

# TIAA CLO IV Rating Report

Tranche Name	EJR Final Rating Non-NRSRO Rating
A1A	AAA (sf)
A1B	AAA (sf)
A2	AAA (sf)
B	A+ (sf)
C	BB+ (sf)
D	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 (%)	Current Subordination <sup>1</sup> (%)		Interest Rate
						MV	Par	
A1A	AAA (sf)	AAA (sf)	AAA	121.2	155.4	37.4	41.9	L_3MO + 1.23
A1B	AAA (sf)	AAA (sf)	AAA	121.2	155.4	30.7	35.6	L_3MO + 1.45
A2	AAA (sf)	AAA (sf)	N/A	121.2	155.4	18.0	23.8	L_3MO + 1.70
B	A+ (sf)	A+ (sf)	N/A	121.2	155.4	11.6	17.9	L_3MO + 2.15
C	BB+ (sf)	BB+ (sf)	N/A	113.0	141.1	5.3	12.0	L_3MO + 3.05
D	BB (sf)	BB (sf)	N/A	108.9		1.7	8.7	L_3MO + 5.95

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

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

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

Par = Par Value

## Transaction Summary

We are providing the rating of TIAA CLO IV as a Non-NRSRO rating. The transaction closed on December 20, 2018. It had a reinvestment period, which ended on January 20, 2024. It has a maturity date of January 20, 2032. The Dealer and Trustee are Citigroup and U.S. Bank, respectively. The issued notes are collateralized by 98.6 senior secured loans, cash, and eligible investments with the balance of the portfolio consisting of -97.6 second lien loans and senior unsecured loans. Teachers Advisors serves as the collateral manager.

## Quantitative Analysis

### Key Credit Metrics

Metrics	Number
SENIOR TRANCHE SUBORDINATION (%)	37.4
DIVERSITY SCORE	67
EJR WEIGHTED AVERAGE RATING SCORE	3790.5
WEIGHTED AVERAGE LIFE (Years)	4.4
CCC+ OR LESS (%)	6.1

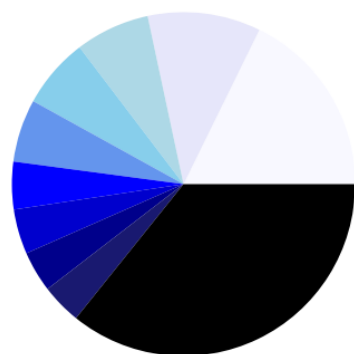
As of November 03, 2022, the total balance of the underlying assets was approximately \$449.8M. The diversity score of the portfolio was 67. Egan-Jones's weighted average rating score and weighted average life (years) of the collateral were 3790.5 and 4.4, respectively. Approximately 6.1% of the portfolio's assets were rated CCC+ or less by other agencies. Senior tranche subordination was 37.4%.

## Portfolio Characteristics

### Industry Concentration

Top 5 asset industries	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
Healthcare & Pharmaceuticals	79.1	17.7	7.0	3.8	89.2
High Tech Industries	47.5	10.6	6.7	3.5	95.7
Banking, Finance, Insurance & Real Estate	31.2	7.0	6.4	3.2	94.4
Services: Business	29.6	6.6	6.8	3.7	92.4
Telecommunications	26.4	5.9	6.6	3.6	94.2

