

Carlyle U.S. CLO 2023-3 Rating Report

EJR Final Rating
Non-NRSRO Rating
AAA (sf)
AAA (sf)
AAA (sf)
A+ (sf)
BB+ (sf)
BB- (sf)





Rating Summary

Tranche Name	EJR Implied Rating	EJR Final Rating NonNRSRO Rating	Other NRSROs EJR Equivalent Rating	Current Interest OC (%)	Current Principal OC (%)	Subordir	rrent nation ¹ (%) ets at Par	Interest Rate
A1	AAA (sf)	AAA (sf)	AAA	133.9	120.4	37.9	40.3	S 3MO + 1.74
A2	AAA (sf)	AAA (sf)	AAA	133.9	120.4	34.2	36.7	S 3MO + 2.25
В	AAA (sf)	AAA (sf)	AA	133.9	120.4	22.4	25.3	S_3MO + 2.60
С	A+ (sf)	A+ (sf)	Α	124.8	111.0	16.7	19.9	S_3MO + 3.00
D	BB+ (sf)	BB+ (sf)	BBB-	115.9	99.6	10.3	13.7	S_3MO + 5.50
E	BB- (sf)	BB- (sf)	BB-	110.8		6.2	9.8	S_3MO + 8.40

Note: The data used in the analysis of this report was updated on

MV = Market prices reported by the trustee on the latest report (when available)

Par = Par Value

Transaction Summary

We are providing the rating of Carlyle U.S. CLO 2023-3 as a Non-NRSRO rating. The transaction closed on August 17, 2023. It had a reinvestment period, which ended on October 15, 2028. It has a maturity date of October 15, 2036. The Dealer and Trustee are Barclays and U.S. Bank Trust Company, respectively. The issued notes are collateralized by 99.0 senior secured loans, cash, and eligible investments with the balance of the portfolio consisting of -98.0 second lien loans and senior unsecured loans. Carlyle CLO Management serves as the collateral manager.

Quantitative Analysis Key Credit Metrics

Metrics	Number
SENIOR TRANCHE SUBORDINATION (%)	37.9
DIVERSITY SCORE	59
EJR WEIGHTED AVERAGE RATING SCORE	3840.6
WEIGHTED AVERAGE LIFE (Years)	4.8
CCC+ OR LESS (%)	3.8

As of November 24, 2023, the total balance of the underlying assets was approximately \$421.8M. The diversity score of the portfolio was 59. Egan-Jones's weighted average rating score and weighted average life (years) of the collateral were 3840.6 and 4.8, respectively. Approximately 3.8% of the portfolio's assets were rated CCC+ or less by other agencies. Senior tranche subordination was 37.92%.

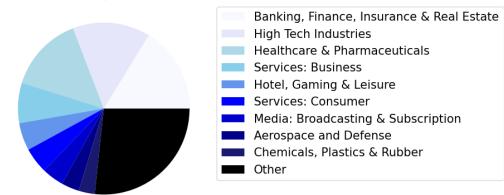
^{1.} Current Subordination = (Collateral Value- (Pari-Passu Balance + Senior Balance)) / Collateral Value



Portfolio Characteristics Industry Concentration

Top 5 asset industries	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
Banking, Finance, Insurance & Real Estate	68.5	16.2	8.9	3.8	97.8
High Tech Industries	61.6	14.6	9.5	4.2	94.5
Healthcare & Pharmaceuticals	60.4	14.3	9.0	3.9	93.7
Services: Business	31.9	7.6	9.5	4.1	96.6
Hotel, Gaming & Leisure	21.9	5.2	8.3	3.4	97.3

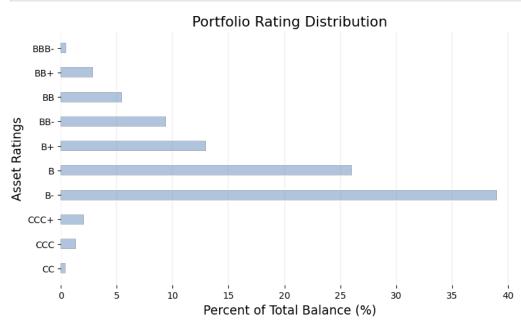
Top 10 Industry Contribution



The top 5 industries constituted 57.9% of the underlying portfolio with a total current balance of \$244.4M. The top 5 industries are Banking, Finance, Insurance & Real Estate. High Tech Industries. Healthcare & Pharmaceuticals. Services: Business. Hotel, Gaming & Leisure, The top 10 industries constituted 76.3% of underlying portfolio with a total current balance of \$321.6M.

