On Determinants of Asset-Backed Securities: An Investigation on Post-Crisis US

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Abstract

Asset-backed securities are a relatively novel mechanism through which firms can obtain funding, and have undergone change due to their involvement in the financial crisis. This paper investigates the characteristics of non-financial US firms using securitization data between 2009 to 2012, and looks to find what effect new accounting regulation has had on the amount of debt outstanding on Special Purpose Vehicles. I attempt to explain firm preference for this type of financing in comparison to others by looking at accounting variables. Findings show that likelihood of ABS outstanding is concave in credit ratings, and firms with highest working capital surpluses tend to securitize. Moreover, the analysis shows that accounting regulation has not significantly changed firm preference for securitization over other methods of financing. Securitization allows firms to minimize borrowing costs for firms which have the ability to do so.

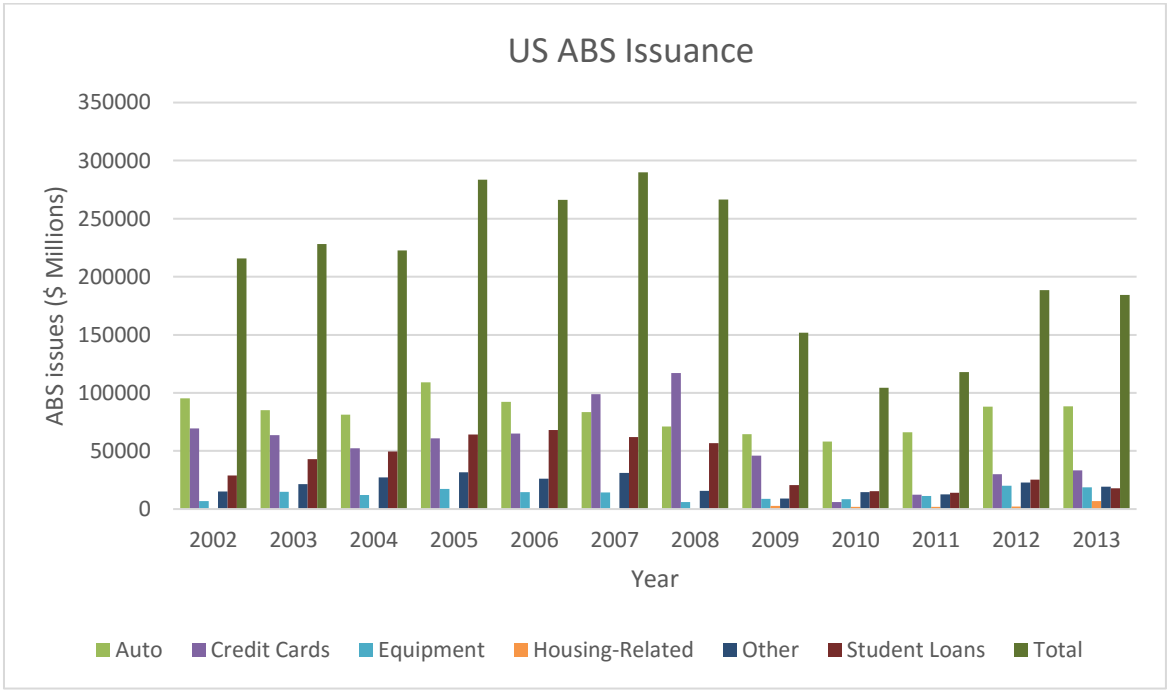
Key words: Securitization, Asset-backed securities, special purpose vehicle

Introduction

The 2007 financial crisis caused a severe meltdown of the Asset-Backed Securities (ABS) market, which led the issues of such financial products to come to a complete standstill. Prior to the crisis, these securities had undergone tremendous growth and increasing appreciation from firms as tools to obtain credit, with a total US issuance value of $238 billion in 2007 alone (Stein, 2010). Though it is retrospectively understood that the crisis was fuelled by poor underwriting of sub-prime mortgage backed securities, a rational explanation lacks as to reasons why the traditional consumer ABS market followed in the former's demise. One proposed hypothesis is that a bank-run type mechanism occurred with respect to these types of assets (Acharya, Schnabl, & Suarez, 2012 & Skarabot, 2002). This implied a significant reduction in the supply of credit for consumers, and is believed to have exacerbated the drop in consumption experienced during the 2007-2008 period. The ABS' involvement in the crisis raised questions on whether these financial instruments should be more heavily regulated. A recent ruling by the SEC looked to provide more transparency to investors by having "firms file reports on the underlying loan data to the agency and the SEC will

post the information on its website" (Ackerman, Martin, & Timiraos, 2014). The motives for the use of ABS have been in the spotlight, and especially so for securities backed by mortgages given their catalysing effect during the crisis. On the other hand, according to (Lemmon, Liu, Mao, & Nini, 2014) more traditional ABS have been used by around 10% of public firm with assets in excess of $350 billion between 1996 and 2009. This paper aims to investigate the type of firms issuing asset-backed securities, and what the proceeds are usually used for. Potential reasons could be, to increase investment, improving financial ratios or recapitalizing. Moreover, post-crisis regulation on these securities has been tightened and accounting standards have been altered in order to increase the transparency of these securities. This creates a good natural experiment setting, whereby the effects of the regulatory changes can be detected by comparing results obtained with prior work.

Figure 1:



The figure above depicts statistics on the issuance of asset-backed securities in the US from 2002 to 2013. The peak issuance year was in 2007 with a nominal amount nearing $300 billion. The credit-card industry was the biggest contributor to this total amount, and was also the one to experience the heaviest decline during the crisis. At its lowest point in 2010 there were only just over a $100 billion worth of issues. Interesting to note that the least volatile sector in terms of issues is the automotive (non-financial) sector.

With a recovery of the market for these types of assets, it is interesting to see how the numbers compare to pre-crisis levels. The SEC proposed amendments to the way in which ABS are reported, to the benefit of investors by "better alignment of the interests of issuers and investors through

retention or 'skin in the game' requirement" (Financial Accounting Standards Board, 2008). These new measures should lead to: better disclosure on the receivables being transferred; a minimum of 5% retained stake in the receivables and lastly, providing a reasonable basis for which the cash flows will be paid out (Ernst & Young LLP., 2010). Furthermore, pre-crisis accounting treatment allowed for companies to account for the transfer of their receivables as sales, rather than financing (Higgins, Mason, & Mordel, 2009) though new, stricter regulation instructs firms to consolidate the assets on their balance-sheet and adding the proceed value from the transfer under 'debt'. This accounting treatment change may reduce the preference for securitization, as firms no longer gain the benefits of improving certain financial ratios. Depending on the quality of the receivables being pledged as collateral in the securitization, firms may receive more favourable rates in comparison to a loan. The fact that the pledged receivables are transferred to bankruptcy remote entity further reduces the risk of the loan and hence allowing for a smaller compensation for risk. That being said, in pre-crisis periods, firms could be offloading assets and using the proceeds to pay off debt, or to finance dividend pay-outs without additional debt being accounted for on the balance sheet. This would thereby increase the return on capital, in an arguably synthetic manner. Under the new consolidation treatment, it has become increasingly common for firms to consolidate the securitization as debt on the balance-sheet, whilst keeping the receivables on the asset-side. This accounting treatment results in an unchanged return on capital. Furthermore, assets being kept on the balance sheet render an unchanged asset turnover ratio, which is a component of return on equity. This implies a more comprehensive view of firm efficiency, since the selling of assets is not considered part of the core business operations.

Several studies investigated firm characteristics which are attributable to asset-backed security issues, though no research to my knowledge has investigated these relationships in post-crisis times. SEC 10-k filings will be checked to obtain the number of receivables securitized and the proceeds the firm received for them. The investigation will follow in the direction of previous work, and focus on non-financial firms. This should allow for a more reasonable comparison of results, and should help determine whether new regulation has altered the manner in which- and amount of securitization. The time period under investigation is between 2009 (where there has been a recovery in the asset-backed market) up to 2011, which should give an idea on the evolution of the market in current economic conditions. Further, the remaining firms will be obtained from CompuStat, in order to have a comparison between issuing and non ABS-issuing firms. By employing statistical techniques, this thesis aims at providing a better understanding at what type of firms issue these securities and under what conditions they do so, given the new accounting practice.

