns and no significant changes in bond prices or credit ratings. Securitization appears to create firm value that is not generated at the expense of existing bondholders. We conclude that securitization is a financing mechanism that permits firms to lower their cost of debt capital, with the benefits accruing to existing shareholders.

Given the results we find, an open question is why so few firms use securitization. Fixed costs of setting up an SPE likely can explain why very small firms rarely use securitization. However, this seems unlikely to explain why the majority of large firms do not use securitization. We suspect the answer is related to our result showing that firms start using securitization following rating downgrades when earnings have fallen and market-to-book ratios are low. Moreover, firms tend to repay existing debt rather than use the securitization to finance new growth. We conjecture that these firms face little cost from removing assets from their balance sheets, whereas higher performing and growing firms would find it costly to remove assets from their balance sheets. It is not difficult to imagine that frictions in financial markets make on-

balance sheet collateral particularly valuable for some firms, which would reduce the value of securitization. We leave this question to future research.

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**Table I. Summary statistics on securitization use**

This table presents summary statistics on the use of securitization by nonfinancial and nonutility firms, as reported in a 10-K filing during 1996 through 2009. Panel A reports statistics by fiscal year. “Usage frequency” is the percentage of all firms in the sample that report using securitization. “Rated firms” refers to only firms with a long term issuer rating at the beginning of the year; “Large firms” restricts the sample to be firms with total assets larger than \$350 million at the beginning of the year. “Total securitization debt” is the aggregate amount of debt borrowed through special purpose entities. Panel B reports the number of unique firms using securitization across the Fama-French 38 industry classifications.

## Panel A Securitization by year

Year	Number of firms using securitization	Number of new firms using securitization	Usage frequency within:			Total securitization debt (\$ billions)
			All firms	Rated firms	Large firms (A>350m)	
1996	113		1.87%	8.12%	6.73%	31.99
1997	135	15	2.07%	9.95%	7.22%	47.89
1998	146	21	2.27%	9.99%	7.20%	56.27
1999	158	24	2.53%	10.80%	7.84%	67.51
2000	177	31	2.80%	12.07%	8.67%	91.57
2001	218	46	3.46%	13.84%	9.91%	152.71
2002	220	22	3.74%	14.41%	9.98%	151.25
2003	206	14	3.70%	14.57%	9.86%	133.80
2004	200	13	3.67%	14.06%	9.39%	132.10
2005	179	7	3.30%	12.46%	8.21%	159.25
2006	168	8	3.17%	11.97%	7.63%	174.06
2007	162	7	3.03%	11.95%	7.25%	110.61
2008	157	3	2.92%	12.15%	6.71%	175.96
2009	126	3	2.60%	10.26%	5.74%	79.64
Total	2365					

**Table I (continued)**

## Panel B. Securitization by industry

Industry name	Number of firms using securitization	Industry name	Number of firms using securitization
Wholesale Services	53	Rubber and Miscellaneous Plastics Products	6
Retail Stores	50	Miscellaneous Manufacturing Industries	6
Machinery, Except Electrical and Electronic Equipment	40	Telephone and Telegraph Communication	6
Chemicals and Allied Products	38	Mining	4
Transportation Equipment	33	Lumber and Wood Products	4
Transportation	26	Stone, Clay and Glass Products	4
Primary Metal Industries	23	Apparel and other Textile Products	3
Instruments and Related Products	21	Construction	2
Food and Kindred Products	20	Furniture and Fixtures	2
Paper and Allied Products	14	Radio and Television Broadcasting	2
Textile Mill Products	13	Sanitary Services	2
All others	11	Agriculture, forestry, and fishing	1
Petroleum and Coal Products	10	Leather and Leather Products	1
Fabricated Metal Products	9	Public Administration	1
Printing and Publishing	8	Nonmetallic Minerals Except Fuels	0
Oil and Gas Extraction	8	Tobacco Products	0
	7	Steam Supply	0
	6	Irrigation Systems	0
		Total	434

**Table II. Summary statistics on securitization financing**

This table presents summary statistics on the size and usage of securitization for firms that report using securitization in a 10-K filing during 1996 through 2009. All the variable definitions are in Appendix Table AI. All ratios have been winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles.

	Mean	Median	Std Dev	10th Pctl	25th Pctl	75th Pctl	90th Pctl
SPED/SPEA	0.572	0.648	0.303	0.000	0.385	0.823	0.913
FirmD/FirmA	0.295	0.279	0.160	0.100	0.184	0.387	0.510
TotalD/TotalA	0.348	0.331	0.169	0.145	0.227	0.444	0.582
SPED/TotalA	0.074	0.038	0.115	0.000	0.011	0.084	0.180
SPED/TotalD	0.202	0.110	0.238	0.000	0.034	0.271	0.579
Limit/TotalA	0.098	0.061	0.139	0.019	0.035	0.108	0.207
Limit/TotalD	0.845	0.202	8.952	0.060	0.107	0.407	0.858
SPED/Limit	0.551	0.650	0.371	0.000	0.159	0.883	1.000

**Table III. Cumulative abnormal asset returns around the announcement of securitization**

This table presents results of stock and bond event studies around the initiation of a securitization program. The event date is the origination date of the contract governing the transaction. The numbers in the table are mean or median cumulative abnormal returns over various windows around the event date. Cross-sectional standard errors are reported in parentheses. \*, \*\*, \*\*\* denote a mean (median) value that is statistically significantly different from zero based on a t-statistic (signed-rank test) at the 10, 5, and 1 percent levels, respectively. Panel A shows the results for stock returns; abnormal returns are computed using a market model with a single value-weighted market factor. Panel B shows the results for bond returns; abnormal returns are computed as the difference between actual returns and the returns on a broad index of corporate bonds. Post FAS140 denotes events that happen after September 30, 2000.

Panel A. Stock Returns				
Window	Full sample (N=231)		Post FAS140 (N=117)	
	Mean	Median	Mean	Median
(-30, -1)	0.82% (1.16%)	0.70%	1.50% (1.69%)	0.74%
(0, +1)	0.45% (0.32%)	0.07%	0.48% (0.52%)	-0.11%
(0, +5)	1.09%** (0.48%)	0.74%**	1.49%** (0.75%)	1.20%**
(0, +30)	1.42% (1.09%)	1.16%	2.90%* (1.60%)	2.31%*
Panel B. Bond Returns				
Window	Full sample (N=65)		Post FAS140 (N=59)	
	Mean	Median	Mean	Median
(-30, -1)	1.26%*** (0.46%)	0.01%	1.39%*** (0.49%)	0.00%
(0, +1)	0.00% (0.21%)	0.01%	0.03% (0.23%)	0.01%
(0, +5)	0.38% (0.37%)	0.08%	0.37% (0.41%)	0.08%
(0, +30)	1.51% (1.09%)	0.47%	1.63% (1.19%)	0.42%

**Table IV. Credit rating changes around the announcement of securitization**

This table presents results of event study of credit rating changes around the initiation of a securitization program. Sample means are reported for firms with securitization, a set of firms without securitization matched to the securitization users, and the difference. The set of matched firms is constructed based on at most five firms from the same industry, size decile, and with the closest leverage ratio as of the year before the securitization was initiated. Panel A reports changes in the level of the rating, using the numerical scale: AAA=1, AA+=1, ..., D=20. Panel B reports the frequency of rating downgrades. The event date is the origination date of the contract governing the transaction, and the windows capture 30 working-day periods before and after the event date. P-values for the null hypothesis that the difference is equal to zero are based on a t-test for independent samples with equal variance.

Window	Sample mean:		Difference	S.E. of difference	P-value
	Securitization firms (N=91)	Matched firms (N=200)			
Panel A. Rating changes					
[-90 , -60)	0.044	0.019	0.025	0.037	0.499
[-60 , -30)	0.187	0.033	0.154	0.064	0.016
[-30 , 0)	0.132	0.024	0.108	0.089	0.224
[0 , 30)	0.011	0.038	-0.027	0.031	0.388
[30 , 60)	0.033	0.033	0.000	0.040	0.993
[60 , 90)	0.055	0.048	0.007	0.034	0.831
Panel B. Downgrade frequency					
[-90 , -60)	0.055	0.029	0.026	0.024	0.264
[-60 , -30)	0.088	0.029	0.059	0.026	0.025
[-30 , 0)	0.055	0.033	0.022	0.025	0.381
[0 , 30)	0.044	0.033	0.011	0.024	0.653
[30 , 60)	0.033	0.014	0.019	0.018	0.288
[60 , 90)	0.044	0.043	0.001	0.026	0.966

**Table V. Summary statistics**

This table presents summary statistics for the explanatory variables used in subsequent regressions. The sample covers all nonfinancial and nonutility firms in Compustat for fiscal years 1996 through 2009. All ratios have been winsorized at the 1<sup>st</sup> and 99<sup>th</sup> percentiles. Panel A includes only firm-years with reported securitization use; panel B reports firm-years without securitization.