Rating of Underlying Assets

Bottom 5 asset ratings	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
В	109.8	26.0	9.1	3.9	97.8
B-	164.6	39.0	9.5	4.2	95.3
CCC+	8.6	2.0	9.7	4.4	85.8
CCC	5.6	1.3	9.8	4.4	80.0
CC	1.8	0.4	9.5	4.1	55.9

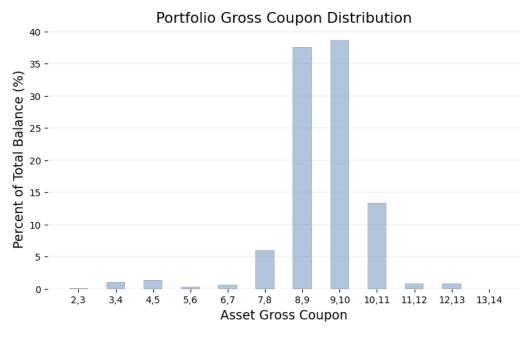


The current ratings of the underlying assets range from BBB- to CC. An amount equal to 3.8% of the underlying assets have ratings equal to or below CCC+, with a total balance of \$16.0M. (Note: The current current ratings are other agencies ratings as of November 01, 2023.)



Gross Coupon of Underlying Assets

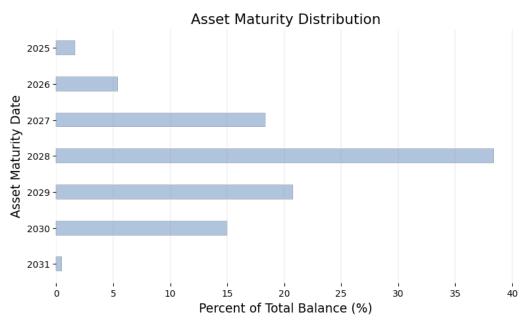
Top 5 Gross Coupon Range	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
≥9% but <10%	162.8	38.6	9.5	4.1	96.1
≥8% but <9%	158.2	37.5	8.7	3.3	97.3
≥10% but <11%	56.4	13.4	10.4	5.0	92.1
≥7% but <8%	25.3	6.0	7.8	2.4	96.9
≥4% but <5%	5.7	1.3	4.5		84.5



Gross coupon of the underlying assets ranges from 3.0% to 12.4%. The weighted average gross coupon of the portfolio is approximately 9.1.

Maturity of Underlying Assets by Current Balance

Top 5 Asset Maturity Range	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
2028	161.8	38.4	9.1	3.8	96.4
2029	87.5	20.7	9.2	4.2	94.7
2027	77.3	18.3	9.1	3.8	94.5
2030	63.4	15.0	8.8	3.7	97.5
2026	22.7	5.4	9.3	3.9	96.2



The underlying assets have maturity dates from February 14, 2025 to March 01, 2031. 5.9% of the underlying assets will mature within 3 years, while another 43.4% of the underlying assets have maturities beyond 5 years.

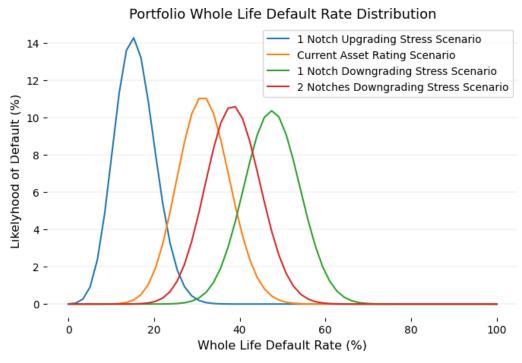


Senority of Underlying Assets

	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
Second Lien	4.3	1.0	11.7	6.3	91.9
Senior Secured	417.4	99.0	9.0	3.8	95.7

There are 413 non-default assets (with seniority information available) in the underlying collateral pool, 99.0% are senior secured loans, and 1.0% with lower seniority.

