



MSc in Corporate Finance
Course of Financial Statement Analysis

The Securitization for Non-Financial Firms, the ABS Market and the creation of a Truck-Loans pool of ABS.

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Accademic Year 2021/2022

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Preface and chapter details

During my university career, I had the opportunity to approach the world of work through three internships, of different matrix and sector, one in real estate and the second and third in the credit area of Mercedes-Benz Financial Services Italia and Diamler Truck Financial Services Italia.

A topic that these two areas have in common is the one dealt with in this thesis: securitisation.

In fact, it played a relevant role during the mortgage crisis of 2008 and to this day remains a valid tool, data in hand in strong recovery in use, of many credit and non credit institutions.

This is why I think it is interesting to focus on securitisation, trying to define when it can actually be used and properly assessing its costs and benefits.

In a bank-centric system like the European one, an instrument that is able to increase the lending power of banks and other institutions is of central importance.

In the first chapter of my thesis I provide an all-round perspective of the world of securitisation. After the introduction that touches on the historical aspects that have defined its current notoriety. I report on a trend analysis I performed on historical transactions based on data extrapolated from Bloomberg and Thompson Reuters.

I then focus on how it works and the agents involved in the process, I define on the basis of the characteristics offered by securitisation which investors are interested in this type of derivative.

Moving on to the effects within the balance sheets of the companies that use it, I define securitisation as a financing instrument,

Before making a brief reference to regulation, I focus on CDOs, defining their mechanism, their importance and dealing with their volumes on a time series basis.

I discuss the topic of rating, which is increasingly relevant in the credit market. After defining the effects of securitisation on the balance sheet, I take up Rosegg's study on the rating of securitising firms and carry out an audit on the balance sheets of the Italian banks that have carried out the largest securitisation programmes in recent years, comparing the rating assigned by Moody's with the operations carried out and the consequent repercussions on the balance sheet, in detail verifying what type of relationship exists between securitisation and rating.

In the second chapter, the one devoted to non-financial firms, i.e. those companies that can give credit but do not hold a banking licence, I therefore use Bloomberg data to look at the ABS market, which is composed mainly of two components, credit cards and auto loans, both of which are linked to the world of banks and the world of non-financial firms such as the captives of vehicle manufacturers.

I next analyse the securitisation carried out by Mercedes-Benz Financial Services Italy, relating to auto loans.

I define the benefits that this securitisation brought to MBFSI

The third and final chapter deals with the practical case.

I realised that although it is now a popular tool, some realities do not make use of it, as the volumes that would be securitised would be too small compared to the commitment and costs involved in the operation. Therefore, my idea is to create an SPV that would package and sell the credits of the various small companies, which could make the ABS market accessible to smaller realities as well.

This work is focus on the Truck segment in Italy. The target is setting up an SPV to securitise receivables held by heavy commercial vehicle finance companies in Italy.

After defining the market of the companies operating in this sector in Italy and the relevant Captives (parent company vehicle financiers), I obtained from the

deposited balance sheets and the relevant notes to the accounts the values of the loans contained in the balance sheet granted for the purchase of vehicles over 6000 kg by the main Captives in the sector.

The sum of these financings constituted for my study, the research pool on which to carry out scenario and sensitivity analyses by changing the variables involving the present value of the future cash flows generated by the sale of these credits.

I initially performed a sensitivity analysis by changing both the value of the A notes (less risky) out of the total and the discount rate, composed of 3-month Euribor (the reference rate in Italy for all vehicle financing transactions) + spread defined as the intermediation margin.

In the second simulation analysis I carried out, I verified the variation of the value of the pool of assets as a function of changes in the value of the Euribor rate. I considered it interesting to carry out this verification because of the recent increase in rates.

I then conclude the empirical chapter by including what are the Technical requirements to the effective implementation of this emission.

Conclusions as usual are given at the end of the paper.

Chapter 1: Introduction to securitization: a 360° overview

Historical background and explanation of the development through the different ages

Asset securitization began in the mid-1970s, when the Government National Mortgage Association developed pass-through securities backed by mortgages (Lockwood et al., 1996)¹.

By issuing residential mortgage-backed securities, mortgage bankers were able to raise funds more efficiently in the capital market to finance their originations of residential mortgages. It took only 20 years for the asset securitization market to become the largest sector in the U.S. capital market, with the outstanding balance exceeding one trillion dollars.

Two major facts contributed to the growth of securitization during the last 3 decades:

First, during the 1980s thrift crisis, asset securitization enabled thrifts to convert their residential and commercial mortgage assets to mortgage-backed securities. It significantly improved mortgage marketability and accelerated the settlement of bankrupt thrifts.

Second, the post-World War II baby boomers reaching home-buying age in the late 1970s caused a strong demand for homes for over 20 years.² Residential mortgage securitization allowed finance for the spike in population demand for houses.

¹ **Wealth effects of asset securitization**, Larry J. Lockwood, Ronald C. Rutherford and Martin J. Herrera, *Journal Of Banking and Finance*, 1996

² Asset Securitization ,Theory and Practice ,JOSEPH C. HU

Non-mortgage asset securitization was introduced in 1985, when the Sperry Corporation issued \$192.5 million in securities backed by computer leasing receivables (Minton, Opler and Stanton, 1997)³.

La notorietà di questo strumento finanziario senza dubbio ebbe una rilevante crescita a causa della crisi del 2008.

It is obvious watching at the graph down below that ABS were skyrocketing in the interval of time 2000-2006, from 2008 as reported in the graph n2, extrapolated computing the differences in ABS emission from 1985 to 2022, that the biggest decrease in the ABS emission is related to 2008 crisis, with a variation of -50911 reached at the beginning of 2012.

Securitization was recognized as a direct impact of the subprime mortgage default and the crash in asset-backed commercial.

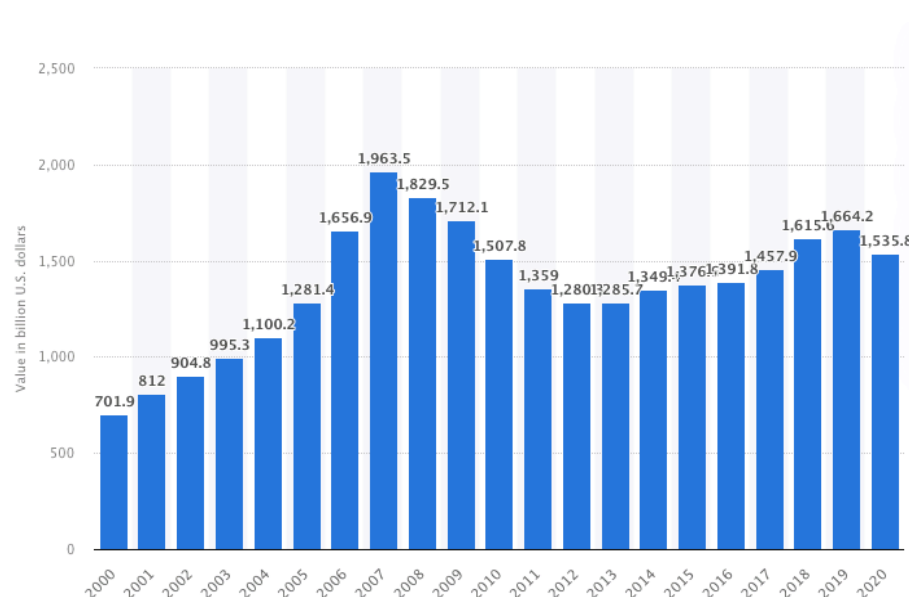


Chart n1 Created by the Author using data from Bloomberg, Thomson Reuters, Dealogic. SIFMA⁴ Database.

³ Asset Securitization Among Industrial Firms
by [Bernadette Minton](#), [Tim Opler](#), and [Sonya Stanton](#)
November 1997

⁴ <https://www.sifma.org/resources/archive/research/>

Chart n1 shows the volumes of ABS traded on the US market in the 2000/2020 time frame. Values in billions of dollars.

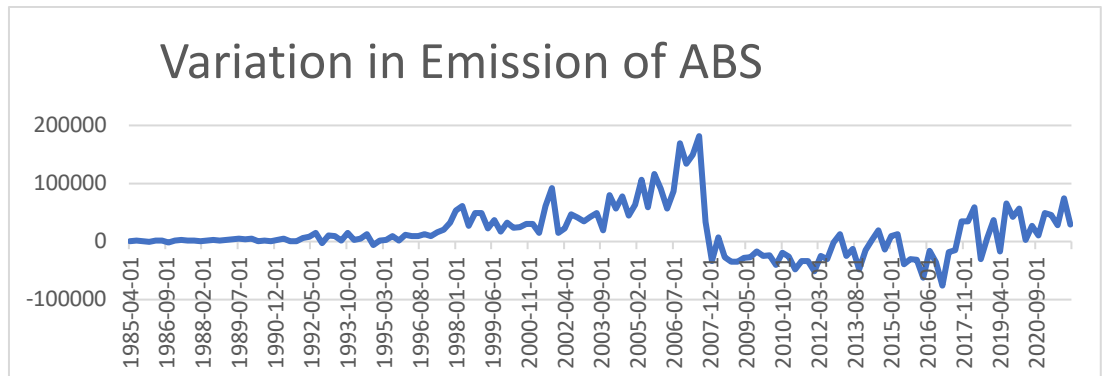


Chart n.2, Variation in emission of Asset Backed Securities, quarterly values, From jan 1985 to September 2022, Source Nordigen⁵ Database, Created by the Author.

Also, for nonfinancial firm there was a huge reduction in terms of utilization. Asset-backed securitization by nonfinancial companies fell precipitously during the financial crisis. SPE debt was about \$176 billion at the end of 2008, but by the end of 2009, it had dropped to little under \$80 billion. (Lemmon 2014)

The flexibility and wide application of the securitization technique, though advantageous to banks that employed it, also contributed to its misuse in the markets. By giving banks the ability to move assets off the balance sheet, ABS became a vehicle by which low-quality assets such as subprime mortgages could be sold on to investors who had little appreciation of the credit risk they were taking on.