### Top 10 Industry Contribution

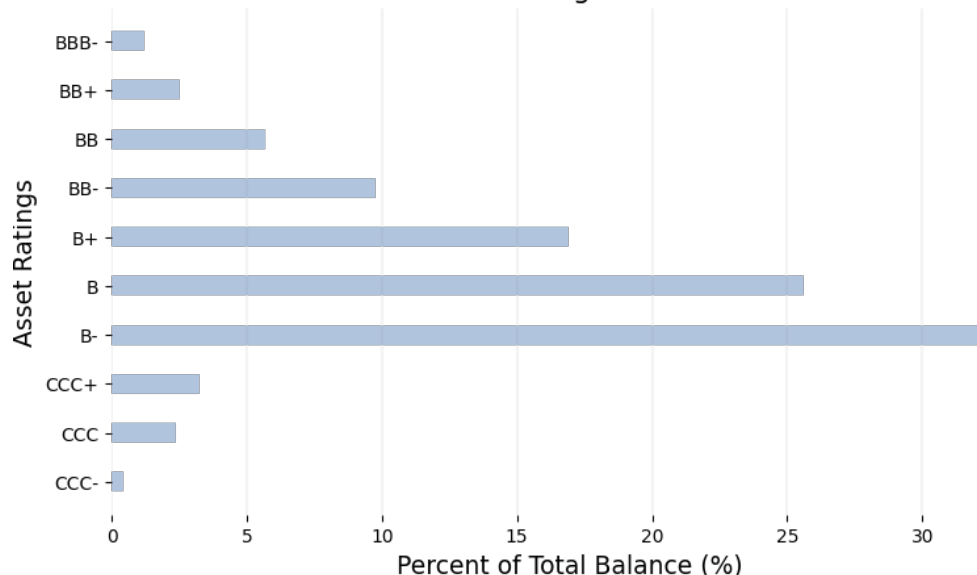


The top 5 industries constituted 47.9% of the underlying portfolio with a total current balance of \$213.7M. The top 5 industries are Healthcare & Pharmaceuticals, High Tech Industries, Banking, Finance, Insurance & Real Estate, Services: Business, Telecommunications. The top 10 industries constituted 68.0% of underlying portfolio with a total current balance of \$303.2M.

### Rating of Underlying Assets

Bottom 5 asset ratings	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
B	114.2	25.6	6.9	3.7	94.8
B-	144.1	32.3	6.6	3.5	91.9
CCC+	14.5	3.2	6.9	3.6	81.7
CCC	10.5	2.4	7.3	4.0	79.6
CCC-	2.0	0.5	4.9	3.5	26.4

### Portfolio Rating Distribution

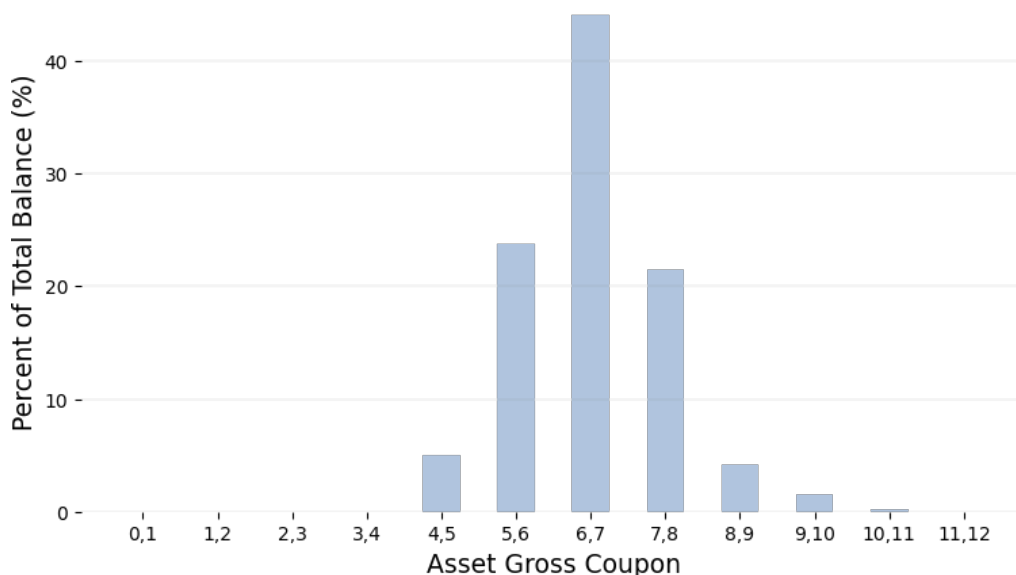


The current ratings of the underlying assets range from BBB- to CCC-. An amount equal to 6.1% of the underlying assets have ratings equal to or below CCC+, with a total balance of \$27.0M. (Note: The current current ratings are other agencies ratings as of October 01, 2022.)