Sensitivity Analysis



In EJR's view, ratings on loans may be upgraded or downgraded with little notice. In EJR's optimistic case, we assumed an notch one upgrade to underlying assets. In EJR's stress cases, we assumed one or two notch cut to the underlying assets reflect possible market pressure. According to EJR's Default Probability Table, optimistic case, base case, one notch cut and two notches cut cases weighted average whole life default rate of probability are 15.6%, 31.7%, 47.5% and 38.5%, respectively.



Estimated Loss Information

Estimated loss is one of the key considerations in EJR's structured finance ratings. In times of stress when economic conditions are deteriorating, default rates and loss severity are more likely to increase relative to a portfolio's initial or base case default and loss severity levels. EJR believes a tranche with higher rating should be able to withstand greater stress and sustain lower losses than a tranche with a lower rating. For example, a tranche with AAA rating should be able to survive the great depression scenario (the highest default and loss severity levels experienced if they were to occur in the future). A 'AA' rated tranche would be more susceptible to an adverse economic impact than the 'AAA' rated tranche, but nonetheless should be able to withstand such effects better than a tranche with a lower rating. EJR creates different stress levels based on different target tranche ratings (from AAA to B+). The detailed estimated loss (%) information of each tranche under each stress level is detailed in the below table:

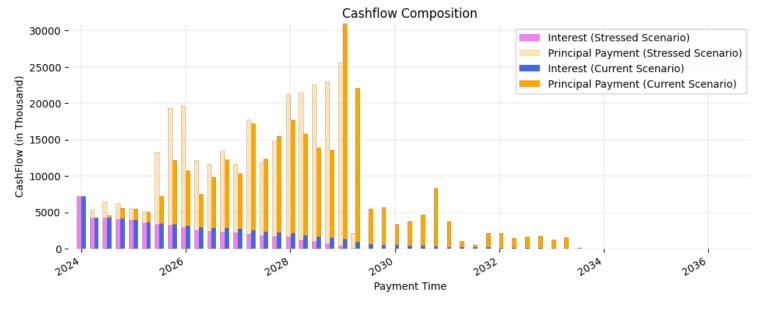
Stress Level	A1	A2	В	С	D	Е
AAA (sf) Stress	0	0	0	39.2	80.0	84.7
AA+ (sf) Stress	0	0	0	16.8	70.7	83.5
AA (sf) Stress	0	0	0	14.0	69.0	83.3
AA- (sf) Stress	0	0	0	11.3	67.2	83.1
A+ (sf) Stress	0	0	0	0	46.7	81.7
A (sf) Stress	0	0	0	0	43.8	81.3
A- (sf) Stress	0	0	0	0	40.9	80.8
BBB+ (sf) Stress	0	0	0	0	13.0	76.2
BBB (sf) Stress	0	0	0	0	10.0	75.1
BBB- (sf) Stress	0	0	0	0	7.1	73.8
BB+ (sf) Stress	0	0	0	0	0	43.3
BB (sf) Stress	0	0	0	0	0	14.6
BB- (sf) Stress	0	0	0	0	0	0
B+ (sf) Stress	0	0	0	0	0	0
B (sf) Stress	0	0	0	0	0	0
B- (sf) Stress	0	0	0	0	0	0
CCC+ (sf) Stress	0	0	0	0	0	0
CCC (sf) Stress	0	0	0	0	0	0
CCC- (sf) Stress	0	0	0	0	0	0
CC (sf) Stress	0	0	0	0	0	0
C (sf) Stress	0	0	0	0	0	0
D (sf) Stress	0	0	0	0	0	0

