Master Thesis

The Determinants of Securitization Usage by Nonfinancial Firms

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Date: June 2016
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Abstract

Prior research shows that asset-backed securitization by nonfinancial firms has more than halved in the first year of the financial crisis. It is however still a significant form of financing for some firms. Between 2012 and 2014, firms' outstanding securitization debt was on average 16.5% of their total debt. This thesis examines the determinants of asset-backed securitization by nonfinancial firms, studies which factors have an effect on the limit and utilisation rate of securitization programs, and investigates the effect of the initiation of a securitization program on shareholder value. Using data from SEC filings between 2012 and 2014, I find that firms that are larger in size, firms with more receivables, and firms with a rating in the lower middle of the credit distribution are more likely to use securitization. The utilisation rate of securitization programs is positively related to the cash to asset ratio, suggesting that firms use their securitization debt to increase liquidity. Furthermore, firms with an unconsolidated ABS program have a higher utilisation rate, as off-balance sheet financing is valuable to the firm. While securitization has advantages like minimizing bankruptcy costs, gaining liquidity and diversifying a firms' capital structure, I find no evidence that the initiation of a securitization program has an effect on shareholder value.

Keywords: Asset-backed securitization; ABS; off-balance sheet; capital structure; SPE

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1. Introduction

Securitization of assets began in the mid-1970s, when the Government National Mortgage Association developed mortgage backed pass-through securities (Lockwood et al., 1996). Asset backed securitization of non-mortgage assets was introduced in 1985, when Sperry Corporation issued $192.5 million of securities backed by computer lease receivables (Minton, Opler and Stanton, 1997). The Asset Backed Securities (ABS) market is now a significant funding source for US corporations. Although most ABS are issued by financial firms to finance mortgages, nonfinancial firms also use ABS to finance their organization. They primarily securitize accounts receivables, but securitization by nonfinancial firms can also include lease receivables, consumer credit or long-term assets that are incidental to their primary business (Korgaonkar and Nini, 2010).

This paper will focus on the asset backed securitization by nonfinancial firms. In 2008, the total amount of securitized nonfinancial debt outstanding reached its peak at more than $175 billion (Lemmon, Liu, Mao and Nini, 2014). During the subprime mortgage crisis the quality of some of the underlying assets, primarily mortgages and CDO/CLO, deteriorated, which undermined investor confidence. During this time securitization became less popular, as it was, inter alia, suggested to suffer from agency problems. Moreover, many loans were not kept on the balance sheets of the originators and actual risks were transferred to investors, which might have encouraged originators to cut back on screening and monitoring the borrowers. By 2009, the total amount of ABS debt outstanding declined to $80 billion (Lemmon et al., 2014).

Even though securitization is a complex financial innovation, that is, even after 2009, a significant funding source for large corporations, little research has been conducted on the determinants of ABS usage by nonfinancial firms, especially not in the period after 2009. Research on ABS financing after 2009 might be interesting for three reasons. First, as the use of securitization declined sharply during the financial crisis, it is interesting to examine if the use has increased after the crisis. Second, in 2010 new accounting regulations[1] took effect, which limited firms' ability to structure their securitization programs in such a way that they could achieve off-balance sheet financing. Off-balance sheet financing is one of the benefits of securitization, for example because it enhances ratios like the debt to equity ratio. The new accounting regulations might result in less use of securitization. Thirdly, existing research has shown some firm characteristics that partly determine whether a firm uses securitization, this might also have changed after the crisis, for example because firms have become more cautious and strive for more liquidity or because they have more difficulty getting loans from banks who have become more restrained with supplying loans. Furthermore, it is not yet clear what determines the limit and utilisation rate of securitization programs and how the initiation of a securitization program affects shareholders. The reaction to the initiation of a

[1] FAS 166 and 167 took effect in 2010 and heightened the requirements firms had to meet to keep their securitization transactions off- balance sheet.

securitization program may have changed after 2009, because the new accounting rules require firms to report more information about the transactions, which results in more information for shareholders.

The goal of this study is to identify the determinants of securitization usage by nonfinancial firms, and to examine which factors can explain the limit and utilisation rate of existing programs. Therefore, the research question is as follows:

What are the determinants of securitization usage by nonfinancial firms, how do firm characteristics determine the limit and utilisation rate of securitization programs, and what is the effect of the initiation of a securitization program on shareholder value?

This research question will be answered by collecting data on non-financial firms that use securitization in the years 2012, 2013 and 2014, and examining which company characteristics explain whether they use this form of financing and which factors influence the amount of financing available and utilised. Additionally, I analyse whether the benefits from securitization have economic value, and whether they result in an increase in shareholder value. This way I hope to add to existing literature on the wealth effects of securitization and provide insight for companies as to what effects on shareholder value they may expect.

I identify 115 unique firms that use securitization between 2012 and 2014. The total amount of debt borrowed through the securitization programs by these firms at the end of the fiscal year is on average equal to $75 billion, which is a bit lower than the almost $80 billion in 2009, as reported by Lemmon et al. (2014). My main findings show that increases in age, size and accounts receivable to asset ratio lead to an increased probability that a firm uses securitization in 2013. Furthermore, firms with very high or very low credit ratings are significantly less likely to use securitization. For firms with a high rating there is little benefit, as they already have access to high-grade credit markets. Firms with low credit ratings often cannot use securitization, as existing creditors and possible agency problems with ABS creditors limit the access of these firms to securitization. Of the firms that have a securitization program between 2012 and 2014, firms with more accounts receivables have, on average, a higher securitization limit to debt ratio. The rating of a firm does not seem to have an effect on the limit, though unrated firms have a significantly higher limit than rated firms. With respect to the utilisation rate of securitization programs, I find that firms with less liquid assets use more of their available SPE debt. Furthermore, I show that firms with higher levels of debt to assets and secured debt to total debt have a higher utilisation rate, possibly because they use the securitization debt to pay off other debtholders. Lastly, firms with a consolidated program have a lower utilisation rate on average, suggesting off-balance sheet financing adds extra value to the securitization program.

Even though existing literature suggests that securitization can lower a firm's cost of capital, my results do not show any significant abnormal returns surrounding the initiation of a securitization program. It is possible that information on the different securitization programs came out at different

times, thus diluting the effect, or that my sample size of 41 firms was too small to find a significant effect.

The remainder of this paper is structured as follows. Section 2 presents some general information on securitization, its accounting treatment, and an overview of literature regarding the benefits of securitization and characteristics of nonfinancial firms that have a securitization program. Section 3 yields a description of the construction of the dataset. Section 4 provides the methodology description. Section 5 shows the results of the research. Section 6 discusses the conclusions and academic relevance of this research and makes recommendations for further research.

2. Theoretical Background and Literature Review

2.1 Securitization

Asset securitization is the process in which one company (the originator) pools together assets and transfers these to another entity, which is established as a special purpose entity (SPE) and solely exists for the purpose of holding claims on the assets. Subsequently, the SPE sells an undivided interest in the receivables pool to a commercial paper conduit of a financial institution. The commercial paper conduit then issues securities backed by the receivables. These securities only have recourse on the cash flow generated by the assets. The assets can be mortgage loans, credit card receivables, trade receivables or other kinds of financial assets. The book value of the assets transferred to the SPE typically exceeds the funding raised from the issuance of securities by the SPE. The remaining portion is held by the originator as equity interest in the SPE, which may be referred to as overcollateralization, retained interest or first-loss position and adds to the credit enhancement of the securities.

The securities issued by the SPE are ranked with respect to seniority. Losses in the asset pool are first absorbed by the lowest class of securities, so that the higher classes have a cushion against losses. This allows the highest class to get a high rating from rating agencies. Because of the ranking, different types of securities are created, which satisfy the needs and requirements of different investors. The rating is also influenced by the fact that assets that are transferred to the SPE will not be part of the originator's bankruptcy estate and will continue to be used for the benefit of the security holders in case of a default of the originator (Ayotte and Gaon, 2011). Due to this bankruptcy remoteness, the rating of the ABS is solely based on the quality of the assets, and the rating of the higher ranks of the ABS will often be higher than the rating of the originator. As a result, the rate paid on the ABS can be lower than the rating of normal bonds issued by the company.

Although most ABS are issued to finance mortgages, nonfinancial firms also use ABS to finance their organization. They primarily securitize accounts receivables, but securitization by nonfinancial firms can also include lease receivables, consumer credit or long-term assets that are incidental to their primary business (Korgaonkar and Nini, 2010). This paper will focus on the securitization of accounts receivables by nonfinancial firms.

2.2 Accounting treatment

Under certain circumstances, a securitization program can be an off-balance sheet financing. In such a case the transferring of the assets is treated as a sale and the originator removes the assets from its balance sheet and does not add a liability. One consequence of off-balance-sheet financing is that debt to equity and leverage ratios decrease. This is quite different than the treatment for secured borrowing, in which case the originator receives the same amount of cash, but also records debt on the balance sheet.

The Financial Accounting Standards (FAS) state the criteria under which an SPE can be left off-balance sheet or has to be consolidated. Up until 2010, FAS 140 and FASB Interpretation No. 46 (FIN 46(R)) provided for the accounting treatment of SPEs. FIN 46(R) included two important criteria for off-balance sheet SPEs. First, a third party's equity holding in the SPE should exceed 10% of the total assets in the SPE. Second, the originator could not hold the majority of residual risk or obtain the majority of the benefits of the SPE. An SPE could however still be off-balance sheet if it met the criteria of FAS 140. FAS 140 stated the conditions under which an SPE could be treated as a Qualified Special Purpose Entity (QSPE), these QSPEs were exempt from the requirements of Fin 46(R) and therefore not consolidated.