## Gross Coupon of Underlying Assets

Top 5 Gross Coupon Range	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
≥6% but <7%	196.7	44.1	6.5	3.4	93.2
≥5% but <6%	105.8	23.7	5.6	2.7	87.5
≥7% but <8%	96.1	21.5	7.4	4.1	90.9
≥4% but <5%	22.5	5.0	4.7	1.3	83.5
≥8% but <9%	18.5	4.2	8.5	4.9	89.6

Portfolio Gross Coupon Distribution

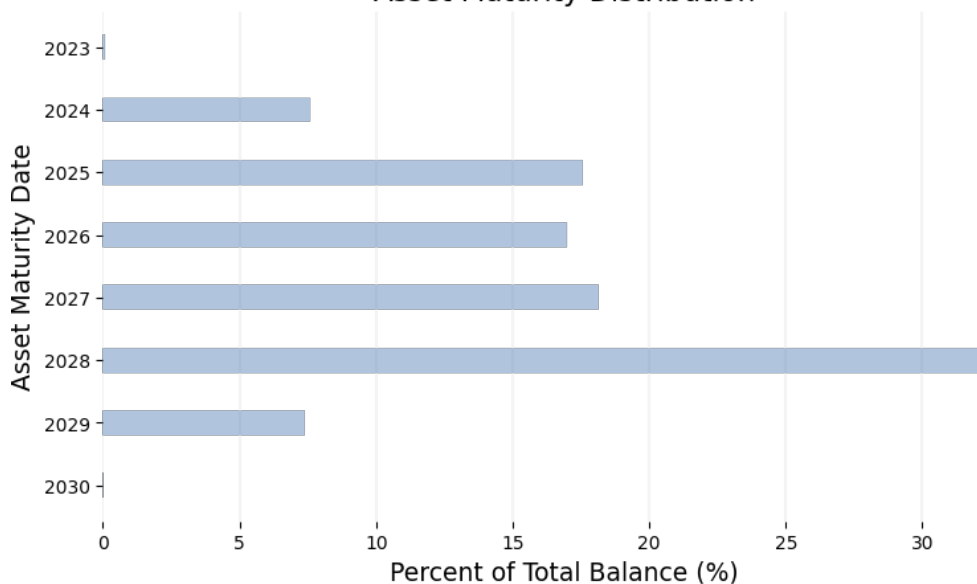


Gross coupon of the underlying assets ranges from 0.0% to 10.9%. The weighted average gross coupon of the portfolio is approximately 6.5.

## Maturity of Underlying Assets by Current Balance

Top 5 Asset Maturity Range	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
2028	143.6	32.2	6.7	3.5	91.6
2027	80.9	18.1	6.0	2.7	95.4
2025	78.3	17.6	6.6	3.7	85.6
2026	75.8	17.0	7.0	3.9	91.7
2024	33.9	7.6	6.3	3.3	94.5

Asset Maturity Distribution



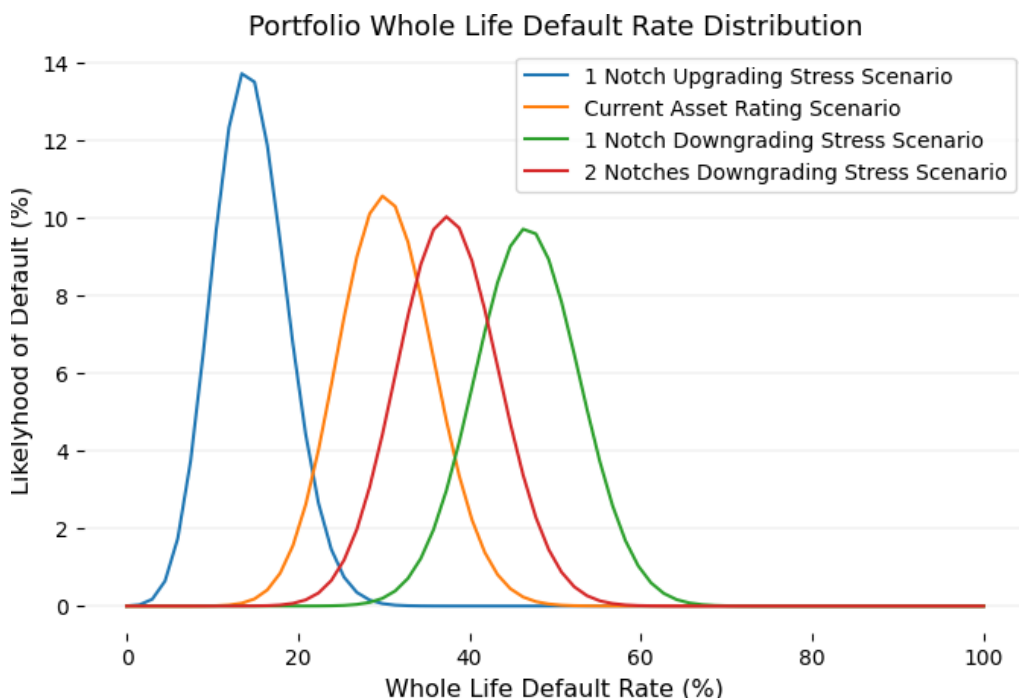
The underlying assets have maturity dates from February 28, 2023 to January 24, 2030. 20.6% of the underlying assets will mature within 3 years, while another 44.1% of the underlying assets have maturities beyond 5 years.