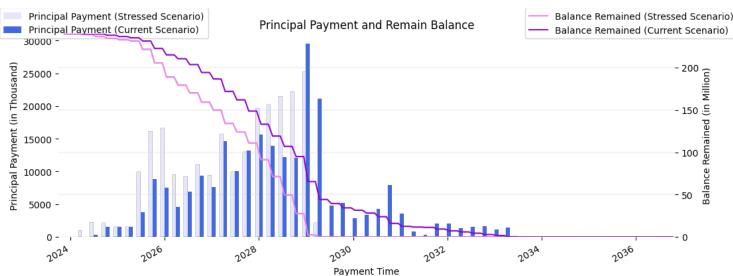


Tranche Summary

Tranche A1

Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	240.0	IC TEST TRIGGER	120.0
CURRENT BALANCE (\$ Million)	240.0	CURRENT IC	120.4
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	123.3
EJR MODEL IMPLIED RATING	AAA (sf)	CURRENT OC	133.9
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0



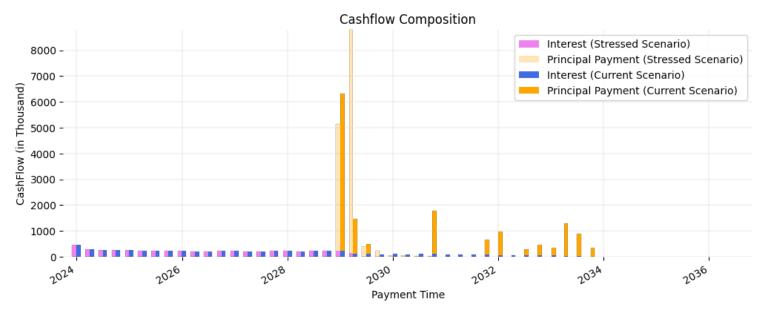


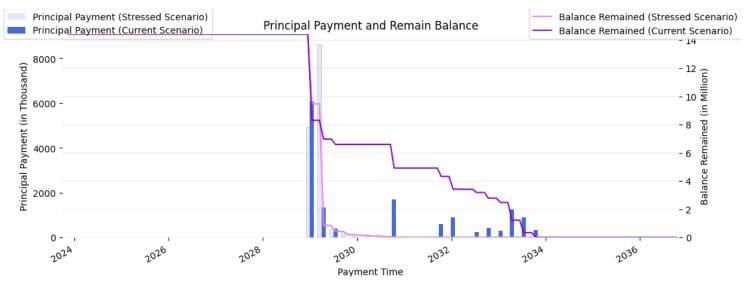
The charts reflects the remaining balance and cashflow forcasting under a) current default and recovery scenario and b) AAA (sf) stress level default and recovery scenario, assuming 50% loss will happen evenly in the first 2 years. The current principal balance of the tranche is \$240.0M. Under current default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Jul 15, 2033. By the end of the payment period (Jul 15, 2033), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.1M. Under AAA (sf) default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Jul 15, 2033. By the end of the payment period (Jul 15, 2033), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.1M.



Tranche A2

Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	14.4	IC TEST TRIGGER	120.0
CURRENT BALANCE (\$ Million)	14.4	CURRENT IC	120.4
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	123.3
EJR MODEL IMPLIED RATING	AAA (sf)	CURRENT OC	133.9
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0



