

FIXED INCOME

ASSET-BACKED SECURITIES

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1. Asset Backed Securities*

1.1 Introduction*

Generally speaking, asset backed securities (ABS) are bonds or notes collateralized by a pool of financial assets or the cash flows generated from them. These financial assets are typically of the same nature but illiquid and non-marketable, such as receivables from any number of consumer asset types including credit cards, auto loans, as well as other non-consumer asset types such as equipment leases and loans, utilities, aircraft leases, and royalties. By contrast, asset backed securities are generally marketable securities – thanks to a process called securitization.

Securitization is a process that began with the structured financing of mortgage pools in the 1970s in the US. Initially, banks were just portfolio lenders – they were giving mortgages to borrowers and held them until they matured or were paid off. These mortgages were funded principally by deposits and sometimes by debt, which was a direct obligation of the bank rather than a claim on specific assets. This worked fine as long as banks had enough deposits. But with the rising demand for housing credit, banks had to find another financing solution. Securitization was the answer. Rather than keeping their mortgages on their balance sheet, banks isolated defined mortgage pools and sold them to investors in the form of “asset backed” securities. This enabled them to transfer some of the risks of ownership to parties more willing or able to manage them. Since the mid 1980s, the same techniques have been applied to non-mortgage assets and first mortgage securitizations in Europe. Better technology and more sophisticated investors have combined to make asset securitization one of the fastest growing activities in the capital markets.

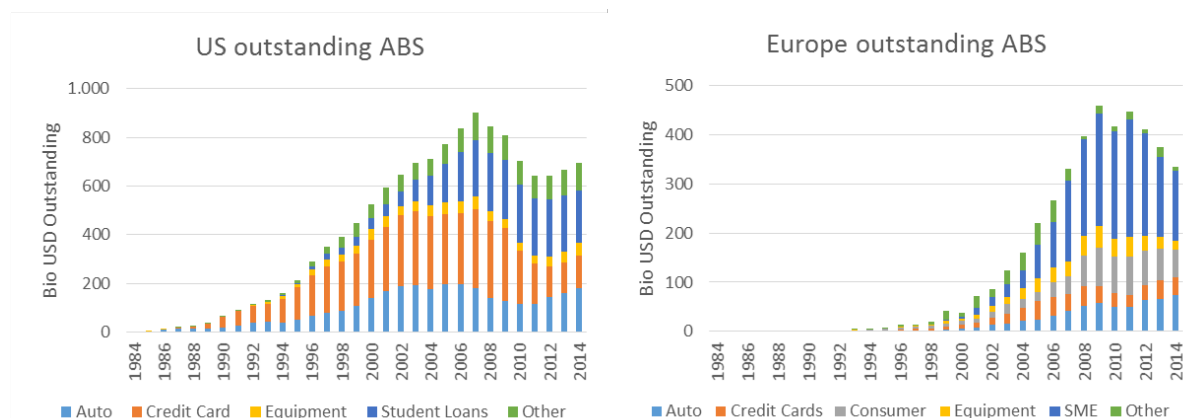


Figure 1-1: Asset backed securities outstanding 1985 – 2014 (Source: SIFMA)

Although, initially confined to automobile loans and credit cards receivable ABS have progressively become fashionable in other important sectors such as student loans, and leases, as is shown in figure 1-1.

The securitization of European ABS started in the early 90s with Auto ABS in the UK. Different to the US, the securitized funding of banks in Europe is largely dominated by covered bonds. Therefore, the use of ABS is driven more by opportunistic cost and balance sheet considerations. The fact, that ABS issuance in Europe reached its temporary peak during the crisis in 2009 is owed to the liquidity needs of financial institutions in these days. Especially Spanish and Italian banks used ABS to create ECB repo-eligible collateral by pooling their loans to small and mid-size enterprises. For this reason, over 75 percent of all structured ABS between 2008 and 2011 have been retained for repo-transactions by the issuers and not placed with the market.

The global scope of the ABS market can be good observed by globally operating car companies. One of the most frequent issuer, Volkswagen Financial Services, currently issues ABS in eleven countries, mainly in local currencies and tailored to local laws and investor demands. (Germany, UK, France, Spain, US, Canada, Mexico, Brazil, Australia, Japan and China).