1.1 Workings of Asset-backed securities

The central idea behind structured finance is to pool assets such as mortgages, bonds, student loans and other types of receivables to effectively merge the assets into one; thereby obtaining benefits of diversification. Non-financial firms may use these structured products in order to offload their longer term assets, in return for cash which has been found to be a key determinant of investment for value enhancing projects or research and development (Hadlock, 1998). The creation of these assets undergoes a two-stage process the first being pooling, followed by a trenching procedure. Assets are transferred to what is known as Special Purpose Vehicle (SPV) and these are bundled together according to their credit ratings provided by rating agencies. The different assets are then subordinated in a hierarchical manner, whereby the more senior tranches will hence be protected by subordinated tranches. This leads to the risk of the assets being reduced and transferred from the firm to outside investors with the according risk appetite (Salomon, Smith, & Barney, 2001). The figure below provides a schematic representation of the abovementioned securitization mechanism.

Figure 2:

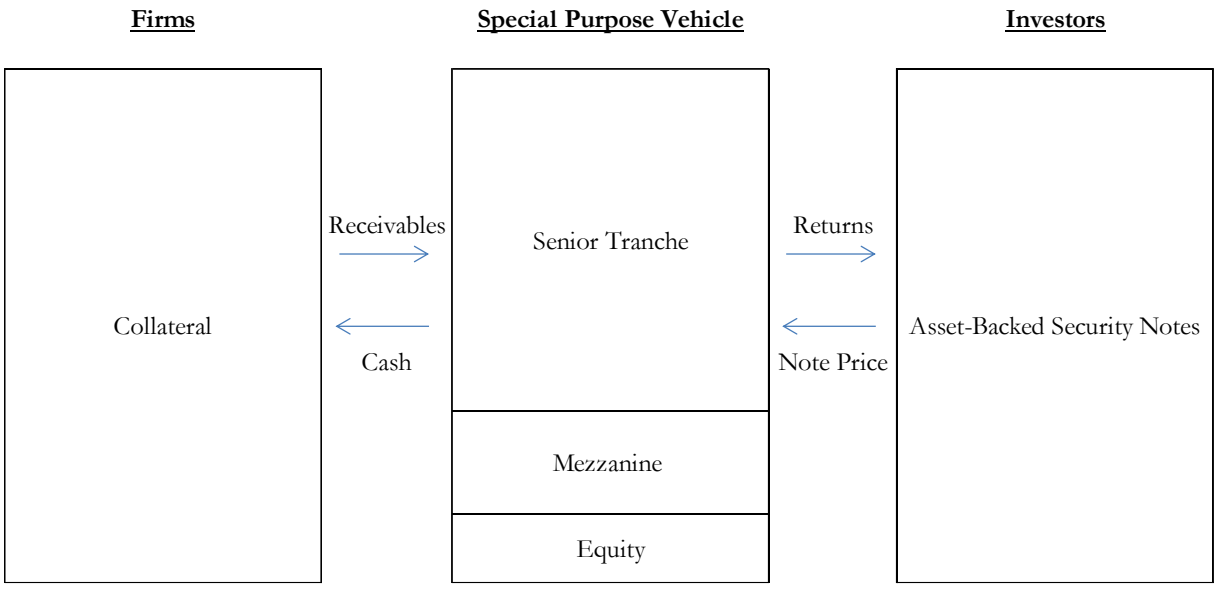


Figure 1 above depicts the flows of assets and proceeds during a securitization. Firms hold long-term assets in the form of receivables, which generate cash-flows with varying levels of repayment risk. A firm may decide to set up and transfer these receivables to a bankruptcy remote SPV. To finance the purchase, the SPV will repackage the receivables into different priority tranches, where these have different subordinated repayment priorities and sold on to investors. The first priority tranche is the most senior tranche, and has the first claim on the cash flows. Going down the structure, mezzanine will receive the cash flows once all the senior tranches have been repaid, and lastly the equity tranches will be repaid. Hence, the most senior tranches have the highest price, and therefore lowest yield given they have the first claim on cash flows. The junior tranches are sold at lower prices and therefore generating higher yields for investors

with a larger risk appetite. Once the SPV has sold all claims on the cash flows from the transferred receivables, it may pass on the proceeds, net of fees for the administrator of the SPV (usually comprising of one or more banks), to the firm.

1.2 Special Purpose Vehicles and Post-Crisis Accounting measures

Perhaps one of the most hotly discussed characteristics of the asset securitization procedure has been the separation of ownership which occurs in the transfer of assets. When the decision is made to offload the assets from the balance sheet, firms are no longer responsible for the administration of the asset. Prior to the crisis, firms were able to maintain close to no retained interest in the collateralized assets, and this situation lead to potential moral hazard under asymmetric information. According to Greenbaum & Thakor (1987), unregulated banks choose to securitize their best performing assets and finance their poorer on-balance sheet assets through deposits. Reasons for using such funding structures are not entirely understood and are still being investigated to this day. One of the main advantages of SPV financing is the bankruptcy remoteness of these entities and are hence, by design, are not able to go bankrupt. Since these are only legal constructs, they do not have any management nor employees and require no equity (Gorton & Souleles, 2007). These characteristics can provide protection for investors, in the case the issuing firm has additional risks in other operation, and therefore lead to a lower cost of debt. The risk of the SPV is more easily measurable than a corporation as a whole with much more complex structures and operations, though this apparent simplicity was not reflected during the times of downturn, and hence bringing the benefits of SPV's in doubt. The Securities Exchange Commission (SEC) has undergone some procedure in order to dampen the negative spill-overs of securitization. The first step, has been to enforce issuing firms to maintain at least 5% stake in each tranche offered in the securitization with a restriction to hedge this position. This should align the incentives between issuer and investor. Furthermore, issuing firms must provide information on the collateralized pools to investors and firms may no longer account the transferred assets as sale (Ernst & Young LLP., 2010). Statement NO. 140 regarding accounting for transfers of financial assets has been amended in order to provide "enhanced transparency about the transfers of financial assets and a transferor's continuing involvement with the transferred financial asset" (Financial Accounting Standards Board, 2008). The report states the following rules and goals:

> "Additionally, on and after the effective date, the concept of a qualifying special-purpose entity is no longer relevant for accounting purposes. Therefore, formerly qualifying special-purpose entities (as defined under previous accounting standards) should be evaluated for consolidation by reporting entities on and after the effective

> date in accordance with the applicable consolidation guidance. If the evaluation on the effective date results in consolidation, the reporting entity should apply the transition guidance provided in the pronouncement that requires consolidation. […] This Statement improves financial reporting by eliminating (1) the exceptions for qualifying special-purpose entities from the consolidation guidance and (2) the exception that permitted sale accounting for certain mortgage securitizations when a transferor has not surrendered control over the transferred financial assets. In addition, comparability and consistency in accounting for transferred financial assets will be improved through clarifications of the requirements for isolation and limitations on portions of financial assets that are eligible for sale accounting."

This change in accounting procedure allows for a natural experiment setting, where the effects can be measured by monitoring the change in asset-backed securitization. This thesis will serve as a build-on study on the characteristics of asset-backed securities, as well as identifying the effects of the new accounting ruling.

According to all the above mentioned information, this paper will look to build on the academic literature concerned with the workings and use of asset-backed securitization. By investigating the time-period in which new regulation was implemented, the goal is to answer the following research question:

Which are the determinants of asset-backed securities' issues in post-crisis US?

This research paper aims to add onto the list of literature on asset-backed securities to provide more understanding on how and why these securities are used by firms. The findings show that firms which have most to gain from securitization in terms of interest costs will be most likely to do so when taking into account the level of risk as denominated by credit rating. The safest firms according to credit rating will only have an increased incidence of securitization facilities when they are on the riskier tail of the credit range and that the use of securitization increases in working capital surpluses. Firms with working capital surpluses are also the most likely in obtaining credit through securitization. The effect of new accounting regulations on firms' debt outstanding on SPE's is investigated, and no real change has been found in this report. Lastly, firm specific accounting variables have been investigated with their consequent effect on within-firm variation of SPE debt. The only notable result has been that higher investment measured by two different proxies result in lower SPE debt. Further research should consider the importance of sample size when running the panel regression to investigate within firm variation of SPE debt as time

requirement only allowed for a time period of four fiscal years. Additionally, research could be conducted on the effects of external, rather than firm-specific stimuli on the amount of securitization.

Theoretical Background

The question posed by Fischer Black regarding dividend pay-out policies has led to further questions on the way firms organise their capital structure. Answers on these questions usually ended with "We don't know", though these have shed some insight on potential reasons for financing firm operations (Myers, The Capital Structure Puzzle, 1984). Since then capital markets have evolved, and theories thereof have followed suit. Beginning with the Modigliani and Miller (1958) approach in a static setting with partial equilibrium, who assert that the type of financing would not affect the cost of capital; academics have conducted a myriad of studies on the capital structure, in attempt of understanding the motives for manager to adopt a certain financing mechanism. The static trade-off theory proposed in conjunction with the pecking-order theory, give an idea, both in their own way, of how firms capitalise themselves given on-balance sheet financing.