Beginning 2010, FAS 140 and FIN 46(R) were not effective anymore, as on June 12, 2009 FAS 166 and 167 were published and took effect at the start of companies' first fiscal year beginning after November 15, 2009. According to Robert Herz, chairman of the FASB, the new standards were proposed to address concerns about companies who were stretching the use of off-balance sheet entities to the detriment of investors (FASB, 2009). FAS 166 is a revision to FAS 140 and changes the requirements for derecognizing financial assets and requires more disclosure. Under FAS 166 there are two requirements that must be met to achieve sale treatment: the sold participation should be a qualifying participating interest and the transfer of the participating interest must meet the conditions for a surrender of control (SFAS No. 166, 2009). FAS 166 defines a participating interest as a portion of a financial asset that conveys proportionate ownership rights with equal priority to each participating interest holder, involves no recourse, and does not entitle any participating interest holder to receive cash before any other participating interest holder (SFAS No. 166, 2009).

FAS 167 is a revision to FASB Interpretation No. 46(R) and requires firms to perform an analysis to determine whether the firm's variable interest gives it a controlling financial interest in a variable interest entity and whether the firm is the primary beneficiary of a variable interest entity. If this is so, the firm has to consolidate the entity. FAS 167 defines the primary beneficiary of a variable interest entity as the firm that has both (a) the power to direct the activities of a variable interest entity that most significantly impacts the entity's economic performance and (b) the obligation to absorb losses of the entity that could potentially be significant to the variable interest entity or the right to receive benefits from the entity that could potentially be significant to the variable interest entity (SFAS No. 167, 2009).

2.3 Securitization benefits

Modigliani and Miller (1958) state that capital structure is irrelevant in a world with perfect information and no transaction costs. This would mean that no value would be created or destroyed by a firm using securitization. Still, arguments can be made that securitization does add value to a company. These arguments are summarized below.

1. *Liquidity and expanded borrowing capacity*

One advantage of securitization is that it enhances liquidity. By securitizing assets like accounts receivables, illiquid assets are converted into cash. This is especially important for firms with long sales cycles and terms of sale (Katz and Blatt, 2008). The cash can be used for other purposes like paying off debt or investing. Lockwood, Rutherford and Herrera (1996) argue that securitization also offers the firm expanded borrowing capacity, enabling the firm to pursue additional positive net present value projects that they may not have started without securitization due to a lack of liquidity. Minton, Opler and Stanton (1997) mention that it is also possible for a firm to securitize relatively low risk receivables and use the proceeds to invest in riskier activities, or to undertake negative net present value investments or to pay out the cash to shareholders. If firms use the proceeds from securitization this way, then the ABS issues should result in reductions in existing bondholder wealth and increases in shareholder value (Minton, Opler and Stanton, 1997). However, the bondholders can often protect themselves by using covenants that restrict the firm's use of proceeds from a securitized issue.

2. *Diversification of funding*

An additional advantage is the possibility to issue securities with a higher credit rating than the rating of the originator. In contrast, the rating of bonds issued by a company depends on the credit condition of the whole company, instead of the asset pool. Having an investment grade rating allows access to a larger part of the debt market, as some institutions like pension funds are required to mostly hold their assets in the highest rated securities. The reason for the possibility to issue securities with a different rating is the separation of the credit risk of the originator from the credit risk of the SPE. As the holders of the securities are only exposed to the risk of the underlying assets and not the risk of the originator, the credit quality of the assets determines the credit rating of the securities.

3. *Minimizing bankruptcy costs*

Gorton and Souleles (2005) show that securitization can reduce bankruptcy costs. Securitization involves the transfer of assets from the balance sheet to a bankruptcy remote SPE. These assets are untouchable for other creditors and not subjected to the expensive and lengthy bankruptcy process. Furthermore, it is possible to structure SPEs in such a way that there cannot be an event of default, and thus no bankruptcy. This way, debt issued by the SPE should not include a

premium reflecting the expected bankruptcy costs, which leads to lower funding costs for the originator.

4. *Off-balance sheet financing and earnings management*

A securitization program can provide off-balance sheet financing, meaning that the underlying assets are removed from the originator's balance sheet and cash is injected in the balance sheet. Under certain conditions, companies are only required to report the part of the ABS that they guarantee as liability on their balance sheet. This means that, unlike conventional debt, securitization does not always inflate a company's liabilities. Furthermore, receivables are removed from the balance sheet before they have been paid by the customers, which improves ratios such as days-sales-outstanding and the debt-to-equity ratio and aids in the compliance with debt or loan covenants (Katz, 2011).

According to Dechow and Shakespeare (2009), managers also have some flexibility in reporting the amount of future cash flows from the securitization transactions, as they should be reported at fair value but are not traded in active markets. Because of this flexibility, there might be a possibility for earnings management. Dechow and Shakespeare (2009) find that a significantly greater proportion of securitization transactions occur in the last few days of the last month of the quarter, even though the creation of receivables likely occurs smoothly across time, and any day of the quarter could be chosen as the date to securitize. They also show that firms that report gains sufficient to beat earnings benchmarks are more likely to engage in securitization transactions at the end of the quarter than firms that already met the benchmark before entering a securitization transaction. This suggests that, besides the economic benefits of securitization, the possibility for off-balance sheet financing increases firms' ability to window-dress their financial statements.

Most studies agree that securitization can create value for firms by lowering their cost of capital, but it can be questioned whether it really creates value or transfers it from existing bondholders. A reason for this may be that the securitization process transfers low-risk assets from the balance sheet to the SPE and reduces the amount of high-quality collateral available to existing lenders (Lemmon et al. 2014). The assets transferred to a SPE are only available to existing debtholders after the securities have been repaid. Lemmon et al. (2014) investigate whether this is the case and find that the initiation of a securitization program does not result in significant changes in bond prices or credit ratings. They also state that standard covenants in corporate credit agreements effectively prohibit securitizations, so that firms can only use securitization if they obtain an exemption from the covenant. Firms will only receive such an exemption in cases where the benefits to creditors outweigh the costs, for example in cases where the securitization debt is used to repay the existing debt. It thus seems that if securitization creates shareholder value, it does so without transferring value from other creditors and that it is a truly net gain.

In conclusion, it appears that securitization offers financial benefits, suggesting that there are positive wealth effects for shareholders of issuing firms.

2.4 Characteristics of firms that securitize

Previous literature seems to come to the conclusion that asset-backed securitization can create value for a company by, among other things, lowering the cost of capital and enhancing liquidity. This leads to the question why not all firms use securitization. Based on existing literature, the average firm that uses securitization has some characteristics that set it apart from other firms. These characteristics will be explained below.

Three of the aspects that were found to set firms with a securitization program apart from other firms, are their size, age, and number of accounts receivables. Lemmon et al. (2014) compare SPE-users with non SPE-users in the same industry. They show that SPE-users are roughly 10 times bigger than the average firm in the same industry, are nearly twice as old, and have a higher ratio of accounts receivables to assets. The higher ratio of accounts receivable to assets found by Lemmon et al. (2014) can explain why Korgaonker and Nini (2010) find that the use of securitization varies by industry. They report that securitization is used predominantly by firms in manufacturing and production of consumer durables industries. These firms generally have a large amount of receivables, reflecting the financing needs of their customers.

The use of securitization also depends on whether a company has a credit rating, the level of this rating, and expected bankruptcy costs. Lemmon et al. (2014) find that firms that used securitization had a higher probability of having a credit rating when compared to other firms. Likewise, Korgaonker and Nini (2010) report that firms with no S&P credit rating use SPEs the least, and firms with both a short-term and long-term rating use SPEs the most. According to Gorton and Souleles (2005), firms with higher credit risk or with greater incentives to improve their balance sheets use more securitization. Lemmon et al. (2014) show that the firm's credit quality has an impact on the use of securitization. The set of firms with the highest (A and above), and lowest (B and below) ratings have a lower usage of securitization than the BBB and BB rated firms. Lemmon et al. (2014) argue that, for firms with the highest credit quality, there is little benefit to securitization since the probability of default is low and high rated firms already have access to investment-grade bond and commercial paper markets.

Korgaonker and Nini (2010) examine the relation between the credit quality of the firm and securitization usage. Besides the credit rating, they use the current ratio and a cost of credit measure in a probit regression to determine their effect on the probability of securitization usage. Korgaonker and Nini (2010) find that a lower current ratio, which suggests lower credit risk, increases the probability of a firm using securitization. They also show that higher interest expense increases the average firm's probability of using securitization.

Mills and Newberry (2004) match tax returns of U.S. firms during 1989-2001 to their corresponding financial statements. This way they examine the firms' use of off-balance sheet and hybrid debt financing. After conducting between-firm tests, Mills and Newberry (2004) find that firms with weak bond ratings before the securitization or higher leverage ratios compared to their industry peers, report greater amounts of interest expense on their tax returns than they report to investors and creditors on their financial statements. This suggests that credit-constrained firms are more likely to use structured financing arrangements to access lower cost financing sources or enhance their financial statement balance sheets. They also suggest that firms use more structured financing arrangements when they enter into contractual loan agreements that provide incentives to manage debt ratings. Gorton and Souleles (2005) show that securitization can reduce the total deadweight costs of financial distress, since fewer assets managed by the firm are subject to bankruptcy proceedings. They test whether firms with high expected bankruptcy costs are the largest users of off-balance sheet financing. This test confirmed that firms with higher bankruptcy costs use more off-balance sheet financing and suggests that SPEs create value by minimizing bankruptcy costs. Likewise, Lemmon et al. (2014) state that as firm credit risk increases, the benefit from using securitization increases as firms can minimize costs associated with bankruptcy.