This evolution of securitization and the support from central banks for this asset class is not surprising given the opportunities that it offers. On the originators side, securitization converts on-balance-sheet assets into off-balance-sheet fee income streams. For borrowers, ABS increase the availability of credit on terms that lenders may not have provided had they kept the loans on their balance sheets. It releases capital for expansion or reinvestment purposes and improves asset/liability and credit risk management. For investors, ABS offer direct and distinct exposure to consumer and corporate lending and increased secondary market liquidity for non-tradable assets.

1.2 Structures*

Asset-backed securities can be structured in many different ways but their creation usually goes as shown in figure 1-2.

The process can be summarized as follows:

- 1) A lender originates loans to a series of borrowers.
- 2) To initiate a securitization, the lender first creates what is called a special purpose vehicle (SPV). This SPV usually takes the form of a wholly independent legal entity such as a corporation, a trust, or a partnership established for a specific and limited purpose.
- 3) The lender pools together and sells its loans or other receivables to the SPV. This sale is designed to insulate investors from the credit risk of the lending institution.
- 4) The SPV in turn refinances these assets by issuing several interest bearing securities backed by a beneficial interest in the receivables on these loans. These new, more liquid, instruments are called asset backed securities. They can be issued with either fixed rate or floating rate coupons. They can achieve a credit rating separate from the financial institution that originates the loan.
- 5) The cash flows from the underlying loans are allocated to investors either directly after administrative fees are subtracted (“pass-through”) or can be carved up according to specified rules and market demand (“structured”). In the latter case, by varying the distribution of proceeds from the same pool of collateral, asset-backed securities with very different risk and return profiles can be created.

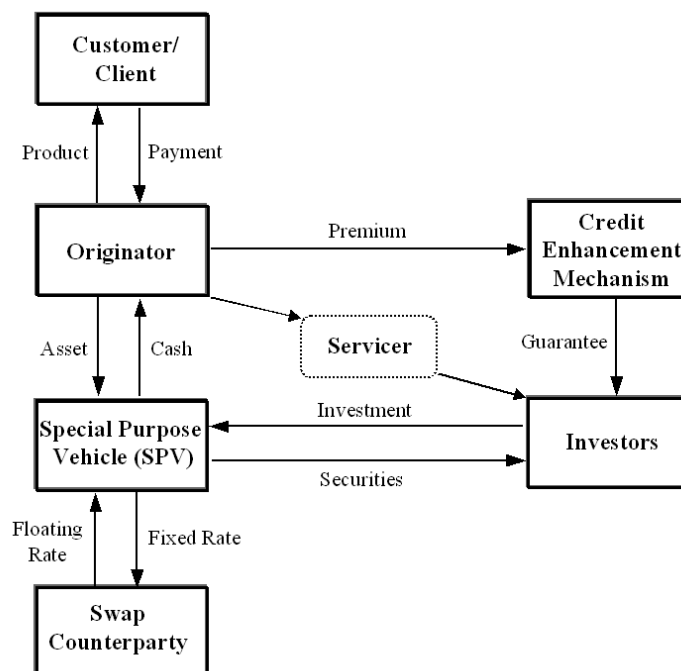


Figure 1-2: Simple securitization structure and key players

Apart from the underlying assets, ABS transactions may also incorporate features such as credit enhancement and liquidity supports. We will review them hereafter.

1.3 Types of underlying assets*

The amount of outstanding securitized bonds totalize to over eleven trillion USD. Thus, securitized bonds represent with over 15 percent an important share of the total outstanding global bond universe measured by the Barclays Global Aggregate Bond Index. Among securitized bonds, Mortgage Backed Securities, discussed in the previous chapter, represent over 75 percent.

