S&P Global Ratings

Research

Presale:

BMW Vehicle Owner Trust 2023-A

July 6, 2023

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Preliminary ratings

Class	Preliminary rating	Type	Interest rate	Base amount (mil. $)	Upsized amount (mil. $)	Expected legal final maturity date
A-1	A-1+ (sf)	Senior	Fixed	291.50	350.00	July 25, 2024
A-2a/A-2b	AAA (sf)	Senior	Fixed/floating(i)	437.50	525.00	April 27, 2026
A-3	AAA (sf)	Senior	Fixed	437.50	525.00	Feb. 25, 2028
A-4	AAA (sf)	Senior	Fixed	83.50	100.00	Nov. 26, 2029

Note: This presale report is based on information as of July 6, 2023. The ratings shown are preliminary. This report does not constitute a recommendation to buy, hold, or sell securities. Subsequent information may result in the assignment of final ratings that differ from the preliminary ratings. (i)The class A-2 notes will be split into fixed-rate class A-2a and floating-rate class A-2b notes at closing. The sizes of these classes will be determined at pricing, though the principal balance of the class A-2b notes may not exceed 50% of the class A-2 notes' aggregate principal balance. The class A-2b interest rate will be a floating rate indexed to compounded SOFR plus a margin (to be determined). SOFR--Secured overnight financing rate.

Profile

Expected closing date	July 18, 2023.
Collateral	Prime fixed-rate auto loan receivables.
Originator, sponsor, seller, administrator, and servicer	BMW Financial Services N.A. LLC.
Originator	BMW Bank of North America, a wholly owned subsidiary of BMW Financial Services N.A. LLC.
Depositor	BMW FS Securities LLC.
Issuing entity	BMW Vehicle Owner Trust 2023-A.
Indenture trustee	U.S. Bank Trust Co. N.A. (A+/Stable/A-1).
Owner trustee	Wilmington Trust N.A. (A-/Stable/A-2).
Lead underwriter	TD Securities (USA) LLC.
Bank account provider	U.S. Bank N.A. (A+/Stable/A-1).

Rationale

The preliminary ratings assigned to BMW Vehicle Owner Trust 2023-A's (BMWOT 2023-A) automobile receivables-backed notes reflect:

- The availability of approximately 6.0% credit support for both base and upsized pools (hard credit enhancement and excess spread) for the class A (A-1, A-2, A-3, and A-4) notes based on stressed cash flow scenarios. This credit support level provides at least 5.0x coverage for both the base and upsized pools of our expected cumulative net loss (ECNL) of 0.55% for the class A notes (see the Credit Enhancement and Collateral and the Cash Flow Modeling Assumptions and Results sections below).
- The timely payment of interest and principal by designated legal final maturity dates under our stressed cash flow modeling scenarios, which we believe are appropriate for the assigned preliminary ratings (see the Cash Flow Modeling section). In our modeling approach, we used a bifurcated pool method, in which the low-annual percentage rate (low-APR) loans (those with APRs at or below our APR bifurcation threshold) prepay and default at lower rates than the high-APR loans.
- The expectation that under a moderate ('BBB') stress scenario (2.0x our expected loss level), all else being equal, our preliminary 'AAA (sf)' ratings on the class A notes will be within the credit stability limits specified by section A.4 of the Appendix contained in "S&P Global Ratings Definitions," published June 9, 2023.
- The collateral characteristics of the securitized pool of prime automobile loans, and our updated macroeconomic forecast and forward-looking view of the auto finance sector (see the Credit Enhancement And Collateral and the Macroeconomic And Auto Finance Sector Outlook sections below).
- The series' bank account at U.S. Bank N.A (A+/Stable/A-1), which do not constrain the preliminary ratings.
- Our operational risk assessment of BMW Financial Services N.A. LLC, as servicer, and our view of the company's underwriting.
- Our assessment of the transaction's potential exposure to environmental, social, and governance credit factors, that are in line with our sector benchmark.
- The transaction's legal and payment structures.

Our ECNL for BMWOT 2023-A is 0.55%, unchanged from the last transaction that we rated (BMWOT 2022-A). It reflects:

- Our view that the BMWOT 2023-A collateral characteristics are generally consistent with that of BMWOT 2022-A.
- BMW Financial Services' outstanding BMWOT series, which continue to perform in line with or better than our initial expectations.
- Our forward-looking view of the U.S. economy and the auto finance sector.

Environmental, Social, And Governance (ESG) Factors

Our rating analysis considers a transaction's potential exposure to ESG credit factors. For the auto ABS sector, we view the exposure to environmental credit factors as above average, to social credit factors as average, and to governance credit factors as below average (see "ESG Industry Report Card: Auto Asset-Backed Securities," published March 31, 2021).

The exposure to ESG credit factors in this transaction is in line with our sector benchmark. Environmental credit factors are generally viewed as above average, given that the collateral pool primarily comprise vehicles with internal combustion engines (ICEs), which emit pollutants that contribute to climate transition risks. While the adoption of electric vehicles and future regulation could in time lower ICE vehicle values, we believe our current approach to evaluating recovery and residual values adequately accounts for vehicle values over the relatively short expected life of the transaction. As a result, we have not separately identified this as a material ESG credit factor in our analysis.

Credit Enhancement And Collateral

Structural changes from BMWOT 2022-A

Notable structural changes from BMWOT 2022-A include:

- The yield supplement overcollateralization (YSOC) discount rate increased to 8.60% from 6.40%.
- The initial YSOC as a percentage of the initial adjusted pool balance increased to 8.55% from 7.44%.

Table 1 shows the credit enhancement changes from BMWOT 2022-A.