It is not yet clear whether the usage of securitization depends on growth prospects. Minton et al. (1997) find that, for the period 1987-1994, the market-to-book ratio of securitization users was on average one third that of non-securitization users. Using logit panel regressions, Minton et al. (1997) also show that firms with low profitability and low market-to-book ratios are more likely to use ABS. Similarly, Korgaonker and Nini (2010) find a negative relation between the market-to-book ratio and securitization usage in 2006. In contrast, Lemmon et al. (2014) find no evidence that securitization is more or less likely to be used by firms with significant growth opportunities.

One factor that can limit the use of securitization is a debt covenant. The securitization process transfers low-risk assets from the balance sheet to the SPE and reduces the amount of collateral available to on-balance sheet lenders (Korgaonker and Nini, 2010). The assets transferred to an SPE are only available to existing debtholders after the securities have been repaid. Since creditors are concerned with activities that might increase the risk of their debt claim, securitization is sometimes limited by contractual restrictions in loan agreements that prohibit off-balance sheet financing. Korgaonkar and Nini (2010) find that almost all firms with a securitization program have received explicit permission in a credit agreement to use off-balance sheet financing. While firms with more credit risk are likely the ones to find securitization debt more valuable, they are also more likely to have more secured debt (Rauh and Sufi, 2010), and thus there is less chance that they are allowed to create a SPE. Korgaonkar and Nini (2010) show that firms with a larger proportion of secured debt to total debt are significantly less likely to use an SPE. They conclude that the amount of bank debt and secured debt on a firm's balance sheet constrains the use of off-balance-sheet financing, especially for riskier borrowers, as covenants restricting the use of SPEs are more common for them.

This reasoning is also followed by Lemmon et al. (2014), who find a decrease in securitization usage by the most risky firms and attribute this decrease to constraints from existing creditors. Lemmon et al. (2014) also add that very risky firms do not use securitization because of agency problems with the ABS creditors. ABS creditors can be concerned that, as the originator becomes riskier, it may shirk in its servicing responsibility or accept lower quality customers.

In conclusion, results from previous literature suggest that securitization by nonfinancial firms is mostly concentrated in fairly large firms, with enough receivables to support the creation of an SPE. Securitization users are also likely to have a credit rating in the middle of the credit quality distribution, as firms with high ratings use traditional debt sources and firms with very low ratings are not able to use securitization.

2.5 Securitization limit and utilisation rate

Every securitization facility has a limit, which is the maximum amount of funding or securities outstanding at any time. The originator does not always utilise the full capacity of the securitization facility, for example because it does not have enough receivables to sell, or because it does not need additional financing. The limit can be altered in consultation with the sponsor. Little research has been done on the limit of securitization facilities and the research that has been done, arrives at inconsistent conclusions. On the one hand, Lemmon et al. (2010) argue that since SPEs are bankruptcy remote, the credit risk of SPEs should be determined by the quality of assets moved to the SPE and not by the credit risk of the originator. One the other hand, Gorton and Souleles (2005) argue that originators must provide implicit guarantees to SPEs to make them a viable financing vehicle. They support their theoretical model with evidence that shows that the credit risk of the originating firm (their sample only includes banks) helps to explain the yield spreads of securitization debt after controlling for the structure of the SPE and the quality of its assets.

Even though the sponsor decides what the maximum level of the limit can be, originators choose a lower limit. While a high limit results in more financial flexibility, it has a disadvantage, namely the commitment fee. Securitization users have to pay a program fee, interest on the drawn amount and a commitment fee on the unused portion of the limit. This commitment fee can incentivize originators to not set the limit at a level they will never need.

The utilisation rate may be influenced by factors that also have an effect on general use of leverage. Frank and Goyal (2009) show that firms with a high market-to-book ratio, more assets, more tangible assets, and with low profits tend to have high leverage. The amount of debt in the firm might also have an effect on the utilisation rate, as Lemmon et al. (2014) show that securitization proceeds are partially used to repay existing debt. Lemmon et al. (2010) examine factors that explain the amount of debt used in SPEs. They measure leverage as the amount of ABS debt divided by the assets of the SPE and find that SPE leverage decreases with the risk of assets moved to the SPE. Furthermore, they do not find any evidence that firm characteristics of the originator can explain SPE

leverage ratios. Lemmon et al. (2010) do find that cash rises about 1% upon ABS initiation. Since liquidity is one of the benefits associated with ABS, it is possible that firms with low levels of cash in the beginning of the year have a larger utilisation rate at the end of the fiscal year. With regard to the consolidation of the SPE, Lemmon et al. (2010) find some evidence that the leverage ratios of SPEs are lower when they are consolidated. This is consistent with studies that argue that earnings management is one of the benefits associated with off-balance securitization programs.

2.6 Effects on shareholder value

Lockwood et al. (1996) study 294 securitization transactions from the period 1984-1992. Their sample is mostly dominated by banks, but they also include automobile companies, industrial firms and finance firms and tests the wealth effects for these groups separately. Their results differed across types of industries. For finance companies the securitization announcement on average led to an increase in shareholder returns, while for banks it led to a decrease. They found no significant effect for automobile and industrial companies.

Thomas (2001) conducts an event study on 1,416 securitization transactions for the period 1983-1997. He finds that when the market is under pressure, securitization has been associated with losses to the asset seller and when the market is calm, it has been associated with shareholder gains. The research of Thomas (2001) is directed at banks, financial institutions and non-financial firms and shows that banks' shareholders experience greater wealth gains than shareholders of other financial or non-financial institutions. This indicates that securitization is important for avoiding regulatory constraints. Thomas (2001) also suggests that wealth gains are greater, the poorer the creditworthiness of the originator.

Lemmon et al. (2014) perform event studies around the initiation of securitization programs for 231 non-financial and non-regulated utility firms in the period 1996-2009. During the [0, +5] event window they find a significant cumulative average abnormal return of 1.09% and conclude that securitization creates value for shareholders. They do not find significant cumulative abnormal returns for the [0,+1] event window, possibly because the majority of news about the announcement of a securitization program occurs during the six day event window.

Korgaonkar and Nini (2010) find positive cumulative average abnormal returns surrounding the announcement of securitization of 86 non-financial firms that still use securitization in 2006. They show that cumulative average abnormal returns are close to zero in the 30 days preceding the event, suggesting that no or little informations about the securitization program is known before the announcement date. During the [-1, +5] event window, Korgaonker and Nini (2010) find a significant cumulative average abnormal return of 1.61%.

2.7 Conclusion and hypotheses

Previous literature shows that the initiation of a securitization program is associated with value increases for shareholders, without having an adverse effect on existing bondholders. Since large amounts of receivables are needed to make up for the fixed costs associated with securitization, ABS users are on average older and larger firms, with enough receivables to support the creation of an SPE. Securitization is more beneficial to firms with higher amounts of bankruptcy costs and firms that have less access to commercial paper markets. However, very risky firms do not use securitization, possibly because they are prohibited by existing debtholders or because of agency problems with ABS creditors.

Given results of previous research, I expect that older firms that have more assets, more receivables, higher interest costs, a rating in the middle of the credit rating distribution, less secured debt, and a lower current ratio are more likely to use securitization and that there is a concave relationship between leverage and securitization use. It could be possible that securitization is used by firms to fund growth or that securitization is, like other forms of on-balance sheet leverage, avoided by high growth firms because of debt related agency problems. Lemmon et al. (2014) find no evidence that securitization is used to fund growth nor do they find that it is avoided by high-growth firms. Thus, I expect that the market-to-book ratio, research and development expenses, and property, plant and equipment expenses of a firm do not have an impact on the probability of securitization use. Based on the literature review, I form the following hypothesis with regard to the probability of a firm using ABS:

Hypothesis 1: ABS usage can be predicted based on firm characteristics.

Since there is little research on the limit of securitization facilities and the utilisation rate, there is little formulated and tested theory on these topics. Yet, we can try to start by looking at less specific theory for inspiration. Among other factors, the limit relative to the total debt of a firm may depend on the amount of financing the sponsoring bank is willing to lend to the originator. In most cases, accounts receivables are the assets backing the financing, and thus I expect a positive relation between accounts receivables and the limit to debt ratio. Even though the securitization financing is backed by the cash flows from accounts receivables, securitization still has risks for the sponsor, for example because the servicing stays with the originator. If the originator happens to default, customers may try to walk away from their payment obligation, for example because the warranty does not exist anymore. As a proxy for the banks assessment of the riskiness of the originator, that is, its probability of default, I use the long term rating. I expect that higher rated firms will have a higher limit. Regarding the limit, the following hypothesis is established:

Hypothesis 2: The limit to debt ratio can be predicted based on firm characteristics.