Global outstanding securitized bonds

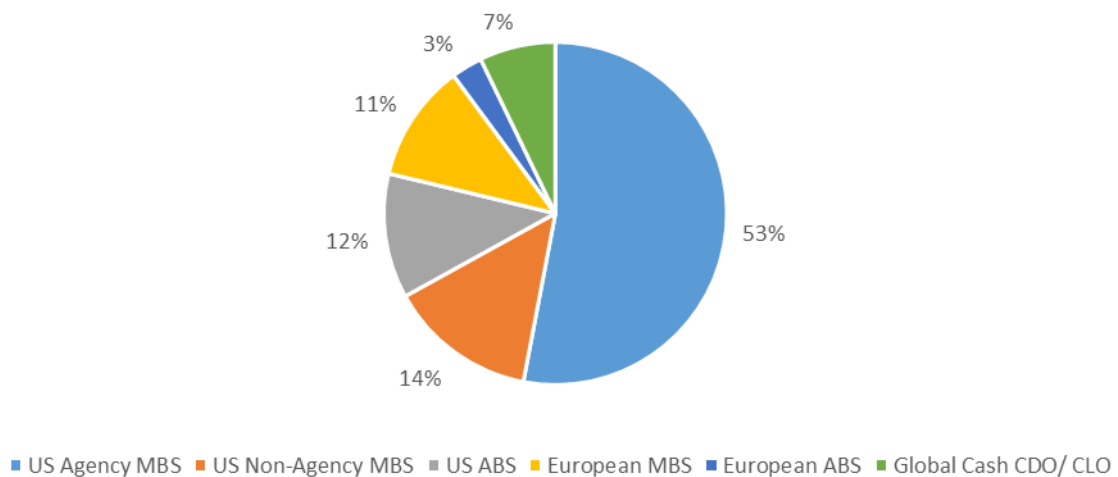


Figure 1-3: Global outstanding securitized bonds (Source: SIFMA)

The nearly two trillion USD of outstanding ABS differ primarily by their underlying assets, as illustrated in figure 1-3.

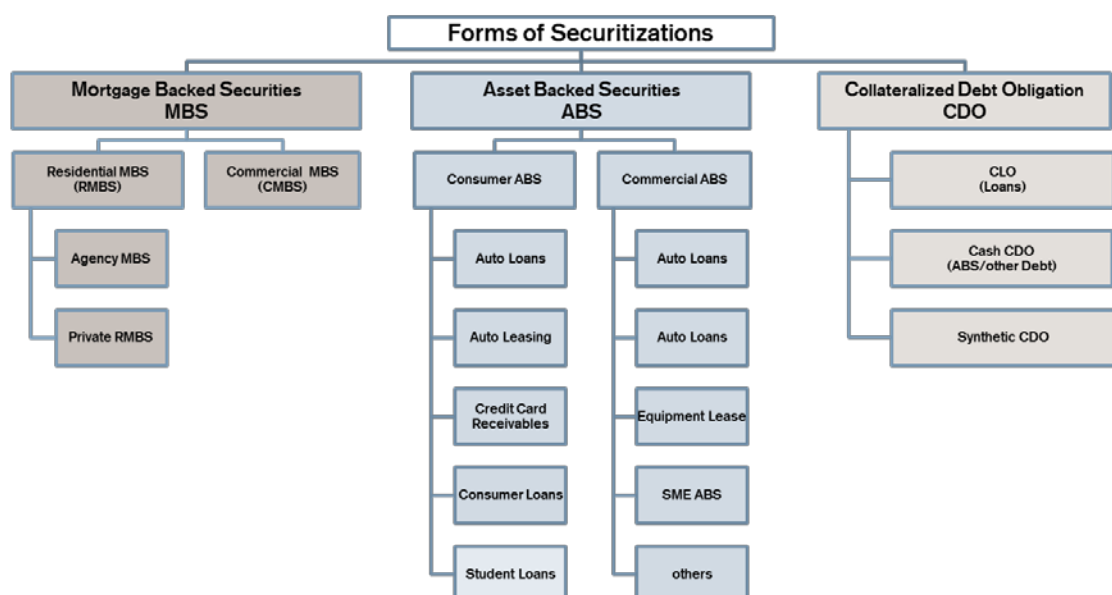


Figure 1-4: Various types of ABS

The assets underlying ABS can essentially be classified in two categories: (i) closed-end amortizing assets or installment contracts, which have predefined amortization schedules and a set maturity date and (ii) open-ended assets, which do not have a precise amortization schedule but use revolving lines of credit and are therefore extendable at the will of the borrower. We will examine the most common examples of both classes.