Panel A. Firm-years with securitization (N=2,365)

	Mean	Median	Std Dev	10th Pctl	25th Pctl	75th Pctl	90th Pctl
Ln(A)	8.075	7.954	1.512	6.255	7.068	9.003	10.021
AR/A	0.187	0.153	0.140	0.053	0.096	0.234	0.382
MB	2.682	1.800	3.688	0.782	1.151	2.957	4.815
D/A	0.315	0.302	0.162	0.116	0.202	0.407	0.540
EBITD/A	0.123	0.121	0.063	0.060	0.086	0.156	0.198
R&D/A	0.013	0.000	0.027	0.000	0.000	0.019	0.038
Ln(age)	3.082	3.219	0.808	1.946	2.485	3.850	3.970
PPE/A	0.529	0.462	0.337	0.142	0.269	0.718	0.992
Cash/A	0.060	0.033	0.075	0.005	0.014	0.076	0.146
Inv/PPE	0.106	0.086	0.087	0.035	0.055	0.128	0.200
Rating	9.931	10.000	2.684	7.000	8.000	12.000	13.000
STRating	3.083	3.000	1.209	2.000	3.000	3.000	4.000
With_Rating	0.761						
With_STRating	0.271						

Panel B. Firm-years without securitization (N=78,676)

	Mean	Median	Std Dev	10th Pctl	25th Pctl	75th Pctl	90th Pctl
Ln(A)	4.912	4.800	2.306	2.067	3.331	6.404	7.944
AR/A	0.154	0.128	0.132	0.013	0.051	0.221	0.327
MB	3.869	2.018	6.206	0.669	1.136	3.798	7.671
D/A	0.192	0.147	0.193	0.000	0.007	0.319	0.471
EBITD/A	-0.003	0.092	0.383	-0.295	-0.028	0.159	0.226
R&D/A	0.058	0.000	0.126	0.000	0.000	0.062	0.176
Ln(age)	2.322	2.303	0.840	1.099	1.792	2.890	3.526
PPE/A	0.511	0.406	0.417	0.080	0.183	0.753	1.069
Cash/A	0.213	0.109	0.246	0.007	0.026	0.324	0.616
Inv/PPE	0.159	0.107	0.170	0.023	0.055	0.205	0.371
Rating	10.256	10.000	3.632	5.000	8.000	13.000	15.000
STRating	2.465	2.000	1.094	1.000	2.000	3.000	3.000
With_Rating	0.167						
With_STRating	0.051						

## **Table VI. Determinants of securitization usage**

This table presents estimated coefficients from regressions that relate the probability of a firm using securitization to firm characteristics measured at the beginning of the fiscal year. Regression (1) includes all firms; regression (2) includes only firms with a long term issuer rating from S&P; regression (3) includes only firms with assets larger than \$350 million; and regression (4) includes firms with assets larger than \$350 million and with a long term issuer rating from S&P. The dependent variable in all regressions is an indicator variable that equals one if the firm reports using securitization. All regressions include industry fixed effects based on the Fama-French 38 industry classification. Robust standard errors adjusted for within firm clustering are shown in parentheses. The squared brackets contain estimated marginal effects, computed as the impact of a one standard deviation change in a continuous explanatory variable or the impact of changing an indicator variable from zero to one, while holding other variables at their sample means. \*, \*\* and \*\*\* denote an estimate that is statistically significantly different from zero based on a t-statistic at the 10, 5 and 1 percent levels, respectively. “Unconditional Pr” is the unconditional probability of a firm using securitization in a given year.

	All firms (1)	Rated firms (2)	Large firms (3)	Large, rated (4)
Ln(A)	0.275*** (0.019) [0.61%]	0.189*** (0.030) [4.12%]	0.177*** (0.027) [2.25%]	0.170*** (0.031) [3.71%]
AR/A	1.469*** (0.239) [0.17%]	1.921*** (0.392) [2.76%]	1.679*** (0.281) [1.71%]	1.951*** (0.398) [3.01%]
MB	-0.003 (0.005) [-0.01%]	0.006 (0.005) [0.42%]	-0.000 (0.005) [-0.01%]	0.007 (0.006) [0.46%]
D/A	0.912*** (0.159) [0.15%]	0.689*** (0.235) [1.75%]	0.937*** (0.186) [1.62%]	0.770*** (0.237) [2.04%]
EBITD/A	-0.037 (0.254) [-0.01%]	-0.929** (0.398) [-1.15%]	-0.424 (0.324) [-0.37%]	-1.013** (0.401) [-1.30%]
XRD/A	-3.160*** (1.007) [-0.35%]	-3.978** (1.556) [-2.08%]	-3.074*** (1.160) [-1.27%]	-3.889** (1.566) [-2.05%]
PPE/A	-0.150 (0.092) [-0.05%]	-0.157 (0.121) [-0.94%]	-0.153 (0.099) [-0.58%]	-0.170 (0.122) [-1.08%]
Ln(age)	0.189*** (0.037) [0.14%]	0.245*** (0.050) [2.98%]	0.206*** (0.040) [1.62%]	0.243*** (0.050) [3.17%]
With_Rating	0.078 (0.090) [0.07%]		0.067 (0.090) [0.63%]	
With_STRating	-0.225*** (0.085) [-0.15%]		-0.122 (0.085) [-1.07%]	
BBB	0.644*** (0.079) [1.27%]	0.671*** (0.078) [12.16%]	0.625*** (0.078) [8.46%]	0.647*** (0.078) [12.29%]
BB	0.491*** (0.084) [0.79%]	0.563*** (0.083) [9.92%]	0.441*** (0.085) [5.40%]	0.527*** (0.086) [9.81%]
Observations	80,704	14,832	27,700	14,051
Unconditional Pr	2.93%	12.14%	8.09%	12.77%
Pseudo R <sup>2</sup>	0.34	0.16	0.19	0.15

## **Table VII. Determinants of initiation of securitization program**

This table presents estimated coefficients from regressions that relate the probability of a firm initiating a securitization during a fiscal quarter to firm characteristics calculated at the beginning of the quarter. Regression (1) includes all firms; regression (2) includes only firms with a long term issuer rating from S&P; regression (3) includes only firms with assets larger than \$350 million; and regression (4) includes firms with assets larger than \$350 million and with a long term issuer rating from S&P. The dependent variable in all regressions is an indicator variable that equals one if the firm initiates a securitization program during the quarter, and zero otherwise. The sample is limited to firms that have never used securitization prior the current quarter. Downgrade indicates a downgrade in the S&P long term rating compared with the rating 4 quarters before. All regressions include industry fixed effects based on the Fama-French 38 industry classification. Robust standard errors adjusted for within firm clustering are shown in parentheses. The squared brackets contain estimated marginal effects, computed as the impact of a one standard deviation change in a continuous explanatory variable or the impact of changing an indicator variable from zero to one, while holding other variables at their sample means. \*, \*\* and \*\*\* denote an estimate that is statistically significantly different from zero based on a t-statistic at the 10, 5 and 1 percent levels, respectively. “Unconditional Pr” is the unconditional probability of a firm starting a securitization program in a given quarter.