1. The shadow banking system

In a classic banking regime there is no detachment between the borrower and the lender. The bank does its own credit analysis, offers the loan to its client, and monitors the client over the life of the loan. In securitization, however, the

⁵ <https://nordigen.com/>

link between the borrower and the bank is disconnected. The loan is packaged into different pieces and moved onto an unknown client base. As a direct consequence, there is less incentive for the arranger to be risk conscious.

This becomes a potential negative issue when banks set up a parallel circuit, now termed the “shadow banking” system, where they are not bound by a regulatory regime that normal banks must adhere to. For instance, in a vanilla banking regime banks must keep a certain percentage of deposits against their loans, but this does not apply if they fund themselves via the commercial paper market, which is uninsured by a central bank's discount window.

therefore, the shadow banks' major risk is when their commercial paper investors do not want to roll their investment anymore and leave the shadow bank with a funding problem. As a result, they might need to tap into the outstanding credit lines of regulated banks or sell their assets at fire sale prices. This is what happened in the asset-backed commercial paper (ABCP) crash in August 2007.⁶

2. Lack of transparency

Some of these products became extremely complex and started to look like a black box that was difficult to analyze by outside parties who sought to make an assessment on the value of the investment. For instance, the mark-to-market value was not only related to credit spread widening of the tranche, but also changes in correlation risk within the credit portfolio, which had different impacts on different tranches in the structure. As a matter of fact, default correlation is a statistic that cannot be observed in the market, so any pricing model that uses it as an input parameter is, to a certain extent, subjective.

3. Credit rating agencies (CRA)

⁶ Suleman Baig, Moorad Choudhry. “The Mechanics of Securitization: A Practical Guide to Structuring and Closing Asset-Backed Security Transactions”.

The CRAs publicized their rating methodologies, which had the cachet of statistical logic but were not understood by all investors; moreover, they were in hindsight overly optimistic in issuing ratings to certain deals in which the models used assumed that the likelihood of a significant correction in the housing market on an (inter)national scale was virtually zero. The favorable overall economic conditions and the continuous rise in home prices over the past decade provided near-term cover for the deterioration in lending.

Functioning explanation

Asset securitization is a method for lenders to raise funds in the capital market by selling securities whose principal and the connected interest payments are linked to a pool of specified cash flows owned by a SPV or SPE.⁷ The cash flows, underwritten by the financial intermediary, are sold in the form of securities that are backed by the cash flows of the assets sold. The securities are therefore called asset-backed securities (ABS) to the SPV.

Basically, the Securitization process comprises 3 different entities.

First, **the originating firm**, which within its assets, holds financial receivables that it intends to liquidate in order to obtain immediate liquidity rather than a cash flow subject to various maturities and risks.

Second, **the servicer**, who frequently serves as both the originator and the seller of the assets that are sold to the SPE, performs the servicing role. In order to perform the servicing role, the servicer first collects the interest and principal cash flows produced by the underlying assets and transfers them to the investor via the SPE (holder of certificate of beneficial interest). Working with

⁷ The Mechanics of Securitization: A Practical Guide to Structuring and Closing Asset-Backed Security Transactions.

late-paying debtors, selling off defaulting assets, and giving investors fast and accurate cash-flow information are all crucial components of the servicing role. It's important to remind that in many cases the servicer role is act by originator, in order to cope with delinquency situations exploiting the advantages deriving from the lender-client relationship.

Third, **The SPV** , that is generally a corporation that has been set up specifically for the purpose of securitization and is usually domiciled abroad. The formation of an SPV guarantees that the underlying asset pool is kept distinct from the originator's other assets.

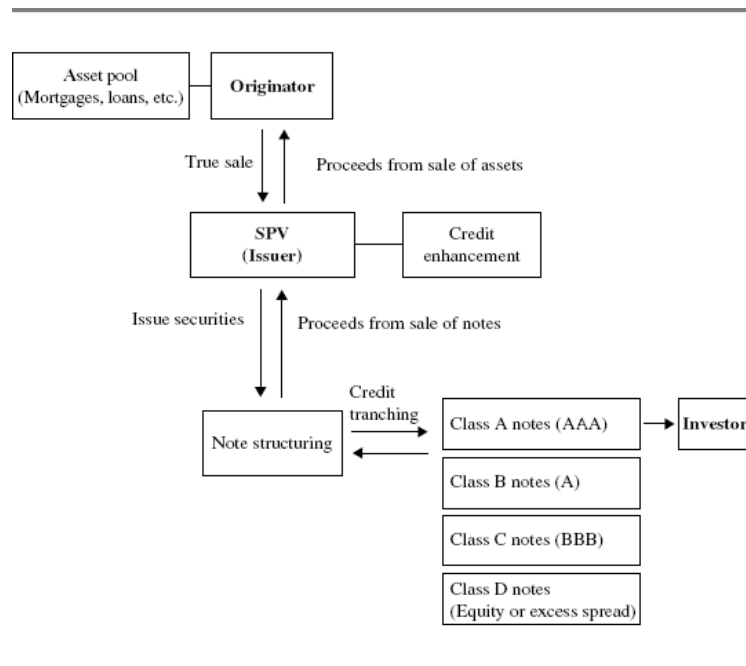
This process is put in place as a sort of insurance for the buyers, in fact, in the event that the originator is declared bankrupt or insolvent, the assets that have been transferred to the SPV will not be affected.

But on the other hand if the underlying assets begin to risky deteriorate in quality and are subject to a ratings downgrade, investors have no recourse to the originator.

Being a distant entity from bankruptcy, the SPE has no assets besides the loans it bought from the lender and no obligations outside those related to the issued security.

In order to prevent double taxation at both the investor level and the issuing trust level, the legal structure must be set up so that the SPE is considered a non-taxable company. The obligations and interests of the issuer, trustee, investor, custodian of the asset pool, and security servicer must also be outlined in distinct but coordinated legal agreements.⁸

⁸ The Mechanics of Securitization: A Practical Guide to Structuring and Closing Asset-Backed Security Transactions.



This graph represent the relation of the different entities involved in the in a typical ABS emission.

Analyzing more in deep the instruments traded, according to US literature, the acronym by which the securities issued are identified identifies the nature of the credits sold; in particular, securities are called MBS (Mortgages Backed Securities) if the underlying is of a real estate nature (residential or commercial mortgages) or ABS if the underlying is of a financial nature (consumer credits, leasing credits, car financing, etc.). This distinction is not found in the European market.

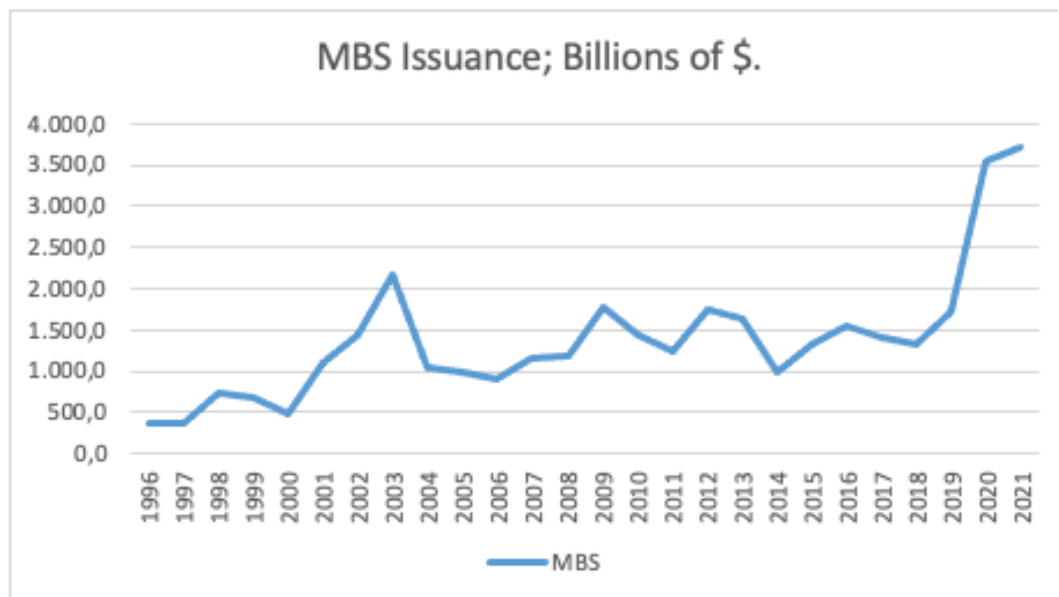


Chart n.3, MBS issuance from 1996 to 2021, Billions of dollar yearly. Source (Bloomberg). Created by the Author.⁹

Accounting effects

From a balance-sheet point of view, the SPE has no assets other than those purchased from the originator, and no liabilities other than those of the ABS it issues

Those ABS then, are rated and after were sold in the capital markets.

Implying that the underlying assets are taken out of the originator's balance sheet and cash is added. Companies are only required to list the portion of the ABS that they guarantee as a liability on their balance sheet under certain circumstances. As a result, unlike traditional debt, securitization does not always result in an increase in a company's liabilities.

Applied to banking, securitisation allows banks' loans to be transformed into marketable bonds. Facilitating the disinvestment of non-performing and substandard loans of banking institutions allows not only to transfer the credit

⁹ Mortgage Backed Securities issuance data downloaded from Bloomberg.

risk to others, but also to redevelop their loan portfolios, to downsize asset items ultimately freeing up resources that can be reinvested in alternative uses.

Securitization can be viewed as a source of financing for the firms, the three main results from the implementation of the securitization process are¹⁰:

- the removal of the loans from the balance sheet
- the immediate retrieval of financial resources, that can be reinvested
- the transfer of credit risk to others

Specifically, by issuing an ABS to raise funds to finance the origination of loans, the financing has the following 5 topics:

- A SPV is in charge to issue the ABS
- In terms of accounting standards, the issuing of an ABS is an asset sale instead of debt financing
- An asset-backed security requires the servicing of the underlying assets for the investor.
- The credit of the asset-backed security is derived primarily from the credit of the underlying assets (the collateral).
- There is invariably a need of credit enhancement for the asset-backed security.