Table 1

Credit enhancement summary

	BMWOT				
	2023-A (base)	2023-A (upsized)	2022-A	2020-A	2019-A
Overcollateralization (%)(ii)					
Initial	2.50	2.50	2.50	2.50	2.50
Target	2.50	2.50	2.50	2.50	2.50
Reserve account (%)(i)					
Initial	0.25	0.25	0.25	1.00	0.25
Target	0.25	0.25	0.25	1.00	0.25
After the pool factor drops below 50%	0.25	0.25	0.25	0.50	0.25
Total initial hard credit enhancement (%)(i)	2.75	2.75	2.75	3.50	2.75
Total target hard credit enhancement (%)(i)	2.75	2.75	2.75	3.50	2.75

Table 1

Credit enhancement summary (cont.)

	BMWOT				
	2023-A (base)	2023-A (upsized)	2022-A	2020-A	2019-A
Total after 50% pool factor (%)(i)	2.75	2.75	2.75	3.00	2.75
YSOA required rate (%)	8.60	8.60	6.40	4.60	5.65
Estimated annual excess spread (including YSOA) (%)(ii)	2.23	2.23	2.24	2.79	2.28
Initial aggregate receivables balance ($)	1,391,674,845	1,670,093,595	1,652,928,130	1,054,601,017	1,350,116,131
Initial YSOA ($)	109,620,926	131,629,369	114,466,502	28,959,987	68,064,200
Initial adjusted receivables balance ($)	1,282,053,919	1,538,463,226	1,538,461,629	1,025,641,029	1,282,051,932
Initial overcollateralization ($)	32,053,919	38,464,226	38,461,629	25,641,029	32,051,932
Total securities issued ($)	1,250,000,000	1,500,000,000	1,500,000,000	1,000,000,000	1,250,000,000
YSOA as % of the initial aggregate receivables balance	7.88	7.88	6.93	2.75	5.04
YSOA as % of the initial adjusted receivables balance	8.55	8.56	7.44	2.82	5.31

(i)Percentage of the initial adjusted pool balance. (ii)Estimated excess spread before pricing. Assumes a 1.00% annual servicing fee. Annual excess spread is adjusted for yield supplement overcollateralization. BMWOT--BMW Vehicle Owner Trust. YSOA--Yield supplement overcollateralization amount.

Collateral changes from BMWOT 2022-A

Notable changes in the collateral composition from BMWOT 2022-A include:

- The weighted average contract rate (APR) increased to 4.37% (base and upsized) from 2.81%.
- The percentage with an original term greater than 60 months increased to 45.40% (45.66% if upsized) from 41.51%.
- The percentage with a remaining term greater than 60 months increased to 25.69% (25.80% if upsized) from 20.12%.
- Used (near new) vehicle pool concentration decreased to 19.35% (19.48% if upsized) from 30.69%.

We believe the series 2023-A pool is generally comparable to the series 2022-A pool (see table 2).

Table 2

Collateral comparison(i)

	BMWOT					
	2023-A (base)	2023-A (upsized)	2022-A	2020-A	2019-A	2018-A(ii)
Receivables balance (mil. $)	1,391.67	1,670.09	1,652.93	1,054.60	1,350.12	1,422.53
No. of receivables	38,188	45,857	54,064	37,199	48,130	53,449

Table 2

Collateral comparison(i) (cont.)

	BMWOT					
	2023-A (base)	2023-A (upsized)	2022-A	2020-A	2019-A	2018-A(ii)
Avg. principal balance ($)	36,443	36,420	30,574	28,350	28,051	26,615
Avg. original principal balance ($)	49,152	49,079	42,272	37,604	36,684	33,735
Weighted avg. APR (%)	4.37	4.37	2.81	3.35	3.12	2.40
Weighted avg. original term (mos.)	64.52	64.56	63.93	65.06	63.62	63.22
Weighted avg. remaining term (mos.)	51.76	51.78	49.93	51.84	51.14	52.98
Weighted avg. seasoning (mos.)	12.76	12.78	14.00	13.23	12.48	10.24
Weighted avg. FICO score	787	787	788	784	784	778
Original term 61-72 mos. (%)	45.40	45.66	41.51	48.41	41.46	42.62
Remaining term 61-72 mos. (%)	25.69	25.80	20.12	19.87	16.76	24.12
% of new vehicles	80.65	80.52	69.31	70.51	68.19	60.07
% of used vehicles (includes near-new)	19.35	19.48	30.69	29.49	31.81	39.93
Vehicle segment (%)						
Passenger cars	31.85	31.77	31.86	41.88	45.20	51.55
Light trucks	61.80	61.82	61.60	49.91	46.79	35.31
Motorcycles	1.62	1.62	1.37	1.23	1.45	3.58
MINI passenger cars	4.73	4.79	5.17	6.97	6.57	9.56
Top five state concentrations (%)						
	CA=18.22	CA=18.14	CA=17.00	CA=16.24	CA=18.39	CA=20.27
	TX=12.33	TX=12.21	TX=10.43	TX=12.37	TX=11.52	TX=10.34
	FL=10.46	FL=10.54	FL=8.95	FL=7.43	FL=7.88	FL=7.61
	NJ=5.77	NJ=5.75	PA=4.93	PA=4.85	NJ=4.53	NJ=5.19
	GA=4.72	GA=4.73	NJ=4.76	IL=4.77	PA=4.43	PA=4.50

(i)All percentages are of the initial receivables balance as of each series' respective cutoff date. (ii)Not rated by S&P Global Ratings. APR--Annual percentage rate. BMWOT--BMW Vehicle Owner Trust.