	All firms	Rated firms	Large firms	Large, rated
	(1)	(2)	(3)	(4)
Ln(A)	0.130*** (0.016) [0.02%]	0.025 (0.021) [0.02%]	0.005 (0.023) [0.00%]	0.000 (0.023) [0.00%]
AR/A	1.408*** (0.176) [0.01%]	1.357*** (0.284) [0.08%]	1.510*** (0.201) [0.06%]	1.401*** (0.285) [0.08%]
MB	-0.012** (0.006) [-0.00%]	-0.025** (0.010) [-0.07%]	-0.012* (0.006) [-0.02%]	-0.026** (0.010) [-0.08%]
D/A	0.704*** (0.129) [0.01%]	0.678*** (0.184) [0.07%]	0.684*** (0.138) [0.05%]	0.738*** (0.187) [0.08%]
EBITD/A	-0.572 (0.443) [-0.00%]	-1.415** (0.718) [-0.02%]	-1.592*** (0.508) [-0.02%]	-1.602** (0.701) [-0.03%]
XRD/A	-3.011 (2.204) [-0.01%]	3.082 (2.426) [0.02%]	-0.546 (2.507) [-0.00%]	3.566 (2.543) [0.02%]
PPE/A	0.079 (0.074) [0.00%]	0.048 (0.099) [0.01%]	0.056 (0.080) [0.01%]	0.049 (0.099) [0.01%]
Ln(age)	0.025 (0.036) [0.00%]	0.026 (0.046) [0.01%]	0.038 (0.039) [0.01%]	0.024 (0.046) [0.01%]
With_Rating	0.036 (0.094) [0.00%]		-0.004 (0.087) [-0.00%]	
With_STRating	-0.132* (0.077) [-0.01%]		0.013 (0.077) [0.00%]	
BBB	0.443*** (0.076) [0.05%]	0.479*** (0.077) [0.41%]	0.441*** (0.075) [0.27%]	0.445*** (0.076) [0.38%]
BB	0.269*** (0.088) [0.02%]	0.259*** (0.081) [0.18%]	0.219** (0.085) [0.10%]	0.208** (0.082) [0.15%]
Downgrade	0.266*** (0.070) [0.02%]	0.276*** (0.070) [0.22%]	0.279*** (0.070) [0.15%]	0.278*** (0.070) [0.24%]
Observations	281,594	47,357	91,426	44,605
Unconditional Pr	0.07%	0.30%	0.21%	0.32%
Pseudo R <sup>2</sup>	0.17	0.07	0.09	0.07

**Table VIII. Consequence of initiation of securitization program**

This table presents an event study of changes in firm characteristics around the start of a securitization program. Time 0 is the first year (quarter) that a firm reports using securitization, and the table shows the means of the levels of variables as of two years (quarters) before the securitization, and one year (quarter) differences during the year (quarter) before, the year (quarter) of, and the year (quarter) after the securitization started. All variables are annual except for “Rating” and “Downgrade,” which are quarterly. Panel A presents unadjusted sample means; panel B presents sample means for the difference between the firm value and the contemporaneous mean for a set of matched firms. Each firm is matched on at most 5 firms in the same industry, size decile, and with the closest leverage ratios as of the year (quarter) before the securitization started. Industry is based on the Fama and French 38 industry classification of SIC codes. The sample includes 234 firms, including 136 firms with a long-term issuer rating. Standard errors are reported in parentheses. \*, \*\* and \*\*\* denote a value that is statistically significantly different from zero based on a t-statistic at the 10, 5 and 1 percent levels, respectively.

## Panel A. Unadjusted means

	Level at	Change during period:		
	-2	-1	0	1
Rating (quarterly)	10.030***	0.157*** (0.058)	0.185*** (0.056)	0.052* (0.031)
Downgrade (quarterly)		0.103*** (0.026)	0.140*** (0.030)	0.051*** (0.019)
FirmD/FirmA	0.288***	0.028*** (0.007)	-0.023*** (0.008)	0.019*** (0.007)
TotalD/TotalA	0.288***	0.028*** (0.007)	0.024*** (0.008)	0.013** (0.006)
Cash/FirmA	0.052***	-0.002 (0.005)	0.005 (0.003)	0.011*** (0.004)
EBITD/FirmA	0.128***	-0.011*** (0.004)	-0.004 (0.004)	0.003 (0.004)
Inv/PPE	0.126***	-0.002 (0.005)	-0.012* (0.006)	-0.012** (0.006)

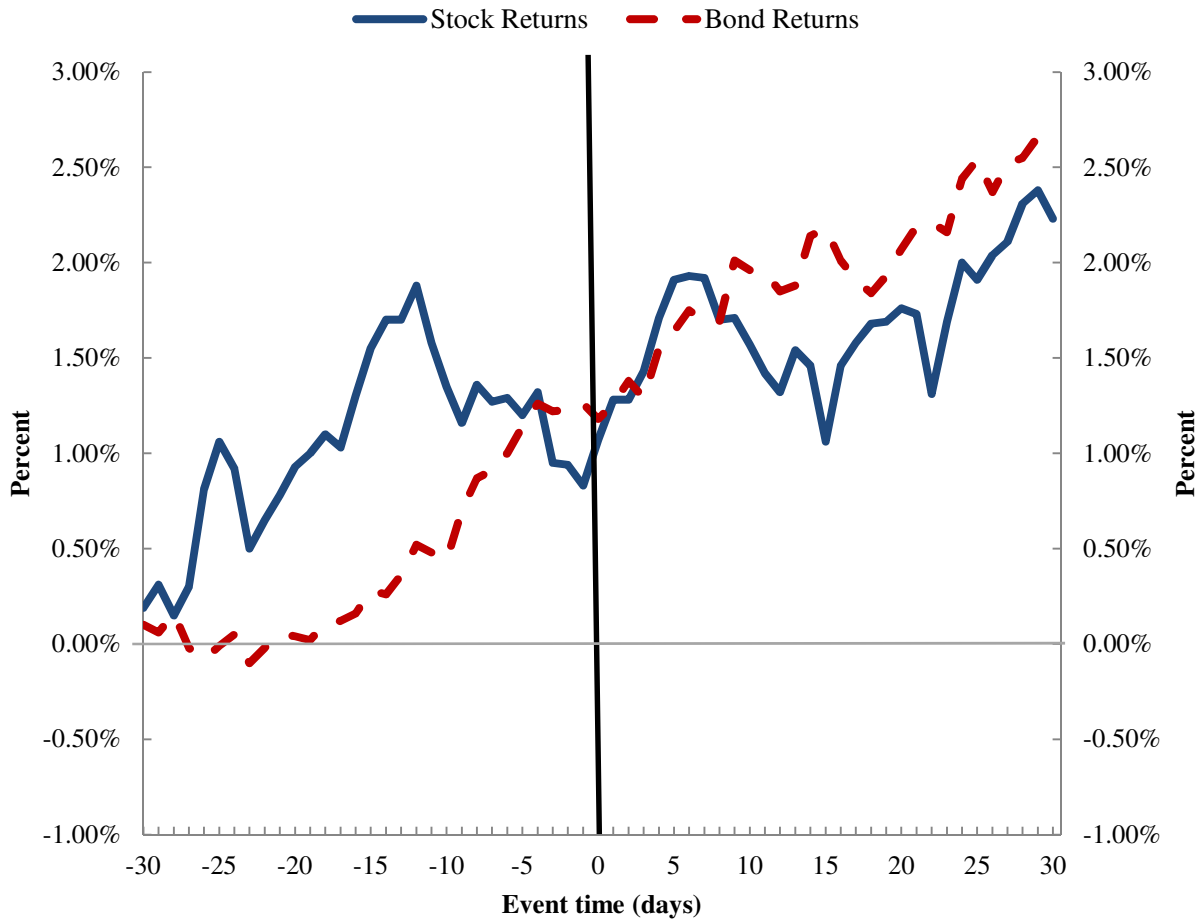
**Table VIII Cont.**

## Panel B. Matching firms adjusted

	Level at	Change during period:		
	-2	-1	0	1
Rating (quarterly)	0.686***	0.124**	0.113*	-0.052
		(0.060)	(0.060)	(0.044)
Downgrade (quarterly)		0.067**	0.075**	-0.007
		(0.028)	(0.034)	(0.024)
FirmD/FirmA	-0.007	0.020**	-0.021**	0.024***
		(0.008)	(0.008)	(0.008)
TotalD/TotalA	-0.007	0.020**	0.025***	0.017**
		(0.008)	(0.008)	(0.007)
Cash/FirmA	-0.039***	0.000	0.002	0.006
		(0.005)	(0.004)	(0.004)
EBITD/FirmA	-0.005	-0.007*	0.005	0.001
		(0.004)	(0.006)	(0.004)
Inv/PPE	0.001	0.005	0.003	-0.005
		(0.006)	(0.007)	(0.006)