## Seniority of Underlying Assets

	Current Balance (M)	Percentage (%)	Gross Coupon (%)	Gross Margin	Market Price (\$)
Second Lien	6.3	1.4	5.2	1.6	94.0
Senior Secured	439.9	98.6	6.7	3.6	91.5

There are 734 non-default assets (with seniority information available) in the underlying collateral pool, 98.6% are senior secured loans, and 1.4% 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 one notch upgrade to the underlying assets. In EJR's stress casees, we assumed one or two notch cut to the underlying assets to reflect possible market pressure. According to EJR's Default Probability Table, the optimistic case, base case, one notch cut and two notches cut casees weighted average whole life default rate of probability are 14.5%, 30.3%, 46.7% and 37.5%, respectively.

## Estimated Loss Information

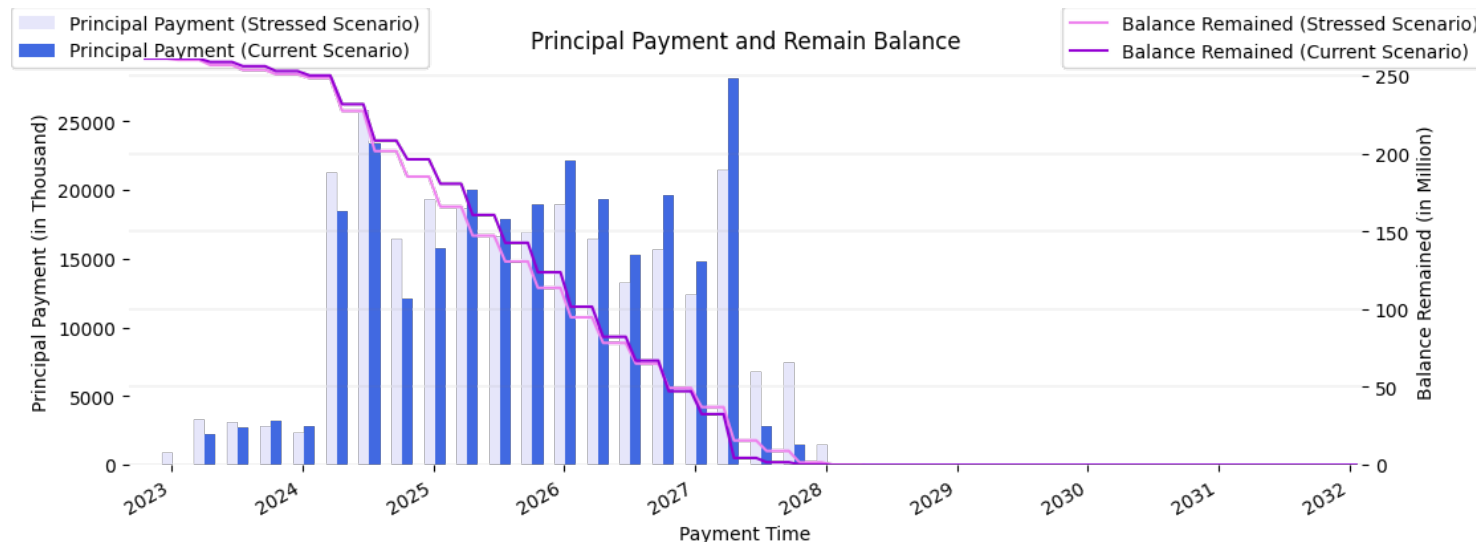