We also compared the BMWOT 2023-A collateral pool to those of several peers in the prime auto loan sector (see table 3). The BMWOT 2023-A pool has the highest weighted average FICO score, the second-highest average original loan amount behind the Mercedes-Benz Auto Receivables Trust 2023-1 pool, and the second-lowest percentage of loans with an original term greater than 60 months behind the Honda Auto Receivables 2023-2 Owner Trust pool.

Our expected loss of 0.55% for the BMWOT 2023-A pool considers these peer collateral comparisons (see the S&P Global Ratings' Expected Loss section below).

Table 3

Peer collateral comparison(i)

	BMWOT 2023-A (base)	BMWOT 2023-A (upsized)	MBART 2023-1	TAOT 2023-A	HAROT 2023-2
Receivables balance (mil. $)	1,391.67	1,670.09	2,117.73	1,813.67	1,619.45
No. of receivables	38,188	45,857	52,827	69,360	69,210
Avg. principal balance ($)	36,443	36,420	52,741	33,020	30,573
Avg. original principal balance ($)	49,152	49,079	40,088	26,129	23,399
Weighted avg. APR (%)	4.37	4.37	4.85	3.64	3.78
Weighted avg. original term (mos.)	64.52	64.56	67.48	66.50	63.16
Weighted avg. remaining term (mos.)	51.76	51.78	54.32	56.20	51.61
Weighted avg. seasoning (mos.)	12.76	12.78	13.16	10.30	11.55
Loans with original term greater than 60 mos. (%)	45.40	45.66	79.29	63.10	39.14
Maximum original loan term (mos.)	72	72	72	72	72
New vehicles (%)	80.65	80.52	50.14	79.06	88.86
Used vehicles (includes near-new) (%)	19.35	19.48	49.86	20.94	11.14
Weighted avg. FICO score	787	787	759	766	766
Minimum FICO	601	601	650	620	446
Top three state concentrations (%)					
	CA=18.22	CA=18.14	CA=21.75	CA=26,46	CA=17,96
	TX=12.33	TX=12.21	FL=15.29	TX=13.30	TX=9.89
	FL=10.46	FL=10.54	TX=14.80	PA=4.35	OH=6.32

(i)All percentages are of the initial gross receivables balance. BMWOT--BMW Vehicle Owner Trust. HAROT--Honda Auto Receivables Owner Trust. MBART--Mercedes-Benz Auto Receivables Trust. TAOT--Toyota Auto Receivables Owner Trust. APR--Annual percentage rate. ECNL--Expected cumulative net loss. N/A--Not applicable.

Macroeconomic And Auto Finance Sector Outlook

We believe changes in the unemployment rate are a key determinant of charge-offs in the auto finance industry. We have also observed that recovery values tend to weaken during recessionary periods.

In our analysis, we considered the economic data and forecasts outlined in table 4, and their baseline effect on collateral credit quality in determining our base-case expected loss level.

Despite 500 basis points of official rate hikes, the U.S. economy has remained resilient. First-quarter 2023 real GDP growth came in at 1.3% annualized, and second-quarter GDP is tracking close to 2.0% annualized. In light of the economic resilience, our baseline scenario has a shallower and more attenuated slowdown than previously. Importantly, our baseline U.S. forecast no longer contains a recession. Our updated forecast is for real GDP growth to slow to under 1.0% in the second half of the year and register only 1.3% and 1.5% in 2024 and 2025, respectively. Unemployment will gradually rise to an average of 4.5% in 2025 (see "Economic Outlook U.S. Q3 2023: A Sticky Slowdown Means Higher For Longer," published June 26, 2023).

Inflation remains a concern because it is eroding wage gains and the savings cushion that was built during the pandemic, particularly for those with lower incomes and smaller cushions.

Table 4

U.S. economic factors

	Actual	Forecast			
	2022	2023	2024	2025	2026
Real GDP (% year-over-year growth)	2.1	1.7	1.3	1.5	1.8
Unemployment rate (annual average, %)	3.7	3.5	4.0	4.5	4.6
Consumer Price Index (CPI) (annual average, %)	8.0	4.3	2.7	2.3	2.1

Sources: Bureau of Economic Analysis, Bureau of Labor Statistics, and S&P Global Ratings Economics forecasts.

S&P Global Ratings' Expected Loss: 0.55%

We determined our expected loss for BMWOT 2023-A by analyzing:

- The transaction's collateral characteristics relative to those of outstanding series (see table 2 above);
- The managed portfolio performance and origination static pool data and their relative performances (see table 5); and,
- The outstanding series' performance (see table 6 and chart 1).

Given BMW's established performance track record as a consistent issuer, we placed more emphasis on the outstanding series' performance when determining the expected loss for BMWOT 2023-A. We complemented this analysis with our forward-looking view of the economy and the auto finance sector (see the Macroeconomic And Auto Finance Sector Outlook section above).

Overall, we expect BMWOT 2023-A to experience lifetime CNLs of 0.55%, unchanged from BMWOT 2022-A.

Managed Portfolio

The retail auto managed portfolio grew approximately 4% year over year to $19.3 billion as of March 31, 2023 (see table 5). Total delinquencies increased to 1.51% from 0.98%, while annualized net charge-offs increased to 0.30% from 0.07% as a percentage of the average principal balance outstanding. However, although total delinquencies and charge offs increased year over year, they are both below pre-COVID-19 pandemic levels.