2.1 Capital Structure Considerations

Static trade-off proposes an optimal level of debt in the interaction between the interest tax shields from interest payments, and the present value of bankruptcy costs. It follows, that firms with low levels of debt may increase the value of the firm (and hence maximizing shareholder value) by issuing debt and entering a share buyback programme up to the point where the marginal benefit of tax-shield benefits equals the marginal cost of bankruptcy. The pecking-order theory approaches the capital structure problem in a setting with asymmetric information, where managers are considered to have more information regarding the firm performance (Myers & Majluf, 1984). Underlying this assumption, firms will resort to issuing equity last; as such a financing method will be a signal of overvaluation to the markets. If this would not be the case, the firm would have chosen to issue debt as this one has the smallest capital charge. Under asymmetric information, use of retained earnings is the preferred method of financing investments, as it does not rely on the perception of outside investors and has therefore bears the lowest cost. These two theories are still regarded as the pillars in finance regarding capital structure, though asset-backed securities have not been investigated to determine in which way they influence the capital structure. As mentioned by Lemmon et. al (2014), firms may have used securitization in order to remove assets which are

subject to bankruptcy costs. Research by Ayotte & Gaon (2011) found asset-backed securities allowing for more efficient investment initiatives in comparison to secured debt. In doing so, firms may be able to maintain a higher debt ratio as prescribed by the static-trade off theory and subsequently reduce the cost of debt. Moreover, the firm may reduce the costs of asymmetric information by issuing asset-backed securities through a bankruptcy remote SPV. As found by DeMarzo (2005), an originating firm can benefit from derivative securities by collateralizing their assets and subsequently pooling them to achieve diversification benefits. The additional effect of pledging collateral assets is that it significantly reduces information asymmetry problems and thereby lowering the cost of capital. This mechanism may lead to preferences for firms in particular credit rating range to issue asset-backed securitization over equity and unsecured debt.

2.2 Underinvestment problem

The pecking-order theory describes the way firms take on, and finance their investments. More specifically, shareholders of cash constraint firms with high debt costs (firms with high growth options), will see the gains of their investment be transferred to debtholders, and new debtholders would have a junior claim on the assets with respect to old debt holders (Berkovitch & Kim, 1990). With managers deciding shareholders' behalf, they may have an incentive not to issue equity and new debtholders may be increasingly difficult to attract thereby missing out on positive net present value opportunities (Fazzari, Hubbard, & Petersen, 1987). Research conducted by Hennessy (2004) found significant effect of debt overhang, in situations where firms are not able to surpass this problem by issuing additional secured debt. Asset-backed securities may be a way in which firms may circumvent the underinvestment problem by pledging safe assets as collateral for an asset-backed security program and thereby enabling capital for new investments. A paper by Naduld & Weisbach (2011) found a significant reduction in the cost of debt associated with firms issuing securitized corporate bank loans. This investigation therefore seeks to find whether firms in high leverage positions, with restrictions due to financial distress have a tendency to use a securitization facility. Furthermore, the academic literature has found no particular answer on whether securitization is used for the furthering of investments to increase the value of the firm, or whether the proceeds are used for other purposes such as refinancing the capital structure, and supporting firms' dividend policy. This paper will proxy corporate investment by the level of capital expenditures (CAPEX) and Property, Plant and Equipment as proposed by Malmendier & Tate (2005) and Hennessy (2004) to identify whether securitization is used to accommodate investment growth. Modgliani & Miller (1963) state that firms will aim to sustain a "reserve borrowing capacity", though specific reasons for this were not stated. In light of the discussion regarding the

under-investment problem, maintaining a reserve borrowing capacity can be of use in times where capital markets tighten, in order to optimize investment opportunities. According to Opler, Pinkowitz, Stulz & Williamson (1999), firms with restricted access to capital markets maintain a higher cash buffer to support potential operational losses. Securitization may be seen as a closer substitute to cash compared to debt or equity due to its lower cost, and may therefore lead to riskier firms maintaining such funding streams available when others become access-restricted.

2.3 Asset Substitution effect & Ratio improvements

The asset-substitution effect arising from the incentive for managers to shift wealth from bondholders to shareholders has been mentioned by (Jensen & Meckling, 1976). The idea focusses on the way in which capital claims are subordinated. Debtholders are known to have senior claim on assets over equity holders in the case of bankruptcy, though managers are operating as representatives of the shareholders. Considering a firm in financial distress, shareholders may decide to undertake riskier investments to retain some value with a certain probability. Jensen & Meckling (1976) assert that these agency costs increase in the level of debt. Green & Talmor (1986) theoretically analyse the effects of agency costs in the determination of the optimal capital structure with sub-optimal outcomes from the perspective of bondholders. A more recent study by de Jong & van Dijk (2002) finds no empirical effect of agency problems and leverage on a sample of Dutch firms, and are only able to confirm a trade-off between tax benefits of debt and costs of financial distress. Furthermore, Speiss, & Affleck-Graves (1999) find stock long-run underperformance at the issue of both straight and convertible debt. This effect is magnified for firms issuing speculative grade debt. There are hence some conflicting views on the issue of debt and agency costs, though it is interesting to investigate the use of asset-backed securities in light of these possible outcomes. Given the negative stock market reactions upon the issuance of lower than investment grade bonds, management may therefore have a greater incentive to obtain capital through securitization. In this manner, they may be receiving better terms due to the positive rating effect of risk pooling. The abovementioned literature suggests that firms are expected to make use of securitization facilities when they are exposed to high agency costs of debt. That is, firms with high leverage ratios (i.e. firms closer to financial distress) are expected use securitization as this will reduce agency frictions and allow for the continuation of operations which could not be maintained through other type of funding. Furthermore, firms are often subjected to covenants and constraints by various regulatory entities. Banks have since the crisis endured much restrictions on minimum capital buffers to absorb losses in severe downturns. To quickly adjust to these requirements banks have used securitization as a tool to remove these assets without having to account for them as debt on their

balance-sheet (Stein, 2010). Non-financial firms investigated in this thesis may use securitization reasons related to the latter but with respect to financial ratios such as leverage, which can be affected by securitization with a non-consolidating accounting treatment.

2.4 Hypotheses Formulation

The abovementioned related literature will be used in order to serve as foundation for the determinants of asset-backed security issuing firms. Several mechanisms have been found to have an effect on a firm's capital structure. Following the work of Lemmon, Liu, Mao, & Nini (2014), the first hypothesis can be stated as follows:

H1: The likelihood of maintaining an asset-backed security facility is concave in credit ratings.

The effects of new accounting regulation after the crisis have been applied in order to decrease information asymmetry between the different agents involved in securitization. The question remains to see whether these accounting treatments have had an effect. To determine this, it is possible to test for differences between firms which maintain the sales treatment in contrast with firms which consolidate the transfer on their own balance-sheet. Reasons for firms taking appeal to the off-balance sheet nature of securitization may include ratio enhancement as these are exposed to capital requirements or financial leverage targets. The adoption of securitization with a sales accounting treatment may help these meet these targets. Doing so will involve taking a small sample of firms which have experienced a change in accounting treatment and test for differences in the amounts of financing. Hence, the second hypothesis can be stated as follows:

H2: Firms adopting a consolidating accounting treatment have a reduced preference for securitization debt.