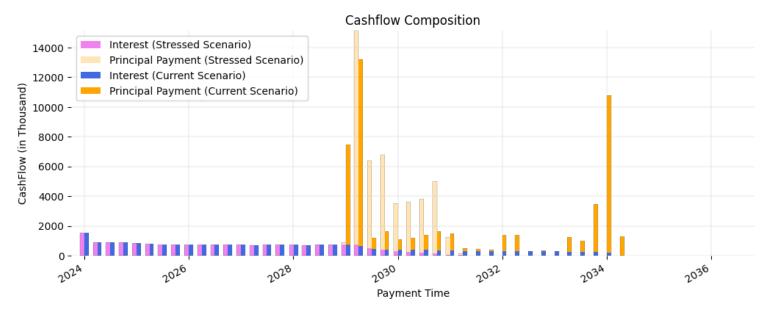


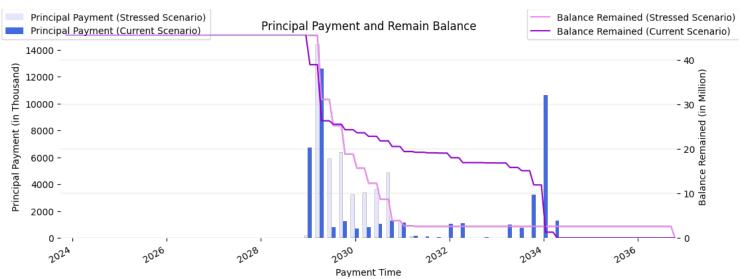
The charts reflects the remaining balance and cashflow forcasting under a) current default and recovery scenario and b) AAA (sf) stress level default and recovery scenario, assuming 50% loss will happen evenly in the first 2 years. The current principal balance of the tranche is \$14.4M. Under current default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Oct 17, 2033. By the end of the payment period (Oct 17, 2033), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M. Under AAA (sf) default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Oct 17, 2033. By the end of the payment period (Oct 17, 2033), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M.



Tranche B

Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	45.6	IC TEST TRIGGER	120.0
CURRENT BALANCE (\$ Million)	45.6	CURRENT IC	120.4
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	123.3
EJR MODEL IMPLIED RATING	AAA (sf)	CURRENT OC	133.9
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0



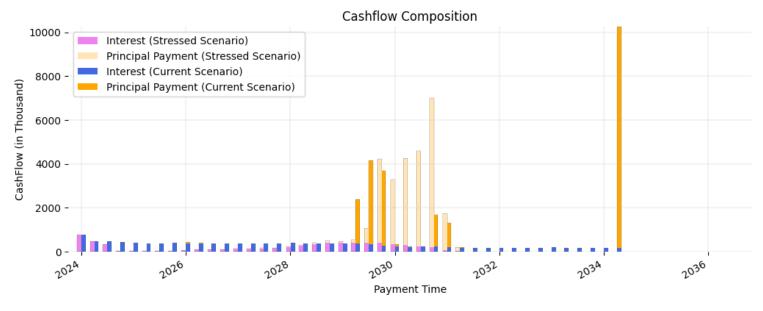


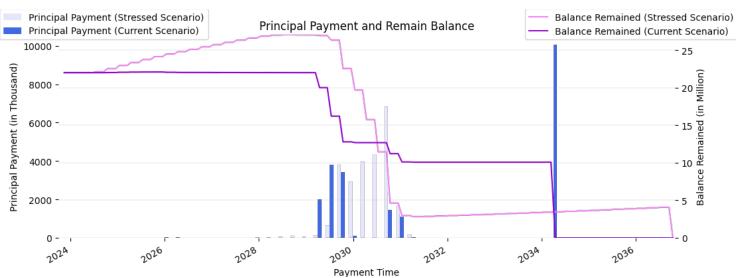
The charts reflects the remaining balance and cashflow forcasting under a) current default and recovery scenario and b) AAA (sf) stress level default and recovery scenario, assuming 50% loss will happen evenly in the first 2 years. The current principal balance of the tranche is \$45.6M. Under current default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Apr 17, 2034. By the end of the payment period (Apr 17, 2034), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M. Under AAA (sf) default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Apr 17, 2034. By the end of the payment period (Apr 17, 2034), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M.



Tranche C

Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	22.0	IC TEST TRIGGER	110.0
CURRENT BALANCE (\$ Million)	22.0	CURRENT IC	111.0
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	116.2
EJR MODEL IMPLIED RATING	A+ (sf)	CURRENT OC	124.8
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0