The utilisation rate of a securitization program can be dependent on the financing needs of the originator. Previous research shows that securitization debt is used to pay back existing debt, and that cash increases after the initiation of a securitization facility (Lemmon et al. 2010). Accordingly, I expect that debt has positive and cash has a negative relation with the utilisation rate. One reason as to why securitization proceeds are used to pay back debt is that firms with existing loan agreements have to get explicit permission of their creditors to be able to use securitization (Kargaonker and Nini, 2010). One condition these existing creditors can set for the firm to be allowed to initiate a securitization program, is that they use the proceeds to pay back existing debt. If this is the case, the total debt to asset ratio can capture a part of this relation between debt and the utilisation rate. However, total debt includes debt owed to suppliers and other accounts payable, and these creditors cannot negotiate about how the proceeds of the securitization program are used. Secured debt holders, and especially secured bank debt holders are more likely to have covenants and also more likely to be able to exert pressure on the firm to use the SPE debt to pay back their existing debt. Especially bank debtholders have an incentive to do this, as this leads to a decrease in their single obligor exposure. Hence I expect that an increase in secured debt leads to an increase in the utilisation rate. Lastly, with regard to the consolidation of SPEs, I expect that firms with an unconsolidated program have a higher utilisation rate, because of benefits associated with off-balance securitization programs. My hypothesis regarding the limit to debt ratio and utilisation rate is as follows:

Hypothesis 3: The utilisation rate can be predicted based on firm characteristics.

The last part of my thesis is the event study on shareholder returns surrounding the initiation of a securitization program. Recent research finds positive abnormal returns surrounding the initiation date. Furthermore, the returns might have become even higher after 2010, when firms were required to publish more information about securitization programs. This leads to my hypothesis that abnormal returns surrounding the initiation date of securitization programs are larger than zero.

Hypothesis 4: The abnormal shareholder returns around the initiation date of a securitization program are larger than zero.

3. Data

3.1 Data collection

There is no database that provides information on the usage of securitization programs. From my thesis supervisor I received a file with 160 companies that possibly used securitization in 2013. The 10-K filings of these companies contained words that suggest that the company uses securitization, like words starting with “securitiz”, or anything related to receivable sales or purchases. Not all of the 160 firms use securitization. For example, some firms mention securitization when they state that they do not have any securitization facility, or that they had one in the past.

The list with the 160 firms already excludes financial firms (SIC codes between 6000 and 6999) as I only examine the determinants and effects of securitization by nonfinancial firms. Furthermore, regulated utility firms (SIC codes between 4900 and 4999) are also excluded because of their specific circumstances like having a natural monopoly, being at least somewhat implicitly guaranteed by government and being subject to specific regulation.

I manually review the 10-K filings of the 160 companies for the fiscal years 2012, 2013 and 2014 to identify which of them used securitization. For each securitization user, I collect data on the potential financing available (*"Limit"*), the amount of borrowing outstanding of the SPE at the end of the fiscal year (*"SPED"*), and whether the SPE is consolidated on the balance sheet. Not all companies mention the limit, outstanding borrowing and consolidation. I still use those companies in the probit regression to examine the characteristics of companies that use securitization but they will be excluded from analyses that look into the determinants of the limit or outstanding borrowing. Since this file with the 160 companies only focuses on 2013, my sample excludes firms that did use securitization in 2012 and terminated their facility in 2013, or firms that set up a securitization facility in 2014. However, it can happen that a firm stopped using securitization after 2012 and mentions this in their 2013 filing, thus appearing in the list. For example: Alpha Natural Resources had a securitization program in 2012, which they terminated in 2013. Subsequently, in 2014 they started a new securitization program.

The following excerpt from the 2013 10-K filing of Bunge LTD is an example of a typical disclosure found in 10-K filings:[2]

"Our trade receivable securitization program initially entered into in June 2011, provides us with an additional source of liquidity. The program provides funding for up to $700 million against receivables sold into the program. The securitization program terminates on June 1, 2016. However, each committed purchaser's commitment to fund trade receivables sold under the securitization program will terminate on May 28, 2014 unless extended for additional 364-day periods in accordance with the terms of the receivables transfer agreement. At December 31, 2013 and 2012, $696 million and $772 million, respectively, of receivables sold under the Program were derecognized from Bunge's consolidated balance sheets. Proceeds received in cash related to transfers of receivables under the program totaled $12,596 million and $13,823 million for the years ended December 31, 2013 and 2012, respectively. … Bunge's risk of loss following the sale of the accounts receivable is limited to the deferred purchase price receivable, ("DPP"), which at December 31, 2013 and 2012 had a fair value of $96 million and $134 million, respectively, and is included in other current assets in Bunge's consolidated balance sheets (see Note 6)."

[2] Taken from: https://www.sec.gov/Archives/edgar/data/1144519/000104746914001600/a2218521z10-k.htm

For Bunge LTD in 2013, I record the limit of the facility to be $700 million. I calculate the borrowing outstanding as the receivables sold at the fiscal year end date minus the deferred interest, which leads to an amount of $600 million. In this disclosure, the 10-K filing states that the receivables were derecognized from the balance sheet, so I record this as an unconsolidated securitization program. Not all disclosures, however, are this straightforward. Some filings, for example, do not include the limit or the outstanding amount at all. It can also happen that filings use a different currency. In this case I apply the exchange rate on the fiscal year end date to convert the value to US dollars.

To determine which company characteristics determine securitization usage, I compare ABS users with non-ABS users. Data for the non-ABS user sample is retrieved from Compustat, with the following restrictions: only nonfinancial, nonutility firms, that have data available for the total assets. Furthermore, I do not include companies with missing data on accounts receivable or companies with zero accounts receivable since these can by definition not use receivables securitization. The dataset is described in more detail in Appendix 1.

Lastly, I collect data on the initiation dates of securitization programs that still exist in 2012, 2013 or 2014. I only look at the first time that a company reported using securitization. Subsequent programs are ignored because there is often little time between two programs and the limit is similar, so most of the time it is comparable with a continuation of the first program, with a few alterations. The 10-K filings do not always include the specific initiation date, sometimes they only mention a month or a quarter. In these cases I also examine the 10-Q filings, which often lead to a more specific initiation date. For the event study I only use the companies of which I find the exact initiation dates. Since there are no 10-K filings from before 1994 available on Edgar, I do not have the initiation dates of securitization programs that started before this year.

3.2 Summary statistics

Using the procedure described in paragraph 3.1, I identify 119 firms that use a securitization program in 2012, 2013 or 2014. Four of these firms do not have any Compustat data and are dropped from the sample. One firm does have Compustat data for fiscal years 2011 and 2012, but not for 2013 and is thus dropped from the sample in the last year[3]. Appendix 4 provides information on the exact initiation date of the securitization program for the 54 firms of which I found this date. These dates are used for the event study. Table 1 provides summary statistics for the sample of securitization users. In 2013, 107 companies had a securitization program, which was 2.2% of all nonfinancial, nonutility firms in the Compustat database. This is lower than reported by Lemmon et al. (2014) before the crisis. In the period 1996-2009, they found that on average 2.9% of the nonfinancial, nonutility firms used securitization. The total amount of securitization debt outstanding has also decreased. Lemmon et al. (2014) report that there was 174 billion of securitization debt outstanding in

[3] Heinz H J Co, Mylan Inc, Rock-Tenn Co and Drivetime Automotive Group Inc are deleted from the whole sample. American Greetings Corp is dropped in the last year.

2006. However, this amount decreased by more than half in 2009, to a level of 80 billion. I find a similar amount of debt outstanding, with an average of 75 billion between 2012 and 2014.

Table 1 also reports the amount of debt borrowed through securitization, and how this amount relates to the assets, debt and securitization limit of the firm. The securitization debt accounts for, on average, 16.5% of total firm debt (SPED/TotalD). In my sample, firms only borrow 46.1% of their permitted limit (SPED/Limit) and could further increase their reliance on their securitization program. Lemmon et al. (2014) however, report a higher usage of the securitization facility limit during the 1996 to 2009 period. However, they also show that in 2009, firms only used 34.1% of the limit. Because of the uncertainty surrounding securitizations in 2009, investor appetite at that time for ABS might have been severely limited, causing the relative funding advantage to disappear for many originators. I show that the utilisation rate had rebounded by 2012. On average, the limit represents 63.6% of the firms' accounts receivables (Limit/AccRec) and 30.4% of the firms' total debt (Limit/TotalD).

Table 1 shows that around 13.9% of securitization users do not consolidate the securitization program. While reading the 10-K filings, I noticed that many of the firms stated that they did not consolidate the SPE before 2010, but after 2010 they did consolidate it because of the new financial accounting standards. It is interesting to note that the firms that are required to consolidate their ABS program still use securitization. While one of the advantages of securitization is the possibility of off-balance sheet financing, the fact that only a small percentage of firms can do this shows that there are other important benefits to securitization than just off-balance sheet financing.

Appendix 2 provides more information on the industry and credit rating of the whole sample. The industry tranches are based on the Fama French 10 industries. As can be seen in Appendix 2, consumer durables and non-durables, manufacturing, and wholesale firms make up a large part of the ABS user sample. In the whole sample of 115 firms, there are only eight firms with a S&P rating of A or higher. This could be due to the fact that there is little benefit to securitization for high rated firms, as these firms already have access to investment-grade bonds and commercial paper markets (Lemmon et al., 2014). Furthermore, there are no firms with a rating lower than B at the start of 2012 and 2013 that use securitization in these years. At the start of 2014 there was one firm with a rating of CCC+, which was an existing, downgraded, securitization user.

4. Methodology

In assessing the determinants of securitization usage, I follow the methodology of Lemmon et al. (2014). The main difference lies in the observation period, which is 2012-2014 instead of 1996-2009. I examine various factors that may be characteristic of the average firm that uses securitization. These are measured as of the fiscal year prior to the fiscal year in which the securitization program was active. Most of these factors are deduced from previous literature on ABS and capital structure and include: Size (Assets), Accounts Receivable (AR/Assets), Financial constraints (Age), Credit quality

(Rating, Debt/Assets, current ratio, interest expense/liabilities), and Growth prospects (Market to Book ratio, sales growth, Research and development expense/Assets). Data is downloaded from Compustat and is described in more detail in Appendix 1. I estimate the probability of a firm using a securitization program in 2013 based on the firm characteristics of the previous fiscal year, using a standard probit model:

$$\Pr(ABS\ user_{it} = 1) = \Phi(X_{it-1}\beta) \quad (1)$$

where $\Phi(..)$ is a standard normal distribution function, X_{it-1} stands for the independent variables per firm *i* used in the probit regression at the year before year *t*.