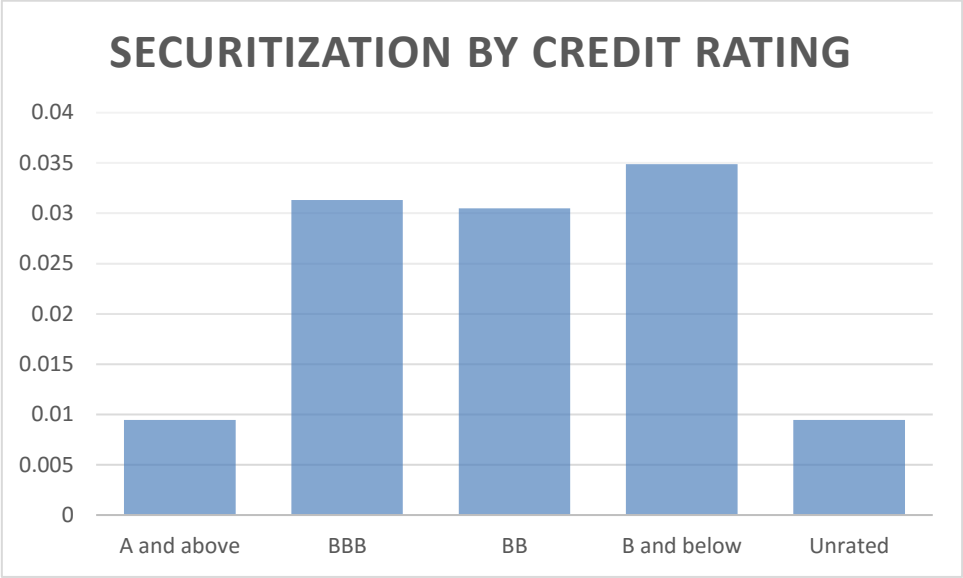
The third and last hypothesis will focus on finding what securitization proceeds are used for. According to 10-k filings, firms generally state the use of such programs to be due to liquidity requirements in research and development, working capital financing and rolling over current debt. Furthermore, securitization could be used for firms with high growth options as an additional buffer in case these decide to exercise their growth option. The sample will be reduced to firms with on-going securitization facilities in order to determine which accounting measures have systematic explanatory power on the change in debt levels obtained from SPEs. For economic reasoning for the implementation of accounting variables, refer to the data and methodology section. The third hypothesis will be as follows:

H3: Firm-specific accounting measures have explanatory power with regard to the amount of debt obtained from SPE's

Data and Methodology

This research looks at the time period between fiscal 2009 to 2012. Given the difficulty with which the data on Asset-backed security issuance can be gathered, a longer horizon is not feasible. Furthermore, this thesis serves as an extension to the work of Lemmon, Liu, Mao, & Nini (2014), and will therefore exclude financial firms and utilities (SIC codes 6000 to 6999 and 4000 to 4999). The first step was to obtain data on the amount of securitization done by firms. SEC 10-k filings for each firm was looked into, and by searching for key words such as "securitization" and "sale of receivables" the structure of the securitization agreement is determined. Some firms maintain a revolving asset-sale program, whereby they sell up to a pre-specified amount their eligible receivables. Under certain agreements, issuing firms directly obtain proceeds for the sale of their assets, which is some discounted factor of the net asset value. Other agreements work in a different manner, whereby all assets eligible for sale (subjected to certain covenants applied by the underwriting financial institution) are transferred at the beginning of the fiscal year, and allow for borrowing by the issuing firm. This type of contract more closely resembles a credit line, under the additional condition that firms which are eligible for sale are transferred solely to that particular SPV. Additionally, information is gathered on whether the firm consolidates the transfer on their consolidated balance-sheet. Once the firms utilizing securitization and whether they consolidate these assets, the following step is to determine the structure of the SPV. Firms transferring an amount of $500 million (SPEA) in assets to the SPV, but receiving proceeds of $300 (SPED) will have a retained interest in the SPV of $200 million. This methodology again is in line with the prior work of Lemmon, Liu, Mao & Nini (2014) and should allow for an equitable comparison between firms with and without consolidation. To illustrate this point, consider the following case: Two identical firms, with the same nominal value of assets and debt decide to transfer half their assets to an SPV. One firm follows the sale accounting treatment and the other the consolidation method. To compare them both in the same light, the assets and debt under the SPV for the firm following the sale treatment should be added back to the firm's total assets. In addition to this, the contractual limit (Limit) on the amount of borrowing allowed by the originator is collected as an additional measure of the amount of possible securitization.

Figure 2:



The figure above displays the firms which had an ongoing securitization facility between fiscal 2009 and fiscal 2012 according to credit rating. A firm having an on-going securitization facility with no outstanding balance is still considered in the graph above, and firms have been assigned to their current credit rating.

3.1 SPE Summary statistics

Table I in the appendix displays the summary statistics of SPE balance sheet related data from between fiscal years 2009 to 2012. The sample consists of a total of 583 uses of securitization throughout that time frame with 140 firms in 2009, and increasing to 147 in 2012. This is very slight increase in reflected in the fraction of all firms in the sample using securitization which increases from 2.4% to 2.6%. Interestingly, the share of firms consolidating their transferred assets decreases from 1.0% in 2009 to 0.6% in 2012, which shows the effects of the altered accounting regulation. Average leverage for the total sample remains somewhat around 40% with its lowest point in 2010 where it was at 36.8%. Looking at the difference between the firms which consolidate, it is noteworthy to state that firms which consolidating firms are consistently overleveraged with respect to firms which do not follow the consolidation treatment even when the SPE debt has been accounted for (added back) in total debt for off-balance sheet arrangements. Consolidating firms do have around eight times the amount of outstanding debt on their SPE's in comparison to non-consolidating firms with an aggregate amount outstanding hovering around $1 trillion each year.

The ratio of an SPE's debt to assets shows the level of retained interest that a firm maintains in the receivables transferred to the SPE. Non-consolidating firms have a ratio varying between 75.2% and 82.0%, and shows that on average, these firms tend to maintain a small retained interest and

do tend to over-collateralize. Consolidating firms in this sample seem to have a different approach as values fluctuate between 15.2% and 72.9%. From the 10-k filings, it appeared that many of these firms maintained revolving securitization agreements, where eligible assets are transferred at the beginning of each year but liquidity was not immediately withdrawn from the SPE. This may be due to the fact that these firms do not have any benefits of having off-balance sheet assets of debt and may therefore decide to maintain credit for when time requires it. SPED/D reveals that in totality, securitization has become less attractive with respect to other sources of debt with the percentages dropping from 10.0% in 2009 to 7.3% in 2012. The Limit as a fraction of total assets reveals similar statistics across years and consolidation with the highest level being at 2.7% in 2009. Limit as a fraction of total debt shows that unconsolidated firms tend to have a higher buffer for borrowing under securitization programs, and an overall downward trend is observable over the time period from 7.8% in 2009 to 5.6% in 2012.

3.2 Data

Once SPE balance sheet values have been acquired, it is then possible to match this to accounting characteristic for these firms, as well as for a sample of around 5000 other firms. With the two samples merged together, an analysis of the summary statistic reveals that the market-to-book, EBITDA and leverage variables. Theses variables have therefore been winsorized at the 1% level in addition to all variables being taken as a ratio of that particular firm's total assets. Data on credit rating is presented on a monthly basis from Compustat, in this way it is possible to determine in which month a firm experienced a downgrade. A dummy variable for a downgrade is created if the firm has experienced it during that particular fiscal year. That dummy is then lagged within one year, as we would expect the firm to require some time to set up a securitization facility in order to obtain liquidity. Yearly credit rating dummies are applied if the firm has a credit rating raging from AAA to A, BBB, BB, B or Below and Unrated. Furthermore, the standard deviation of retained earnings is calculated by taking its yearly average quarterly standard deviation. The market to book ratio is calculated by taking each firm's total assets and subtracting total liabilities. This leaves us with the book value of equity, and the market value of equity calculated by taking the product of shares outstanding and the closing price of the shares. Furthermore, data on acquisitions is retrieved from the Compustat database, and a dummy variable is generated for each firm which has had one or more acquisition in that particular fiscal year. With all the variables now created, any asset-backed security issuing firm which has not been matched to the Compustat data is removed in order to have a more balanced panel. Looking at the data, outliers such as firms with negative market to book and working capital values are removed. Negative market to book values

are theoretically possible, and occurs when firms have more debt than assets and thereby leading to negative equity. This is not likely to happen, and these firms are not in the focus of this investigation.

3.3 Variables

This section provides the reasoning as to the implementation of certain variables in the analyses and the expected outcomes.

3.3.1 Credit rating & Leverage:

The most important variable which is expected to have an effect on the amount of securitization is the credit rating of that particular firm. Credit ratings are the most important determinant of a firms cost of debt, and therefore determine how favourable other methods of financing are. Previous work by Lemmon, Liu, Mao & Nini (2014) found that pre-crisis ABS securitization programs are more likely to follow from a rating downgrade. Furthermore, they find that firms in the BBB and BB rating spectrum are the ones to gain the most from securitization given the lower cost associated with collateralized debt. A paper by Gray, Mirkovic & Ragunathan (2016) find leverage together with interest coverage ratio to be the most pronounced determinants of credit ratings in the Australian corporate debt sector. An additional paper by Kisgen (2009) report that firms target a certain credit rating, and hence alter their leverage in accordance to this goal. Should a firm incur a rating downgrade, leverage will be reduced in order to attain a higher credit rating. Under this reasoning, we should expect firms with the most to gain from securitization to have the highest probability of issuing these securities. This implies that firms around the BBB and BB credit rating would be most active in this market. Unrated firms, would have the most to gain, but it is to be seen if such firms would be able to obtain any sort of credit.