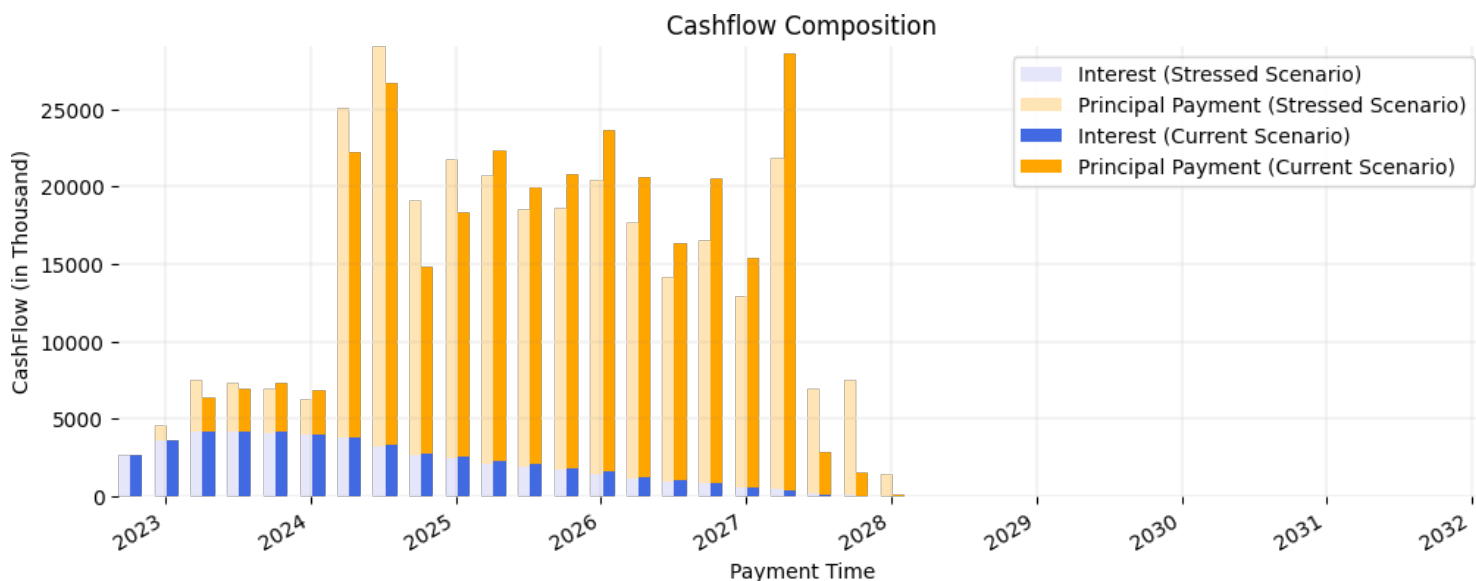
Estimated loss is one of the key considerations in EJR's structured finance ratings. In times of stress when economic conditions are deteriorating, default rates and loss severity are more likely to increase relative to a portfolio's initial or base case default and loss severity levels. EJR believes 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	A1A	A1B	A2	B	C	D
AAA (sf) Stress	0	0	0	29.7	82.6	90.5
AA+ (sf) Stress	0	0	0	10.9	71.5	89.1
AA (sf) Stress	0	0	0	8.8	69.6	88.8
AA- (sf) Stress	0	0	0	6.8	67.6	88.5
A+ (sf) Stress	0	0	0	0	46.3	85.7
A (sf) Stress	0	0	0	0	43.5	85.0
A- (sf) Stress	0	0	0	0	40.7	84.2
BBB+ (sf) Stress	0	0	0	0	16.0	75.5
BBB (sf) Stress	0	0	0	0	13.5	73.7
BBB- (sf) Stress	0	0	0	0	11.1	71.8
BB+ (sf) Stress	0	0	0	0	0	31.5
BB (sf) Stress	0	0	0	0	0	4.8
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 A1A