CDO - Collateralised Debt Obligation

Certainly, one of the key features that made ABSs successful is the fact that AAA rated tranches guarantee higher returns than AAA rated bonds.

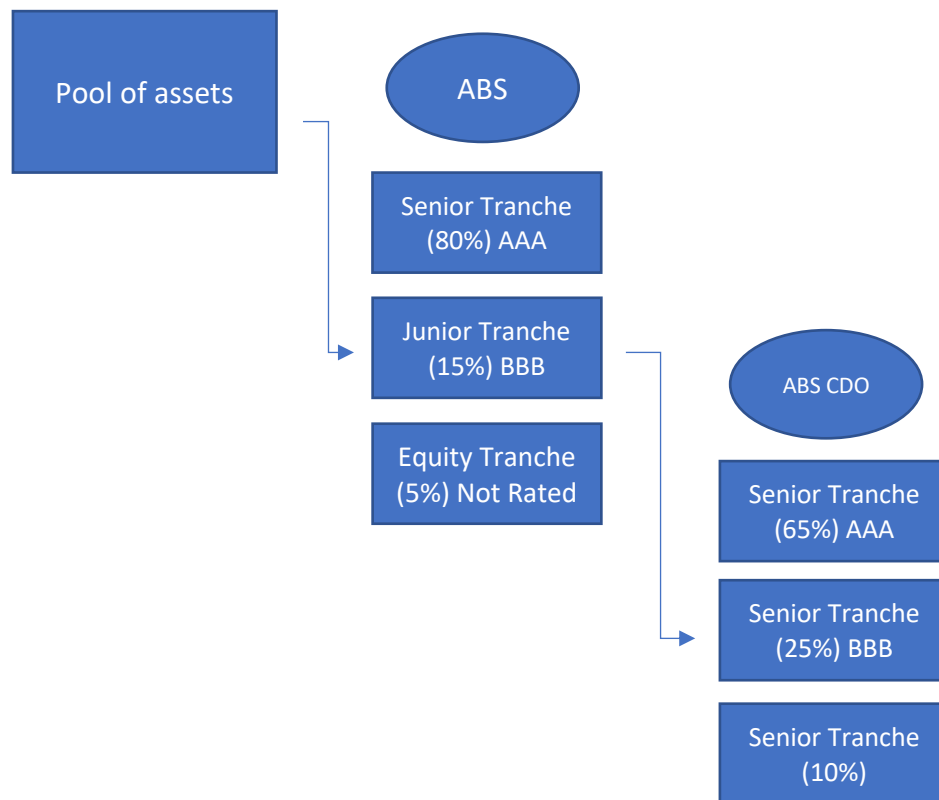
Finding investors interested in mezzanine tranches, on the other hand, is more difficult.

This situation has driven financial innovation towards the creation of CDOs,

¹⁰ The Mechanics of Securitization: A Practical Guide to Structuring and Closing Asset-Backed Security Transactions.

which can be defined as the ABS of ABSs.

Below is a chart showing the structure of this instrument.



In the mechanism behind a Collateralized Debt Obligation, the issuing company does not issue bonds to finance investment projects, but rather buys several tranches of bonds and converts the package into a CDO. Subsequently, the latter is placed in a project company, also called a special purpose vehicle, which will distribute the income from the ABS bonds among several tranches. Speculative-grade corporate bonds and credit classes of asset-backed securities make up the underlying assets of CDOs. These assets, which are securities in and of themselves, are diverse in contrast to the asset-backed securities' homogeneous underlying assets (consumer and business loans). Additionally, the sponsor (or sponsor-designated portfolio manager), who establishes the SPE that issues the CDO securities to investors, manages the underlying assets for CDOs as an investment portfolio.

A *collateralized loan obligation* (CLO) and a *collateralized bond obligation* (CBO) are two separate forms of asset securitization transactions that are included under the umbrella term CDO . A CLO is often a funding tool for a commercial bank, which obtains cash on the capital market by offering notes of beneficial interest issued by a SPE to investors in exchange for its holding (or origination) of commercial and industrial loans (C&I loans).

On the opposite side, a CBO serves as a financing source for qualified money managers. In order to finance the acquisition of a group of corporate bonds, asset-backed securities (usually with BB or B ratings), or equity securities, a money manager creates a SPE and offers notes to buyers. Both CLOs and CBOs are forms of direct capital-market financing mechanisms that link individuals who are seeking finance and those who are providing it, making them similar to asset-backed securities from the perspective of funding. There are several reasons why CDOs are issued, just as there are numerous technically different CDOs. Sponsors often issue CDOs for one of three reasons: arbitrage, capital relief, or risk management. Arbitrage was the main one of the three that significantly facilitated the market expansion for asset-backed securities.

Greenbaum and Thakor (1987)¹¹ present a comparison between the 'buy and sell' and the 'buy and hold' model, thus comparing funding through deposits and funding through ABSs.

The underlying assumptions of the model are that investors and the bank are risk-neutral, while depositors, usually small and medium-sized savers who do not turn to the market, are risk-averse.

The authors, through the development of an economic model under various assumptions, show that:

¹¹ **Bank funding modes: Securitization versus deposits**, *Stuart I. Greenbaum and Anjan Thakor*, 1987

- in a perfect market, in the absence of information asymmetry, government guarantees on deposits and regulation on banks, it is indifferent to fund funding through deposits and securitization, as both are Pareto-efficient solutions ;
- assuming now the presence of information asymmetry and leaving the other assumptions unchanged, a dual equilibrium is reached, as the bank will securitize to fund qualitatively superior exposures and will choose the deposit channel to fund worse assets; the choice depends, therefore, on asset quality and information cost;

Therefore, securitization becomes convenient when third parties, such as insurance companies or funds, guarantee the transaction.

Comparing these conclusions with reality, it is easy to see that the actual market situation is somewhere between the second and third conditions: there are government guarantees, but not high enough to completely nullify the risk of deposits; likewise, there is regulation that requires a regulatory capital that is not 'low' but proportional to the riskiness of bank management. Consequently, the choice of information cost, which, thanks to financial innovation and the intervention of figures such as the rating company (if they operate as required by law), the arranger, and the SPV, is less in securitizations than in deposits.

Interestingly, the factors that determine whether or not to securitize are the same as those identified in the drivers of ABS market development in Europe (especially regulation).

The legal perspective

The Italian regulation

Law No 130 of 30 April 1999¹² governs securitization in Italy. This law was introduced to remedy the problems that discouraged its use, continuing with the regulatory process previously initiated through Article 39 of the T.U.F. which allowed one's financial resources to be invested in any asset and consequently also in credits.

Law 130/99 provides that the credits subject to the securitization operation must be pecuniary and identified in block.

The operation, according to Italian law, provides that the proceeds of the placement of the securities on the market are used to pay the price of the assignment and the repayment of the principal and payment of interest is guaranteed by the amount of the assigned receivables.

Types of investors

Here I want to define the different investors that are attracted by Asset Backed securities investments. We can divide ABS investors into three separate categories based on the assumption that everyone is looking for a different purpose.

Investors who are looking for a high return on their investment The sorts of investors changed as the asset securitization industry grew and got more sophisticated. The most major investors in asset-backed securities in the early stages of the market were yield-oriented investors, such as savings and loan

¹² https://www.consob.it/documents/46180/46181/dlgs58_1998.pdf/e15d5dd6-7914-4e9f-959f-2f3b88400f88

associations and commercial banks. These investors are also known as spread bankers because they focus on the spreads between the costs of their funds and their investment returns. (It's important to note that yield investors are not the same as junk bond investors, often known as yield-oriented investors.) Because they were the first to securitize their assets, they were naturally drawn to the securitization market. They were well aware that asset-backed securities yielded much more than corporate bonds with similar maturities and credit ratings. Another way to put it is that asset-backed securities provide investors significantly higher yield spreads.

In the fixed-income market, all assets' yields are compared to comparable maturity Treasury securities (Treasury securities) that are regarded credit-risk free, or credit-risk free in technical terms. The yield spread is the difference in yield between a fixed-income instrument and its comparable-maturity Treasury.

In the early stages of market growth, when their investment features were novel and little understood, asset securitization instruments enticed investors with generous yield spreads. Even now, the yield spreads on asset-backed securities are significantly higher than those on corporate bonds with identical maturities and credit ratings. The attractive yield spreads to yield-oriented investors have contributed greatly to the asset securitization market's rapid growth and rising popularity.

Investors Who Seek Maturity Just as some investors are limited to investments with specific credit ratings, others are limited to specific age ranges. As previously stated, asset-backed securities have the advantage of providing investors with several maturity options within a single transaction due to maturity tranching. For example, one residential mortgage-backed transaction may have maturities ranging from one to three, five, seven, ten, and thirty years. As a result, money market mutual fund managers or commercial banks may purchase an RMBS with a one- or three-year maturity. A portfolio manager for an insurance firm may purchase a 5- to 10-year maturity RMBS. A pension

fund management may buy an RMBS with a maturity that goes from 10 to 30 years.

Investors Who Value Credit It is well accepted in investing theory that risk and return have an inverse relationship: the greater the risk, the greater the return, and vice versa. Because asset-backed securities are mostly backed by consumer loans, investors regard them as having a higher credit risk. As a result, credit ratings are a major consideration in the eyes of investors. This is especially true for institutional investors, who have a fiduciary duty to the funds they administer and are thus limited to assets with only investment-grade credit ratings. (These are credit ratings that are higher than BBB–/Baa3.) In other words, these investors were not permitted to invest in any assets having non-investment-grade credit ratings (BB/Ba1 or lower).