3.3.2 Market to Book ratio:

A firm's market to book ratio has been found to be a significant indicator of returns through the risk which it bears. According to Fama & French (1995), firms with high book to market (hence low market to book) are less profitable in the following four years than firms with low book to market ratios (high market to book). They assert that firms with high market to book ratios have a stock price exceeding the book value of equity to account for the growth options, and firms with low market to book ratios are firms in financial distress. In light of this investigation, the market to book would be expected to have a positive impact on the probability of a firm using

securitization. Firms seeking to finance their growth would be eager to do so at the lowest cost, and hence through the use of securitization facilities.

3.3.3 Size & Receivables:

In this research, firm size will be measured by the natural logarithm of a firm's total assets. A firm with more assets, has a higher probability of having assets which may be eligible for sale to SPVs, and therefore firms with a larger asset base is expected to have a greater probability of using securitization than firms with low levels of assets. Following a similar reasoning, and the findings by Minton, Opler & Stanton (1997) firms with concentrated receivables should have a higher incentive to transfer a part of them to increase the cash in hand which may be used for positive net-present value projects, or decrease the chance for insolvency in the case of distress.

3.3.4 Earnings Before Interest Tax Amortization and Depreciation & Earnings volatility:

The most fundamental reason for a firm to initiate a securitization facility is to obtain credit, and thereby increasing the chances of having cash with which to operate. If securitization facilities are started for these reasons, then it should follow that firms with the highest need of liquidity will have the highest chance of being involved in such a facility. A paper by Opler, Pinkowitz, Stulz & Williamsom (1999) find that firms with higher access to capital markets in part due to high credit ratings tend to have lower cash to non-cash asset ratios. The authors also find that firms with riskier cash flows hold larger cash reserves to serve as buffer (Dichev & Tang, 2008). Following these findings, earnings before interest tax depreciation and amortization (EBITDA) will be included in the study as a proxy for profitability and earnings volatility for riskiness of cash flows. Earnings volatility is calculated as the yearly standard deviation of quarterly retained earnings values.

3.3.5 Capital Expenditures, Property, Plant and Equipment & Working Capital:

Working capital management and capital expenditures are important expenses to take into account when looking at firms' balance sheet as they reflect the amount of liquidity. Defined as the difference between current assets and current liabilities. A firm endowed with many assets may not have the ability to turn these into liquid resources ready for use in the case of profitable projects, it may look to securitize these assets, thereby allowing for the funding of its short term obligations (current liabilities). In the case of capital intensive sectors, such as in heavy machinery, firms may decide to lease their equipment. The disadvantage of leasing, is that it does not provide with a one-off payment ready for use, but rather an income stream with a certain credit risk dependent on the lessee's financial condition. Another example could be the automotive industry, which has

experienced an increase in the number of leases of its cars. The capital intensive nature of the firms, and the structure of their income allows for a setting where securitization is likely to ensue.

3.4 Statistical testing

With the prepared dataset, it is then of importance to carry out proper empirical tests in order to determine which firm characteristics are associated with asset-backed securitization. The first statistical tool to analyse the incidence of ABS issues will be a probit model, through which it is possible to determine the probability or odds ratio with which firm characteristics lead to securitization.

$$\Pr\left(Securitization_{i,t} = 1\right) = \phi(X_{i,t}, \beta) \quad (1)$$

With $\phi(.)$ being the cumulative distribution of the standard normal distribution, and $X_{i,t}$ being a firm characteristic i in year t. The results from this probit model will shed light on the probability of a firm using securitization given the regression parameters. Using the binary modelling setting, the following model will be tested:

$$ABS_{i,t} = \alpha_{i,t} + \beta_1 * A\ or\ Above_{i,t} + \beta_2 * BBB_{i,t} + \beta_3 * BB_{i,t} + \beta_4 * B\ and\ Below_{i,t} + \beta_5 * Unrated_{i,t} + \sum_{i=6}^{n+1} \beta_n Credit\ rating * Leverage + \sum_{i=9}^{n+1} \beta_n Controls_{i,t} + \varepsilon_{i,t} \quad (2)$$

Where "ABS" will be a binary variable denominating whether each firm in the panel had an active securitization program on-going with a financial institution. "A or Above" is a dummy variable taking a value of 1 for the range of credit ratings between AAA and A-. Following the prior logic, "BBB" represents the dummy variable for credit ratings between BBB+ to BBB-, "BB" between BB+ to BB-, "B and Below" between B+ to C and finally "Unrated" takes the value of 1 in the case no ratings were obtained for that firm in that given year. This model is used to test the first hypothesis on the relationship between credit ratings and the likelihood of having an on-going securitization program. Various accounting dummies will be implemented to control for confounding effects within the model. Interaction dummies between credit ratings and leverage will be applied to answer the question whether distressed firms are more likely to use securitization financing. The interaction will reveal the likelihood of firms using securitization as they have increased leverage within their credit rating classifications. Probit model coefficients give an idea on the directions of the effect of the regressors on the use of asset-backed securitization. Hence, for a more comprehensive view of firm specific characteristics on the probability of securitization, marginal effects transformations are conducted and will be reported in the results. This eases the

interpretation of the increased probability of asset-backed securities given the model parameters (Long & Freese , 2006).

Panel techniques will be used to test the hypothesis of firm-specific accounting characteristic effect on the level of debt obtained from the sale of receivables. The following model will be tested:

$$\frac{SPED}{TD} = \alpha_{i,t} + \beta_1 Leverage_{i,t} + \beta_2 Size_{i,t} + \beta_3 Market\ to\ Book_{i,t} + \beta_4 SD\ Earnings_{i,t} + \beta_5 Capex_{i,t} + \beta_6 Working\ Capital_{i,t} + \beta_7 Cash\ balance_{i,t} + \varepsilon_{i,t} \quad (3)$$

Where SPED is the outstanding debt in the SPE for that particular firm and TD is the total debt (including SPED for firms not consolidating their transfers). Leverage is defined as a firm's total debt to total assets, Size is computed as a firm's log of total assets. Market to Book ratio is the ratio of the market value of equity as a quotient of its book value, and "SD Earnings" as the yearly average standard deviation of quarterly earnings divided by total assets. Capex and Working capital will be applied as obtained from Compustat and adjusted by total assets. Lastly the firm's total cash balance and short term investments divided by total assets will be added to the regression. Additional regressions will be run with the dependent variables defined as SPED as a ratio of total assets, and SPED divided by total receivables to determine if results are robust over the sample.

Lastly, a means difference will be performed to determine if the average level of debt obtained increases in the case firms change their accounting treatment from sale to consolidated treatment. In order to do so, the total sample will be reduced to only firms which have changed accounting treatments, and the means will be compared to firms which have not changed accounting treatments. The test will be as follows:

$$H0:\ \mu_U - \mu_C = 0$$

$$H1: \mu_U - \mu_C > 0$$

Where μ_C represents the mean debt transferred to the SPE as ratio of total debt in period of consolidation, and μ_U is the mean debt transferred to the SPE as ratio of total debt under the unconsolidated accounting treatment. Standard deviations can be obtained from the two samples and therefore allow for a z-test on the differing means. This test is equivalent to a univariate test without control and therefore, further tests will include running the specification (3) with a dummy variable for if a firm has changed its accounting standards to including their SPE debt on their balance sheet. This method should provide evidence for any difference, and if so, the direction of this difference between accounting changes and the relative amount of debt obtained from SPE's.

Results

This section will begin by stating the results of the assumptions which the sample must fulfil before any conclusions can be inferred from the data. The logit model will be run with the random effects' specification, as this study aims at finding differences across firms which lead to differing likelihoods of asset backed security issues.

Table III shows the results obtained from the probit regressions over two different samples. The first being the full sample as described in the data section, with positive book values of equity and positive assets and the second sample with all unrated firms removed. All specifications do not aim at finding within firm variation, but rather looks at the incidence of asset-backed securities across each individual firm and year given the model parameters. Results from both specifications show that size has a significant effect on the probability of that firm having an asset-securitization facility and supports the idea that a firm with many assets has a greater chance of financing their operations through the disposition of their assets. More specifically looking at regression (2) allows for an easier interpretation, namely that a $1 million increase in total assets increases the probability that a firm has an ongoing securitization program by 0.016. When looking at rated firms only, an identical increase in total assets leads to an increased probability of 0.035. Regressions (4) and (6) show that there is not a great change to this effect when including leverage and the interaction between leverage and a firm's credit rating.

