Resiliency of Asset Backed Security Structures

A key tool to a diversified investment program

Asset Backed Securities (ABS) often carry a blanket misconception of being excessively risky or containing overly complex structures. The financial crisis dispelled many of the misconceptions, as prime ABS escaped the crisis unscathed. While the financial crisis crippled the automobile industry as two of the three major domestic manufacturers declared bankruptcy, senior tranches in prime ABS did not experience losses. Since the crisis, the auto industry and consumers healed their wounds, increasing sales from a 9 million unit SAAR (Seasonally Adjusted Annual Rate, automobiles) in 2009 to an over 18 million unit SAAR in 2016. Several factors contributed to the recovery in autos; positive economic growth, the Federal Reserve keeping short term interest rates at emergency levels for nearly 10 years, and loosening credit standards. As the economic recovery continues down its long path of slow growth, the memories and pain felt by the crisis fade, and borrowers and lenders are lured back into some of the same ill-fated practices that hurt them in the past.

Over the past several years, investors began to notice deterioration in the overall quality of auto loans that were securitized to create asset backed securities (ABS). These trends are visible in collateral disclosures for each public ABS offering and summaries of bank balance sheets. The weakening trend is visible in extended loan terms, higher loan to value ratios, and lower FICO scores. As auto manufacturers and lenders try to sell more cars, they have slowly become more creative in their lending practices. To push sales higher, the auto industry increasingly relied on highly incentivized leases and extending loan terms to 84 months.

While it is easy to generalize the trends in the auto lending market as troubling, a careful examination of the different submarkets may lead to different conclusions. After the financial crisis, many of the major captive auto lenders exited the subprime auto lending business, leaving that market to be served by many less experienced lenders. New lenders became more creative in their loan offerings and pursued borrowers further down the credit spectrum. For the most part, the major prime captive auto lenders serving prime borrowers resisted the trends in other submarkets. Each submarket is subject to its own analysis and should be judged on their individual merits.

While trends in underlying collateral characteristics have become less investor friendly, auto ABS securities are still structured to be very safe, offering investors with different risk profiles a variety of securities. Even in the most severe economic conditions, ABS securities are designed to shield investors from losses in senior securities by using subordination, reserve accounts, overcollateralization, and other credit enhancing mechanisms to protect senior securities.

It is critical for investors to fully understand the underlying collateral, as well as the structure of specific ABS securities because their risk profiles vary widely.

To fully understand the strengths, weaknesses, and differences between auto ABS types, investors can use historical performance data to make assumptions on future conditions. Historical data can provide insight into how specific collateral types and structures performed during periods of extreme stress, like the financial crisis. These data points are derived on a monthly basis from the performance characteristics of underlying collateral in an ABS security. In the following analysis, data points will be varied to create different scenarios to stress the collateral of the securities. The main drivers of collateral performance are:

- **Voluntary Prepayment Rate (VPR):** measures the amount of principle paid to the security before it is scheduled to be paid, on a voluntary basis (annualized rate).
- **Constant Default Rate (CDR):** measures the amount of defaults in a portfolio of loans (annualized rate).
- **Severity (SEV):** measures the percentage loss on liquidated collateral.

Each performance data point is crucial to understand as they directly influence the performance of an ABS structure. If a borrower pays off their loan balance earlier than scheduled, investors in senior securities receive their investment back faster (VPR). Many reasons can contribute to borrowers paying off their loans early; i.e., upgrading to a new car, a borrower's underlying financial situation, and insurance claim payoffs from an accident or theft. Constant default rate (CDR) and severity (SEV) are measures investors tend to focus on with more scrutiny because they dictate potential losses. CDR helps investors understand the overall health trends in the underlying collateral by measuring the annualized rate of defaults in a pool of loans. After a loan goes into default and the collateral is liquidated, typically investors will receive less than the outstanding loan balance; this percentage loss on collateral is measured by SEV. Individual CDR and SEV measures need to be evaluated with the other measure in mind. For example, at one extreme, a high CDR and zero SEV would act similarly to VPR, as collateral is being prepaid without a loss. On another extreme, collateral may experience a very low CDR but high SEV. This situation may not be too worrisome as the overall amount of collateral being liquidated is very small. Investors can create different combinations of CDR and SEV to model a variety of economic and collateral underwriting themes.

Currently, the market is bracing for greater losses on auto loan collateral as underwriting standards and auto pricing dynamics have weakened. Unlike most home loans, auto loans tend to be "underwater" for nearly their entire duration, thus investors pay close attention to credit metrics to understand the effect on default and recovery rates. As noted earlier, there are different submarkets of collateral within the overall auto debt market; prime, subprime and deep subprime. Typically FICO scores of borrowers are used to broadly categorize each submarket; an average FICO below 550 are deep subprime, above 700 prime and borrowers in between those can be considered subprime/near prime depending on a variety characteristics. To provide a fair analysis, each submarket will receive its own analysis based on its unique historical characteristics.

To capture the most recent trends in collateral underwriting and security structuring, this analysis will focus on each issuer's first deal of 2017. The table below describes the specific deals used in this analysis.