Rating

The rating in the credit world plays an important role, its primary function being to define the creditworthiness associated with a financial institution, a loan, a lease, etc. in such a way as to inform the creditor, the market or the potential investor in securitised securities of the risk associated with it.

Credit institutions usually have internal ratings, which can be calculated on the basis of balance sheet parameters (ratings with financials) or without financials (ratings without financials); they play a key role both in the granting of credit, since a good rating (e.g. AAA) is usually linked to good credit conditions and a good credit rating (e.g. AAA). AAA) are usually linked to more advantageous lending conditions, such as a lower interest rate compared to a lower-performing rating, and in the Run-off or Review phase, i.e. an assessment usually carried out on large amounts aimed at verifying the creditor's state of health, also in terms of any legal damages that may have occurred between the period of granting credit and the review period, as well as, obviously,

verification of the status of instalment payments (e.g. financing on a purchased vehicle).

Obviously in the securitisation process, the rating is entrusted to external companies, which must provide an impartial assessment of the object of analysis.

The rating is outsourced to external entities because the credit institution securitising its assets may be interested in rating the securitised securities more positively.

For this reason, the issuer hires credit rating agencies to assign ratings to issued bonds in order to give investors an indication of the relative creditworthiness of the bonds (and so facilitate the sale). Ratings, on the other hand, are not intended to predict default or loss.

Generally, Standard & Poor's and Fitch ¹³assign a rating based on the likelihood of failure or the first dollar of loss; that is, a shortfall of even \$1.00 in bond payments is deemed a default. Moody's, on the other hand, gives ratings based on the concept of expected loss. "Expected loss is a function of the probability of default and the expected severity of loss given default," they write.

Then, the rating is derived by comparing the predicted loss to a Moody's idealized loss table showing expected loss by maturity.

The credit rating agencies will next conduct a review of the transaction's asset portfolio, legal framework, and liability structure. As part of the portfolio analysis, they will need a file including the portfolio data, as well as historical performance data for the assets, which will be compared to the past performance of similar assets (as detailed earlier). The portfolio analysis will yield the portfolio's base case projected defaults and loss severity. These are transaction-specific for the portfolio of assets underpinning the transaction.

¹³ Rating Agencies

Standard & Poor's provided the following assumptions for the stress imposed in a triple-A- rating scenario in the 2021 released credit card ABS rating criteria.¹⁴

1. Losses are 3.0 to 6.6 times the base-case over 12 months.
2. Payment rate immediately declines to 45 percent to 55 percent of the
3. base-case.
4. Bond coupon increases by 1 percent per month and reaches 14 percent to 16 percent.
5. Portfolio yield immediately declines to 45 percent to 60 percent of base-case.
6. Excess spread immediately declines to negative 5 percent.
Purchaserateimmediatelydeclinesto0percentto6percent.
7. Servicing fee is 2 percent for prime bankcard receivables; 3 percent to 8 percent for non-prime bankcard receivables.

A credit class has to survive the above scenarios at the same time in order to be receive a triple-A credit rating.

Relation among Rating and Securitization

In this part of my thesis I define whether there is a relationship between the rating given to a particular firm and the use of securitisation.

With respect to credit ratings, firms with a rating of A or higher are less likely to use securitisation 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 securitisation since these firms already have access to investment-grade bond and commercial paper markets.

¹⁴S&P Global Ratings 2021 Annual Global Corporate Default And Rating Transition Study

As previously stated, one of the advantages of securitisation lies in the fact that one can access liquidity not by placing the risk of the demand on one's creditworthiness but rather through the valuation of the credit being securitised.

Thus, companies that have a worse rating than the country in which they operate may be enticed by the use of this instrument, which would guarantee them a cheaper form of financing than the classic financing through loans with rates assessed according to the risk of the requesting company.

Therefore, I carried out this analysis focusing on the banking sector, and I could not avoid making a reference to it even though the thesis is focused on non-financial-firms.

In the timeframe between 2015 and 2021, the main Italian banks that have implemented derisking initiatives of bank assets through securitisation transactions are:

- Unicredit about 47 billion.
- MPS about 43 billion.
- Intesa San Paolo 25 billion.
- Banco BPM 19 billion.

Through the Moody's portal I checked the updated ratings assigned to the above-mentioned banks.

BANK	RATING
MONTE DEI PASCHI DI SIENA	Ba3
UNICREDIT	Baa1
INTESA SAN PAOLO	Baa3
BANCO BPM	Baa2
COUNTRY	COUNTRY RATING
ITALIA	Baa3

Table n.1 created by the Author, based on Moody's ¹⁵ratings.

It is therefore interesting to see what percentage of the total assets of the different banks was used for securitisation.

The financial data were taken from the 2019 and 2020 balance sheets filed by all 4 banks.

The graph below shows that the bank with the worst Moody's rating is also the one that used the most securitisation in relation to its assets.

With a total ratio of 33%.

This is followed by Banco BPM, Unicredit and finally San Paolo.

¹⁵ <https://www.moodys.com/>

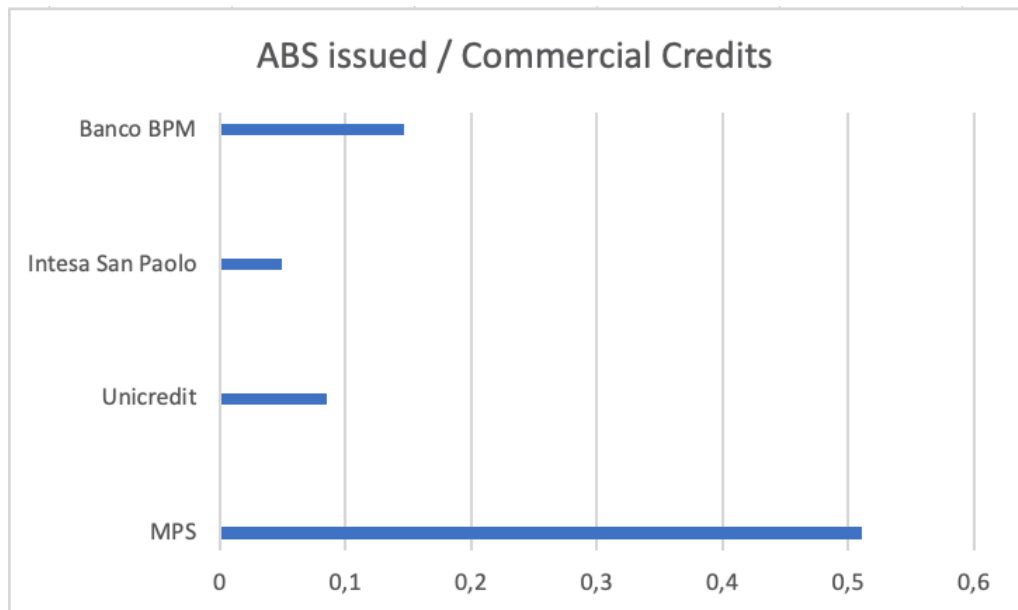


Chart n4, ABS issued/ Commercial credit ratio comparison, Graph created by the author,

All the data were extrapolated from the Balance Sheets of the 4 banks represented.

The result obtained on this small but relevant sample aligns with the findings of the study by Rosegg of the University of Rotterdam.

It is evident from his analysis that the majority of ABS issuances are not made by companies with good ratings, but at the same time focusing on companies with a Baa rating he found no relevance of what was stated prima, in fact the three banks with a Baa rating (Intesa San Paolo, Unicredit and Banco BPM) do not report a securitisation utilisation proportional to the loans held that correlates with the rating.

Instead, monte dei paschi di siena, which holds a worse rating, Ba3, is the Italian bank that used securitisation the most, in line with what was stated earlier and not in contrast to rosegg's study focused on Baa rated firms.

Thus, we can define the banking securitisation landscape as follows.

The largest use was made by MPS, followed by Banco BPM, Unicredit and Intesa San Paolo.

Based on the erroneous assumption that securitisation is always correlated with rating, then we should expect the largest securitisers in Italy to be, in descending order, Monte dei Paschi di Siena, San Paolo, Banco BPM and Unicredit.

But as previously shown by Rosegg, for companies with a Baa (or BBB Standard and Poor's) rating, this correlation does not occur. Thus, a distribution results as follows.

In the specific case analysed

With regard to the effects on liquidity, it confirms what was reported by Inasmuch as even though securitisation is a financing instrument, it has no effect on the balance sheet with the value of liquidity as the value received from the sale of the loans can be used, in this case, by the bank to repay its liabilities.

Chapter 2

Securitization For Non-Financial Firms

Effects related to the issuance of ABS

Previous studies show that the use of securitisation affects the wealth of the company that benefits from it.¹⁶

The outcome is correlated with the sector in which it operates.

According to Modigliani and Miller (1958),¹⁷ capital structure is unimportant in a society where there are no transaction costs and perfect information. This would imply that a company employing securitization wouldn't produce any value or destroy any value. However we can define 2 main gain effects that securitization has on the issuer.

Diversification

As previously mentioned, one of the advantages given by the utilization of securitizations is the possibility to issue securities with a higher credit rating than

the rating of the originator.

As some organizations, such as pension funds, are mandated to hold the majority of their assets in the highest rated securities, having an investment grade rating gives access to a bigger portion of the debt market. The ability to

¹⁶ **Bank funding modes: Securitization versus deposits**, Stuart I. Greenbaum and Anjan Thakor, 1987

¹⁷ Modigliani, F., Miller, M. H. (1958). The Cost of Capital, Corporation Finance and the Theory of Investment. The American Economic review, 48(3), 261-297.

issue securities with a separate rating is made possible by the division of the originator's and SPE's credit risks.

Bankruptcy costs reduction

Securitization has been shown by Gorton and Souleles (2005) to lower the expenses of bankruptcy.

Securitization allow to transferring assets from the balance sheet to a SPE bankruptcy remote.