1.3.1 Installment contracts (e.g. US auto loans)*

Auto loans have a maturity that does not generally exceed 6 years; they are fully amortizing and use the automobile as collateral. Moreover, defaults on auto loans have been historically extremely low in the United-States as cars represent a necessity and loss of the object through repossession would represent a serious burden to the borrowers. These features make them attractive assets for securitization.

Automobile ABS can be structured in a number of ways, with a pro rata pass-through payment structure being the most common. However, since auto loans amortize over time, principal cash flows are more widely distributed than is desired by many investors who prefer short principal repayment periods. This has led to the tranching of auto ABS, similar to Collateralized mortgage obligations (CMO) in the mortgage-backed securities sector. Thus, deals may include planned Amortization Class (or PAC) tranches that are targeted at investors who want virtual certainty of cash flow, along with support tranches that offer a higher yield in return for greater cash flow uncertainty.

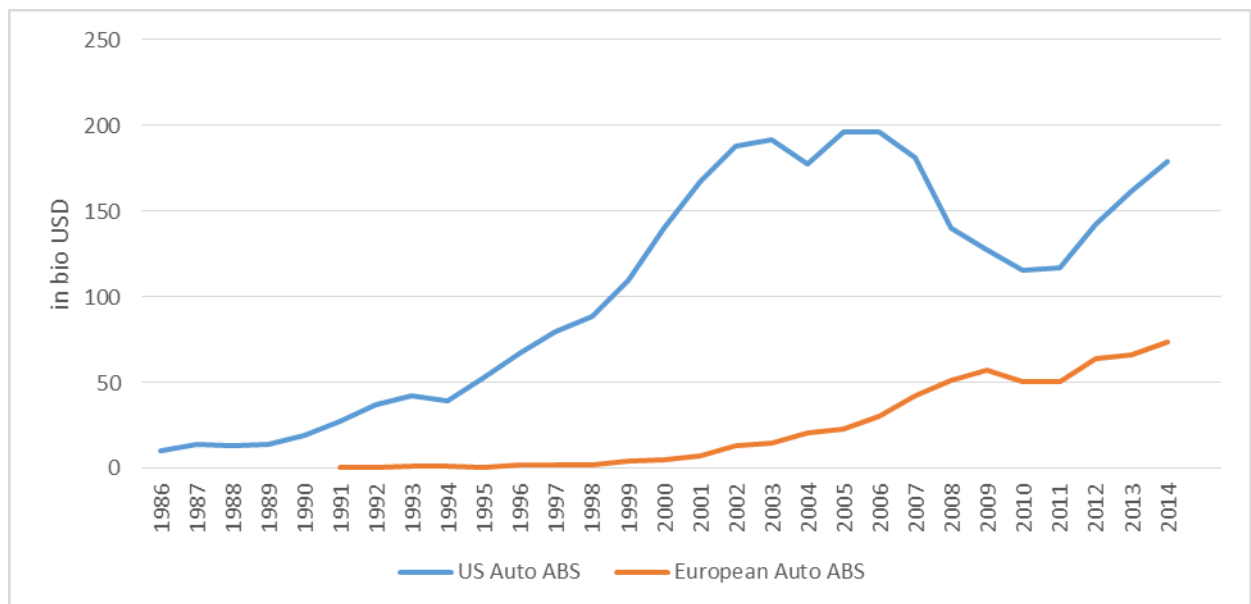


Figure 1-5: Evolution of the Automobile ABS sector in the United States and Europe (Source: SIFMA)

Auto loans ABS credit quality is generally quite high and loan loss rates have historically been very low. Nevertheless, auto loans ABS are classified in three categories: prime, nonprime, and subprime.

- Prime auto loans ABS are collateralized by loans made to borrowers with strong credit histories. They are characterized by relatively conservative underwriting standards, new vehicles backing the notes, maturities of less than 5 years, and an originator who has a record of low delinquency and loss performance.

- Nonprime auto ABS consist of loans made to lesser credit quality consumers, which may have higher cumulative losses.
- Subprime borrowers will typically have lower incomes, tainted credit histories, or get low- and no-doc loans . Latter stands for loans granted without or insufficient income statements.