For the companies that do mention their securitization facility limit and SPE debt outstanding, I analyse which factors influence the limit relative to the total debt of the firm, and utilisation rate in 2012, 2013 and 2014. Utilisation rate is defined as SPE debt divided by the limit. I use a time series regression to examine whether the limit and utilisation rate of ABS programs are related to firm and program characteristics, using the following formulas:

$$\frac{Limit_{it}}{Total\ debt_{it}} = \alpha + X_{it-1}\beta + \varepsilon_i \quad (2)$$

$$Utilisation\ rate_{it} = \alpha + X_{it-1}\beta + \varepsilon_i \quad (3)$$

In these regressions, the dependent variables are measured at year *t*, and the independent variables are measured one year before year *t*. In the limit to total debt regression, total debt is defined as the short term and long term debt of the firm, including the SPE debt outstanding at the end of the year if the ABS program is not consolidated. X_i is a vector of variables for an individual firm that includes, among others, the assets, accounts receivable to asset ratio, age, rating and a dummy variable which is equal to one if the ABS program is consolidated.

To document the impact of the initiation of a securitization program on the valuation of the originating firms' equity, I use an event study. I will use the SEC filings to track the history of the securitization programs and identify the exact date the program was created. Then I examine stock returns around the origination date and use the Eventus software available in Wharton Research Data Services to conduct a standard event study with the market model (MacKinlay, 1997). Following Lemmon et al. (2014) I use the [-210, -46] estimation window, where day 0 is the initiation date of the securitization program. I require the company to have a minimum of 100 days of return data during the estimation window and convert any non-trading dates to the next trading day. As the market index I use the value weighted CRSP index. I will look at the following event windows: [-30, -1], [-10, +10], [-1, +1], [0, +5]. These event windows are selected to be able to compare my results with other studies, to check if there is a build-up before the announcement date, and, in case of the three day window, as a robustness test to ensure no other announcements impact the share price. I also run an event study on firms that initiated their securitization program in between 2009 and 2014, to examine

whether the fact that firms had to report more information about their securitization programs due to FAS 166 and 167 had an effect on the market reaction.

At first I had 54 firms with an exact initiation date for the full sample. However, three of the firms were not found in the CRSP database, nine had no stock data in the event period and one had less than a hundred days of return data in the estimation window. These were all dropped so the event study consists of 41 firms. The sample of firms that started their securitization program between 2009 and 2014 consists of 17 firms.

5. Results

5.1 Determinants of securitization

In this section I examine firm characteristics and how they are correlated with the usage of a securitization program. The firm characteristics are measured one year prior to the year in which a firm is identified as using securitization. These characteristics are related to the probability that a firm uses securitization by using standard probit regression. Some of the characteristics, like whether the firm has a rating and market-to-book ratio, are meant to capture the firm's ability or desire to attract more debt. The ratio of accounts receivable to assets is also included, because securitization has high fixed costs and is probably less efficient when the amount of receivables is low. Furthermore, the natural logarithm of age is included. Hadlock and Pierce (2010) show that larger and older firms are less likely to report being financially constrained in their annual statements. Thus, the age and size coefficients can provide a proxy for constraints on external finance.

The summary statistics for the variables used in the probit regression are reported in Table 2. The average firm that uses securitization is larger, older and more profitable than the other firms in the sample. The ratio of accounts receivable to assets is also larger for ABS users, probably since large amounts of receivables are needed for a accounts receivable securitization program.

While the average book leverage of ABS users is similar to non-users, ABS users have, on average, both a lower current ratio and lower cost of credit (measured by the ratio of interest expense to total liabilities), which suggests that ABS users have lower credit risk. ABS users are also much more likely than non-users to have a long-term credit rating. The average rating of ABS users does not differ significantly from the average rating of non-users. However, while the non-user sample includes ratings between AAA and D, the highest rating of ABS users in is AA+, and the lowest rating is CCC+. Appendix 2 shows the difference in distribution of ratings between ABS users and non-users. Market-to-book ratio, R&D expense and sales growth are also lower for ABS users, suggesting fewer growth opportunities for these firms.

Table 3 shows the results of the probit regressions. Regressions are run on two different samples, the full sample and a sample that only includes large, rated firms. The sample with only large rated firms is included as a robustness test, because ABS users are much larger than non-ABS firms (see Table 2).

As shown in Table 3, larger firms, older firms, and firms with a larger part of receivables to assets are more likely to use securitization. This could be because larger firms can amortize the fixed costs associated with ABS over more receivables. Furthermore, if a firm only has a few receivables, it is of course not efficient to have an ABS program that sells receivables, which is the most common sort of ABS program. The results also indicate that firms with a larger amount of debt to asset ratio are more likely to have an ABS program. It may be that firms with relatively large amounts of debt have an interest in diversification of funding so as to be more financially flexible. Lemmon et al. (2014) suggest that there is a concave relationship between leverage and the likelihood that a firm initiates a securitization program. While the results in column (8) suggest a possible concave relation between debt and the usage of a securitization program, this is only significant at the 10% level and the other results in Table 3 do not suggest that there is such a relationship for firms that are using securitization in 2013.

With respect to credit ratings, firms with a rating of A or higher are less likely to use securitization as compared to lower rated firms. This finding is supported by existing literature, which states that for the highest rated firms there is little benefit to securitization since these firms already have access to investment-grade bond and commercial paper markets. While I find no significant effect for BBB rated firms, the results show that BB rated firms are more likely to use securitization than lower rated firms. Columns (5) to (8) show that usage of securitization for large rated firms is also concentrated around BB-rated firms.

In column (2), some variables are added to measure the effect of growth opportunities. While there is no significant result for the market-to-book ratio, increases in sales growth, R&D expense and plant, property and equipment expense lead to a lower expected probability of ABS usage. These findings, except for the effect of sales growth, are not robust in the sample with only large, rated firms.

Additionally, I run a probit regression with almost the same variables as used by Kargaonker and Nini (2010). Like Kargaonker and Nini (2010), I find that firms with higher interest expense relative to liabilities are more likely to use securitization. However, in the control sample I find the opposite effect. The current ratio does not seem to have an effect on securitization usage. Furthermore, like Kargaonker and Nini (2010) I look at the probability that firms with more secured debt use less securitization. In addition I add the square of the secured debt to total debt ratio, to test if there is a non-linear relation. The results in column (3) and (7) suggest that there is a concave relation between secured debt and securitization use, although this effect disappears when more variables are added. An interpretation of this finding could be that firms that already use secured debt are more likely to use securitization, but only up to a certain level as above that level the secured lenders contractually forbid it.

The null hypothesis that the usage of securitization cannot be predicted based on firm characteristics can be rejected, because at least one of the coefficients in the regression is significantly different from zero.

5.2 Securitization facility limit and utilisation rate

In this subsection I examine the factors that explain the amount of financing available to the originator and the amount they actually use. Table 4 reports the results of regressions of the SPE limit to debt ratio on a set of explanatory variables. Of all the variables included, the accounts receivable to asset ratio has the largest effect on the limit to debt ratio. This seems logical as firms with a small amount of accounts receivable will not benefit from a high limit. Furthermore, there is a negative relation between the size of a firm (as measured in assets) and the limit to debt ratio. This could indicate that sponsors are reluctant to support transactions over a certain limit. While the amount of total debt is likely to grow with the total assets, the ABS limit may have an upper bound. The unrated dummy has a significant positive relation with the limit to debt ratio. Since unrated firms have less access to corporate bond and commercial paper markets, they might want to "lock-in" committed financial flexibility.

While I expected that lower rated firms would have a lower limit because of possible problems with respect to servicing or the possibility of the originator accepting lower quality customers, I find no significant relation between the rating and the limit to debt ratio. This could mean that the sponsors see the SPEs as bankruptcy remote, and thus the credit risk of the SPE should not be determined by the risk of the originating firm. An alternative explanation is that even low rated firms view themselves as sufficiently financially flexible. Lastly, I do not find a significant effect for other firm characteristics, like the growth opportunities and age of the firm, nor for programs that are either consolidated or unconsolidated.

The null hypothesis that the limit to debt ratio cannot be predicted based on firm characteristics can be rejected, as at least one of the coefficients in the regression is significantly different from zero.

Table 5 reports the results of regressions of the utilisation rate on a set of explanatory variables. While the amount of accounts receivables determines for a part how much securitization can be done, there is only a small relation between the amount of receivables and the utilisation rate, which disappears for the sample with only large programs. Leverage is positively related to the utilisation rate. Additionally, firms with a larger part of secured debt in their total debt have a higher utilisation rate. The estimated coefficient of the cash to asset ratio is negative and significant for both samples, suggesting that companies with less liquid assets make more use of their securitization facility. However, in column (1) and (3), the residuals of the cash to asset ratio show a decreasing trend, indicating that the assumption of constant variance is not true. In column (2) and (4) I add the

square root of the cash to asset ratio, which leads to more evenly distributed residuals. Lastly, I find that the highest rated companies on average have a higher utilisation rate.