Table 5

Managed portfolio

	Three months ended March 31		Year ended Dec. 31				
	2023	2022	2022	2021	2020	2019	2018
Principal amount outstanding (bil. $)	19.29	18.57	18.55	18.43	16.48	15.85	15.68
Avg. principal amount outstanding (bil. $)	19.07	18.50	18.64	17.45	16.17	15.76	15.34
No. of contracts outstanding	662,584	683,430	661,560	688,973	666,268	656,617	639,615
Avg. no. of contracts outstanding	662,072	686,202	675,267	677,621	661,443	648,116	625,660
Delinquencies (%)(i)							
30-59 days	0.71	0.54	0.69	0.52	0.63	1.02	1.05
60-89 days	0.25	0.20	0.30	0.21	0.29	0.36	0.42
90 days or more	0.23	0.24	0.29	0.23	0.73	0.36	0.44
Total 30-plus days	1.19	0.98	1.28	0.96	1.65	1.73	1.91
No. of repossessions as a % of the avg. no. of contracts outstanding (ii)	0.26	0.19	0.22	0.40	0.53	0.88	0.96
Net losses as a % of avg. principal amount outstanding(ii)	0.30	0.07	0.18	0.21	0.44	0.69	0.80

(i)As a percentage of the principal balance outstanding. (ii)Annualized.

Origination Static Pool Analysis

To derive the base-case expected loss for BMWOT 2023-A, we reviewed BMW FS' auto loan origination static pool loss performance data, as well as the performance of its securitized pools. We also reviewed BMW FS' managed pool performance and the deal-level collateral characteristics. We then compared our expected loss level for the series 2023-A pool with our projections for BMW FS' peers to verify that the loss range remained appropriate, given the relevant differences across the issuers and their pools.

BMWOT Transaction Performance

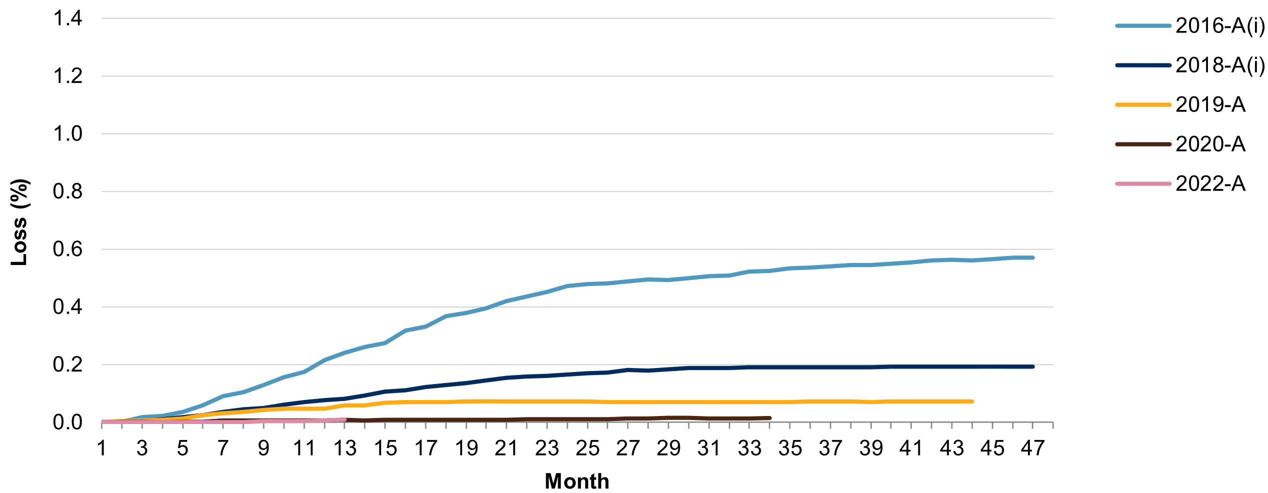
BMW FS has an extensive auto loan securitization history, and it provided cumulative net loss (CNL) performance data on its BMWOT 2011-A, 2013-A, 2014-A, 2016-A, 2018-A, 2019-A, 2020-A, and 2022-A securitizations (BMWOT 2020-A and 2022-A are currently outstanding). The company also provided CNL performance data on its quarterly originations going back to 2010.

BMWOT securitizations have maintained consistently low losses (see charts 1-3). The paid-off BMWOT 2011-A, 2013-A, 2014-A, 2016-A, and 2018-A securitizations experienced CNLs in the 0.11% to 0.57% range, while the outstanding BMWOT 2020-A and 2022-A transactions have taken losses of approximately 0.01% each. BMWOT 2016-A, 2018-A, and 2019-A experienced cumulative recoveries of 53%-66%. Meanwhile, considering the ongoing auto vehicle and parts shortages, BMWOT 2020-A and BMWOT 2022-A have experienced cumulative recoveries 83% and 53%, respectively.

In June 2023, we revised our ECNLs for three BMWOT series: 2019-A, 2020-A, and 2022-A. Performance on these transactions were stronger than our original ECNLS, and we lowered our loss expectation accordingly (see "Seven Ratings Affirmed On Three BMW Vehicle Owner Trust Transactions," published June 23, 2023).