The ABS market analysis

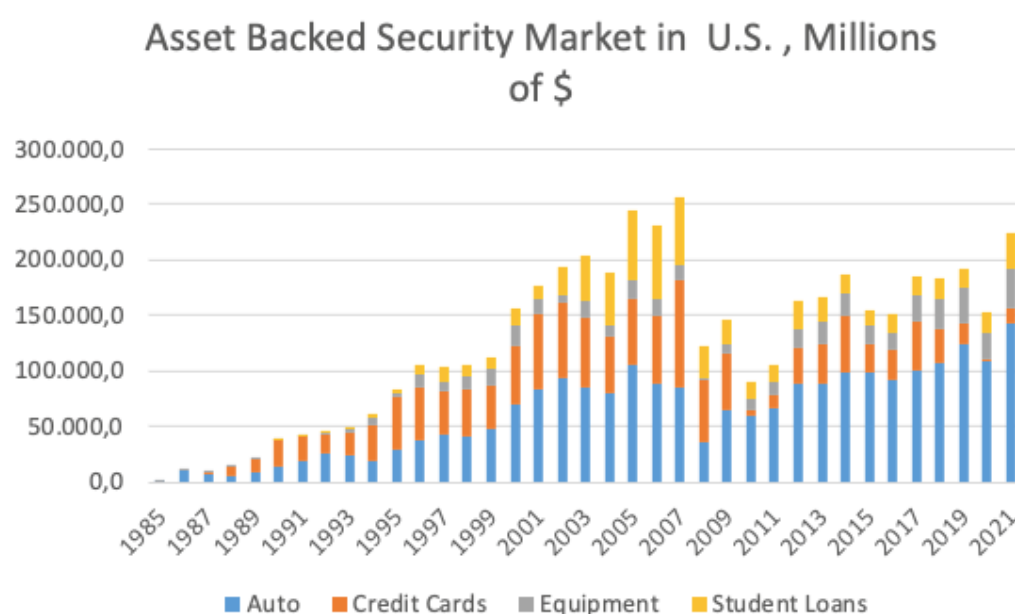


Chart n 5, created by the Author, annual issuance of ABS ¹⁸composition in US. (millions of Dollars)

¹⁸ <https://www.sifma.org/resources/archive/research/> Data from Bloomberg, Dealogic, Thompson Reuters

The two main components of the ABS market are credit card receivables and auto loans, so it is important to define both in detail.

The common feature of these two financial instruments is that they can both be issued by non-financial firms, of course credit card receivables and auto loans are often issued by banks, but they are not the only issuers.

I will therefore begin by specifying how they work and the various types of issuers.

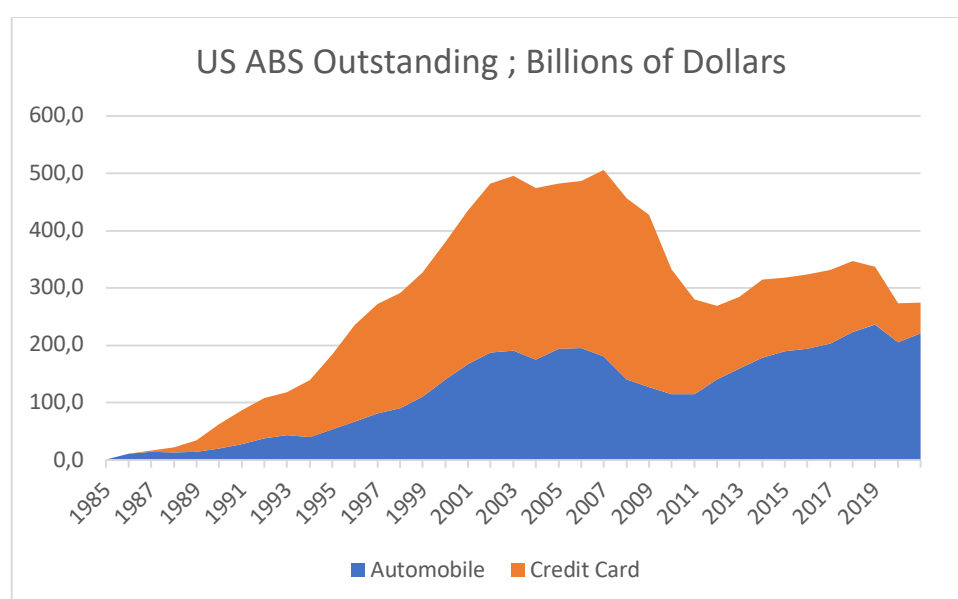


Chart n 6, US ABS Outstanding value in Billions Of Dolars, Graph created from the author utilizing Bloomberg and Thompson Reuters data available on SIFMA.¹⁹

Credit Card ABS

A credit card ABS's underlying collateral is made up of account receivables created by the consumption expenditures of thousands of users. Each customer (cardholder or account) incurs charges on credit card purchases of goods and services. When a consumer charges a purchase on a credit card, the credit card provider effectively provides the user a short-term unsecured loan. The consumer must repay the issuer the next month on the charged amount. (If the

¹⁹ <https://www.sifma.org/resources/archive/research/>

customer only repays a portion of the unsecured loan, the remaining balance will be automatically funded by the issuer, and a finance charge will be assessed.)

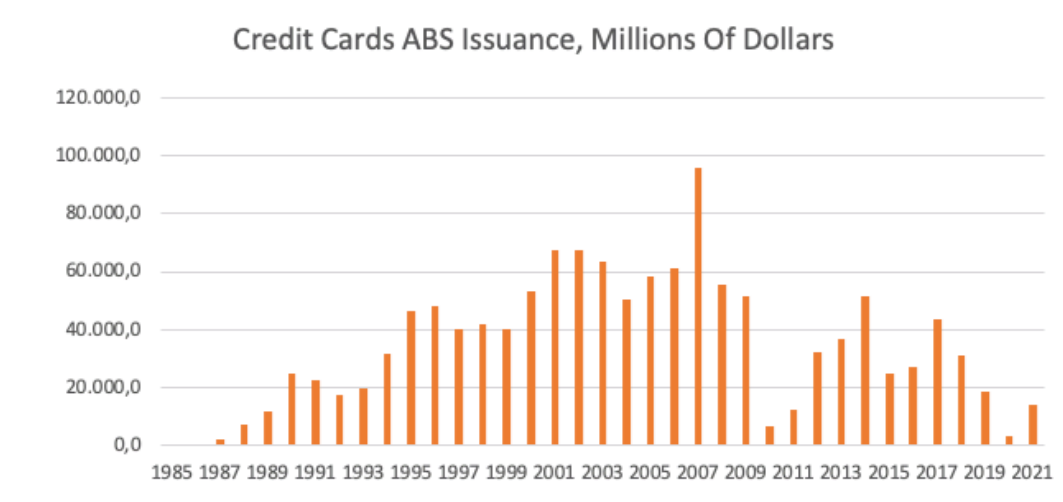


Chart n7, Credit card ABS issuance from January 1985 to June 2022, Graph Created by the Author with Data downloaded from SIFMA.

Issuers

Credit card ABS are classified into three varieties according on the role of the seller/servicer: bank card, private label card, and charge card. A bank card, as the term suggests, is issued by a commercial bank with cash-flow receivables produced from consumer purchases of goods and services made using a revolving co-branded credit card, such as MasterCard or Visa. A retailer, such as Sears or Macy's, issues a private label card, with the receivables produced by a consumer's charges on solely the items and services provided by the merchant. A charge card can be offered by a bank or financial institution, such as Discover or American Express, to ease customer spending on goods, travel, and entertainment.

Auto Loans

To deeply understand the mechanisms related to the empirical case in the last chapter of this thesis, it is useful to define the Auto Loans.

Similar to residential mortgages, auto loans are secured by collateral, have an amortization schedule, and are subject to cash flow instability because of prepayment. Auto loans, on the other hand, have a significantly smaller loan amount and a lot shorter amortization plan. Furthermore, unlike residential mortgages, the collateral used to finance auto loans is degrading rather than rising in value.

A typical auto loan, for instance, has a fixed interest rate and a 60-month amortization period²⁰. But Similar to residential mortgages, auto loans also allow for penalty-free prepayment. By making a greater monthly payment, the borrower may potentially accelerate the loan. if the prepayment is higher, the maturity can steeply decrease, also to 30 months.

Similar to credit card ABS, auto loan ABS also have three main categories of issuers:

domestic captive prime issuers, like the finance divisions of Fiat (LEASYS);

foreign captive issuers, like the finance divisions of Japanese, UK, and American car manufacturers (Ex: Ford Financial services) ;

and sub-prime issuers, like auto finance firms like Household and AmeriCredit.

As shown in the following graph ,Auto Loans represent a large market in the US, in constant growth. Except for two specific period, beginning of 90s and following the 2008 crisis.

The contraction in the economic growth generated a reduction in the long term assets acquisition and consequently the Auto Loans reflected this decrease in volumes.

²⁰

The period is taken as an explanation, leasing and financing have a maturity ranging from 48 to 72 months, typically. 60 months is the most common option.