Deal Name	Issuer	Collateral Category
TAOT 2017 A	Toyota Motor Credit	Prime
SDART 2017-1	Santander Consumer USA	Subprime
ACAR 2017-1	American Credit Acceptance Receivables LLC	Deep Subprime

In order to project future performance of the above mentioned deals, historical data from previously issued deals will serve as a starting proxy. The table below shows deals from the same issuers on the same issuance platform, but their first issuances of 2015. In addition, the highest historical six month average CDR, SEV and average VPR were calculated to act as a baseline for the current analysis.

			Avg	Six Month Average	
Deal Name	Issuer	Collateral Category	VPR	CDR (H)	Sev (H)
TAOT 2015 A	Toyota Motor Credit	Prime	22.8	0.8	55.4
SDART 2015-1	Santander Consumer USA	Subprime	14.5	14.3	60.9
ACAR 2015-1	American Credit Acceptance Receivables LLC	Deep Subprime	6.4	31.0	70.5

Source: Bloomberg, Intex. (H) is the highest three month average

The baseline scenario is severe, as it takes harsh cases of all three data points and combines them. It is unlikely all three data points occurred at the same time in the historical deals or will in the future. This analysis will test several other harsher scenario combinations to stress each security to potential failure or loss. As scenarios become more challenging, certain securities will come away without loss (senior tranches), while other securities might take a loss (subordinated tranches). It is important to note some scenarios might not seem realistic, but it is important to evaluate a broad spectrum of scenarios as the future is unknown.

The table below describes how each variable will be tested. The baseline SEV will be increased by a factor of 10%, 20% and 30%; VPR will be decreased by a factor of 30%, 60% and 90%; and CDR will be increased by a factor of 40%, 80%

and 120%. By using the table above of baseline data and applying the stress factors, 27 unique scenarios will be developed to test all possible combinations.

Base SEV	x10%	x20%	x30%
Base VPR	x(-)30%	x(-)60%	x(-)90%
Base CDR	x40%	x80%	x120%

A sample performance vector, 60.9SEV, 15.9VPR, 1.1CDR, represents 60.9% of the value of liquidated cars are lost, an annualized 15.9% rate of voluntary prepayments and an annualized 1.1% rate of defaults within the pool of loans. Typically, securities are tested with more dynamic scenarios where they mirror historical data ramp up/down trends as time moves on. In reality, default rates on a new pool of loans do not start off nor end at their peak default levels. The same can be said for VPR and SEV. This analysis takes the worst outcome and applies it to the life of the bond in a constant manner, instead of nonlinear vectors seen in historical collateral performance.

Below is a summary of the three deals analyzed. Within ABS deals using subordination, there are securities with higher priority given to principle payments than others that face an increased risk of taking loss. Each security has subordinate tranche(s) that act as a loss-absorbing cushion for the senior securities. Moving from left to right on the table will display the results from increasingly harsher scenarios. The results in the table demonstrate the percentage loss to the specific tranche.

As of May 31, 2017:

Highlighted Cells Represent Percentage of Loss

As of 5/31/2017

Deal	Tranche	Credit Rating	60.9SEV, 15.9VPR, 1.1CDR	60.9SEV, 15.9VPR, 1.4CDR	60.9SEV, 15.9VPR, 1.7CDR	60.9SEV, 9.1VPR, 1.1CDR	60.9SEV, 9.1VPR, 1.4CDR	60.9SEV, 9.1VPR, 1.7CDR	60.9SEV, 2.2VPR, 1.1CDR	60.9SEV, 2.2VPR, 1.4CDR	60.9SEV, 2.2VPR, 1.7CDR	66.4SEV, 15.9VPR, 1.1CDR	66.4SEV, 15.9VPR, 1.4CDR	66.4SEV, 15.9VPR, 1.7CDR	66.4SEV, 9.1VPR, 1.1CDR	66.4SEV, 9.1VPR, 1.4CDR	66.4SEV, 9.1VPR, 1.7CDR	66.4SEV, 2.2VPR, 1.1CDR	66.4SEV, 2.2VPR, 1.4CDR	66.4SEV, 2.2VPR, 1.7CDR	71.9SEV, 15.9VPR, 1.1CDR	71.9SEV, 15.9VPR, 1.4CDR	71.9SEV, 15.9VPR, 1.7CDR	71.9SEV, 9.1VPR, 1.1CDR	71.9SEV, 9.1VPR, 1.4CDR	71.9SEV, 9.1VPR, 1.7CDR	71.9SEV, 2.2VPR, 1.1CDR	71.9SEV, 2.2VPR, 1.4CDR	71.9SEV, 2.2VPR, 1.7CDR	75SEV, 1VPR, 5.1CDR
TAOT 2017 A	A1	P-1/A+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	A2	Aaa/AAA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	A3	Aaa/AAA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	A3	Aaa/AAA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	Aa2/AA+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4.1