Chart 1

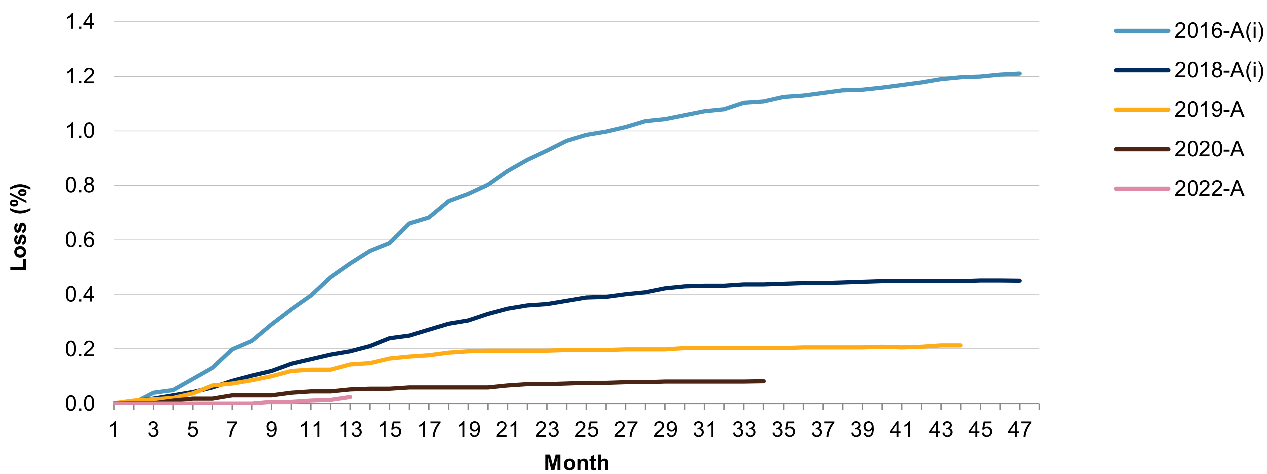
BMWOT securitization cumulative net losses



(i)Paid off. Not rated by S&P Global Ratings. BMWOT--BMW Vehicle Owner Trust.

Chart 2

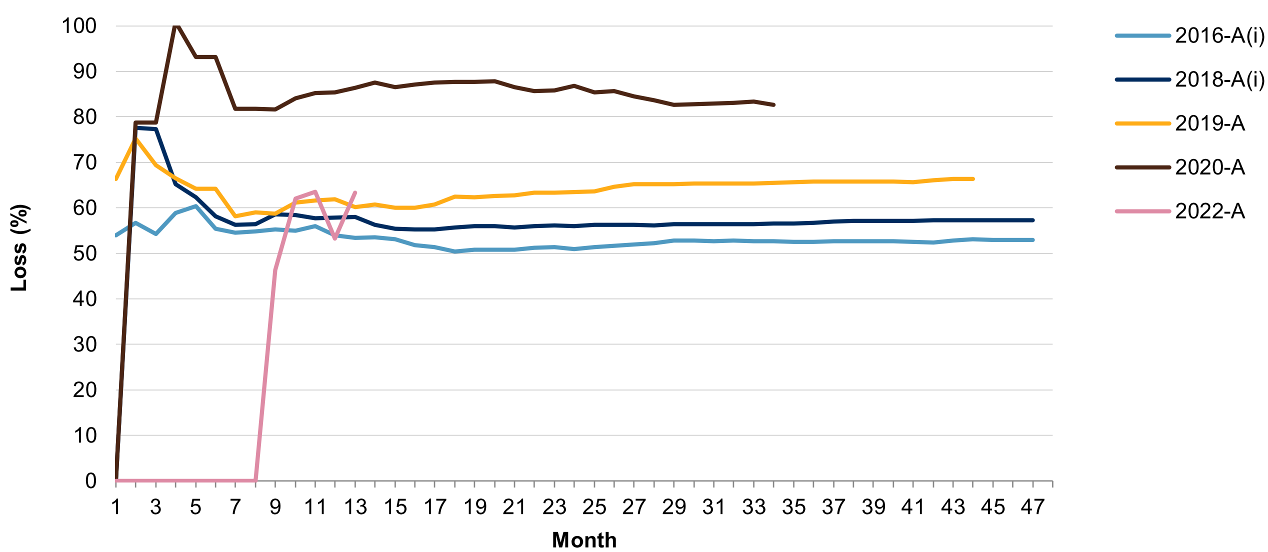
BMWOT securitization cumulative defaults



(i)Paid off. Not rated by S&P Global Ratings. BMWOT--BMW Vehicle Owner Trust.

Chart 3

BMWOT securitization cumulative recoveries



(i)Paid off. Not rated by S&P Global Ratings. BMWOT--BMW Vehicle Owner Trust.

Table 6

Collateral performance and CNL expectations for outstanding BMWOT transactions

As of the June 2023 distribution date

Series	Mo.
2020-A	35
2022-A	13

(i) Lifetime expected CNLs were revised on May 19, 2023, for series 2022-1 and 2022-2. BMOT--BMW Vehicle Owner Trust. CNL--Cumulative net loss. N/A--Not applicable.

Legal Overview And Transaction Structure

Legal overview

In rating this transaction, S&P Global Ratings will review the legal matters it believes are relevant to its analysis, as outlined in its criteria.

BMWOT 2023-A is structured as a true sale of the receivables from BMW FS (originator and sponsor) and BMW Bank of North America (originator and a wholly owned subsidiary of BMW FS) to BMW FS Securities LLC (the depositor and a bankruptcy-remote special-purpose entity). The depositor will, in turn, transfer and assign the receivables to BMWOT 2023-A, the issuer. BMWOT 2023-A will then pledge the rights to the receivables to the indenture trustee for the noteholders' benefit (see chart 4 for the transaction structure).