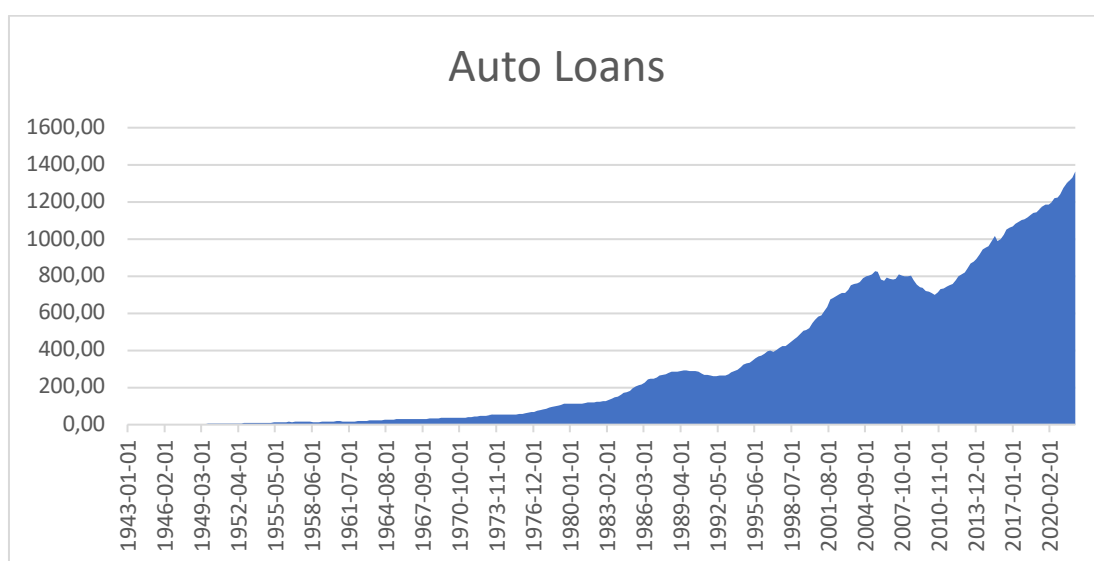


Chart n 8, Auto Loans Owned and Securitized, Billions of Dollars, Quarterly,
Source Bloomberg Database, Graph created by the Author.

Silver Arrow Merfina Securitization

Thanks to my time working at Merfina, I became aware of the securitisation programme.

The programme was allocated in December 2020 as follows.

A double issue of € 504,000,000 Class A Asset-Backed Floating Rate Notes due July 2033 (the "Class A Notes" or the "Senior Notes"); and Class B Notes € 56,000,000 Class B Asset-Backed Fixed Rate and Variable Return Notes due July 2033 (the "Class B Notes" or the "Junior Notes").²¹

The class B tranche is a securitization of financial instruments in which securitised assets are defined as that portion that poses the highest risk of default for the underwriters as it is subordinated to both mezzanine and senior tranches.

²¹ Mercedes-Benz Financial Services Italia S.P.A. Bilancio D'esercizio 2020, Nota integrativa

Class A tranche, on the other hand, means that portion of the securitised assets that carries the lowest risk of default for the underwriters.

The ability of the Issuer to meet its obligations under the Class A Notes is dependent on the performance of the Servicer and the other parties to the Transaction Documents

The yield to maturity of the Class A Notes will depend on various factors and, in particular, the amount and timing of repayment of principal on the Loan Receivables, including prepayments made under the relevant Loans. The rates of prepayment, delinquency and default of the Loan Receivables cannot be predicted and are influenced by a wide variety of economic, social and other factors, including prevailing market interest rates and margin offered by the banking system, the availability of alternative financing and local and regional economic conditions and certain existing Italian legislation which simplifies the refinancing of loans and any future legislations which may be enacted to the same purpose

The Class A Notes are complex instruments which involve a high degree of risk and are suitable for purchase only by sophisticated investors which are capable of understanding the risk involved. In particular the Class A Notes should not be purchased by or sold to individuals and other nonexpert investors.

For this specific reason, investors are informed by the following statements before entering in an investment related to class A Notes.

‘Given the limited recourse nature of the Class A Notes and, in general, the complexity of the Securitisation, an investment in the Class A Notes is only suitable for investors who: ²²

- Have the requisite knowledge and experience in financial and business matters to evaluate the risks of an investment in the Class A Notes;
- Have access to, and knowledge of, appropriate analytical tools to evaluate such merits and risks in the context of their financial situation;

²² Investors disclaimer Mercedes-Benz Financial Services Italia: <https://group.mercedes-benz.com/investors/refinancing/asset-backed-securities/italy/abs-italy.html>

- Are capable of bearing the economic risk of an investment in the Class A Notes;
- Recognise that it may not be possible to dispose of the Class A Notes for a substantial period of time, if at all.'

The principal source of payment of interest, repayment of principal on the Notes and payment of any Variable Return on the Notes will be the Collections and the Recovery Collections received and recovered in respect of the Loan Receivables deriving from the Loans comprised in the Portfolio.

Class A Notes: EURIBOR plus 0.70 per cent. per annum, subject to a floor of zero.

Class B Notes: 1 per cent. per annum plus a Variable Return ²³

Below is the Euribor rate curve. Useful to understand that this remuneration for the two tranches needs to be adjusted.

Since the beginning of 2020, the 3-month Euribor rates (those to which the car loans are also indexed) have fluctuated between -0.25% and -0.75%, lately Euribor rates have reached values very close to +1%, thus narrowing the remuneration difference between Senior Tranche A and Junior Tranche B (riskier).

Keeping class A indexed to Euribor plus 0.70 % therefore the variable return of class B must rise.

²³ <https://www.euribor-rates.eu/it/tassi-euribor-aggiornati/2/euribor-tasso-3-mesi/>



Chart n9, EURIBOR rates from JANUARY 2014 to SEPTEMBER 2022²⁴

Asset Sale and Debt Financing

One major benefit of asset securitization is that the originator may manage their balance sheet effectively by selling freshly issued or existing loans to acquire money. With this method of financing, Mercedes-Benz Financial Services Italia is able to get the present value of the stream of future cash flows from their assets that are still owed to them at the going market rate. Therefore, asset securitization is not a kind of debt financing, and the money has no repercussions of increasing the issuer's balance sheet.

For this reason, it is necessary to know the previously defined Euribor rates and default probabilities from the S&P Global Ratings 2021²⁵ file in order to be able to define the present value of future cash flows generated by the assigned loans.

With regard to the senior tranche, with a Class A rating, Standard and Poor's tables report a zero PD.

In contrast, with regard to the junior tranche, with class B notes, rated B, the probability of default rises to 0.54%.

²⁴ <https://www.euribor-rates.eu/it/tassi-euribor-aggiornati/2/euribor-tasso-3-mesi/>

²⁵ S&P Global Ratings 2021 Annual Global Corporate Default And Rating Transition Study

These values will be taken up in the last chapter for the pricing of the loans analysed below. It is interesting to return to the topic of balance sheet consequences, as securitisation can indirectly lead to changes in the financial structure of a company.

In fact, it may be claimed that when a lender obtains money through asset securitization, the financing may even result in the lender's balance sheet being smaller if the institution chooses to utilize the issue proceeds to settle debt (this being the case when the lender sells existing loans on its portfolio).

In contrast, a lender would have to increase the size of its balance sheet if it raised money through deposits, borrowing, or the issuance of debt or equity instruments to support the origination of loans.

A securitisation transaction is associated with a wide range of effects on the originator's balance sheet, both in terms of income and equity. Alongside the numerous advantages offered by this technique, the costs that an originator will have to bear in order to properly assess the advisability of carrying out a securitisation must necessarily be considered.

Choices will have to be made on the basis of a trade-off between the expenses and risks to be borne and the benefits to be obtained.

Such assessments, cannot disregard accounting aspects, since the results of the post-transaction balance sheet constitute the main source of information for the originator company's stakeholders. Indeed, they will be interested to know how and to what extent the securitization has affected the balance sheet variables.

A classic securitization transaction, theoretically, produces a dual effect on the originator's assets. On the one hand, it generates liquidity, on the other hand, it allows the transfer of credit risk outside the originator's management sphere. Dwelling on one or the other of these elements, a different identification profile of the entire transaction can be grasped.

Considering recourse to the capital market, securitization constitutes a liquidity-providing transaction.

By this we refer not only to situations in which the replacement of the assets of the holder of the claims with liquid assets takes place, but to all hypotheses in which the originator, at the end of the transaction, sees its liquid assets increase in some way. Looking at the perspective of the transfer of assets, securitization is also characterised by the transfer of risks associated with them. By combining types of structures and receivables, it is possible to obtain, through the interaction of the two effects, the most varied results in terms of income and/or assets. The results just mentioned can, in fact, also be obtained by assigning receivables to a factor. Compared to a factoring transaction, however, securitization has certain advantages. Generally, despite the transfer of the ownership of the receivables, the management of relations with the assigned debtors remains with the originator. Securitising therefore allows the lender to retain control over its customers, despite the ownership of the relationship having been transferred to a third party.

It should be noted that not all securitization transactions are followed by the complete transfer of credit risk. In fact, the transfer of credit risk through a 'classic' securitization is conditioned by the limited provision of guarantees by the originator, which only occurs when pools of assets characterised by a very low risk of default are sold.

A very common practice is the underwriting of junior ABS (or class B tranche) by the originator himself; this implies that part of the risk, and sometimes all of it, is not transferred, being embedded in the subordinated securities held by the originator.

In the event that securities are issued that do not incorporate ownership of the transferred assets and at the same time a participatory link is created between the originator and the vehicle, the transaction would have no effect on the consolidated financial statements, since the transferred assets would appear therein.

The securitization, in relation to the structure with which it is realised and the assets it uses, provides a response that is more or less adherent to the individual needs represented.

Certainly, however, it will not be able to satisfy them all at the same time: the range of possible combinations of different structures and different securitizable assets envisages different objectives that impose choices between alternative paths from the outset.

In analysing the reasons underlying a securitization, one must bear in mind the multiplicity and diversity of the originator's needs.

Hence, when analysing a securitisation and evaluating its benefits, the specificity of each individual case must be considered. From the originator's point of view, securitisation of receivables represents a means of transforming relatively illiquid individual assets into liquid, tradable instruments. An originator can, thus, supplement its sources of funding and use the obtained liquidity in a way that is more closely tailored to business needs.

Chapter 3

Securitization of Truck Loans

Introduction

Underlying the theoretical case developed in this chapter is the desire to create an SPV that can securitise financing contracts for Financial Trucks.

The main operators, in Italy, are Daimler Truck Financial Services Italia (Mercedes-Benz vehicles), Scania Financial Services Italia, Iveco Capital Solutions and VFS- Volvo Servizi Finanziari.²⁶

Usually, securitisation operations in the vehicle market are carried out by SPVs directly linked to the parent company.