The market-to-book ratio works as a proxy of future growth potential, and is applied in the regressions to determine whether firms may use securitization facilities as a means to financing this potential. The results from Table III do not show concrete results in this regard, with economically insignificant marginal probability coefficients as shown in (2) and (5). The idea that firms with high upwards potential optimizing their growth strategy by using securitization is statistically supported but seems to have a small effect. The regressions with leverage and interaction effects reduce firms with high market to book values in the probability with which they use securitization. Given the range of the independent variable, we see that the changes in probability are not very big across the sample.

To test the first hypothesis, one should look at the difference in coefficients between credit rating dummies. The hypothesis states that the likelihood of maintaining an asset-backed security facility is concave in ratings which, by looking at the all firms sample seems to be confirmed. The reference point taken are the unrated firms, and firms with at least an AAA credit rating have 0.017 less chance of having an ongoing securitization program. Firms with between BBB+ and BBB- are

0.028 more likely to have an on-going facility than unrated firms, and this effect is robust when adding leverage and interaction measures in (3). BB+ to BB- have the highest marginal probability with a coefficient of 0.043 and this is robust over both model specifications and both samples. Lastly, within the total firms' sample, the B range credit ratings experience a decrease in marginal probability to 0.025 which is statistically significant and thereby displaying concavity in probability of the range of credit ratings. These results display robustness as they are similar when taking into account rated firms only. The new reference point for firms in the B and Below credit range shows that AAA range firms are less likely to securitize, and both BBB and BB credit range are more likely to securitize. The first hypothesis is henceforth supported by the above evidence.

The controls applied in the regressions shed additional light on the firm characteristics which determine the issuing of asset-backed securities. In line with the prediction, firms with high cash in hand have are less likely to use securitization. The table hence seems to support that this financing mechanism is used for firms with cash constraints. Vis-a vis capital structure considerations, this results shows that asset-backed securities would come under retained earnings as a way of supporting operations. Average standard deviation of returns and EBITDA as a share of total assets do not yield robust informative results as to the use of asset-backed securities in either of specifications. On the other hand, it is interesting to note the shift in sign of the EBITDA coefficient when going from a full to ratings' only sample. When considering all firms, table III reveals that firms with higher EBITDA as a share of total assets have a smaller likelihood of using securitization. When dropping unrated firms, the sign of the coefficient is reversed and rendered statistically insignificant. This could suggest that less profitable, and unrated firms tend to securitize their assets in an attempt to raise funding whilst evading public capital markets. Lastly, working capital has a significant impact on the probability of firms using securitization in both samples and also has the most significant impact on firms doing so. 10-k filings obtained in the data gathering methods of this thesis revealed that firms using securitization disclosed doing so for supporting their working capital requirements. These results show that the marginal probability increases by 0.387 in working capital as a ratio of total assets. The implication thereof, is that firms with relatively high working capital surpluses (i.e. high relative current assets) tend to securitize for reasons of flexibility which these programs may bring. Securitization facilities allow firms to quickly borrow at a low cost, and may quickly be refinanced depending on the form of this agreement with their financial institution. Working capital deficits may therefore rebalance through securitization borrowing and may have a lesser impact on the firm due to the lack of involvement of the public markets.

Table III shows the results of specifications (3) and (6) which have the added variables of leverage and the interaction thereof with each credit rating range. Leverage coefficients shows a positive correlation between the incidence of asset-backed securities' issues. This result confirms that firms of higher risk, as measured by the level of financial leverage, may decide to obtain additional financing through streams which do not involve capital markets. Moreover, the interactions between credit ratings and leverage should show how likely firms are to issues ABS when in financial distress. All interactions coefficients in the full sample display negative signs and only statistically significant for the BB and BBB credit ranges. Within the rated firms' sample, the all interactions are significant, and interestingly we see that the AAA credit range has a positive coefficient. This reinforces the concavity hypothesis, where we see that firms in distress within the highest credit rating category has a higher probability of utilizing securitization financing compared to low leverage AAA firms. We therefore see that within the safe firms, as defined by their credit ratings (AAA), but at the riskier tail (due to high leverage) will have a higher chance of using their securitization, which may be in order to remain within that AAA rating and limiting their public debt exposure. When going down the ratings, it may be more difficult for firms to do so as they may be more heavily constraint by certain covenants implied by the securitization programs.

4.1 Change in accounting treatment and level of SPE debt

The above section analysed firm characteristics which have a role in the likelihood of firms having an on-going securitization facility. This section will report results providing insight on the effect of a change in accounting treatment on the level of SPE debt. The sample is reduced to ABS firms which have been found to change their accounting standards, and the mean SPE debt will be compared from before to after the accounting change. To conduct a reliable test, the following test on equal variances is conducted, to determine whether a standard error adjustment is necessary:

$$H0: \sigma_U^2 = \sigma_C^2$$

$$H1: \sigma_U^2 \neq \sigma_C^2$$

Table IV shows the results from the one-sided z-test on means to be rejected at the 1% level. Given we have information on the two population's standard errors as reported above, a z-test will suffice. The means test is of importance in answering the second hypothesis, to determine whether the consolidation treatment has any effect on firm preference for issuing asset-backed securities. The table depicts insignificant difference in mean ratios, with firms using off-balance sheet treatments having around 13.0% of debt on their SPE's; and after the accounting change to on-balance sheet, these firms maintain around 16.1% of their debt on their SPE's. This result hence contradicts the

idea that securitization is exceptionally attractive for firms due to their off-balance sheet characteristics, though this merely presents a static, univariate picture of how SPE debt is affected by the accounting change. A further test is therefore run below in combination with the specification for the third hypothesis as shown on the next page in table V. In order to increase the understanding of the effects of the accounting change on firms' securitization behaviour, a dummy variable is applied in all specification, which takes the value of 1 from the year from the year they have done so onwards, and 0 otherwise. Table V shows that SPE debt as a ratio of total debt increases by around 4.8% with a change to on-balance sheet treatment, though is not statistically significant. The magnitude of the coefficient is reduced to an average increase of 0.5% when looking at the ratio of SPE debt to total firm assets and is again not significant at any level. The only conclusion which may be drawn is that our alternative hypothesis is not accepted, and we can therefore not see any systematic difference in firm preference for securitization, between the different accounting treatments. If the accounting treatment as imposed after the financial crisis has been to reducing asymmetric information, perhaps the increase in SPE debt is then justified by these statistics.

The table in the two previous table displays what type of firm-specific characteristics affect the level of debt on that particular firm's SPE. Dependent variables for SPE debt have been composed as ratios of total debt and total assets to find out which characteristics affect the relative preference of securitization over other types of debt instruments. Looking at the results from the total sample, it is noticeable that the most robust coefficients are "PPE" and "Capex", which are employed in this study as a proxy for investment. A one-unit increase in PPE divided by total debt is associated with an average decrease of $ 0.197 million in SPE debt as a fraction of assets, and is significant at the 5% level. The negative effect is also found in the regression of SPE debt normalized by total assets with a magnitude of $ 0.115 million. The interpretation of the coefficients suggests that firms with high investments tend to have a lower obtained amount of debt from securitization. Similar tests on the sample containing large firms only show that the results no longer hold; and firms with credit ratings have similar effects as the total sample. Capex is an additional proxy for the level of investment applied in the regressions, and these coefficients are significant and stable across all tests. When corrected for firm size and firm debt, the relative amount of debt extracted from SPE's decreases for firms with relatively high Capex. The coefficient sign goes against the expected effect as proposed in the theoretical framework, implying that firms with increasing capital expenditures decide to fund themselves with different financing mechanisms. This result may also be interpreted from the supply side, whereby investors and financial institutions may be less willing to get involved with high capital expenditure firms, though this is merely suggestive.

It is interesting to note that both specifications neither the lagged downgrade dummy or the acquisition dummy have significant effect on the amount of SPE debt. Contesting the expected effect, these results suggest that firms which have suffered a rating downgrade do not experience a statistically significant increase in SPE debt and firms undertaking acquisitions do not use securitization as a funding structure. Firms with higher earnings volatility measured as the average yearly standard deviation of retained earnings do not seem to have significant explanatory power in the amount of debt a firm obtains through asset-backed securities. The variable displays sign reversals across the different regressions and hence does not confirm that firms with higher earnings uncertainty have the highest amount of SPE debt. Similarly, firm profitability measured by earnings before interest tax and depreciation does not explain the level of debt obtained from bankruptcy remote entities. This result is robust across all specifications, and implies that difference in profitability does not seem to matter in the amount in which firms securitize their assets. And lastly, firms experiencing an increasing in working capital do not tend to increase their outstanding debt on their SPE's balance sheet.