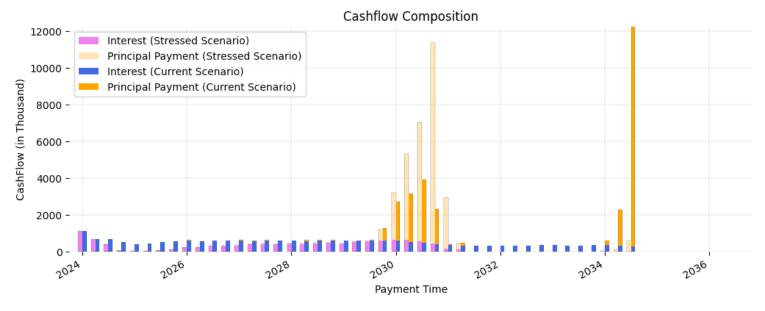


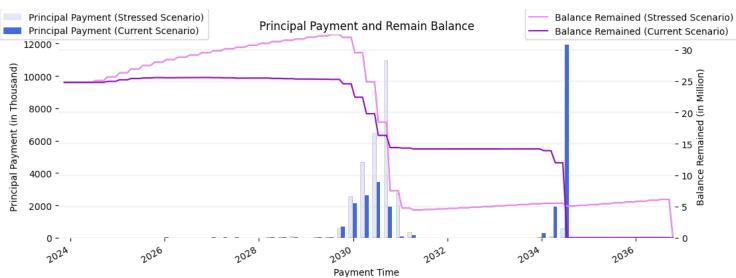
The charts reflects the remaining balance and cashflow forcasting under a) current default and recovery scenario and b) A+ (sf) stress level default and recovery scenario, assuming 50% loss will happen evenly in the first 2 years. The current principal balance of the tranche is \$22.0M. Under current default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Apr 17, 2034. By the end of the payment period (Apr 17, 2034), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M. Under A+ (sf) default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Jul 17, 2034. By the end of the payment period (Jul 17, 2034), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M.



Tranche D

Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	24.8	IC TEST TRIGGER	105.0
CURRENT BALANCE (\$ Million)	24.8	CURRENT IC	99.6
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	109.3
EJR MODEL IMPLIED RATING	BB+ (sf)	CURRENT OC	115.9
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0



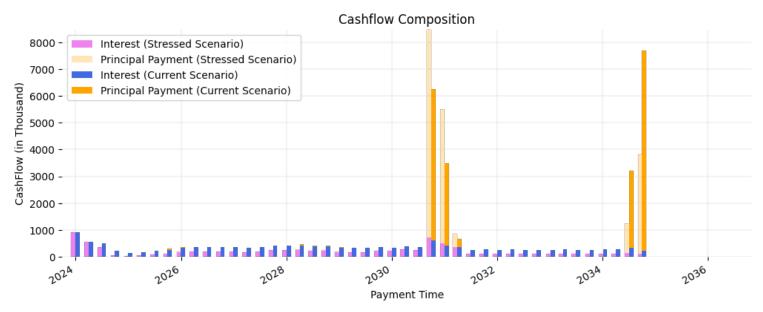


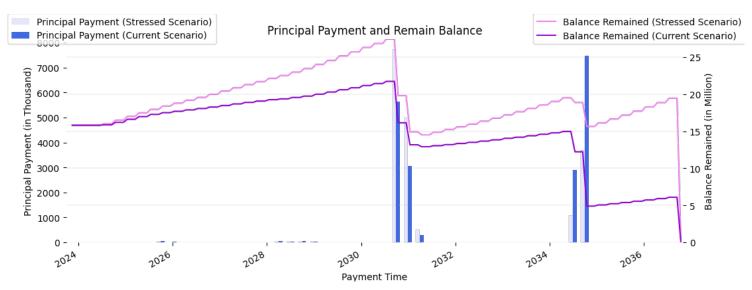
The charts reflects the remaining balance and cashflow forcasting under a) current default and recovery scenario and b) BB+ (sf) stress level default and recovery scenario, assuming 50% loss will happen evenly in the first 2 years. The current principal balance of the tranche is \$24.8M. Under current default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Jul 17, 2034. By the end of the payment period (Jul 17, 2034), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M. Under BB+ (sf) default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Jul 17, 2034. By the end of the payment period (Jul 17, 2034), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M.