An example of this is the securitisation in July 2019 for EUR 558²⁷ mln by Merfina Silver Arrow on receivables from vehicle financing transactions in the name of Mercedes-Benz Financial Services.

The balance sheets analysed for the creation of this chapter show a large gap between leasing and financing in the item Receivables from customers of the Captives analysed.

I identified this situation related to two main reasons.

- tax reasons
- lower rates in leasing²⁸, in fact, comparing the rates offered by the finance companies shows a difference of at least two percentage points between leasing (which does not transfer ownership of the truck) and financing, which does transfer ownership but is more expensive for the customer.

Analysing the Truck market, these percentages change.

²⁶ Rapporto **annuale** sull'andamento del mercato italiano dei VCL, Autocarri, Rimorchi & Semirimorchi e Autobus, ANFIA

²⁷ <https://group.mercedes-benz.com/investors/refinancing/asset-backed-securities/italy/abs-italy.html>

²⁸ Comparing the rates offered by Daimler Truck Financial Services (FINANZIAMENTO ACQUISTO VEICOLI, foglio informativo Secondo Trimestre 2022) and Scania Finance Italy, the difference between leasing and financing is equivalent to two percentage points.

Leasing volumes increase significantly, hovering around 90%.

To be more detailed, in the specific case of Daimler Truck Financial Services Italy, the portfolio is composed of 88% Leasing and 12% Financing, with a ratio therefore of 7.17.²⁹ This ratio was ascertained from internal sources.

This implies a reduction of potentially securitisable financing.

What are the reasons why there is less financing in the truck market?

The customer base of vehicle and truck finance is profoundly different.

Taking Daimler Truck Financial Services Italy as an example, the composition of the customer base is divided mainly into companies operating in freight transport, passenger transport and construction companies

(even intuitively, it is easily understood that the customers of commercial vehicles are not natural persons, but companies that use such vehicles in order to create income), thus entities that enjoy tax benefits from leasing transactions.

Contingently to the increase in the percentage of leasing contracts concluded, the volume of financing transactions therefore decreases.

This situation might push the financial Trucks not to engage in securitisation transactions, as they have to bear high costs to securitise small volumes of securities.

My idea, therefore, is to create an SPV operating in the Trucks sector, with the objective of providing an opportunity for truck finance companies in Italy to securitise their securities, benefiting from a reduction in costs, which would be spread over all the companies that would benefit from it.

In this chapter I therefore analyse the actual feasibility of this hypothetical operation.

²⁹ Internal Sources : Daimler Truck Financial Services Italia

The Trucks market in Italy

It is necessary to begin by defining the main players in the Italian truck market.

According to the Annual Report on the Italian Truck, Trailer & Semi-Trailer and Bus Market Trends of 2021, the Trucks market in Italy is dominated by the following brands.

The total number of vehicles over 8,000 kg is 22,256 units, of which 16,636 are produced by the 4 manufacturers shown in the table below.³⁰

Brands	MKT shares
IVECO	37,4%
MERCEDES	11,5%
VOLVO	11,7%
SCANIA	12,8%
TOTAL	73,4%

TABLE 1, market shares of the main players in the Trucks market in Italy, Data available from the ANFIA report

Definition of the credit portfolio and customers

By defining the truck market, I was able to understand which financiers need to be analysed to ascertain the potential pool of receivables that can be securitized.

³⁰ Rapporto annuale sull'andamento del mercato italiano dei VCL, Autocarri, Rimorchi & Semirimorchi e Autobus, ANFIA

Commercial vehicle financiers or captives are in the business of providing companies operating mainly in the transport (goods and people) and construction sectors with financing for the purchase of vehicles produced by the parent company.

Example: DTFSI receives financing proposals from dealers in the territory, from potential customers who want to purchase truck-buses via leasing or financing.

This first assumption serves to define the fact that, unlike classic Auto Loans, the customers are much more homogeneous, i.e. they operate in more circumscribed sectors and therefore the credits are potentially more subject to cyclical situations.

In 2020, the covid pandemic almost completely shut down the passenger transport sector in Italy. As a result, companies operating in this sector had to request deferment of payments as they no longer had the cash flow to repay the instalments on vehicles leased or financed.

The underlyings, thus of the hypothetical securitisation transaction, would be receivables from commercial vehicle loans of different value and duration.

Captives provide the financing by charging an interest rate that varies depending on the relationship with the customer, the customer's creditworthiness (calculated through internal ratings and if available ratings from external agencies).

The financing rate is indexed to the 3-month Euribor, to which a premium spread is added due to the intermediation margin of the finance company itself. This applied premium can vary from 0.5% to 3.5%, depending on the services applied by the financier.

The assumptions in the creation of the portfolio are as follows.

- Commercial vehicle receivables with a value between EUR 70,000 and EUR 200,000

- Receivables held by customers with exposure between 70,000 and 10,000,0000 euros.
- Rates applied Euribor + premium spread from 0.5% to 3.5%.

The four largest truck manufacturers operate in Italy with the support of as many captive financiers.

They are as follows.

- MERCEDES-BENZ operates through DAIMLER TRUCK FINANCIAL SERVICES ITALIA;
- VOLVO operates through VFS-VOLVO SERVIZI FINANZIARI (which also provides financing for Renault vehicles);
- German manufacturer SCANIA operates through SCANIA FINANCE ITALY SPA;
- The industry leader in Italy, IVECO, finances the purchase of its commercial vehicles through IVECO CAPITAL SOLUTIONS SRL.

I proceed below with the estimation of the portfolio that can potentially be securitised, by retrieving from the balance sheet items and the corresponding notes to the financial statements of the various financial companies mentioned above the values of the loans granted for financing operations.

The companies whose loan values I have derived are Daimler Truck Financial Services Italia, Scania Finance Italy spa and Vfs- Volvo Financial Services.

Iveco Capital Solution has already activated its own securitisation programme³¹ and for this reason has not been included in the pool of assets to be securitised.

However, it is interesting to see that the total amount of loans securitised in this simulation is very close to the value already securitised by Iveco, meaning that the portfolio in this simulation has a value in line with the actual volumes that can be securitised by companies operating within the truck financing sector in Italy.

³¹ Iveco Website

Taking *Daimler Truck Financial Services Italia* as the first object of examination, I was able to estimate the potential value of securitisable receivables.

A filed balance sheet in the name of DTFSI is not available as it is a newly established company, which was created in April 2022 from the demerger from MERCEDES-BENZ financial services Italia³², so the analysis was performed on the latest balance sheet filed by Mercedes Benz Financial Services Italia, relating to the year 2021.

The total portfolio of loans and advances to customers amounts to €4,036 million. (Section C of Item 040 Assets).

This macro-item includes loans and leasing receivables due from customers of both Mercedes-Benz Financial Services Italia and the current Daimler Truck Financial Services Italia.

The notes to the financial statements show that the value of these receivables relating to trucks represents 15% of the total.

Thus, the portfolio of Daimler Truck Financial Services-Italy amounts to approximately EUR 600 million.

With a 12% value of receivables related to financing, the total of potentially securitisable receivables amounts to EUR 72 million.

Continuing with the creation of our potential portfolio of securitisation loans, we examine the balance sheet of Scania Finance Italy, S.P.A.³³

the captive of the German truck manufacturer Scania.

Also in this case, the analysis was carried out on the last filed financial statements for the year 2020.

Receivables from companies (commercial vehicle customers that have requested financing from Scania Finance Italy S.p.A.) amount to EUR 552,637 million.

³² Mercedes-Benz Financial Services Italia S.P.A. Bilancio D'esercizio 2020

³³ Scania Finance Italia Spa, Bilancio d'esercizio 2020

Since the breakdown between leasing and financing is not available, we will again use a hypothetical ratio of 7.11 times.

With this assumption I found a 66.31 million pool of securitisable loans.

The last financial company we examine is *VFS - Volvo Servizi Finanziari Italia*³⁴. Outstanding receivables from customers for leasing and direct financing transactions, net of receivables from factoring transactions, increased by EUR 63,174,950 compared to the amount reported last year, to EUR 433,492,551 as at 31 December 2020 (EUR 360,969,844 as at 31 December 2019).

The VFS loan portfolio consists of €42,879,742. (page 60 Notes to the Financial Statements Annual Report 2020).

The ratio of total leases to total loans is 9.10.

Total financing is equivalent to 9.8% of the item Loans and advances to customers in the balance sheet.

After deducting the value of receivables related to loans of the 3 Captives under review, the value of receivables potentially receivable by our SPV is:
 $\text{EUR } 42,879,742 + 66,310,000 + 72,000,000.$

The issue of 2 tranches of securitised receivables would create a derisking operation for the 3 financials.

From an accounting point of view, the issuance of the two tranches generates an increase in the item Liquidity, which, through the SPV, is transferred to the asset side of Financing with a consequent reduction in the asset item c40 (loans and advances to customers).

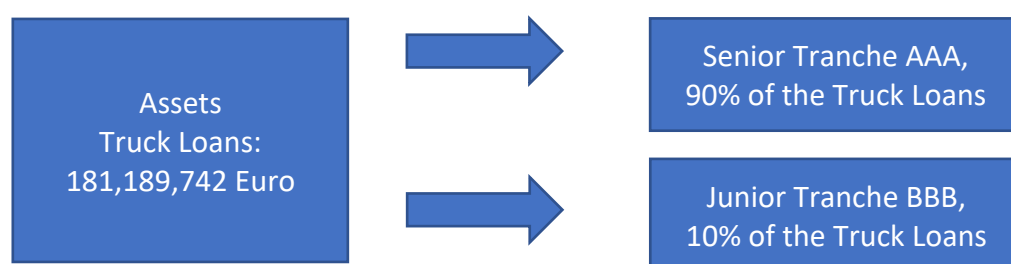
The liquidity item is thus increased by the present value of the future cash flows generated by the previously held loans.

³⁴ VFS- Volvo Servizi Finanziari, Bilancio d'esercizio 2020

I've calculated the present value on the basis of the current Euribor rate³⁵ + the intermediation margin required by the captive at the time the loan was generated with the customer.