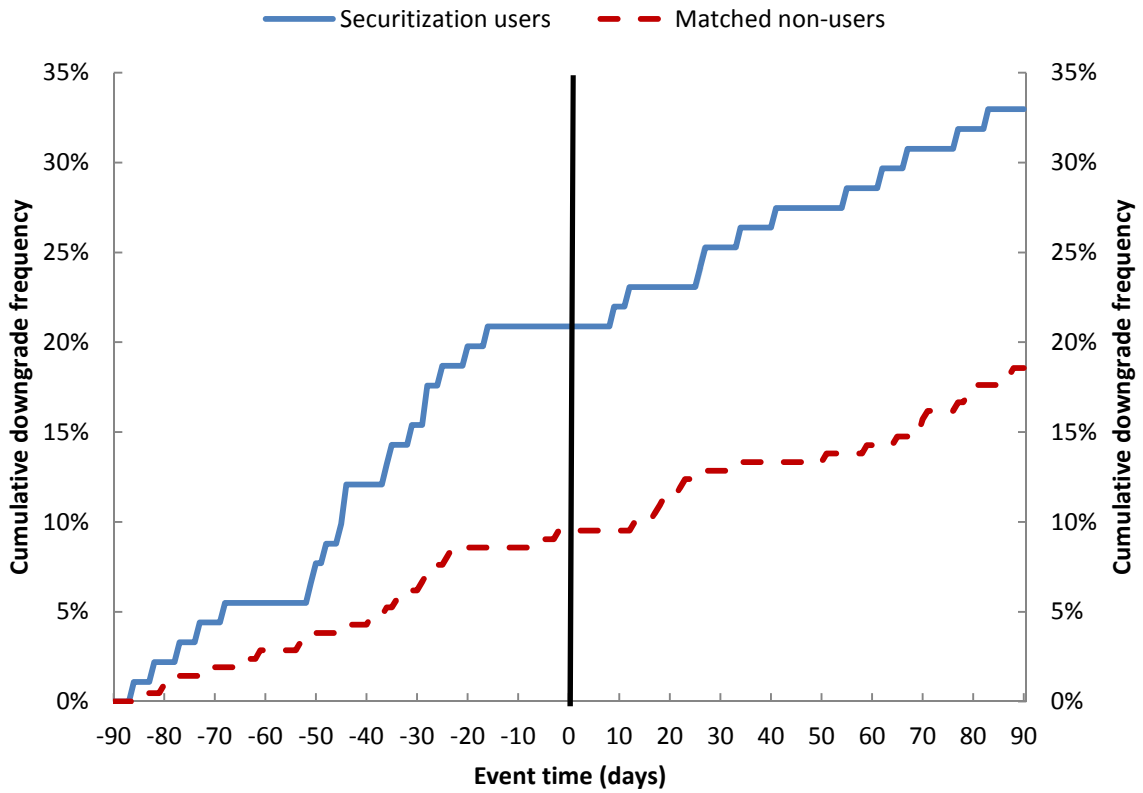
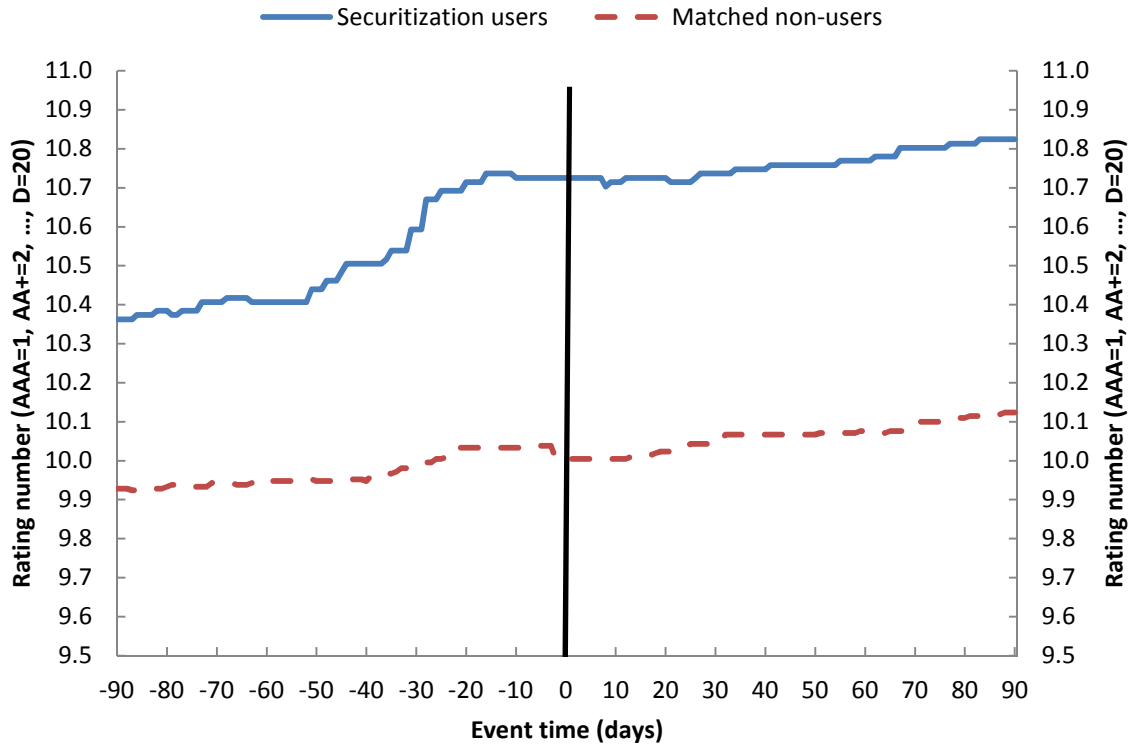
**Figure 1. Stock and bond event study**

This figure presents results from stock and bond event studies around the initiation of a securitization program. Event time 0 denotes the origination date of the contract governing the transaction. The figure plots cumulative average abnormal returns for 231 firms with sufficient stock return data and for 185 bonds from 65 firms with sufficient bond return data. For stocks, abnormal returns are computed based on a market-model measured against a single value-weighted market factor. For bonds, abnormal returns are measured relative to the return on a broad index of corporate bonds.



## **Figure 2. Credit ratings event study**

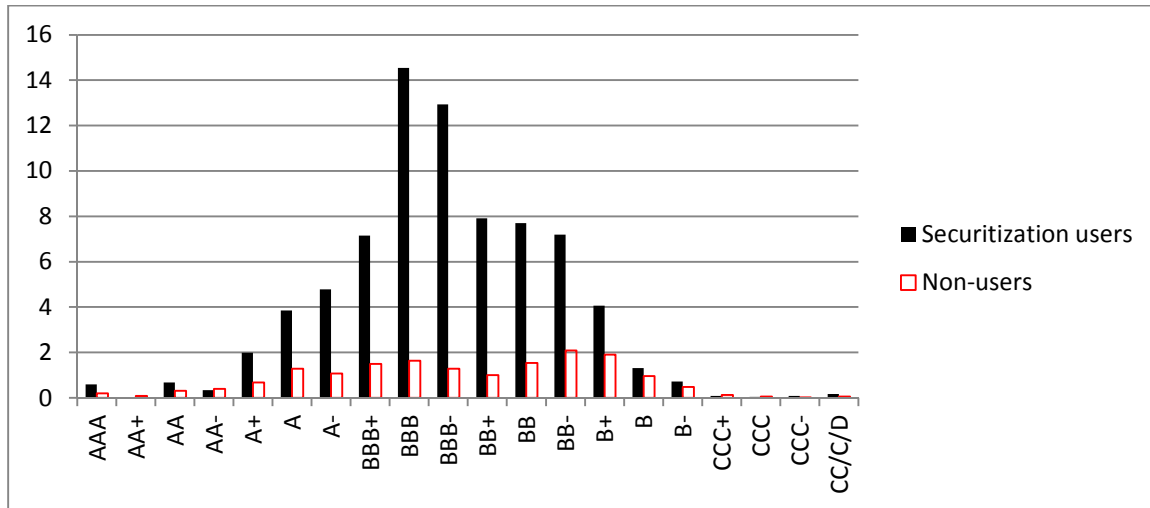
This figure presents an event study of credit rating changes around the initiation of a securitization program. Event time 0 denotes the origination date of the contract governing the transaction. The top figure plots average ratings based on the following numerical scale: AAA=1, AA+=1, ..., D=20. The bottom panel plots the cumulative frequency of ratings downgrades. The sample includes 91 firms with a securitization program and 210 firms without securitization, which are matched based on industry, size, and leverage.