Additional credit enhancements are usually required to support transactions deviating from the prime pool characteristics. The most common credit enhancements for auto ABS are excess spread protection, subordination, reserve funds, and surety bonds. These credit enhancement features will be further discussed in another section.

1.3.2 Revolving lines of credit (credit cards receivables)*

Credit card asset-backed securities were first issued in the U.S. in 1987 to diversify sources of bank funding. Since, the credit card market has grown significantly due to the reliance on credit cards by consumers, along with more acceptances of cards by merchants and service providers, such as doctors and grocery stores. In parallel, the credit card ABS market has enjoyed a steady growth, and has become the primary vehicle by which the card industry funds unsecured loans to consumers. The evolution of the outstanding amount in the U.S. over the recent years is depicted in figure 1-6.

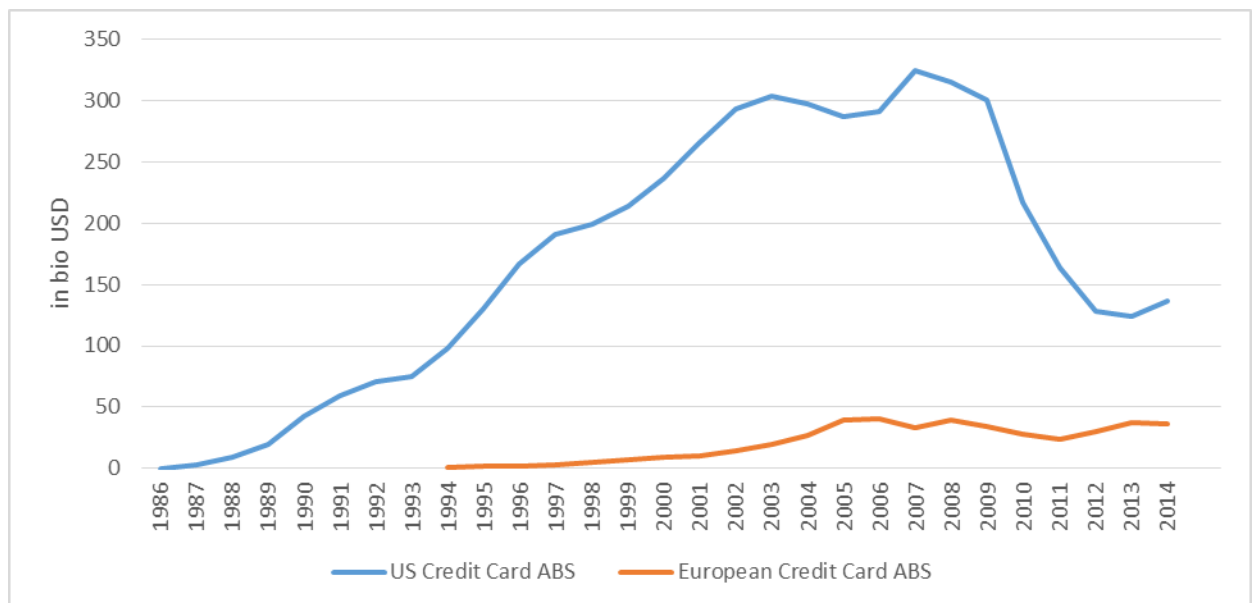


Figure 1-6: Evolution of the credit card ABS sector in the United States and Europe (SIFMA)

Credit card debt is known as revolving debt. Credit cardholders are assigned a credit limit and can generally borrow funds up to that amount. They can repay as little or as much principal each month as they desire, subject to a small minimum payment. As a result, there is no true maturity date for a credit card account and the amount of principal or loan may fluctuate over time.

The collateral for a credit card ABS is the outstanding debt (the receivables) of a group, or pool, of individual credit card accounts. The cash flow available to pay interest to investors comes from the pool's gross revenues, which is made up of finance charges, annual fees, late charges, and interchange (the fee paid to the credit card issuer by a merchant who makes a sale charged to the card). Expenses for the credit card pool consist of the ABS coupon, charge-offs, and a servicing fee.