In the case of the class B notes, I used 1.5 percentage points plus the spread. Below I have reported the sensitivity analysis of the PV of the credits, as a function of changes in the Euribor rate and the credit rating.

As the portion of the receivables rated B increases, the value of the securitised receivables in the senior tranche decreases and the value of the securitised receivables in the junior tranche increases, with a higher risk. The probability of default of the B-rated tranche is 0.54% .³⁶



Sensitivity Analysis

This first part of data retrieval from the balance sheets served me to be able to define the portfolio that could be securitised in the hypothetical case in which the three Captives in question decided to undertake a securitisation process of their loans.

Below I show and comment on the results I obtained by discounting the value of this loan portfolio.

³⁵ <https://www.euribor-rates.eu/it/tassi-euribor-aggiornati/2/euribor-tasso-3-mesi/>

³⁶ S&P Global Ratings 2021 Annual Global Corporate Default And Rating Transition Study

VOLVO	42.879.742	23,67%
DAIMLER	72.000.000	39,74%
SCANIA	66.310.000	36,60%
<i>total</i>	<i>181.189.742</i>	

Breakdown of securitised loans. Table created by the Author with Excel.

The base case I analysed involves:

A 90% Senior Tranche

Followed by Junior Tranche = (1- % Senior Tranche)= 10%.³⁷

1st Sensitivity Analysis , Base Case

The base case is developed as follows.

The Euribor rate considered is the current rate as at 9 September 2022, i.e. 0.93%)³⁸.

The rate used to discount the receivables is constructed using Euribor + a variable spread.

The two variables of this sensitivity are the rate and the percentage of Class A, as reported earlier, the value of the securitised loans being constant, a reduction in Class A corresponds to an equal increase in Class B, which also considers a default spread defined by Standard and Poor's Default Tables.

<u>BASE CASE SENSITIVITY ANALISYS</u>					
	80,00%	85,00%	90%	95,00%	100,00%
194.492.119,52 €					
1,29%	193.104.168,44 €	193.104.168,44 €	193.104.168,44 €	193.104.168,44 €	193.104.168,44 €
1,36%	192.482.772,45 €	192.482.772,45 €	192.482.772,45 €	192.482.772,45 €	192.482.772,45 €
1,43%	192.482.772,45 €	192.482.772,45 €	192.482.772,45 €	192.482.772,45 €	192.482.772,45 €
1,51%	193.073.051,84 €	193.073.051,84 €	193.073.051,84 €	193.073.051,84 €	193.073.051,84 €
1,58%	194.318.438,53 €	194.318.438,53 €	194.318.438,53 €	194.318.438,53 €	194.318.438,53 €

Table Created By the Author using excel, showing the sensitivity analysis of the value of the notes, with changes in Rates and A notes / B notes ratio.

³⁷ In the base case I used a typical 90% class A emission

³⁸ <https://www.euribor-rates.eu/it/tassi-euribor-aggiornati/2/euribor-tasso-3-mesi>

As shown in the graph above, the ratio Class A over total starts from the initial value of 90% and varies + , - 10%.

I have also shown a rate variation of 10%.

1.835.666,08 € is the delta between the highest NPV and the lowest NPV as a result of the change in these two parameters.

2nd sensitivity analysis (fixed amount of class A notes, Hystorical Euribor rates of 2022)

Now it is interesting to see what happens when the ratio Class A over Total is constant and the change occurs according to the Euribor rate again using Excel's senistivity analysis.

In August 2022, the Euribor rate changed from negative to positive, so I calculated how the value of this loan portfolio would change by applying the true Euribor rates of the first day of each month in 2022.

	194.492.119,52 €	90%
01/09/22	0,71%	192.347.545,76 €
01/08/22	0,25%	187.921.225,74 €
01/07/22	-0,18%	183.999.357,49 €
01/06/22	-0,34%	182.542.657,45 €
01/04/22	-0,42%	181.804.931,13 €
01/03/22	-0,46%	181.396.350,80 €
01/02/22	-0,55%	180.618.018,51 €
01/01/22	-0,57%	180.410.417,06 €

Sensitivity analysis with only changes in the Euribor rate, considering a Class A notes amount of 90% over the total. Created by the Author with Excel.

The negative rate obviously leads to negative NPV values of less than '0.42%. Remembering that the value of the portfolio given by the mere sum of the loans equals 181,189,742.

In this case the range of values is much wider than that previously found in sensitivity analysis 1, as the change in price is not offset by the change in percentage of the less risky notes.

To this sensitivity analysis, I also combined an Excel "target seek function" which allowed me to define the rate from which the NPV is positive.

The value found is -0.48% and not - 0.50% as one would think because the 10% weight of class B notes must be taken into account.

Technical requirements to the effective implementation of this emission:

I defined 3 main requirements to implement the securitization of the credit analyzed before:

1. an appropriate loan origination procedure;
2. prudent credit risk evaluation;
3. a broad investor base.

Appropriate loan origination procedure

To begin with, all loan originators must use the same underwriting standards for loans. By doing this, it is made sure that the quality of loans made by various originators is constant. To make the pooling procedure effective, the loan paperwork must also be standardized. To guarantee the uniform quality of freshly created loans, all originators must strictly abide by the underwriting guidelines. Actually, Captives utilize different underwriting criteria, defined by the policy of the company.

But the credit risk valuation, is one of the function that is most affected by IT innovations,

For example Daimler tFSI in order to give a fast response to the customer, has implemented an internal informatic system that accept or decline the proposal

of funding requested by the client. This means that, aligning the different IT systems and utilizing it for a broader platea of transaction, can generate the foundation for standardizing the Credit valuation process among captives and make easier to pack credits in order to be securitized.

Broad investor Base

The rise and expansion of the investor base is a key aspect in the successful development of an asset securitization market. Asset-backed securities have been issued for a total of \$24 trillion during the previous 40 years.³⁹ An ever-widening range of buyers bought this substantial number of securities. Early on in the 1970s, the majority of the thrifts made up the investor base for asset-backed securities (which were essentially just RMBS). The investor base dramatically expanded in the 1980s and later as the market expanded to encompass a wider range of underlying assets and more avant-garde product designs.

Short-term money market fund managers, portfolio managers at commercial banks, corporate treasurers, mutual funds, hedge funds, life insurance firms, and pension funds were some of the new investors. Foreign investors have formed a more significant portion of the asset-backed securities investor base as the capital market has become more globalized.

Asset-backed securities were able to suit the expectations of a wide range of investors because to maturity and credit tranching. Investors interested in yield were drawn to asset-backed securities because of their greater yield. Asset-backed securities were able to draw maturity-oriented investors thanks to maturity tranching because their investment requirements prevented them from buying these securities without it. Credit-focused investors, who are restricted by law to investing solely in securities with investment-grade credit

³⁹ Securitization, Gary Gorton and Andrew Metrick

ratings, found asset-backed securities to be enticing as a result of the credit crunch.

The securitization of auto loans is nothing new and has always found its relevance within the ABS market, therefore the creation of these two tranches relating to commercial vehicle loans would be appreciated by at least 2 types of investors, those who choose a medium-term investment, considering that securitized loans have an average of 60 months and those who intend to diversify their portfolio , as they are correlated with the trend of the transport market.

Prudent Credit Risk evaluation

Since the only source of funding for an asset-backed security is a pool of loans, the investor would understandably be concerned about the credit risk of both the securities and the underlying assets.

Prudence, which includes objectivity, independence, and openness, allowed credit rating agencies to gain investors' credibility. As a result, credit ratings are now a crucial component of asset securitization. The fast growth of the asset securitization industry was made possible by investors' belief in rating agencies' capacity to accurately assess the credit risk in the continuously emerging new products.

Conclusions

The crisis of 2008 inevitably changed the market for asset-backed securities, especially for small and medium-sized companies⁴⁰, which reduced their volumes.

Therefore, following the subprime financial crisis, the market for asset - backed securities (ABS) and mortgage - backed securities (MBS) became extremely thin and illiquid. However, high-quality ABS and MBS have regained some of their former popularity among institutional investors since the European Central Bank included them in the 'Asset Purchase Program'. While, in principle, the innovation of such financial instruments can foster the provision of credit and accelerate the recovery of the real economy, the subprime mortgage crisis has taught us that excessive innovation without control can be devastating and complicate a system that is already complex.

Moreover, in the current environment of very high inflation rates, investors are desperate for higher returns with the same rating, something that securitised products can certainly offer as defined in the second chapter.

In this paper, I have defined their mechanisms, causes of development and benefits, taking the US ABS market as the reference market, as they cover about 5 times the volume of the European ABS market. I also focused on the rating aspect, checking its relationship with the use of securitisation.

Taking the securitisation carried out by MBFSI through Merfina Silver Arrow as a reference, I showed its benefits and defined the ways in which this was done.

⁴⁰ Securitization and Small Business BY JAMES A. WILCOX, FRBSF ECONOMIC LETTER

Aware of the fact that Captives in the Trucks world find it more difficult to implement a securitisation programme that can securitise loans via ABS due to size constraints,

I devised an SPV that would group these loans together and allow access to the ABS market even for companies of a more limited size.

I performed sensitivity analyses with changes in the rate and rating ratio of the notes.

In doing so, I defined various scenarios that could occur in the event of an issue.

I concluded the paper with a theoretical reflection explaining the problems of such an implementation and defining the technical requirements to carry it out.

I think that an investment alternative related to commercial vehicle financing can benefit both the originators, who cede part of their credit risk, and the investors, who have the opportunity to diversify their portfolios by investing fundamentally in the transport and construction sectors (which are the main borrowers of financing and leasing trucks).

Furthermore, I believe that due to the financial innovation related to rating scoring, which will be standardised on the basis of criteria that are no longer defined by humans but by artificial intelligence, it will be easier to group these types of credits together, and therefore to evaluate them and make them available on the ABS market.

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