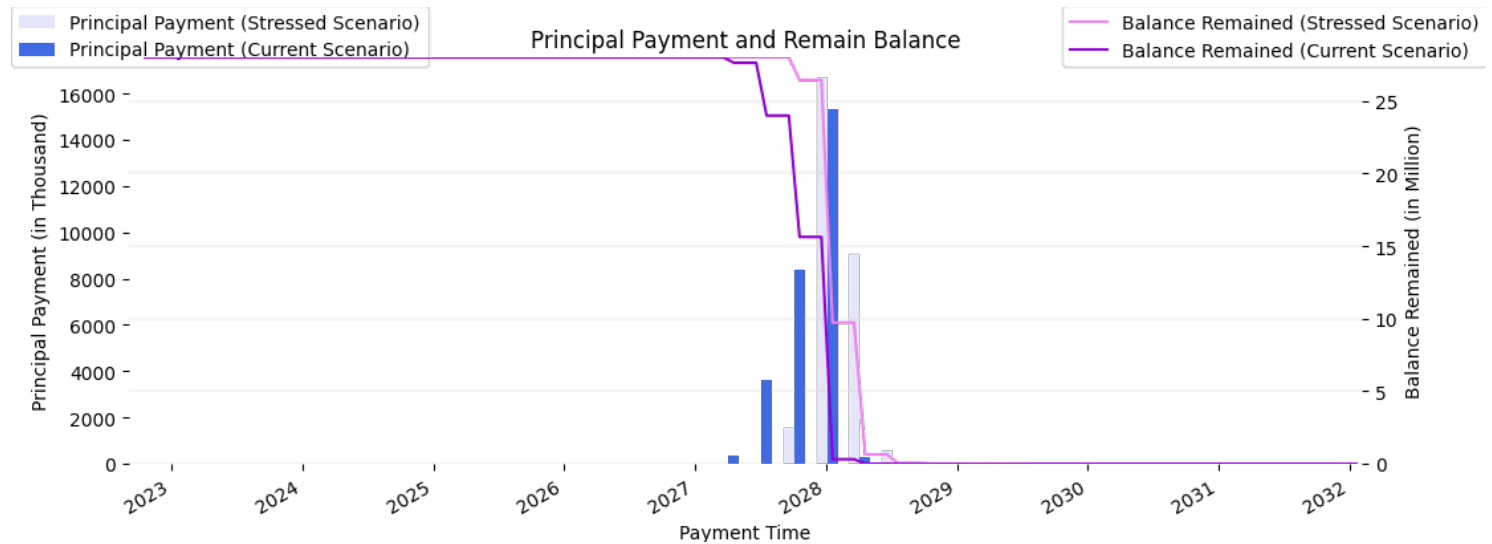
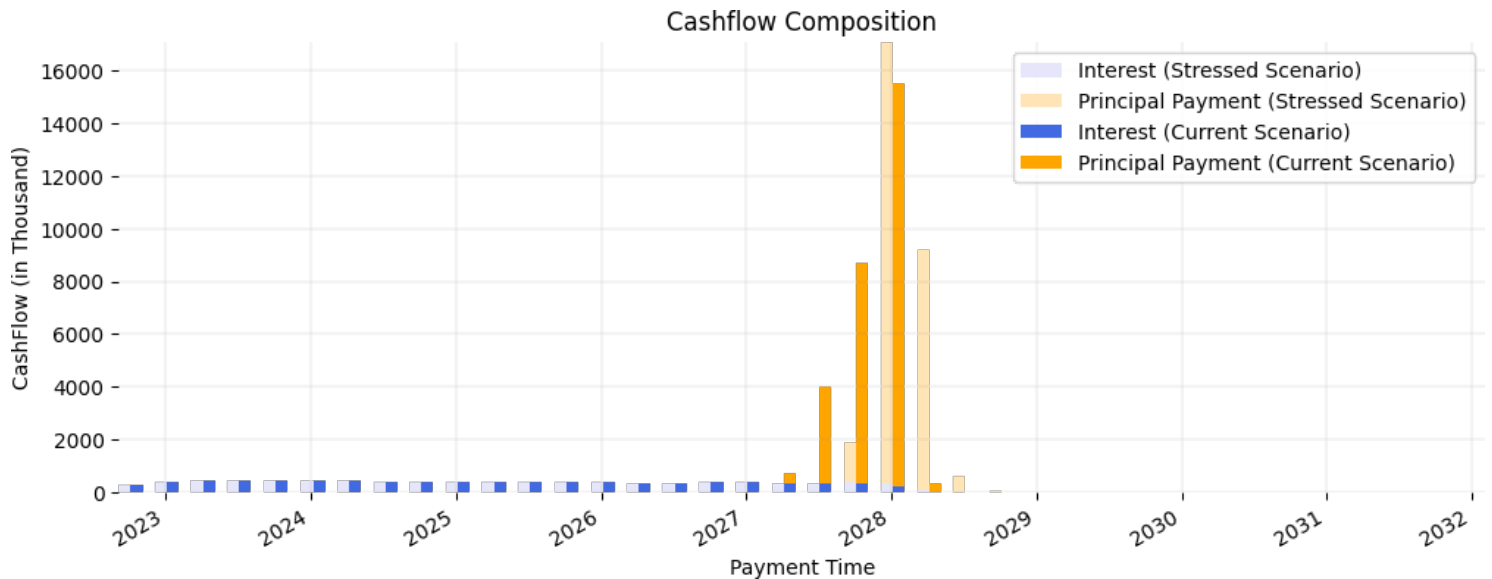
Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	261.0	IC TEST TRIGGER	115.0
CURRENT BALANCE (\$ Million)	261.0	CURRENT IC	155.4
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	114.1
EJR MODEL IMPLIED RATING	AAA (sf)	CURRENT OC	121.2
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0