In addition to examining the firm characteristics and credit quality of the ABS users, I also add a dummy variable that is equal to one if the SPE is consolidated on the firms balance sheet. All regressions show a significant negative relation between consolidated programs and the utilisation rate. This suggests that in deciding how much of their securitization facility to use, firms take into account whether the program is recognized or derecognized on the balance sheet. Furthermore, if off-balance sheet financing is the reason for the firm to use a securitization program, it is logical that the firm uses as much of this financing as possible, as small amounts will not have a large effect on the balance sheet nor will they improve ratios like the debt equity ratio by significant amounts.

The null hypothesis that the utilisation rate cannot be predicted based on firm characteristics can be rejected, as at least one of the coefficients in the regression is significantly different from zero.

5.3 Valuation impact of securitization initiation

Previous literature has argued that there are advantages to securitization usage, like minimizing bankruptcy costs, gaining liquidity, and exploiting segmented markets. In this section I explore the impact of the initiation of a securitization program on the originating firms' shareholder value. I perform standard event studies on 41 firms. For these firms I found the exact initiation date and they had at least 100 days of trading data in the estimation window. The results of the event study are presented in Table 6 and figure 1. All CAARs reported in Table 6 are insignificant and there is no evidence that the initiation of a securitization program impacts the shareholder value of the originating firm. Since more information on securitization transaction had to be reported after 2009, it might be that there is an effect on shareholder value for securitization programs with an initiation date in 2009 or later. However, I could only gather a dataset of 12 firms with enough stock data and an initiation date between 2009 and 2014. This sample is quite small, so the results should be viewed with appropriate care. The results indicate that there is no significant effect of the initiation of a securitization program in this period. Consequently, it seems that securitization does not create value for equity holders.

The null hypothesis that the abnormal shareholder returns around the initiation of a securitization program are equal to zero cannot be rejected, as I do not find a significant effect of the initiation of a securitization program on shareholder value.

6. Conclusion and further research

6.1 Conclusion

During the financial crisis, asset-backed securitization by nonfinancial firms declined sharply. While almost $176 billion of SPE debt was outstanding at the end of 2008, by the end of 2009 this had declined to just below $80 billion (Lemmon et al. 2014). I find that in 2012, 2013 and 2014, the

amount of SPE debt outstanding is increasing, from $73 billion in 2012 to $77 billion in 2014. Even after the financial crisis and the introduction of stricter accounting regulations, securitization is significant funding source for corporations. On average, the 115 companies that used securitization between 2012 and 2014 had an outstanding amount of SPE debt that was 16.5% of their total debt.

The main goal of this thesis was to research which firm characteristics have an influence on the probability of securitization usage. Using a dataset on the usage of securitization by nonfinancial firms in 2013, I show there is a positive relation between the size, accounts receivables, leverage and age of the firm and the probability that that firm uses securitization. Regarding the credit risk, firms with the highest ratings are less likely to use securitization compared to lower rated firms. The benefit of using securitization is larger for firms with more credit risk, as it decreases their bankruptcy costs and provides access to investment-grade bond and commercial paper markets. This would mean that the most risky firms would benefit the most from using securitization. However, these firms do not use securitization at all, as existing creditors and possible agency problems with ABS creditors limit the access of very risky firms to securitization. Holding everything else constant, I find that BB-rated firms have the highest probability of using securitization. Finally, I find some evidence that firms with more growth opportunities (as measured by sales growth, R&D expense and property, plant and equipment expense) are less likely to use securitization. This result does however not hold for the sample that only includes large, rated firms. Furthermore, the market-to-book ratio does not seem to have an effect on the probability of securitization use.

Additionally, I examined which factors, as measured at the start of a fiscal year, had an effect on the limit and utilisation rate of securitization programs as of the end of that fiscal year. I show that the limit to debt ratio increases for firms with a higher ratio of accounts receivables to assets and for unrated firms. Furthermore, I find a negative relation between the limit to debt ratio and the assets of a firm.

I show that the debt to asset ratio and secured debt to total debt ratio have a positive effect on the utilisation rate of securitization programs. I also find some evidence that firms with more accounts receivable have a higher utilisation rate, though this does not hold for firms with large ABS programs. Additionally, I show that firms with lower cash to asset ratios have a higher utilisation rate, suggesting that firms use their SPE debt to increase their liquidity. Finally, the results show that firms with an unconsolidated ABS program have a higher utilisation rate. Off-balance sheet financing is valuable to firms, for example because it can lead to improved ratios. However, significant quantities of SPE debt are needed in order for the securitization program to have an impact on the balance sheet.

The last part of my research aimed to discover whether the initiation of a securitization program affects the shareholder value. Within the sample used I do not find that the initiation of a securitization program has an effect on shareholder value.

One of the main contributions of this thesis is that it focuses on a period after the introduction of FAS 166 and FAS 167. Because of these regulations, fewer firms are allowed to deconsolidate their

ABS program. I show that even though off-balance sheet financing is an important advantage of ABS programs, it is not the only reason for firms to use securitization. This can be seen by the fact that between 2012 and 2014, on average 86.1% of ABS users had a consolidated program. Another benefit of ABS programs is that they can be used to create more liquidity for the originator. Indeed, I show that lower cash to asset ratios predict a higher utilisation rate for firms that use securitization between 2012 and 2014.

The results found in this study may be relevant to practitioners as it can help them identify potential new users of ABS transactions in their marketing effort. It may also be relevant for policy makers as regulation affecting ABS transactions affects the financial flexibility of firms and therefore of economic activity.

While some interesting results were found, this study also has its limitations. First, I could not find the SPED and Limit for all the companies in the sample. Between 2012 and 2014, the sample includes 317 observations of firms that have a securitization program. The SPED and/or Limit are missing for 52 of these observations and the firms for which these numbers are missing are not included in the regression analysis on the limit to debt ratio and the utilisation rate. Second, in the event study on the effect of the initiation of a securitization program, I only include firms that still have such a program in 2012, 2013 or 2014. This has led to a small sample size in comparison with previous studies.

6.2 Further research

The current analysis could be expanded in a number of ways. For instance, a longer time-series would allow to investigate whether and how certain factors affect the behavior of existing ABS users, for example, changes in limits and utilisation rates. While reading the 10-K filings, I noticed that some firms that do not or hardly use their securitization program decrease their limit the next year, citing expense considerations. I could not examine whether there is indeed a relation because my sample is limited to three years. Additionally, a longer time-series would capture more rating transitions and could help to determine the effect of these on limits and utilisation as well, especially if a decent proxy for cost of other debt can be obtained.

This paper examines the factors that affect the probability that firms use ABS. But the question can also be reversed: given that certain firms have factors through which usage is probable, why do they not use it? To answer this question a qualitative approach may be warranted such as interviews with a set of non-users. There is a lot of legal literature on ABS transaction that focusses on the uncertainties of bankruptcy remoteness and it may be that certain types of accounts receivable are harder to transfer, for example due to originator performance risk, or because receivables may turn out to be unenforceable, for instance due to consumer protection regulations.

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Table 1 – Summary statistics on ABS programs

This table presents summary statistics by fiscal year on the use of securitization by nonfinancial and nonutility firms, with data available in Compustat. The 'Total' column reports the average across the three years, except for the "Number of firms using ABS" row, where it reports the total of unique firms that use ABS in at least one of the three years. The last column shows the average results of Lemmon et al. (2014), over the period 1996 to 2009. "Unconsolidated" refers to the percentage of securitization users that do not consolidate their ABS program on their balance sheet. "SPED" is the amount of debt borrowed through special purpose entities at the end of the fiscal year and "Limit" stands for the maximum SPED the originator can have outstanding at any time. SPED and Limit are a bit lower than in reality, because not all firms in the sample mentioned these numbers. "FirmA" and "FirmD" are the assets and debt of a firm excluding the SPE debt. "TotalA" and "TotalD" are the assets and debt of a firm including the SPE debt. Accounting data is measured at the beginning of the fiscal year and SPED and Limit are measured at the end of the fiscal year. All ratios have been winsorized at the 1st and 99th percentiles.

	2012	2013	2014	Total	Lemmon et al.
Number of firms using ABS	110	107	100	115	
Fraction of all firms	2.31%	2.20%	2.04%	2.18%	2.90%
Fraction of large, rated firms	9.46%	9.15%	8.53%	9.05%	12.50%
Unconsolidated	13.64%	14.02%	14.00%	13.89%	
Total SPED ($ millions)	73450	74512	77146	75036	111760
Average SPED	686	723	804	738	
FirmD/FirmA	31.38%	32.01%	32.62%	32.00%	29.80%
TotalD/TotalA	36.37%	36.79%	37.48%	36.88%	35.30%
SPED/TotalA	5.74%	5.38%	8.41%	6.51%	7.70%
SPED/TotalD	15.54%	14.27%	19.70%	16.50%	20.60%
Limit/Total A	10.02%	10.05%	10.35%	10.14%	9.80%
Limit/Acc.Rec.	61.62%	64.78%	64.32%	63.59%	
Limit/TotalD	30.18%	28.44%	32.56%	30.40%	40.80%
SPED/Limit	45.66%	44.02%	48.20%	46.07%	56.60%

Table 2 – Summary statistics on regression variables

This table presents summary statistics for the explanatory variables used in the probit regression on securitization usage in 2013. All variables are measured in fiscal year 2012. The last column reports the average of all firms in the sample that do not have a securitization program in 2013. 'Rating' is the S&P long term rating, converted to numbers by using a linear scale for the rating notches, where the rating AAA is 1 and a rating of D is converted to 21. All ratios have been winsorized at the 1st and 99th percentiles. ***, **, and * represent a significant difference between ABS and non ABS users at respectively 1%, 5%, and 10% levels.