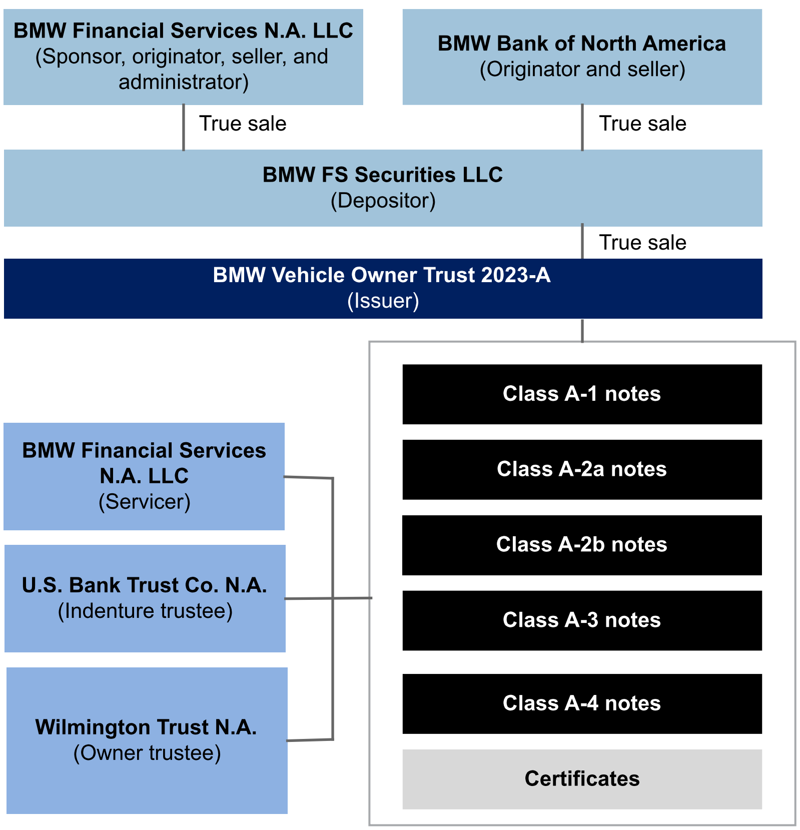
Transaction structure

BMWOT 2023-A incorporates the following structural features:

- A sequential-pay mechanism that results in increased credit enhancement for the senior notes as the pool amortizes.
- Overcollateralization of 2.50% of the adjusted pool balance.
- A nondeclining reserve account that equals at least 0.25% of the initial adjusted pool balance.
- A yield supplement overcollateralization amount (YSOA) that initially will be 8.56% of the adjusted pool balance and calculated each month as the pool amortizes, based on the aggregate amount by which the principal balance outstanding for each receivable with an APR less than 8.60% exceeds the present value (calculated using the 8.60% discount rate) of the sum of the scheduled payments due on each such receivable.
- Excess spread, to the extent available after covering net losses, which pays principal on the outstanding notes to build credit enhancement to the target level.

Chart 4

Transaction structure



Payment Priority

On each distribution date prior to an acceleration of the notes, available funds will be distributed according to the priority shown in table 6.

Table 6

Payment waterfall

Priority	Payment
1	Servicing fee of 1.00% of the current pool balance and any unpaid servicing fees.
2	To the indenture trustee, owner trustee, and asset representations reviewer, pro rata, for payment of any fees, expenses, and indemnification amounts in an aggregate amount not to exceed $250,000 in any calendar year.
3	Interest, pro rata, to the class A noteholders.
4	Principal payments sequentially in the amount of the first-priority principal distribution amount, which is the excess of the aggregate note balance as of the end of the preceding payment date over the adjusted pool balance with respect to that payment date.
5	Reserve account payments until the reserve account required amount is reached.
6	Principal payments sequentially in the amount of the regular principal distribution amount, which is the excess of the aggregate note balance as of the end of the preceding payment date minus the adjusted pool balance less the target overcollateralization amount with respect to that payment date, over the first-priority principal distribution amount with respect to that payment date.
7	Any accrued and unpaid indenture trustee, owner trustee, and asset representations reviewer fees, expenses, and indemnification amounts in excess of the amount paid in item 2 above.
8	Any remaining amounts to the certificateholders.

Cash Flow Modeling Assumptions and Results

In our cash flow analysis, we assess the availability of asset cash flows to meet the transaction's promised obligations under a variety of stress assumptions, while considering the transaction structure and available credit support. We also use our cash flow analysis in other aspects of our ratings analysis, including the testing of credit stability (sensitivity analysis) and legal final analysis.

In a stressed scenario, liquidity risk could arise due to interest shortfalls from the yield on the loans being lower than the yield on the bonds (negative carry risk). This could occur because the bonds pay sequentially, leading to higher-coupon debt remaining outstanding at the tail end of the transaction. In this transaction, negative carry risk is addressed through the YSOA.

Break-Even Analysis

For the BMWOT 2023-A transaction structure, we used a bifurcated-pool method and applied the assumptions outlined in table 7 in our cash flow analysis to simulate stress scenarios that we believe are appropriate for the assigned preliminary ratings. To assign a rating to a class, we consider the class' lower break-even (maximum net losses the class can withstand without defaulting) and generally expect it to be equal to or greater than the rating stressed scenario break-even requirement.

Under this approach, we bifurcated the pool between low-APR loans (underwater) and high-APR loans (above-water) using an APR of 5.00% and applied different prepayment and default assumptions between the two pools. For high-APR loans (with APRs greater than 5.00%), we ran faster voluntary prepayments, disproportionately higher losses, and faster loss timing than for the low-APR loans (with APRs of 5.00% or less). Conversely, we ran a slower voluntary prepay speed, disproportionately lower losses, and slower loss timing on the low-APR loans.

These combined assumptions caused the weighted average APR of the pool to decrease faster over time and increases the likelihood that the YSOA will be used for yield enhancement rather than credit enhancement, thus decreasing the break-even levels.