Deal	Tranche	Credit Rating	66.9SEV, 8.7VPR, 20CDR	66.9SEV, 8.7VPR, 25.7CDR	66.9SEV, 8.7VPR, 31.4CDR	66.9SEV, 4.9VPR, 20CDR	66.9SEV, 4.9VPR, 25.7CDR	66.9SEV, 4.9VPR, 31.4CDR	66.9SEV, 1.2VPR, 20CDR	66.9SEV, 1.2VPR, 25.7CDR	66.9SEV, 1.2VPR, 31.4CDR	73SEV, 8.7VPR, 20CDR	73SEV, 8.7VPR, 25.7CDR	73SEV, 8.7VPR, 31.4CDR	73SEV, 4.9VPR, 20CDR	73SEV, 4.9VPR, 25.7CDR	73SEV, 4.9VPR, 31.4CDR	73SEV, 1.2VPR, 20CDR	73SEV, 1.2VPR, 25.7CDR	73SEV, 1.2VPR, 31.4CDR	79.1SEV, 8.7VPR, 20CDR	79.1SEV, 8.7VPR, 25.7CDR	79.1SEV, 8.7VPR, 31.4CDR	79.1SEV, 4.9VPR, 20CDR	79.1SEV, 4.9VPR, 25.7CDR	79.1SEV, 4.9VPR, 31.4CDR	79.1SEV, 1.2VPR, 20CDR	79.1SEV, 1.2VPR, 25.7CDR	79.1SEV, 1.2VPR, 31.4CDR
SDART 2017-1	A1	P-1/A+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	A2	Aaa/AAA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	A3	Aaa/AAA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	Aa1/AA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	C	Aa3/AA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1.3
	D	Baa2/BBB	0	0	11	0	0	21	0	0	32	0	0	43	0	0	55	0	0.1	68	0	7.4	75	0	18	89	0	29	100
	E	Ba3/BB	0	0	100	0	0	100	0	7.4	100	0	51	100	0	77	100	0	100	100	0	100	100	0	100	100	0	100	100

Source: Bloomberg

Continued on next page.

Deal	Tranche	Credit Rating	77.5SEV, 4.4VPR, 43.3CDR	77.5SEV, 4.4VPR, 55.7CDR	77.5SEV, 4.4VPR, 68.1CDR	77.5SEV, 2.5VPR, 43.3CDR	77.5SEV, 2.5VPR, 55.7CDR	77.5SEV, 2.5VPR, 68.1CDR	77.5SEV, 0.6VPR, 43.3CDR	77.5SEV, 0.6VPR, 55.7CDR	77.5SEV, 0.6VPR, 68.1CDR	84.5SEV, 4.4VPR, 43.3CDR	84.5SEV, 4.4VPR, 55.7CDR	84.5SEV, 4.4VPR, 68.1CDR	84.5SEV, 2.5VPR, 43.3CDR	84.5SEV, 2.5VPR, 55.7CDR	84.5SEV, 2.5VPR, 68.1CDR	84.5SEV, 0.6VPR, 43.3CDR	84.5SEV, 0.6VPR, 55.7CDR	84.5SEV, 0.6VPR, 68.1CDR	91.6SEV, 4.4VPR, 43.3CDR	91.6SEV, 4.4VPR, 55.7CDR	91.6SEV, 4.4VPR, 68.1CDR	91.6SEV, 2.5VPR, 43.3CDR	91.6SEV, 2.5VPR, 55.7CDR	91.6SEV, 2.5VPR, 68.1CDR	91.6SEV, 0.6VPR, 43.3CDR	91.6SEV, 0.6VPR, 55.7CDR	91.6SEV, 0.6VPR, 68.1CDR
ACAR 2017-1	A	Aaa/AAA	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	B	AA	0	0	0	0	0	0	0	0	0	0	0	8.1	0	0	17	0	0	26	0	0	69	0	0	80	0	3.9	91	
	C	A	0	27	73	0	32	78	0	37	83	0	60	100	3.1	66	100	7.2	72	100	24	94	100	30	100	100	36	100	100	
	D	BBB	67	100	100	72	100	100	77	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	
	E	BB	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	100	

Source: Bloomberg

Even though both SDART and ACAR deals suffered heavy losses, the senior, AAA rated securities did not experience a loss. A special situation was created outside of the normal iterations to force a loss in TAOT's subordinate tranche. The difficult part of this analysis is developing a hypothetical economic scenario where these situations could be experienced. Similar securities in the financial crisis did not see losses or scenarios like the ones tested above. It is hard to imagine a situation where a deep subprime deal would experience a constant SEV of 91.6% and an annualized CDR of 68.1% for the life the security, while the rest of the financial and economic systems remain intact. The senior securities in the ABS deals are likely the least of an investors concern during a period of crisis. ABS securities continue to provide investors with a safe and reliable investment option. Innovation in autos and lending products may require additional layers of analysis with different data points as collateral characteristics continually change.

As society incorporates new technology and advancements in transportation, disruptive headlines across markets will persist. While these changes may advance safety and productivity for society, collateral characteristics and risks will evolve as well. Astute investors will discount headlines and evaluate collateral performance before making an investment decision regarding a security's credit quality and potential returns.

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Questions?

Please contact Chandler at info@chandlerasset.com, or 800-317-4747 with any questions or to learn about investment management solutions for public entity investment programs.