	Mean	Median	Std Dev	25th Pctl	75th Pctl	Non-ABS Mean
Ln(Assets)	8.733	8.764	1.244	7.957	9.360	5.600***
Receivables/Assets	0.178	0.139	0.132	0.091	0.221	0.139***
Debt/Assets	0.360	0.315	0.206	0.223	0.486	0.357
Ln(Age)	3.258	3.332	0.780	2.079	3.970	2.466***
Market-to-book ratio	1.030	1.602	6.263	1.013	2.637	1.866*
ΔS/S	0.017	0.013	0.105	-0.035	0.069	0.153***
EBITD/Assets	0.122	0.114	0.053	0.092	0.144	-0.163***
R&D/Assets	0.010	0.000	0.017	0.000	0.015	0.090***
PPE/Assets	0.522	0.499	0.316	0.233	0.775	0.520
Secured debt/Debt	0.260	0.095	0.329	0.000	0.426	0.340***
Current ratio	1.654	1.595	0.867	1.229	2.109	2.642***
Interest expense/Liabilities	0.027	0.025	0.014	0.018	0.036	0.032***
Rating	10.938	11.000	2.662	9.000	13.000	11.204
Unrated	0.243		0.431			0.774***

Table 3 – Determinants of ABS usage

This table presents the estimated coefficients from probit regressions that relate the probability of a firm using securitization in a year to firm characteristics measured at the fiscal year end of the previous year. Regressions (1) to (4) include the whole sample, and regression (5) to (8) only include firms that have assets above $350 million and a long-term S&P issuer rating. The dependent variable in all regressions is a dummy variable that equals one if the firm reports using a securitization program in 2013, and zero otherwise. Robust standard errors are reported in parentheses. ***, **, and * denote an estimate that is statistically significantly different from zero at the 1%, 5%, and 10% levels, respectively.

	All firms				Large, rated firms			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Ln(Assets)	0.268***	0.261***	0.250***	0.243***	0.204***	0.198***	0.178***	0.162***
	(0.028)	(0.030)	(0.028)	(0.031)	(0.047)	(0.049)	(0.052)	(0.054)
Receivables/Assets	2.393***	2.206***	2.191***	2.037***	3.182***	3.057***	2.904***	2.749***
	(0.366)	(0.388)	(0.363)	(0.392)	(0.568)	(0.602)	(0.588)	(0.623)
Debt/Assets	0.959***	0.963***	0.001***	1.097***	2.069**	2.125**	0.750***	2.668***
	(0.268)	(0.306)	(0.000)	(0.391)	(0.952)	(0.963)	(0.267)	(1.032)
$(Debt/Assets)^2$	-0.168	-0.177		-0.204	-1.313	-1.380		-1.551*
	(0.119)	(0.144)		(0.160)	(0.905)	(0.918)		(0.922)
Ln(Age)	0.284***	0.288***	0.262***	0.283***	0.416***	0.404***	0.401***	0.387***
	(0.078)	(0.078)	(0.074)	(0.079)	(0.111)	(0.111)	(0.113)	(0.113)
Unrated	-0.170	-0.161	-0.270*	-0.170				
	(0.146)	(0.149)	(0.142)	(0.160)				
A and above	-0.910***	-0.878***	-0.890***	-0.848***	-0.852***	-0.785**	-0.970***	-0.886**
	(0.275)	(0.289)	(0.273)	(0.299)	(0.315)	(0.350)	(0.324)	(0.359)
BBB	-0.285	-0.284	-0.300	-0.254	-0.236	-0.214	-0.356	-0.308
	(0.180)	(0.186)	(0.189)	(0.198)	(0.200)	(0.217)	(0.217)	(0.229)
BB	0.399***	0.396***	0.337**	0.396**	0.408**	0.422**	0.291*	0.330*
	(0.148)	(0.153)	(0.149)	(0.157)	(0.162)	(0.172)	(0.164)	(0.176)
Market-to-book ratio		-0.001	-0.001	-0.001		-0.001	-0.001	-0.001
		(0.001)	(0.001)	(0.001)		(0.001)	(0.001)	(0.001)
ΔS/S		-0.670***		-0.717***		-0.738**		-0.776**

	All firms				Large, rated firms			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
		(0.180)		(0.185)		(0.373)		(0.385)
EBITD/Assets		0.564*		0.632*		-0.175		-0.132
		(0.323)		(0.383)		(0.648)		(0.654)
R&D/Assets		-3.871**		-3.885**		-3.352		-3.800
		(1.716)		(1.749)		(2.300)		(2.480)
PPE/Assets		-0.226**		-0.229**		-0.100		-0.102
		(0.107)		(0.107)		(0.120)		(0.123)
Secured debt/Debt			1.101**	0.878*			1.333*	1.191
			(0.519)	(0.534)			(0.744)	(0.762)
(Secured debt/Debt)^2			-1.005*	-0.890			-1.824**	-1.659*
			(0.584)	(0.602)			(0.913)	0.945
Current ratio			-0.064	-0.033			-0.004	0.008
			(0.042)	(0.042)			(0.071)	(0.076)
Interest expense/Liabilities			0.127**	-4.982			-7.073*	-11.084**
			(0.056)	(3.365)			(4.205)	(4.604)
constant	-5.384***	-5.174***	-4.783***	-4.893***	-5.567***	-5.325***	-4.747***	-4.723***
	(0.399)	(0.433)	(0.359)	(0.454)	(0.590)	(0.631)	(0.694)	(0.774)
Observations	4868	4868	4868	4868	1143	1143	1143	1143
Pseudo R^2	0.2643	0.2780	0.2574	0.2824	0.1441	0.1535	0.1500	0.1667

Table 4 – Determinants ABS program limit

This table presents the estimated coefficients from regressions run on the limit to total debt ratio of firms with an ABS program in 2012, 2013 or 2014. The full sample covers all the firms that report their limit in their 10-K filing. Regression (3) and (4) only include firms with an ABS program that is larger than 10% of their total debt. All variables, except the consolidated dummy, are lagged by one year. Robust standard errors clustered at firm level are reported in parentheses. ***, **, and * denote an estimate that is statistically significantly different from zero at the 1%, 5%, and 10% levels, respectively.

	Full sample	Large ABS programs
	(1)	(2)
Ln(Assets)	-0.088***	-0.108***
	(0.031)	(0.038)
Receivables/Assets	1.655***	1.766***
	(0.479)	(0.574)
Ln(Age)	0.005	-0.036
	(0.053)	(0.074)
Unrated	0.212**	0.219*
	(0.101)	(0.112)
A and above	-0.150	0.062
	(0.228)	(0.348)
BBB	0.031	0.062
	(0.055)	(0.078)
BB	-0.003	0.007
	(0.070)	(0.112)
Consolidated	-0.012	0.036
	(0.060)	(0.068)
constant	0.684*	0.931*
	(0.359)	(0.445)
Observations	267	174
R^2	0.3794	0.3506

Table 5 – Determinants utilisation rate

This table presents the estimated coefficients from regressions run on the utilisation rate of ABS programs, where the utilisation rate is the amount of debt borrowed through the SPE divided by the limit of the securitization program. The sample covers ABS firms that report their SPE debt and limit in at least one year between 2012, 2013 and 2014. All independent variables, except the consolidated dummy, are lagged by one year. Cash is equal to Compustat item CHE and also includes short term investments. Regressions (1) and (2) include the whole sample, and regressions (4) and (5) include only firms with large programs as a robustness check. I define a large program a securitization program with a limit that is larger than 10% of the total debt of the firm. Robust standard errors clustered at firm level are reported in parentheses. ***, **, and * denote an estimate that is statistically significantly different from zero at the 1%, 5%, and 10% levels, respectively.

	Full sample		Large ABS program	
	(1)	(2)	(3)	(4)
Ln(Assets)	-0.044	-0.040	-0.045	-0.041
	(0.028)	(0.028)	(0.033)	(0.032)
Receivables/Assets	0.410*	0.450**	0.234	0.293
	(0.227)	(0.227)	(0.272)	(0.271)
Debt/Assets	0.179**	0.178**	0.224***	0.218***
	(0.072)	(0.069)	(0.081)	(0.079)
Secured debt/Debt	0.273**	0.271**	0.284*	0.282*
	(0.137)	(0.135)	(0.144)	(0.144)
Cash/Assets	-0.928**		-1.332***	
	(0.454)		(0.453)	
$(Cash/Assets)^{1/2}$		-0.627**		-0.842***
		(0.277)		(0.289)
Unrated	-0.105	-0.103	0.003	0.002
	(0.098)	(0.097)	(0.105)	(0.108)
A and above	0.335**	0.333**	0.484**	0.486**
	(0.164)	(0.165)	(0.222)	(0.223)
BBB	-0.006	-0.006	0.072	0.080
	(0.124)	(0.122)	(0.139)	(0.138)
BB	0.050	0.050	0.118	0.119
	(0.077)	(0.076)	(0.096)	(0.095)
Consolidated	-0.257**	-0.268**	-0.267**	-0.286**
	(0.128)	(0.126)	(0.128)	(0.127)
constant	0.913***	0.971***	0.937***	1.018***
	(0.268)	(0.267)	(0.301)	(0.301)
Observations	265	265	174	174
R^2	0.1835	0.1933	0.2540	0.2647