Our criteria establish rating-specific minimum credit enhancement levels, based on our view that there are limits on the predictability of auto receivable performance. For 'AAA (sf)' ratings, the minimum level is 4.0%, of which 2.5% must be in the form of hard credit support. In our stress cash flow scenarios for the transaction, we assessed the level of available credit enhancement relative to the minimum required.

For the class A-2a/A-2b floating-rate tranche, we applied our stressed interest rates for one-month SOFR, as described in our criteria and corresponding guidance, "Methodology To Derive Stressed Interest Rates In Structured Finance," published Oct. 18, 2019. We modeled the maximum potential size of the class A-2a/A-2b note balances (up to 50.00% of the class A-2a/A-2b notes) indexed to SOFR.

Based on our stressed cash flows, the break-even net loss results show that the class A notes are credit-enhanced to the degree appropriate for the assigned preliminary ratings (see table 8).

Table 8

Break-even cash flow assumptions

Servicing fee (%)	1.0
Recovery rate (%)	50.00
Charge-off and recovery lag (mos.)	3.0
Bifurcated pool (%)	
Low APR (i)	65.0
High APR	34.9
Loss allocation (% of total losses)	
Low APR	55.00
High APR	45.00
Voluntary ABS (%)	
Low APR	0.25
High APR	1.50
CNL timing mos.: (12/24/36/48/60) (%)	
Low APR	30/30/30/10
High APR	40/40/20

(i)The subvened/nonsubvened cutoff annual percentage rate is 5.0%. (ii)The maximum cumulative net losses on the pool that the transaction can withstand without triggering a payment default on the class A notes. ABS--Absolute prepayment speed.

Table 9

Break-even cash flow results

	Class A
Preliminary rating	A-1+ (sf)/AAA (sf)
CNL timing mos.: (12/24/36/48/60) (%)	
Aggregate	36/72/96/100
Low APR	33/65/93/100
High APR	40/80/100
Approx. break-even CNL rate (%)(i)	6.0

(i)The maximum cumulative net losses (with 100% credit to any excess spread) that the transaction can withstand without triggering a payment default on the relevant class of notes. CNL--Cumulative net loss. Mos.--Months.

Sensitivity Analysis

In addition to running break-even cash flows, we undertook sensitivity analyses using the assumptions in table 7. We believe that under a moderate ('BBB') stress scenario (2.0x our minimum credit enhancement level, based on 0.80% ECNL) and with 100% credit to any excess spread, all else being equal, our preliminary ratings will be within the credit stability limits specified in section A.4 of the Appendix in S&P Global Ratings Definitions," published June 9, 2023 (see table 10 and chart 6). The 0.80% implied ECNL is based on our 4.00% minimum credit enhancement level for a 'AAA' rating, as outlined in our auto criteria.

Table 10

Credit stability as a limiting rating factor

	Maximum projected deterioration associated with rating levels for one- and three-year horizons under moderate stress conditions				
	AAA	**AA**	**A**	**BBB**	**BB**
One year(i)	AA	A	BB	B	CCC
Three years(i)	BBB	BB	B	CCC	D

(i)These credit-quality transitions do not reflect our view of the expected degree of deterioration that rated issuers or obligations could experience over the specified time horizons, nor do they reflect the typical historical levels of deterioration among rated issuers and securities.