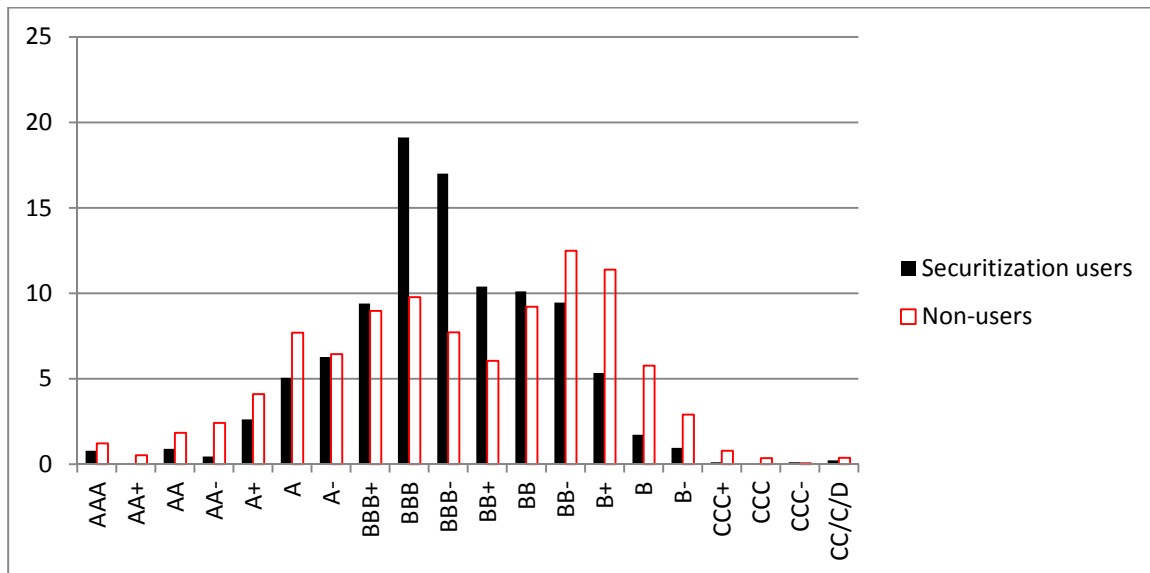
**Figure 3. Distributions of firms by rating**

This figure reports histograms of credit ratings for firms using securitization and for firms not using securitization. The black bars refer to firms using securitization; the red bars refer to firms not using securitization. Panel A uses all firms, including firms without a rating. Panel B uses only firms with long-term rating.

Panel A



Panel B



## **Appendix A. Data collection**

### *A. Securitization usage*

To create a sample of firms that use securitization, we search 10-K filings on the SEC's EDGAR database. We begin with all firms in Compustat from fiscal years 1994 through 2009, excluding financial firms (SIC codes between 6000 and 6999) and regulated utilities (SIC codes between 4900 and 4949). SEC filings are available in EDGAR as early as 1994 for some firms; 1996 is when all firms' filings appear in EDGAR. The nonfinancial, non-utility Compustat sample has 128,317 firm-year observations from 17,496 unique firms, and we successfully find the corresponding 10-K for 115,220 firm-years from 12,066 firms. We merge Compustat and EDGAR filings based on CIK code and filing date.

We identify firms that use securitization through an iterative process. We begin by searching the 10-K filing for each firm-year for any occurrence of the following phrases: "securitiz(s)ation", "securitiz(s)ed", "receivable[s] sale[s]", "sale[s] of receivable[s]", "receivable[s] sold", "receivable[s] financing" and "receivable[s] purchase," where letters in parentheses represent alternatives and letters in brackets are optional. The focus on "receivables" reflects the fact that most securitizations involve receivable-type assets (e.g. accounts receivable and credit card receivables). If any of these phrases is found within the 10-K, we manually check the filing to determine whether the filing firm truly uses securitization. The manual check ensures that we do not have any false positives, which are quite common since our automated search criteria are so broad. This screening procedure identifies 526 unique firms that reported using securitization at some point between 1994 and 2009.<sup>12</sup>

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<sup>1</sup> In very few cases, the securitization was a mortgage-backed securitization initiated by a financial subsidiary of a non-financial firm. We exclude these cases from our sample.

<sup>2</sup> We also tried Securities Data Corporation's (SDC) New Issues database to generate a sample of ABS issuers. The difficulty with using SDC is that an observation is based on the entity issuing the securities, which is the SPE rather

Next, we read *all* of the 10-K filings that can be found on EDGAR through 2009 for each of these 526 firms. We do this to identify the years during which the firm used securitization and to collect securitization-related variables for each year. If available, we collect the actual quantity borrowed by the SPE (called SPED), the maximum amount of borrowing permitted under the program (LIMIT), the assets contained in the SPE (SPEA), and the retained interest, which is the difference between SPE and SPED.<sup>3</sup> Finally, we record whether the firm consolidates the SPE's debt onto the firm's balance sheet or keeps it off balance sheet. For firms that do not consolidate the SPE, we adjust reported balance sheet quantities to create value as if the SPE was consolidated. This creates comparable values across firms.<sup>4</sup> This result is a firm-year panel of variables that indicate the presence securitization and the usage and capacity of the program.

Although our process minimizes the chances of false positives, we are worried about the possibility of false negative, meaning firm-years that actually do have securitization but we fail to identify. Importantly, the nature of our procedure means that each firm-year measured as not having securitization means the *firm* was never identified in our automated search. We would only miss such a firm if our automated search failed to find the securitization in *every* year the firm filed a 10-K.

Nevertheless, we perform two additional checks to gauge the possibility of false negatives. First, for every 10-K filing during the first quarter of 2006, we conduct a broader automated

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than the originating firm. In most cases, the originating firm is not identified. Nevertheless, we do identify around 40 firms using SDC, but all of them are already identified by our search of SEC filings.

<sup>3</sup> Typically, firms will report two of SPEA, SPED, and retained interest, and we assume that SPEA is the sum of SPED and retained interest, as in Dechow and Shakespeare (2009) and Landsman, Peasnell and Shakespeare (2008).

<sup>4</sup> For off-balance sheet securitizations, we add back the debt in the SPE to construct total assets (TotalA) and total debt (TotalD), which include the SPE. We also construct firm assets (FirmA) and debt (FirmD), which exclude the debt in the SPE. For firms that consolidate the SPE, this involves subtracting the debt in the SPE from reported asset and debt. FirmA, FirmD, TotalA and TotalD are comparable across firms, independent of firms' accounting choices.

search.<sup>5</sup> For 3,218 filings, we add the phrase “off\*balance” to our list of phrases above, where “\*” represents a wildcard character.<sup>6</sup> Excluding the firms we previously identified as using securitization, we find an additional 552 firms as potential users. We then manually examine the identified filings for evidence of securitization. In each of the 552 cases, we find that the firm did not use securitization.<sup>7</sup> Second, for a random sample of 100 firms identified as using securitization in 2006, we examine a set of similar firms for evidence that our procedure incorrectly classified these firms as not using securitization. Specifically, we match each of the 100 firms to another firm from the same industry (3-digit SIC code) that is closest in size (based on total assets) and read the *entire* 2006 10-K filing of the matched firm. In no instance do we find that the matched firm reported using securitization. Based on these two checks, we believe that we have accurately identified the vast majority of the population of firms that disclose their usage of securitization financing.

### *B. Some examples*

In this section, we report four representative examples of disclosures related to securitization and show how we define the variables related to the securitizations. These anecdotes are illustrative as to our coding process and provide a glimpse into the nature of disclosures regarding securitization.

1. Ralcorp Holdings (CIK: 0001029506); Fiscal year 2001; Edgar link:  
<http://www.sec.gov/Archives/edgar/data/1029506/000095012401504389/0000950124-01-504389.txt>

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## NOTE 10 -- SALE OF RECEIVABLES

<sup>5</sup> Most of these filings represent annual reports for fiscal year 2005.

<sup>6</sup> We allow any character between “off” and “balance”, thus “off-balance” is also a qualified word.

<sup>7</sup> Firms very often report that they have no off-balance sheet exposure, which is why we exclude the “off\*balance” term from the original search.