The structuring process is as follows. The issuer creates a credit card ABS by first setting up a trust. Then, the issuer sells the outstanding receivables (the current balances and the future cash flows produced by the current balances) of a designated group of credit card accounts to the trust. Additionally, the issuer transfers the right to purchase, at par, any future balances generated by the same group of accounts. The balance of receivables outstanding is collateralized into two types of securities, known as investor and seller certificates. The investor certificate is sold to ABS investors, and the card issuer retains the seller certificate. The holder of the seller certificate receives all finance charge cash flows from the receivables that remain after payment of the investor certificate coupon, the collateral pool servicing fee, charge-offs, and trust expenses. The balance of the seller certificate fluctuates over time as cardholders pay off their balances and make new purchases. The cash flow available to pay the investor coupon depends on the amount of principal outstanding. If the pool's principal is paid down more quickly than new charges are added to the point where the balance falls below an established minimum, the seller must add more accounts to the pool. Credit card ABS can have fixed or floating rate coupons. Interest payments, based on the investor certificate's outstanding balance, are most often paid monthly, but are sometimes paid quarterly or semiannually. In contrast to automobile ABS, the principal is not immediately amortized. More precisely, during a specified period, the lockout period or revolving period, the investor certificate pays only interest, and principal payments are reinvested in new receivables generated by the pool. The lockout period can vary from 18 months to 10 years. When the lockout period ends, the principal is no longer reinvested but is instead returned to investors. This period is known as the principal-amortization period. Early credit card ABS structures repaid principal by passing proportional shares of all repayments to investors and sellers until the securities were retired. But because ABS investors wanted a more predictable repayment schedule, today the securities are usually structured in one of two ways - either through controlled amortization or by bullet payments.

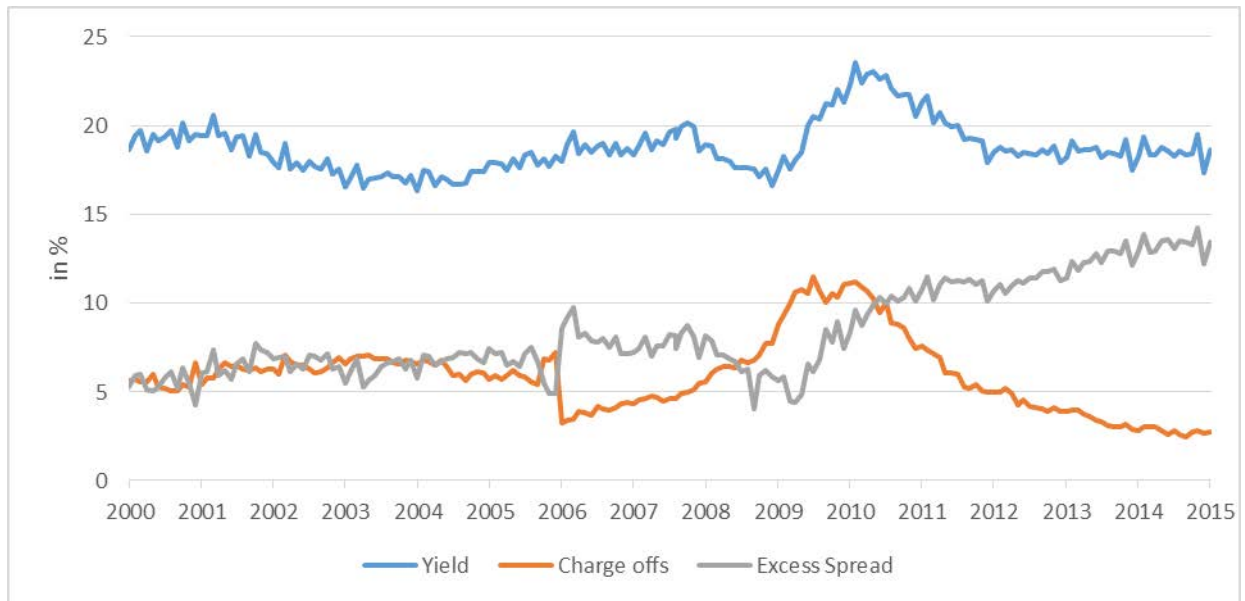


Figure 1-7: Development of the US credit card performance

1.3.3 Other*

There are many other cash-flow-producing assets, including equipment leases and loans, aircraft leases, container leases, trade receivables, student loans, and royalties.