Tranche E

Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	15.8	IC TEST TRIGGER	
CURRENT BALANCE (\$ Million)	15.8	CURRENT IC	
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	104.8
EJR MODEL IMPLIED RATING	BB- (sf)	CURRENT OC	110.8
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0





The charts reflects the remaining balance and cashflow forcasting under a) current default and recovery scenario and b) BB- (sf) stress level default and recovery scenario, assuming 50% loss will happen evenly in the first 2 years. The current principal balance of the tranche is \$15.8M. Under current default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Oct 16, 2034. By the end of the payment period (Oct 16, 2034), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M. Under BB- (sf) default and recovery scenario, the payment window for this tranche ranges from Jan 16, 2024 to Oct 16, 2034. By the end of the payment period (Oct 16, 2034), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M.



EJR's Key Rating Features & Differences Compare With Other NRSROs

Below is a summary of EJR's approach (see our Methodology for a more complete description):

- 1. Our rating is derived from estimated losses.
- 2. The probabilities of default utilized are generally more conservative than industry standards.
- 3. Generally, our ratings are more heavily model driven and take into account fewer subjective / qualitative assumptions.
- 4. Generally, EJR updates the cashflow and ratings monthly based on the availability of the trustee reports.
- 5. EJR's analysis is conducted using information and cash flow engines supplied by a recognized industry service provider.

Difference Between Implied Rating and Assigned Rating

There is no difference between model implied rating and final assigned rating.



SEC Rule 17g-7(a) Disclosure

Below are the disclosures as required by Paragraph (a) of Rule 17g-7.

1. The symbol in the rating scale used to denote the credit rating categories and notches within categories and the identity of the obligor, security, or money market instrument as required by Paragraph (a)(1)(ii)(A) of Rule 17g-7:

There are three notches in each of EJR's rating category (e.g., A-(sf), A(sf) and A+(sf) for category A(sf)) except for AAA(sf), CC(sf), C(sf) and D(sf).

2. The version of the procedure or methodology used to determine the credit rating as required by Paragraph (a)(1)(ii) (B) of Rule 17g-7:

We are using the EJR CLO Methodology (Non-NRSRO) version 1a published by December 1, 2022, the General Methodology for Rating Asset Backed and Structured Finance Obligations version 2a published by December 1, 2022.

3. The main assumptions and principles used in constructing the procedures and methodologies used to determine the credit rating as required by Paragraph (a)(1)(ii)(C) of Rule 17g-7:

The credit rating assigned reflects EJR's judgement regarding the future credit quality of the issue. The major assumptions used to construct the methodologies include: 1) Past data reflects the performance and credit worthiness of the pooled assets and is useful for analysis. 2) Financial and credit information that EJR gets from the issuer or the third party is reliable and accurate. 3) The economy and regulation policies will remain stable in the foreseeable future. Specific quantitative assumptions used in this credit analysis applied to the collateral assets, which include Default Rate and Recovery Rate. According to the methodology, EJR converts the collateral assets into numbers of identical independent assets with the same default rate and recovery rate. The number of these converted assets is the Diversity Score.

4. The potential limitations of the credit rating as required by Paragraph (a)(1)(ii)(D) of Rule 17g-7:

EJR's rating pertains solely to EJR's view of current and prospective credit quality. EJR's rating does not address pricing, liquidity or other risks associated with holding investments in the issuer. EJR ratings 1) Are not intended to address the value, price, price stability, liquidity, suitability, or merit of an investment. 2) Do not address investment merit, whether a particular rated security is suitable for a particular investor or suitable for an investor's risk tolerance. 3) Do not address whether the expected return of a particular investment is adequate for the inherent risk. 4) Do not address whether the market value of the security will remain stable over time. 5) Are not exact measures of the probability of default but are instead expressions of the relative credit risk of issuers and debt instruments. 6) Are not recommendations to buy, sell or hold any security.

5. Information on the uncertainty of the credit rating as required by Paragraph (a)(1)(ii)(E) of Rule 17g-7:

EJR's rating is dependent on numerous factors including the reliability, accuracy, and quality of the data used in determining the credit rating. The data is sourced from issuers' publicly disclosed reports, or from third-party data vendors. For solicited rating reports, EJR may also use the information provided by the client. In some cases, the information is limited because of issues such as the lack of reported data. Such shortcomings are not always readily apparent. EJR aims to identify such shortcomings and make adjustments using its best judgement.