On September 24, 2001, the Company entered into a three-year agreement to sell, on an ongoing basis, all of its trade accounts receivable to a wholly owned, bankruptcy-remote subsidiary called Ralcorp Receivables Corporation (RRC). RRC funds its purchases of Ralcorp trade receivables by selling up to \$66 million of ownership interests in such receivables to a bank commercial paper conduit. The bank conduit funds its purchases by issuing commercial paper to investors. Ralcorp continues to service the receivables as agent for RRC and the bank conduit. RRC is a qualifying special purpose entity under FAS 140 and the sale of Ralcorp receivables to RRC is considered a true sale for accounting, tax and legal purposes. Therefore, the trade receivables sold and the related commercial paper borrowings are not recorded on Ralcorp's consolidated balance sheet. However, the Company's consolidated balance sheet does reflect an investment in RRC that in substance represents a subordinated retained interest in the trade receivables sold. As of September 30, 2001, the outstanding balance of receivables (net of an allowance for doubtful accounts) sold to RRC was \$102.0 and proceeds received were \$61.0, resulting in a retained interest of \$41.0. No material gain or loss resulted from these transactions, while the proceeds were used to reduce Ralcorp's long-term debt.

For Ralcorp fiscal year 2001, the firm borrowed \$61 million through the securitization after placing assets of \$102 million into the SPE. The limit to the borrowing is \$66 million. Based on this information, we record the following values: SPED=61, SPEA=102, LIMIT=66. Since Ralcorp did not consolidate the SPE, we record that the securitization is accounted for as off-balance sheet.

2. Raytheon Corp (CIK: 0001047122); Fiscal year 2006; Edgar link:  
<http://www.sec.gov/Archives/edgar/data/1047122/000119312507037249/d10k.htm>

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In 2006, we sold an undivided interest of general aviation finance receivables, while retaining a subordinated interest in and servicing rights to the receivables. We received proceeds of \$67 million and recognized a gain of \$1 million. We irrevocably, and without recourse, transferred the receivables to the qualifying special purpose entity (QSPE), formed in 2003, which in turn, issued beneficial interests in these receivables to a commercial paper conduit. The transaction involves a third party guarantee of the conduit investment. The assets of the QSPE are not available to pay the claims of the Company or any other entity. We retained a subordinated interest in the receivables sold of approximately 3%. The conduit obtained the funds to purchase the interest in the receivables, other than the retained interest, by selling commercial paper to third-party investors. We retained responsibility for the collection and administration of receivables. We continue to service the sold receivables and charge the third party conduit a monthly servicing fee at market rates.

We accounted for the sale under Statement of Financial Accounting Standards No. 140, Accounting for Transfers and Servicing of Financial Assets and Extinguishment of Liabilities. The gain was determined at the date of transfer based upon the relative fair value of the assets

sold and the interests retained. We estimated the fair value at the date of transfer and at December 31, 2007 and 2006 based on the present value of future expected cash flows using certain key assumptions, including collection period and a discount rate of 7.3%, 7.0% and 6.8%, respectively. At December 31, 2007, a 10% and 20% adverse change in the collection period and discount rate would not have a material effect on our financial position or results of operations.

At December 31, 2007 and 2006, the outstanding balance of securitized accounts receivable held by the third party conduit totaled \$135 million and \$173 million, respectively, of which our subordinated retained interest was \$60 million, net and the fair value of the servicing liability was \$1 million in both years.

For Raytheon fiscal year 2006, the firm borrowed \$113 million through the securitization after placing assets of \$173 million into the SPE. The limit on the borrowing is not reported. Based on this information, we record the following values: SPED=113, SPEA=173, LIMIT=missing. Since Raytheon did not consolidate the SPE, we record that the securitization is accounted for as off-balance sheet.

3. United Stationers (CIK: 0000355999); Fiscal year 1998; Edgar link:  
<http://www.sec.gov/Archives/edgar/data/355999/0001047469-99-012062.txt>

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#### RECEIVABLES SECURITIZATION PROGRAM

On April 3, 1998, in connection with the refinancing of its credit facilities, the Company entered into a \$163.0 million Receivables Securitization Program pursuant to which the Company sells its eligible receivables (except for certain excluded receivables, which initially includes all receivables from the Azerty Business and Lagasse) to the Receivables Company, a wholly owned offshore, bankruptcy-remote special purpose limited liability company, which in turn ultimately transfers the eligible receivables to a third-party, multi-seller asset-backed commercial paper program existing solely for the purpose of issuing commercial paper rated A-1/P-1 or higher. The sale of trade receivables includes not only those eligible receivables that existed on the closing date of the Receivables Securitization Program, but also eligible receivables created thereafter. The Company received approximately \$160.0 million in proceeds from the initial sale of certain eligible receivables on April 3, 1998. These proceeds were used to repay a portion of the Tranche B Facility and certain other indebtedness under the Credit Agreement. Costs related to this facility vary on a monthly basis and generally are related to certain interest rates. These costs are included in the Consolidated Statements of Income, included elsewhere herein, under the caption Other Expense.

The Chase Manhattan Bank acts as funding agent and, with other commercial banks rated at least A-1/P-1, provides standby liquidity funding to support the purchase of the receivables by the

Receivables Company under a 364-day liquidity facility. The proceeds from the Receivables Securitization Program were used to reduce borrowings under the Company's Revolving Credit Facility. The Receivables Company retains an interest in the eligible receivables transferred to the third party. As a result of the Receivables Securitization Program, the balance sheet assets of the Company as of December 31, 1998, exclude approximately \$160.0 million of accounts receivable sold to the Receivables Company.

For United Stationers fiscal year 1998, the firm borrowed \$160 million through the securitization after placing an unreported amount of assets into the SPE. The limit to the borrowing is \$163 million. Based on this information, we record the following values: SPED=160, SPEA=missing, LIMIT=163. Since United Stationers did not consolidate the SPE, we record that the securitization is accounted for as off-balance sheet.

4. United Stationers (CIK: 0000355999); Fiscal year 2007; Edgar link:  
<http://www.sec.gov/Archives/edgar/data/355999/000104746908002036/a2182993z10-k.htm>

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## 10. Receivables Securitization Program

### General

On March 28, 2003, USSC entered into a third-party receivables securitization program with JP Morgan Chase Bank, as trustee (the "Receivables Securitization Program" or the "Program"). On November 10, 2006, the Company entered into an amendment to its Revolving Credit Facility (the "2006 Credit Agreement") which, among other things, increased the permitted size of the Receivables Securitization Program to \$350 million, a \$75 million increase from the \$275 million limit under the 2005 Credit Agreement. During the first quarter of 2007, the Company increased its commitments for third party purchases of accounts receivable, and the maximum funding available under the Program is now \$250 million. The Program typically is the Company's preferred source of floating rate financing, primarily because it generally carries a lower cost than other traditional borrowings.

Under the Program, USSC sells, on a revolving basis, its eligible trade accounts receivable (except for certain excluded accounts receivable, which initially includes all accounts receivable of Lagasse, Inc. and foreign operations) to USS Receivables Company, Ltd. (the "Receivables Company"). The Receivables Company, in turn, ultimately transfers the eligible trade accounts receivable to a trust. The trust then sells investment certificates, which represent an undivided interest in the pool of accounts receivable owned by the trust, to third-party investors. Affiliates of JP Morgan Chase Bank, PNC Bank and (as of March 26, 2004) Fifth Third Bank act as funding agents. The funding agents, or their affiliates, provide standby liquidity funding to support the sale of the accounts receivable by the Receivables Company under 364-day liquidity

facilities. Standby liquidity funding is committed for 364 days and must be renewed before maturity in order for the Program to continue. The Receivables Securitization Program provides for the possibility of other liquidity facilities that may be provided by other commercial banks rated at least A-1/P-1.

The Program liquidity was renewed on March 23, 2007. The Program contains certain covenants and requirements, including criteria relating to the quality of receivables within the pool of receivables. If the covenants or requirements were compromised, funding from the Program could be restricted or suspended, or its costs could increase. In such a circumstance, or if the standby liquidity funding were not renewed, the Company could require replacement liquidity.

As discussed above, the 2007 Credit Agreement is an existing alternate liquidity source. The Company believes that, if so required, it also could access other liquidity sources to replace funding from the program.