Chart 5

'BBB' sensitivity loss coverage multiples | base

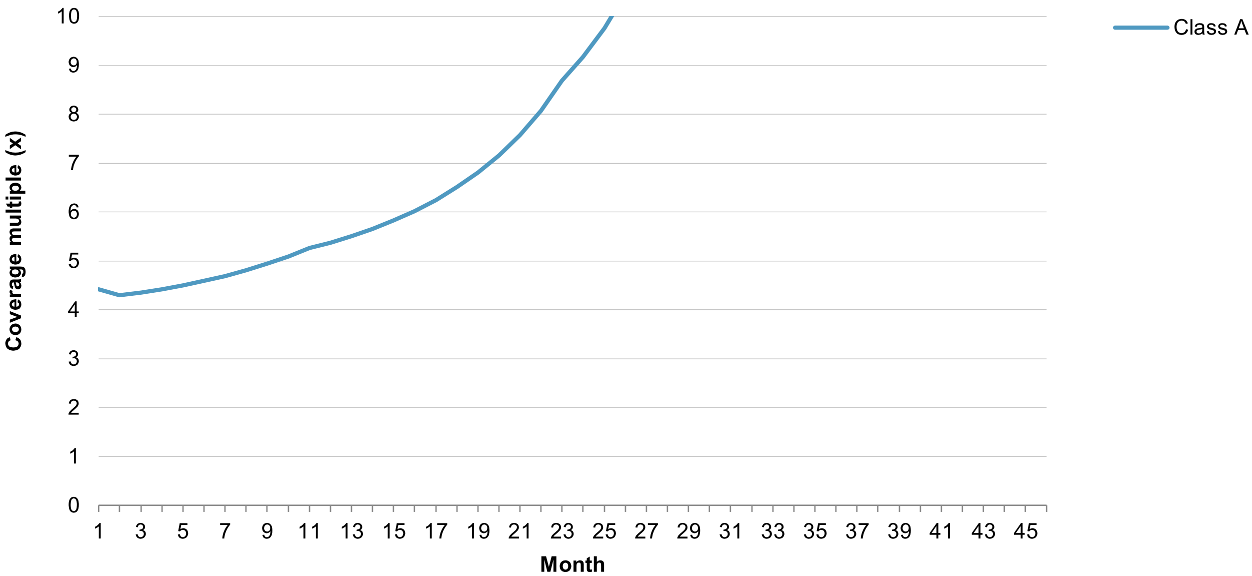
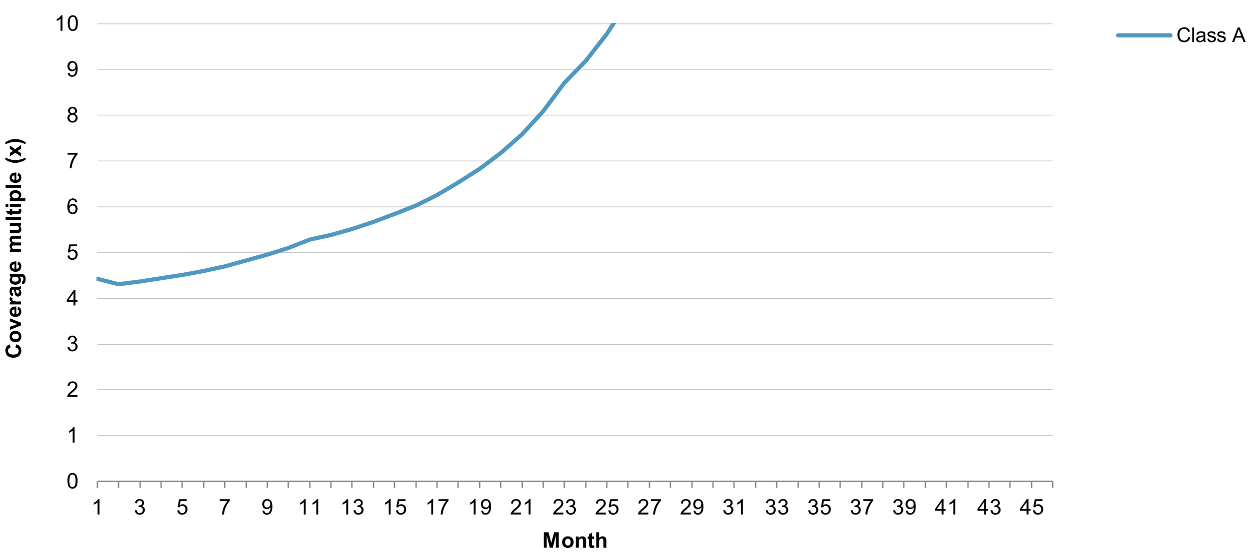


Chart 6

'BBB' sensitivity loss coverage multiples | upsized



The proposed legal final maturity date for the money market tranche (class A-1) is July 25, 2024. To test whether the money market tranche can be repaid by the proposed legal final date, we ran cash flows using assumptions to delay the principal collections during that time period. Based on our cash flow results, approximately 12 months of principal collections would be sufficient to pay off the money market tranche.

Legal Final Maturity

To test the legal final maturity dates proposed for the class A-2 and A-3 notes, we determined the dates on which the respective notes were fully amortized in a zero-loss, zero-prepayment scenario and then added three months to the result. For the longest-dated security (class A-4), at least six months were added to the tenor of the longest receivable in the pool to accommodate potential extensions on the receivables. Furthermore, in our break-even cash flow scenario for each respective rating level, we confirmed that there was sufficient credit enhancement to cover losses and repay the related notes in full by the legal final maturity date.

BMW FS

BMW Financial Services N.A. Inc., the predecessor of BMW FS, was incorporated on April 23, 1984, in Delaware and converted into a limited liability company on May 1, 2000. BMW FS is responsible for pooling and servicing the pool assets and structuring the securitization transaction.

Related Criteria

- Criteria | Structured Finance | ABS: Global Auto ABS Methodology And Assumptions , March 31, 2022
- General Criteria: Environmental, Social, And Governance Principles In Credit Ratings , Oct. 10, 2021
- Criteria | Structured Finance | General: Global Framework For Payment Structure And Cash Flow Analysis Of Structured Finance Securities , Dec. 22, 2020
- Criteria | Structured Finance | General: Methodology To Derive Stressed Interest Rates In Structured Finance , Oct. 18, 2019
- Criteria | Structured Finance | Legal: U.S. Structured Finance Asset Isolation And Special-Purpose Entity Criteria , May 15, 2019
- Criteria | Structured Finance | General: Counterparty Risk Framework: Methodology And Assumptions , March 8, 2019
- Criteria | Structured Finance | General: Incorporating Sovereign Risk In Rating Structured Finance Securities: Methodology And Assumptions , Jan. 30, 2019
- General Criteria: Methodology For Linking Long-Term And Short-Term Ratings , April 7, 2017
- Criteria | Structured Finance | General: Global Framework For Assessing Operational Risk In Structured Finance Transactions , Oct. 9, 2014
- General Criteria: Global Investment Criteria For Temporary Investments In Transaction Accounts , May 31, 2012
- General Criteria: Principles Of Credit Ratings , Feb. 16, 2011

- Criteria | Structured Finance | General: Methodology For Servicer Risk Assessment , May 28, 2009

Related Research

- Credit Conditions North America Q3 2023: Risks Vs. Resilience, June 27, 2023
- Economic Outlook Canada Q3 2023: A First-Half Resurgence Will Give Way To An Inevitable Slowdown, June 26, 2023
- Economic Outlook U.S. Q3 2023: A Sticky Slowdown Means Higher For Longer, June 26, 2023
- Seven Ratings Affirmed On Three BMW Vehicle Owner Trust Transactions, June 23, 2023
- U.S. Auto Loan ABS Tracker: April 2023 Performance, June 9, 2023
- S&P Global Ratings Definitions, June 9, 2023
- BMW AG, Dec. 16, 2021