6. Whether and to what extent third-party due diligence services have been used in taking the rating action as required by Paragraph (a)(1)(ii)(F) of Rule 17g-7:

EJR does not utilize third-party due diligence services.

7. How servicer or remittance reports were used, and with what frequency, to conduct surveillance of the credit rating as required by Paragraph (a)(1)(ii)(G) of Rule 17g-7:

EJR did not conduct surveillance of this rating.



8. Adescription of the data that were relied upon for the purpose of determining the credit rating as required by Paragraph (a)(1)(ii)(H) of Rule 17g-7:

EJR uses a third-party data vendor obtain essential data for ratings on this ABS product.

9. Astatement containing an overall assessment of the quality of information available and considered in the credit rating as required by Paragraph (a)(1)(ii)(l) of Rule 17g-7:

The information used in this analysis is generally of high quality.

10. Information relating to conflicts of interest as required by Paragraph (a)(1)(ii)(J) of Rule 17g-7: This rating is unsolicited.

11. An explanation or measure of the potential volatility of the credit rating as required by Paragraph (a)(1)(ii)(K) of Rule 17g-7:

EJR's rating aims to assess the possible loss of investing in the obligations. Factors which affect such projection, and in turn EJR's rating, include changes in the credit worthiness of the collateral assets, changes in the correlation between them, and overall economic changes.

12. Information on the content of the credit rating as required by Paragraph (a)(1)(ii)(L) of Rule 17g-7:

1) Historical performance can be found on https://portal.egan-jones.com/client/fast/clo.aspx 2) As discussed in EJR's CLO Methodology, EJR attempts to calculate the weighted average default probability of the portfolio by using EJR's Weighted Average Rating Score (WARS) approach. EJR's ratings of CLO tranches are based on the estimated losses (EL) generated by applying default scenarios based on likelihood of occurrence. However, EJR's credit ratings are not based on absolute measures of probability of default and expected loss. EJR's credit ratings are opinions about the relative creditworthiness of an entity or an instrument.

13. Information on the sensitivity of the credit rating to assumptions as required by Paragraph (a) (1)(ii)(M) of Rule 17g-7:

See the section in this report entitled "Stress Analysis".

14. If the credit rating is assigned to an asset-backed security, a description of: (i) the representations, warranties, and enforcement mechanisms available to investors; and (ii) how they differ from the representations, warranties, and enforcement mechanisms in issuances of similar securities, as required by Paragraph (a)(1)(ii)(N) of Rule 17g-7::

Such information in this analysis is non-public. Hence EJR has determined that this disclosure doesn't apply to this report.

Disclaimer

THIS RATING IS ISSUED IN RESPECT OF AN "ASSET-BACKED SECURITY". EGAN-JONES RATINGS COMPANY IS NOT REGISTERED AS A NATIONALLY RECOGNIZED STATISTICAL RATING ORGANIZATION IN RESPECT OF "ASSET-BACKED SECURITIES" AND THE RATING IS NOT BEING ISSUED OR MAINTAINED BY EGAN-JONES IN ITS CAPACITY AS AN NRSRO. EGAN-JONES MAKES NO REPRESENTATION OR WARRANTY THAT ANY SUCH NON-NRSRO RATING MEETS ANY CONDITIONS OR REQUIREMENTS FOR USE OF A RATING.



ATTESTATION FORM

In compliance with the US Securities and Exchange Commission (SEC) Rule 17g-7(a), the Egan-Jones analyst who published the report is responsible for the rating action and to the best knowledge of the person:

- 1) No part of the credit rating was influenced by any other business activities,
- 2) The credit rating was based solely upon the merits of the obligor, security, or money market instrument being rated, and
- 3) The credit rating was an independent evaluation of the credit risk of the obligor, security, or money market instrument.

Analyst Signature:

THE QUANT TEAM Date Prepared 11/24/23

Reviewer Signature:

THE QUANT TEAM Date Prepared 11/24/23