#### Financial Statement Presentation

The Receivables Securitization Program is accounted for as a sale in accordance with FASB Statement No. 140 *Accounting for Transfers and Servicing of Financial Assets and Extinguishments of Liabilities*. Trade accounts receivable sold under this program are excluded from accounts receivable in the Consolidated Financial Statements. As of both December 31, 2007 and 2006, the Company sold \$248 million and \$225 million of interests in trade accounts receivable. Accordingly, trade accounts receivable of \$248 million and \$225 million as of both December 31, 2007 and 2006 are excluded from the Consolidated Financial Statements. As discussed below, the Company retains an interest in the trust based on funding levels determined by the Receivables Company. The Company's retained interest in the trust is included in the Consolidated Financial Statements under the caption, "Retained interest in receivables sold, net." For further information on the Company's retained interest in the trust, see the caption "Retained Interest" below.

The Company recognizes certain costs and/or losses related to the Receivables Securitization Program. Costs related to this program vary on a daily basis and generally are related to certain short-term interest rates. The annual interest rate on the certificates issued under the Receivables Securitization Program during 2007 ranged between 5.62% and 6.55%. In addition to the interest on the certificates, the Company pays certain bank fees related to the program. Losses recognized on the sale of accounts receivable, which represent the interest and bank fees that are the financial cost of funding under the program including amortization of previously capitalized bank fees and excluding servicing revenues, totaled \$14.6 million for 2007, compared with \$12.8 million for 2006. Proceeds from the collections under this revolving agreement for 2007 and 2006 were \$3.9 billion and \$3.6 billion, respectively. All costs and/or losses related to the Receivables Securitization Program are included in the Consolidated Financial Statements of Income under the caption "Other Expense, net." The Company has maintained responsibility for servicing the sold trade accounts receivable and those transferred to the trust. No servicing asset or liability has been recorded because the fees received for servicing the receivables approximate the related costs.

## Retained Interest

The Receivables Company determines the level of funding achieved by the sale of trade accounts receivable, subject to a maximum amount. It retains a residual interest in the eligible receivables transferred to the trust, such that amounts payable in respect of such residual interest will be distributed to the Receivables Company upon payment in full of all amounts owed by the Receivables Company to the trust (and by the trust to its investors). The Company's net retained interest on \$342.8 million and \$332.1 million of trade receivables in the trust as of December 31, 2007 and December 31, 2006 was \$94.8 million and \$107.1 million, respectively. The Company's retained interest in the trust is included in the Consolidated Financial Statements under the caption, "Retained interest in receivables sold, net."

The Company measures the fair value of its retained interest throughout the term of the Receivables Securitization Program using a present value model incorporating the following two key economic assumptions: (1) an average collection cycle of approximately 40 days; and (2) an assumed discount rate of 5% per annum. In addition, the Company estimates and records an allowance for doubtful accounts related to the Company's retained interest. Considering the above noted economic factors and estimates of doubtful accounts, the book value of the Company's retained interest approximates fair value. A 10% and 20% adverse change in the assumed discount rate or average collection cycle would not have a material impact on the Company's financial position or results of operations. Accounts receivable sold to the trust and written off during 2007 and 2006 were not material.

For United Stationers fiscal year 2007, the firm borrowed \$248 million through the securitization after placing \$342.8 million of assets into the SPE. The limit to the borrowing is \$350 million. Based on this information, we record the following values: SPED=248, SPEA=342.8, LIMIT=350. Since United Stationers did not consolidate the SPE, we record that the securitization is accounted for as off-balance sheet.

### *C. Compustat variables*

To create the final dataset that we use for our analysis, we merge the data on usage of securitization back to Compustat. In doing so, we make a few restrictions that reduces the size of our sample. First, we focus only on the period from 1996 through 2009, since all firms 10-K filings are on EDGAR beginning only in 1996. Second, we require that an observation have non-missing data on a variety of variables that we use in our analysis, including: total assets, the market-value of equity, operating income, and accounts receivable. This reduces the number of

firms using securitization from 526 to 434.<sup>8</sup> We make the same data restriction for firms not using securitization, which leaves our final sample with 2,365 firm-years of securitization usage and 78,676 firm-years without securitization usage.

Table A1 provides a list and description of the variables that we use in our analysis.

#### *D. Additional data collection*

For each of the 434 firms that identified as using securitization at some point during our sample, we search the firm's history of 10-K, 10-Q, and 8-K filings to identify the exact date that the securitization began. We are able to identify the exact date that the program started for 231 firms. The primary source for identifying the start date is the contractual agreements that govern the transaction.<sup>9</sup> In other cases, firms report the start date directly in the 10-K. For the firms that we cannot identify the exact start date, the most common reason is that the program began prior to 1996, and EDGAR doesn't have the firm's filings around the start of the program.

For an additional three firms, we are able to identify the quarter the program started but not the exact day. We use this set of 234 firms when examining the consequences of initiating a securitization program (Table VIII). When we restrict to firms with necessary quarterly data from Compustat, this number falls to 207, which is the number of securitizers used in the quarterly regressions that examine the determinants of initiation (Table VII).

For each of the 231 firms with the exact start date, we attempt to perform a daily event study of stock returns, bond returns, and credit ratings around the initiation date. We use EVENTUS to perform the stock return event study, using the CRSP permanent number as the firm identifier. The stock event study uses all 231 firms.

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<sup>8</sup> The most common reason for losing firms that use securitization is that the securitization was terminated before the firm became public, yet the 10-K still makes reference to the securitization.

<sup>9</sup> For instance, receivable purchase and sale agreements govern receivable securitization programs and are often attached as an exhibit to 10-K or 8-K filings.

For the bond event study, we collect daily bond quotes from DataStream, who gather the data from Barclays and Merrill Lynch bond dealers. For each of the 231 firms, we begin by identify existing bonds using the Mergent Fixed Income Securities Database (FISD). Using the 6-digit CUSIP taken from Compustat, we find all possible bonds with matching CUSIP in FISD, and then confirm the match using the name of the issuer in FISD and the name of the firm in Compustat. We are confident that we do not have any incorrect matches. For bonds issued prior to the securitization initiation date, we collect daily quotes from *DataStream*. Because the ultimate source of the data is intended for Merrill and Barclays bond indexes, not every bond is in DataStream. We find usable data for 185 non-convertible bonds from 65 firms.<sup>10</sup>

Alternative sources for bond returns are unattractive for a variety of reasons. TRACE, which provides actual bond trade data, does not have complete coverage until 2004 and no coverage prior to 2001.<sup>11</sup> Since many of our programs began prior to 2001, we would miss a lot of observations. Similarly, data on credit default swap spreads is available for only a limited number of firms for only relatively recent years. Finally, DataStream is preferable to the Lehman Brother Bond Database, which may have broader coverage, because DataStream provides quotes at a daily, rather than monthly, frequency. Bessembinder, Kahle, Maxwell, and Xu (2009) highlight the importance of using daily data. Since we examine a fairly wide window around the event date, we are not particularly concerned about stale quotes. We are worried that the small sample size will lead to low statistical power to detect deviations from the null hypothesis, but this is simply an unfortunate consequence of bond event studies for a relatively small number of firms.

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<sup>10</sup> We do include callable bonds since many bonds contain a call feature. We exclude the few convertible bonds issued by firms in our sample.

<sup>11</sup> TRACE did not cover below investment-grade bonds prior to 2004.

Finally, we construct a daily series of S&P long-term issuer ratings using S&P's RatingsExpress. RatingsExpress provides an event-based dataset that identifies each instance of "news" related to a firm's rating. Any change to the rating or the firm's outlook triggers an observation that documents the change. We use this data to construct a daily dataset of ratings around the securitization initiation dates. We merge to RatingsExpress using Compustat gvkey. Our constructed series stretch from 90 prior to the securitization to 90 days afterwards. We are able to create a complete series for 91 firms.

#### *E. Sample summary*

Table A2 summarizes the sample that we use at different points throughout the paper. As discussed above we are not able to identify the start date of the securitization for every firm; we find the start date for about one-half of firms. We also lose a few observations for some of the analysis that we do at a quarterly frequency.<sup>12</sup>

Since much of our analysis focuses on firms' credit ratings, we highlight that not all firms have an S&P rating. Table A2 shows that, within the sample of firms using securitization, about three-quarters of these firms do have a rating. Among firms not using securitization, less than 20 percent of firms are rated.

Finally, Table A2 shows that we cannot find information on the usage of securitization for all of the firms. In more than 90 percent of firm-year, firms do report the level of debt held in the SPE, so we are very successful in acquiring data on SPED. However, less than half of these firms also report the level of assets in the SPE (SPEA), meaning that we cannot compute the leverage of the SPE in many cases.