1.4 Credit enhancement*

Virtually all ABS are rated by one or more rating agencies such as Moody's or Standard & Poor's. These ratings are watched closely by investors as a guide to the credit quality of the securities. In almost all cases, rating agencies monitor the performance of the securities on an ongoing basis.

Most ABS issues are highly rated, either AAA or AA, i.e. their credit quality is higher than the one of their underlying securities. This is only possible because asset backed securities are credit-enhanced. Credit enhancement is usually provided by one or more of the following methods.

1.4.1 Excess spread*

One of the first defenses in ABS securities against losses is the excess spread. This refers to the fact that the interest payment on the underlying securities (receivables) is in general greater than the coupon paid to the investors. The difference would commonly be used to cover administrating costs or to make provision for losses. The remainder, which is denoted excess servicing, generates an additional profit to the seller, but in the event of partial or even complete default exceeding the losses provisions it may be used to make the coupon payment to investors.

1.4.2 Subordination*

This feature describes the situation where an SPV issues more than one ABS class of securities (“tranches”) of varying degrees of seniority or subordination. In the event that a loan in the underlying asset pool defaults, any resulting loss is absorbed first by the most subordinated/junior tranche (often referred to as “equity”). The upper-level tranches remain unaffected unless losses exceed the entire amount of the subordinated/junior tranches. The coupon paid on each class of securities will depend on its level of subordination: the higher the seniority, the lower the risk thus the lower the coupon. This mechanism also offers the advantage of creating assets with different risk/return profiles, which can suit a wider range of investors than the initial pool of assets. The senior securities are typically AAA rated while the lower-credit quality subordinated classes receive a lower rating.

1.4.3 Guaranty*

This type of credit enhancement is in nature similar to the letter of credit. A third party, e.g. a public agency or an insurer, agrees to pay the trust to cover the loss up to a stated amount.

1.4.4 Reserve fund*

The issuer creates a cash reserve account prior to emitting the ABS to cover potential losses. Reserve funds are usually used as secondary form of credit support.

1.4.5 Recourse*

When a recourse feature is added to an ABS it is possible to put back bad loans to the issuer of the ABS. The issuer provides access to his own resources in order to reimburse the trust (or SPV) up to a stated amount.

1.4.6 Over-collateralisation*

Overcollateralization is a commonly used form of credit enhancement. With this support structure, the face value of the loan which serves as collateral to the ABS is larger than the securities issued. Thus the issued security is over-collateralized. As a result, the ABS will amortize in a shorter time period and a buffer is created against losses. Even if some of the payments from the underlying loans are late or default, principal and interest payments on the ABS can still be made.

1.5 Major risks of ABS*

Despite their apparent security, asset backed securities are not exempt of risks.

1.5.1 Interest rate risks*

Asset backed securities can be sensitive to interest rate variations. Similar to other bonds floating rate ABS are less affected by price volatility than fixed rate ABS, as the index against which the floating rate ABS rate adjusts will usually reflect interest rate changes. Furthermore, interest rate changes may affect the prepayment rates on the underlying loans,

1.5.2 Prepayment risks*

The risk stems from the uncertainty of cash flows used for the valuation of ABS. Most ABS do not exhibit a bullet maturity similar to sovereign and corporate bonds, but pass-through all payments of the underlying portfolio. Unexpected high or low prepayment rates within the underlying loan portfolio change the timing and size of the assumed cash flows used for the valuation.

1.5.3 Credit risk*

The credit risk of asset backed securities can be decomposed into two elements that together define the expected amount obtained in case of default: the default risk and the recovery rate.

Default risk

Default denotes the situation in which the SPV is unable to make the contractual payment to the investors. Default risk is usually expressed in terms of probabilities of default, which in turn translate into ratings. Rating agencies such as Moodys or Standard and Poor's evaluate the probability of default based on a number of criteria including: history of default in the sector, credit enhancement, market conditions...

Recovery rate

In case of default, the recovery rate is the proportion of the amount owed that is effectively paid back to the investor. The credit enhancement features, previously discussed, may allow to mitigate the recovery rate uncertainty, by offering third party guaranty that losses will be covered up to a stated amount.

The overall rating of a security will determine the level of the credit premium required by the investors to hold an ABS.