The three included control variables show that they may have some effect on the level of securitization indebtedness. Firm size, as measured by the natural logarithm of its total assets is associated with a decrease in firm debt through their SPE, which is against previous belief. Theoretically, it was expected that a firm with an increasing asset-base, would have a greater ability to transfer these off to an SPE to obtain cheaper debt. The negative impact is significant in all regressions run on the specification as a ratio of total assets, and these results are not robust. The market-to-book ratio displays neither statistical nor economic significance. This result may be due to the fact that the change of market-to-book ratio will be negligible across the span of three fiscal years, and hence having barely any within firm variation. Leverage coefficients display inconsistencies across dependent variables, though this is stable between all three samples, and it is therefore difficult to conclude on the effects of leverage on the amount of securitization. Statistical significance is obtained in the credit ratings only sample, where an increase in SPE debt over total debt is reduced by an average of $0.268 million at the 10% level. On the other hand, when computing SPE debt as a fraction of total firm assets, an increase in leverage will increase the amount of firm securitization debt by an average of $0.127 million at the 5% level.

The results from these regressions found that understanding the way debt changes on a special purpose vehicle is difficult to understand through accounting changes. The main result which has been robust across three samples and with regard to the different specification has been the amount of investment of firm engages in. That is, firms which increase their investment outlays, measured

by PPE and CAPEX as a ratio of total assets, tend to reduce the amount borrowed through their SPE's. This goes in contraction to the proposed effect, and reasons for this would be highly speculative given the limited research in this field.

Conclusion

This thesis aimed at finding the determinants of asset-backed securities' in the US in the post-crisis period. It attempted in doing so by first analysing which type of non-financial firms were most likely to have an on-going securitization program during that period, and what their consequent characteristics were. Lastly, I attempted in finding the resulting effect of the new consolidation accounting treatment, which were imposed on US firms after the financial crisis.

Adding onto, and supporting the existing literature on asset-backed securities, it seems that the largest number of firms entering these programs are the ones with the most to gain. That is, firms below the 'A' credit rating, and above the 'B' credit rating. Since investment grade firms can obtain cheap finance they will generally do so, and hold their illiquid assets until maturity to reap their benefits. On the other side of the spectrum, below B rated, and unrated firms may find it hard to find investors willing to invest in their securitized assets. It is for this reason that firms between the BBB and BB credit rating have the highest likelihood of using securitization facilities. Hence, the results show that the likelihood of securitization is concave in credit ratings, and supports previous findings. When looking at the interaction between firm risk, expressed by leverage, and credit rating, I find that riskier firms in the AAA credit range are more likely to have an ongoing securitization facility. An additionally interesting finding is that firms with high working capital needs measured as a fraction of assets, tend to have a high chance of maintaining securitization facilities. This result may point out that firms use securitization as a means of obtaining short-term liquidity, as a support of their working capital needs. Furthermore, by investigating firms that have adopted an accounting treatment change over the sample, it was possible to analyse the difference in amount of debt obtained through the SPEs. Against the expectations, the level of debt obtained from SPE's did not have a significant impact on relative financing preferences for firms. The recorded effect showed a slight increased average use of securitized debt as ratio of total firm debt and this may suggest that more transparent accounting treatment allows for greater supply in the asset-backed security market, though further studies should elaborate on the results are not conclusive when tested in this research paper.

Lastly, when isolating asset-backed securities firms in one sample, accounting characteristics were analysed which might have an effect on the amount of debt obtained from SPEs. The most notable result is that increased investment activity results in lower levels of SPE debt, which does not support the claim that securitization is used to support firm growth. From the perspective of this paper, securitization has its function as a facilitator between debtors and creditors, whereby asymmetric information is reduced in comparison to subordinated debt. The benefits from securitization does not come to the cost of existing debt holders, as distressed firms (classified by their credit rating) have the lowest likelihood of utilizing securitization programs. Furthermore, securitization has been found to be most likely used by firms with high working capital. This result shows that firms with high working capital, and hence a high number of current assets relative to current liabilities, are optimizing their liquidity by making turning their assets into cash for profitable investments. It is interesting to note that firms with high growth options do not have an increased probability of using securitization. An implication thereof may be that firms with growth potential are financed through different credit channels.

Not all the results obtained in this research are conclusive, and therefore additional research could increase the understanding of these types of securities. Starting with the limitations of this research, I hope to inspire future research for an improved understanding on the determinants of asset-backed securities. First and foremost, the difficulty with which the data is gathered limited the sample to four fiscal years, which may hamper the precision of the coefficients over the panel regression. More technical research could be done as to understand at what discount firms transfer their assets to an SPV, and how this discount is affected by credit ratings, and determining whether these markets are fully efficient. Asset-backed securitization facilities generally come with covenants with which firms must comply in order to maintain it. It would be interesting to research how particular covenants affect the amount debt outstanding on the SPE, and what the effects are should these covenants not be met. This research found that accounting measures are not particularly good predictors of the amount of debt on the SPE. Further research could look at what type of factors, both internal (ownership structure and financial news) and external (credit spreads, supply and demand shocks) affect the amount of debt and compare it to the determinants of corporate debt.

It seems much of the research is focussed on non-financial asset-backed securities, and it would therefore be of interest to compare the different workings in different industries. The financial sector should be particularly interesting to investigate given the heavy regulatory changes they have had to endure at the passing of the crisis. Capital requirements are no restricting banks slightly as

they must maintain lower leverage ratios. In this manner, the new accounting standard should have had quite an impact on these types of firms as they may no longer load-off their assets. All in all, this research hopes to have set some interesting foundational work on post-crisis determinants of asset-backed securities, though more research must be done to get a broader understanding of their workings.

Appendix

Table I: Special Purpose Entity Statistics

The following table displays yearly statistics on the Special Purpose Entities' (SPE) balance sheets from fiscal year 2009 to 2012. The bottom most part gives an aggregation of the asset backed securities in use throughout those years, and the uppermost part delineates between firms using different consolidation treatments. Where the "number of firms using ABS" stands for the total number of firms in the sample using securitization, "Fraction of all firms" being the share of firms using securitization. "Total D/Total A" provides an impression of the total sample's average leverage ratio. "Total SPE Debt" shows the total funding firms obtained through securitization and "SPED/SPEA" gives the amount of average collateralization in that funding. "SPED/Total A" shows the amount of debt obtained by firms as a ratio of their assets and "SPED/Total D" tells about the share of collateralized debt as a fraction of total debt. "Limit/Total A" tells about the contractual limit on the amount of debt capacity as a fraction of firms' total assets. "Limit/Total D"[1] gives the maximum share of securitization funding as a ratio of total debt.

	Consolidated/ Unconsolidated	# Firms using ABS	Fraction of all Firms	Total D/Total A	Total SPE Debt ($ Millions)	SPED/SPEA	SPED/Total A	SPED/Total D	Limit/Total A	Limit/Total D
2009	C	81	1.4%	53%	874813	15.2%	5.3%	10.1%	2.1%	4.1%
	U	59	1.0%	28%	134900	82.0%	2.8%	9.9%	3.2%	11.4%
2010	C	89	1.5%	50%	823752	71.9%	4.4%	8.8%	2.1%	4.2%
	U	57	1.0%	24%	151176	76.5%	2.2%	9.1%	2.2%	9.4%
2011	C	114	2.0%	43%	892401	18.1%	3.7%	8.6%	2.1%	4.9%
	U	36	0.6%	34%	113324	75.2%	2.2%	6.6%	2.2%	6.7%
2012	C	113	2.0%	42%	870895	72.9%	3.3%	7.9%	2.3%	5.4%
	U	34	0.6%	34%	117795	76.0%	2.3%	6.6%	2.0%	5.8%
Total										
2009		140	2.4%	40.4%	1009713	48.6%	4.1%	10.0%	2.7%	7.8%
2010		146	2.5%	36.8%	974929	77.0%	3.3%	9.0%	2.1%	6.8%
2011		150	2.6%	38.2%	1005725	74.2%	2.9%	7.6%	2.2%	5.8%
2012		147	2.6%	38.3%	988690	47.3%	2.8%	7.3%	2.1%	5.6%

[1] Not all 10-k filings reported a limit of funding whilst having outstanding balances on the SPE's balance sheet. This results in a total SPED to be higher than Limit D which should not be possible in a perfectly balanced panel.