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<sup>12</sup> We do not do all of our analysis quarterly because we would have to read the quarterly filings for all of the firms we identify as using securitization.

## **Appendix B. Evidence on the validity of the event study**

Since the three event studies are central to our analysis, we conduct a simple test for the presence of confounding news that might be announced near in time to the initiation of a securitization program. Since our event date is based on the contractual start of the securitization rather than the date the news is known to become public, we examine a fairly broad event window around the event date. In much of our analysis, we focus on a 6-day window from the event day through 5 days afterwards. With such a large window, we are worried about the systematic release of other news in the same window which could be the source of the abnormal returns we observe.

We collect data on other news events around the event date to test the hypothesis that other news is concentrated in the event windows we examine. Specifically, we collect data from Dow Jones Factiva on the occurrence of the following news events: (1) firms' earnings releases and mid-quarter guidance; (2) changes to capital structure unrelated to securitization such as security issuance or retirement of debt and equity and dividend changes; (3) significant changes in the corporate structure such as acquisitions, divestitures, and purchases of majority stakes in other firms; (4) changes in chief officers and directors; (5) purchases and sales of shares by insiders or changes in stakes by blockholders; (6) legal proceedings including lawsuits, regulatory compliance news, and patent issues; (7) news related to new products, business lines, joint ventures, and R&D. We collect all stories from Dow Jones newswire, major news publications as defined by Factiva, and major business publications as defined by Factiva. We limit the search to corporate and industrial news.

Of the 231 firms with an origination date, we are able to find 171 of them in Factiva. The missing firms are likely due to name changes that make it difficult to find the firm historically. We collect news for 36 days around the event day, which we group into six buckets of 6 days

each. This permits us to compare the frequency of news within the [0,5] event window of interest with five other 6-day windows. We test the null hypothesis that the frequency of news in each category is the same across the six windows, with the interesting alternative the frequency of news increases in the [0,5] window.

Table A3 reports the results. The first column shows that we find a news story about the securitization program for only about 25 percent of firms, during the 36 days around the start date. Although this suggests that market participants may not be informed about the securitization for a large fraction of firms, we do not conduct the event study for only firms where we can identify the news event. Since firms have some choice over whether to issue a press release, sample selection concerns suggest that the firms with press releases may be more likely to experience positive abnormal returns.

The remaining columns show the frequency of other news events, and the bottom row shows a standard chi-square statistic for testing the null hypothesis that the frequencies are constant across the windows. In each of the other eight cases, there is no evidence to reject the null hypothesis that the frequencies are equal. Moreover, the observed news frequencies show no spike in the [0,5] window, including for other capital structure changes. There is no evidence that securitization programs are announced simultaneously with other important news such as a new bank loan or announced repayment of debt. We conclude that the rather large event study windows are not contaminated by simultaneous confounding news releases.

**Table A1. Variable list and description**

SPED	Debt borrowed through special purpose entities (SPEs)
SPEA	Assets in SPEs
Limit	Upper limit of the amount of debt SPEs can borrow
A	Total assets (Compustat annual item: AT)
TotalA	Total assets of the firm, including debt in SPEs
FirmA	Assets of the firm, excluding debt in SPEs
D	Total debt (DLTT+DLC)
TotalD	Total debt of the firm, including debt in SPEs
FirmD	Debt of the firm, excluding debt in SPEs
AR	Account receivable (RECT)
MB	Market value of equity (PRCC_F*CSHO) divided by book value of equity (CEQ+TXDB)
EBITD	Operating income before depreciation (OIBDP)
R&D	Research and development expense (XRD, setting to zero if missing)
Cash	Cash and short term investment (CHE)
Inv	Investment expenditure (CAPX-SPPE, setting SPPE to zero if missing)
Age	Firm age, defining the first fiscal year with accounting data in Compustat as age 1
PPE	Gross property, plant & equipment (PPEGT)
Rating	Discrete variable taking values 1 to 20 based on the S&P long term domestic issuer credit rating (SPLTICRM). AAA, AA+, AA, AA-, A+, A, A-, BBB+, BBB, BBB-, BB+, BB, BB-, B+, B, B-, CCC+, CCC, CCC-, and anything below CCC- correspond to Rating 1 to 20, respectively
STRating	Discrete variable taking values 1 to 10 based on the S&T short term domestic issuer credit rating (SPSTICRM). A-1+, A-1, A-2, A-3, B, B-1, B-2, B-3, C, D correspond to STRating 1 to 10 respectively
With_Rating	An indicator variable taking value of 1 if a firm has S&P long term rating and zero otherwise
With_STRating	An indicator variable taking value of 1 if a firm has a S&P short term rating and zero otherwise
BBB	An indicator variable taking value of 1 if S&P long term rating is BBB+/BBB/BBB- and zero otherwise
BB	An indicator variable taking value of 1 if S&P short term rating is BB+/BB/BB- and zero otherwise
Downgrade	An indicator variable taking value of 1 if the current Rating is greater than the prior Rating

**Table A2. Sample construction summary statistics**

This table summarizes the number of firms and firm-year observations used throughout the paper. The sample described here refers to only firms identified as using securitization. As described in Appendix A, the sample is constructed based textual analysis of 10-Ks from the intersection of Compustat and 10-K filings from EDGAR. The period covers fiscal years from 1996 through 2009. The initiation date is taken from historical SEC 10-K, 10-Q, and 8-K filings. Long-term ratings are S&P issuer ratings from Compustat.

	Number of unique firms	Number of unique firms with long term rating	Number of firm-years	Number of firm years with securitized borrowing amount (SPED)	Number of firm years with securitized borrowing amount (SPED) and securitized assets amount (SPEA)
Full sample	434	316	2365	2205	979
With initiation year	234	159	NA	NA	NA
With initiation date	231	145	NA	NA	NA
With initiation month and quarterly Compustat variables	207	144	NA	NA	NA

**Table A3. News events around the initiation of a securitization program**

This table reports the frequency of firms that report various news events in 6-day windows around the origination date of the contract governing the securitization, which is date 0. News events are collected at a daily frequency from Dow Jones Factiva using the following sources: Dow Jones newswire, major news publications, and major business publications; subjects are restricted to corporate and industrial news. “Sec Program” refers to news about the securitization; “Earnings” refers to news related to actual earnings releases, mid-quarter guidance or revisions to growth or earnings; “Capital Structure” refers to all changes to non-securitization changes to capital structure, including debt and equity issuance, debt or equity retirement, and dividend news; “Corporate Structure” refers to changes such as acquisitions, divestitures, and purchases of majority significant stakes in other firms; “Mgmt Changes” refers to changes to chief officers and directors; “Insider Activity” refers to significant purchases or sales of shares by insiders and significant changes in stakes by a blockholder; “Legal Issues” refers to significant lawsuits where the firm is defendant or plaintiff, regulatory compliance issues, and patent news; “Products” covers all news related to product markets, such as new product offerings, joint ventures, research and development, and new purchase contracts; “Other” covers all other news. The sample includes 171 firms, which is the subset of the 231 with a specific initiation date that could be identified in Factiva. The “Chi-Square” row reports a Pearson chi-square statistic to test the hypothesis that the proportions are equal across the six windows. In parentheses is the p-value for the test statistic under the null hypothesis that the proportions are equal.

Window	Sec Program	Earnings	Capital Structure	Corporate Structure	Mgmt. Changes	Insider Activity	Legal Issues	Products	Other
[-18, -13]	0.0%	7.6%	8.2%	8.2%	5.8%	5.3%	5.3%	16.4%	5.3%
[-12, -7]	1.2%	11.7%	10.5%	8.2%	5.8%	7.0%	7.0%	25.1%	1.8%
[-6, -1]	0.0%	10.5%	5.8%	7.0%	4.7%	4.7%	7.0%	19.9%	4.7%
[0, 5]	19.3%	11.7%	5.8%	4.1%	7.0%	4.7%	4.7%	19.3%	1.8%
[6, 11]	2.3%	9.4%	4.1%	4.7%	4.7%	5.3%	2.9%	11.7%	4.7%
[12, 17]	1.8%	14.6%	7.0%	2.3%	4.1%	3.5%	4.1%	19.3%	2.3%
Chi-Square	117.4 (0.0%)	4.4 (48.9%)	6.2 (28.9%)	8.6 (12.4%)	1.8 (88.2%)	2.2 (82.0%)	4.4 (50.0%)	9.0 (11.1%)	6.7 (24.4%)