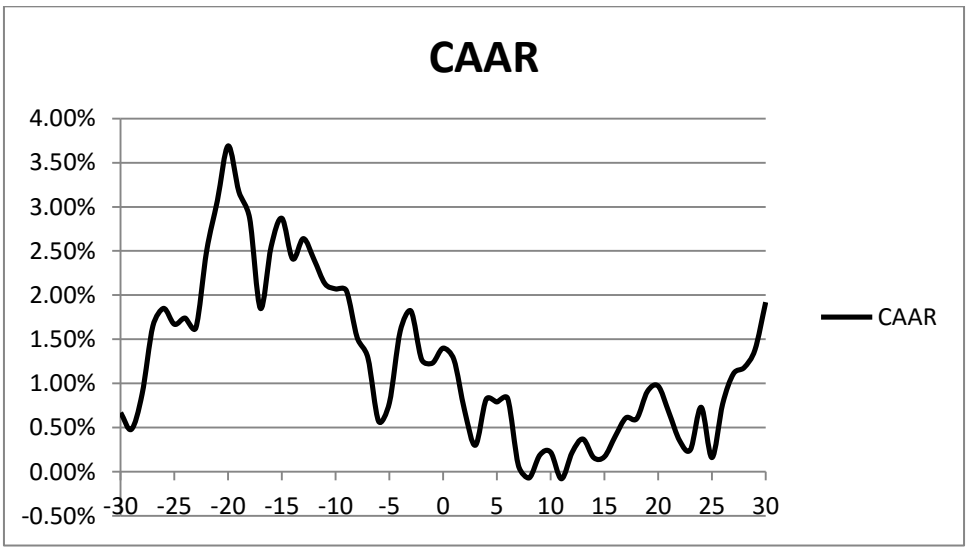
Table 6 – Cumulative abnormal stock returns around securitization initiation

This table presents results from the stock price event study on the 41 firms with usable stock returns and an exact initiation date. The cumulative abnormal returns are computed using a single-factor market model with a value weighted market index estimated during a 210 day window before the initiation date that ends 46 days before the initiation date. ***, **, and * denote a cumulative average abnormal return that is significantly different from zero based on a t-statistic at the 1%, 5% and 10%, respectively.

	Full sample		Initiation date between 2009-2014	
Event window	**CAAR**	**Rank Test Z-statistic**	**CAAR**	**Rank Test Z-statistic**
(-30, +1)	1.27%	-0.012	0.63%	-1.148
(-10, +10)	-1.86%	-0.642	-3.76%	-0.962
(0, +1)	0.04%	0.661	0.56%	0.227
(0, +5)	-0.41%	0.111	-1.18%	-0.843
N	41		12	

Figure 1 – Stock return event study

This figure presents the results from the stock price event study using 41 firms with usable stock returns and with the exact date that the firm initiated its securitization program. The figure plots cumulative abnormal using a single-factor market model with a value weighted market index estimated during a 210 day window before the initiation date that ends 46 days before the initiation date.



Appendix 1 – Variable definitions

SPED	Debt borrowed through SPEs at the end of the fiscal year
Limit	Upper limit of the amount of debt SPEVs can borrow
Unconsolidated	Dummy variable that indicates whether the SPE debt is consolidated
Assets	Total assets (Compustat item AT)
TotalA	Total assets of the firm, including debt in SPEs
FirmA	Assets of the firm, excluding debt in SPEs
Debt	Total debt (DLTT+DLC)
TotalD	Total debt of the firm, including debt in SPEs
FirmD	Debt of the firm, excluding debt in SPEs
Age	Firm age, which is set to one for the first fiscal year with accounting data in Compustat
Receivables	Accounts receivable (RECT)
Market-to-book ratio	Market value of equity/book value of equity ((PRCC_F*CSHO) / (CEQ+TXDB))
S	Sales (Sale)
ΔS	$Sales_t$-$Sales_{t-1}$, where t represents fiscal year t
EBITD	Operating income before depreciation (OIBDP)
R&D	Research and development expense (XRD)
Secured debt	Mortgages and other secured debt (DM)
Cash	Cash and short-term investment (CHE)
PPE	Gross property, plant, and equipment (PPEGT)
Current ratio	Currents assets (ACT) divided by current liabilities (LCT)
Interest expense	Total interest expense (XINT)
Liabilities	Total liabilities (LT)
Rating	Discrete variable based on the S&P long-term domestic issuer credit rating (SPLTICRM), ranging from 1 (AAA) to 21 (D)

Appendix 2 – Industry and rating

This table presents the firms in both the ABS users and non-ABS users sample over the three years from 2012 to 2014. In the cases where the rating of a firm changes, the average rating over the years is used.

	Non ABS users	ABS users	Share of ABS users to total firms in category
Total	5620	115	2.01%
Industry			
Consumer Non-durables	324	11	3.28%
Consumer Durables	171	8	4.47%
Manufacturing	731	33	4.32%
Energy	417	9	2.11%
Business equipment	1337	8	0.59%
Telecom	226	0	0.00%
Wholesale	540	24	4.26%
Healthcare	970	3	0.31%
Other	904	19	2.06%
Long-term S&P Rating			
A and above	214	8	3.60%
BBB	313	26	7.67%
BB	281	36	11.36%
B	349	20	5.42%
CCC and below	82	0	0.00%
Unrated	4381	25	0.57%

Appendix 3 – Correlation matrix

This correlation matrix shows the correlations between the variables used in the probit regression on the determinants of ABS usage.

	Ln(A)	AR/A	D/A	Ln(Age)	MB	ΔS/S	EBITD/A	R&D/A	PPE/A	CR	IE/Lia	SD/TD
Ln(Assets)	1											
Receivables/Assets	-0.183	1										
Debt/Assets	-0.067	-0.001	1									
Ln(Age)	0.387	0.032	-0.007	1								
Market-to-book ratio	-0.001	-0.019	-0.001	-0.015	1							
ΔS/S	-0.042	-0.006	0.001	-0.039	0.003	1						
EBITD/Assets	0.235	-0.044	-0.270	0.094	0.000	-0.006	1					
R&D/Assets	-0.191	0.008	0.526	-0.087	-0.012	0.003	-0.440	1				
PPE/Assets	-0.021	-0.098	0.178	0.077	0.004	-0.010	-0.069	0.074	1			
Current ratio	-0.079	-0.111	-0.014	-0.021	-0.002	-0.003	0.038	-0.021	-0.107	1		
Interest expense/Liabilities	-0.100	-0.012	0.007	-0.050	0.001	0.002	-0.031	0.012	0.004	0.008	1	
Secured debt/Total debt	0.048	-0.062	-0.013	-0.020	0.004	-0.010	0.050	-0.040	0.056	-0.083	0.000	1

Appendix 4 – List of firms with exact initiation date

This table lists all the firms that report using securitization in 2012, 2013, or 2014 and for which I could find the exact initiation date. * means that the firm was not used in the stock return event study because it was not listed in the CRSP database. ** means that the firm was not used in the stock return event study because it had no/not enough stock price data available.

	Company Name	Program Initiation Date	Limit (in $ million)
1	Aircastle LTD**	15-06-06	
2	Alliance One International, In	27-09-06	55
3	Alpha Natural Resources, Inc.	25-03-09	85
4	Amerco /Nv/	01-06-07	217
5	American Greetings Corp	07-08-01	250
6	Anixter International Inc	06-10-00	275
7	Arch Coal Inc*	10-02-06	100
8	Archer Daniels Midland Co	01-07-11	1000
9	Armstrong World Industries Inc	10-12-10	100
10	Ashland Inc.	13-11-08	200
11	Black Diamond, Inc.	13-04-99	150
12	Borgwarner Inc**	28-01-94	75
13	Cloud Peak Energy Inc.	11-02-13	75
14	Commercial Metals Co	20-06-01	130
15	Community Health Systems Inc	21-03-12	300
16	Constellation Brands, Inc.	04-12-12	250
17	Cooper Tire & Rubber Co	30-08-06	175
18	Dean Foods Co	30-06-00	150
19	Dominos Pizza Inc	16-04-07	1850
20	Dst Systems Inc	24-05-07	200
21	Ferrellgas Partners L P	26-09-00	60
22	Ferro Corp	28-09-00	
23	Greif Inc	31-10-03	120
24	Hanesbrands Inc.	27-11-07	250
25	Heinz H J Co*	12-06-09	175
26	Huntsman International Llc*	21-12-00	
27	Insight Enterprises Inc	31-12-02	200
28	Jabil Circuit Inc	25-02-04	100
29	Jarden Corp	28-08-06	250
30	Kelly Services Inc	04-12-09	100
31	Lexmark International Inc /Ky/**	31-01-94	100
32	Lkq Corp	28-09-12	80
33	Marathon Petroleum Corp**	01-06-11	1000
34	Moog Inc.	05-03-12	100
35	Owens Corning	31-03-11	250
36	Packaging Corp Of America	29-11-00	150
37	Phillips 66**	27-04-12	1200
38	Pool Corp	27-03-03	90
39	Ralcorp Holdings Inc /Mo	24-09-01	66

40	Seacube Container Leasing Ltd.**	24-08-06	
41	Servicemaster Co	23-03-01	65
42	Sungard Data Systems Inc	11-08-05	375
43	Supervalu Inc	16-08-01	200
44	Synnex Corp**	30-08-02	200
45	Tal International Group, Inc.**	01-08-05	875
46	Timken Co	19-12-02	125
47	United States Steel Corp	28-11-01	400
48	United Stationers Inc	03-04-98	163
49	Volt Information Sciences, Inc	15-04-02	
50	Vwr Funding, Inc.**	04-11-11	200
51	West Corp**	28-08-09	125
52	Willis Lease Finance Corp	17-09-12	
53	Worthington Industries Inc	30-11-00	120
54	Zep Inc.	31-05-13	