1.5.4 Liquidity risk*

This is the risk stemming from a lack of marketability, that the investment cannot be bought or sold in terms of size and timing. Especially during the financial crisis, this marking-to-market risk turned out to be a mayor risk of this asset class.

1.5.5 Counterparty risks*

The default of one or several involved counterparties in the transaction could cause unexpected cost and interruption of cash flow streams. In general, Swap Counterparties and Servicer can be replaced, but such action mostly leads to higher cost burden for the structure.

1.6 Valuation methodologies*

In order to evaluate ABS, one needs to clearly define the cash flow characteristics of the underlying securities. The methodology employed will vary according to the nature of these cash flows.

The major difficulty in valuing ABS comes from the embedded options, namely pre-payments opportunities. In several ABS, at every point in time the borrower (credit card customer etc.) has the possibility to refinance his loan, namely to pay the entire remaining balance and borrow at new conditions. This will typically happen when interest rates fall significantly and borrowers have the possibility to refinance at better rates. The drop in interest rates should be sufficient to create a significant improvement in order to pay for all transaction fees attributable to the borrowers, namely legal expenses, origination fees and title insurance. It is therefore crucial to build a reliable model of the prepayment schedule, which will in general depend on the entire path of the interest curve over the lifetime of the loan. The prepayment model will define a prepayment scheme as a function of the characteristics of the underlying securities, the time horizon and the macroeconomic environment. Typically, the model will provide a monthly percentage of prepayment. In addition, ABS dealers provide their prepayment projections to firms such as Bloomberg or Reuters, making them available to investors.

As a result, the valuation of ABS is somehow similar to the pricing of path-dependent options. A methodology remarkably suitable to solve this type of problem is the Monte Carlo simulation. The simple idea behind this powerful methodology is to simulate trajectories of the underlying random variables – in the case of ABS: cash flows and interest rate – and to average the present value of the future cash flows across the different paths.

1.7 The 2007-2009 crisis and developments afterwards*

The success of the securitization industry seems to have been halted since the summer 2007 and the beginning of the so called subprime crisis.

Securitization has helped many individuals with subprime credit histories to obtain credit under one form or another. Indeed, securitization has allowed more subprime loans to be made because it provided lenders an efficient way to “manage” credit risk by pooling it and passing it to investors. As a result, investors have bought bundles of loans and mortgages which were so complex that nobody could put a price on them.

Investors relied on ratings agencies to rate them, but rating agencies’ long and well-known track record was in rating bonds, not complex financial products. Moreover, subprime lending was new and there was limited information on its past performance, a shortcoming that was especially important when trying to determine how it would perform during economic stress. According to the IMF, optimism about how subprime loans would perform led to more than 90 percent of securitized subprime loans being rated AAA. Market incentives for loan originators, securitizers, and even credit rating agencies did not encourage skepticism of these hard-to-understand securities. Rather, the incentives increased the volume of transactions and encouraged disregard of issues such as credit quality and prudence because all players were getting paid to get deals done and because someone else – the end investors – would ultimately hold the risk.

The problem started in the subprime lending market in the summer 2007. As interest rates in the U.S. began to rise, and thus the interest burden on the subprime borrowers was rising as well, it became evident to analysts and investors alike that there will be delinquencies, losses and downgrades. The problem was compounded by falling house prices and a serious economic slowdown.

The negative reputation owing to the moral hazard occurring with the issuance of subprime ABS spilled over to the global ABS market causing unprecedented price volatility and liquidity shortages in 2007-2009.

Realizing the inadequateness of prevailing regulations, the focus of regulators and central banks shifted to improvements of the ABS market. Central Banks introduced new measures to address information asymmetry within the securitization process. To obtain ECB repo-eligibility for ABS transparency and regular performance reporting requirements are now considerably stricter. A further introduced feature is the risk retention. Issuers of ABS have to retain a certain portion of the first loss tranche of each ABS to comply with the ECB repo-eligibility criteria. This exposes issuers directly to the risk of each transaction and intends to mitigate the risk of moral hazard and a negative selection bias of the assets in ABS.

Nevertheless, the regulatory frameworks in Europe and the US currently differ in essential points. An international alignment would provide more support for an efficient and liquid market.