Table II: Summary Statistics

This table provides the descriptive statistics of the variables applied in the regressions. The variables are obtained for each firms between fiscal years 2009 to 2012 and will be matched to the asset-backed securities data on by CIK and year. The sample consists of 4758 firms over the course of the four years. Leverage, EBITDA/A and MTB have been winsorized at the 1% and 99% to take care of extreme values. The credit dummy displays the dummies given the following descending rank categories: AAA and above = 1, BBB and above = 2, BB and above =3, Below BB = 4, Unrated = 5 according to the S&P 500.

	Mean	Std. Dev.	Minimum	Median	Max	N
Size	5.990	2.370	0.000	5.930	12.920	14481
MTB	3.280	5.110	0.000	1.830	37.540	14481
EBITDA/A	0.040	0.290	0.000	0.100	0.450	14440
Leverage	0.160	0.180	0.000	0.120	0.930	14481
R&D/A	0.060	0.160	0.000	0.120	8.180	14481
Cash/A	0.250	0.240	0.000	0.170	1.000	14481
Capex/A	0.040	0.060	-0.800	0.030	1.000	14410
PPE/A	0.470	0.410	0.000	0.350	6.140	14348
Working Capital/A	0.320	0.230	0.000	0.350	2.010	14481
Std. Dev. Earnings/A	0.060	0.160	0.000	0.030	6.320	13726
Credit rating	4.320	1.170	1.000	5.000	5.000	14587
Acquisition dummy	0.340	0.470	0.000	0.000	1.000	14481

Table III

Likelihood of ABS program

The table below displays the coefficients obtained from the probit models, providing evidence on firm-specific characteristics leading to asset-backed securities issues. Regressions (1), (2) are identical in their specification with the latter reporting marginal effects. Specification (3) includes leverage, and its interaction between credit rating categories. A similar approach was undertaken for (4), (5) and (6) for a sample restricted to rated firms. The dependent variable is binary which equals to one in case the firm is engaged in a securitization program in that particular fiscal year and zero otherwise. "A or above", "BBB", "BB", "B or Below", all binary variables indicating the firm's credit category. All other variables or continuous variables corrected for the firms' yearly total assets. The coefficient z-statistics are reported in parentheses and *, **, *** stands for significance at the 10%, 5% and 1*** level, respectively.

	All Firms			Rated Firms		
	(1)	(2)	(3)	(4)	(5)	(6)
Size	0.271***	0.016***	0.265***	0.268***	0.035***	0.260***
	(13.75)	(13.08)	(13.27)	(10.97)	(10.83)	(10.28)
MTB	0.023***	0.001***	0.019***	0.032***	0.004***	0.023***
	(4.14)	(4.12)	(3.35)	(4.63)	(4.63)	(3.32)
A or Above	-0.278	-0.017**	-0.347	-0.755***	-0.098***	-0.839***
	(-2.46)	(-2.46)	(-1.61)	(-6.09)	(-6.05)	(-3.81)
BBB	0.465***	0.028***	0.828***	0.024	0.003	0.419**
	(5.81)	(5.76)	(5.64)	(0.27)	(0.27)	(0.17)
BB	0.706***	0.043***	1.014***	0.355***	0.046***	0.761***
	(9.48)	(9.22)	(7.11)	(4.35)	(4.34)	(4.28)
B and below	0.410***	0.025***	0.359**	Reference	Reference	Reference
	(5.33)	(5.27)	(2.35)			
Unrated	Reference	Reference	Reference			
SD. Earnings / A	-0.486	-0.029	-0.382	-1.154	-0.150	-0.733
	(-1.12)	(-1.12)	(-0.90)	(-1.16)	(-1.16)	(-0.76)
EBITDA / A	-1.039***	-0.063***	-1.020***	0.112	0.015	0.038
	(-5.14)	(-5.11)	(-4.99)	(0.29)	(0.29)	(0.0)
Cash & Liquid Inv / A	-2.882***	-0.175***	-2.745***	-3.489***	-0.453***	-3.292***
	(-10.75)	(-10.36)	(-9.99)	(-9.97)	(-9.84)	(9.10)
WC / A	1.4906***	0.090***	1.582***	2.985***	0.387***	3.185***
	(7.18)	(7.05)	(7.45)	(11.14)	(11.01)	(11.50)
Leverage			0.843***			1.209***
			(3.49)			(3.98)
Leverage*A or Above			0.358			1.241**
			(0.47)			(2.18)
Leverage*BBB			-1.516**			-0.813*
			(2.97)			(-1.75)
Leverage*BB			-1.233**			-0.982**
			(2.80)			(-2.21)
Leverage*B or Below			-0.223			
			(-0.58)			
Pseudo R^2	0.245	0.245	0.25	0.132	0.132	0.146

Table IV

Mean SPE debt & Accounting change

The table below presents the results from the t-test on equal variance for firms which have experienced an accounting change in consolidation treatment during fiscal 2009 to 2012. Mean and standard deviations are computed from the SPE values prior to and after consolidation. The null hypothesis is tested at the 1% level with the reported degrees of freedom.

	Mean	**Std. Error**	**Std. Dev**	**N**
Unconsolidated SPED/TD	0.130	0.025	0.180	51
Consolidated SPED/TD	0.161	0.042	0.300	50
Difference	-0.031	0.049		101
Ha: difference > 0			z = -0.625	

Table V

Determinants of SPE debt

The table below presents the coefficients obtained on the determinants of SPE debt firms obtain from securitization. The sample is restricted to firms with asset-backed securitization programs, and the models should shed some light on what type of firm characteristics lead to higher securitized debt. Three specifications are run per sample. The first sample being of all firms with an on-going securitization program, second with all firms with assets over $350 million, and thirdly with only rated firms. All regressions are run as fixed-effects model to determine the within firm variation. Hausman-tests are run to check the statistical possibility of doing so, and the results are reported at the bottom. All numbers are in $ millions, and *, **, *** stand for the 1%, 5% and 10% significance level, respectively.

	All Firms		Large Firms		Rated Firms	
	SPED/TD	SPED/TA	SPED/TD	SPED/TA	SPED/TD	SPED/TA
Size	-0.077	-0.050***	-0.022	-0.033**	-0.079	-0.051***
	(-1.61)	(-3.27)	(-0.50)	(-2.44)	(-1.67)	(-3.27)
MTB	0.002	0.000	0.002	0.000	0.002	0.000
	(1.23)	(0.71)	(1.33)	(0.92)	(1.38)	(0.96)
Leverage	-0.263	0.130**	-0.454**	0.072	-0.268*	0.127**
	(-1.61)	(2.51)	(-3.17)	(1.59)	(-1.66)	(2.50)
SD. Earnings / A	-0.075	0.002	-0.051	0.005	-0.058	0.001
	(-0.61)	(0.05)	(1.33)	(0.15)	(-0.47)	(0.05)
PPE / A	-0.197**	-0.115***	-0.074	-0.038	-0.204**	-0.119***
	(-2.20)	(-4.07)	(-0.72)	(-1.09)	(-2.28)	(-4.23)
Cash & Liquid Inv. / A	0.728**	-0.002	0.055	-0.031	0.688**	-0.000***
	(2.53)	(-0.24)	(0.50)	(-0.38)	(2.39)	(-0.000)
Working Capital / A	-0.211	0.002	-0.101	0.0152	-0.191	0.013
	(-1.08)	(0.04)	(-0.54)	(0.25)	(-0.98)	(0.22)
Capex / A	-0.986**	-0.595***	-1.030**	-0.593***	-0.854**	-0.522***
	(-2.52)	(-4.81)	(-3.03)	(-5.49)	(-2.15)	(-4.17)
EBITDA / A	-0.193	0.022	-0.213	0.036	-0.114	0.068
	(-0.67)	(0.25)	(-0.91)	(0.49)	(-0.41)	(0.78)
Lagged Downgrade Dum	0.009	-0.006	0.023	0.013***	0.026	0.014**
	(-0.39)	(-0.76)	(1.52)	(2.74)	(1.45)	(2.52)
Acquisition Dum	0.003	-0.006	0.002*	-0.008	0.006	-0.006
	(0.12)	(-0.91)	(1.65)	(-1.37)	(0.27)	(-0.87)
Change in Accounting treatment Dum	0.048	0.006	0.045	0.005	0.046	0.005
	(1.50)	(0.61)	(1.65	(0.58)	(1.45)	(0.52)
Hausman-test Outcome	FE	FE	FE	FE	FE	FE
R^2	0.08	0.15	0.10	0.15	0.08	0.17

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