The charts reflect the remaining balance and cashflow forecasting 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 \$261.0M. Under current default and recovery scenario, the payment window for this tranche ranges from Oct 20, 2022 to Jan 20, 2028. By the end of the payment period (Jan 20, 2028), 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 Oct 20, 2022 to Oct 22, 2029. By the end of the payment period (Oct 22, 2029), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M.

## Tranche A1B

Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	28.0	IC TEST TRIGGER	115.0
CURRENT BALANCE (\$ Million)	28.0	CURRENT IC	155.4
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	114.1
EJR MODEL IMPLIED RATING	AAA (sf)	CURRENT OC	121.2
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

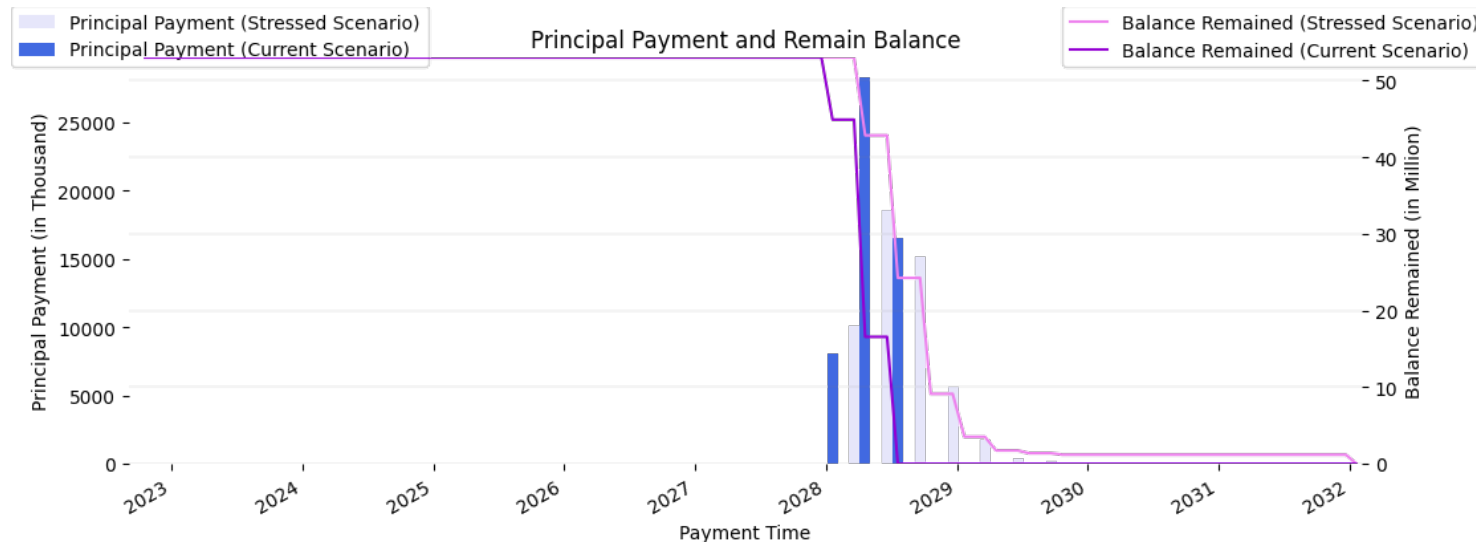
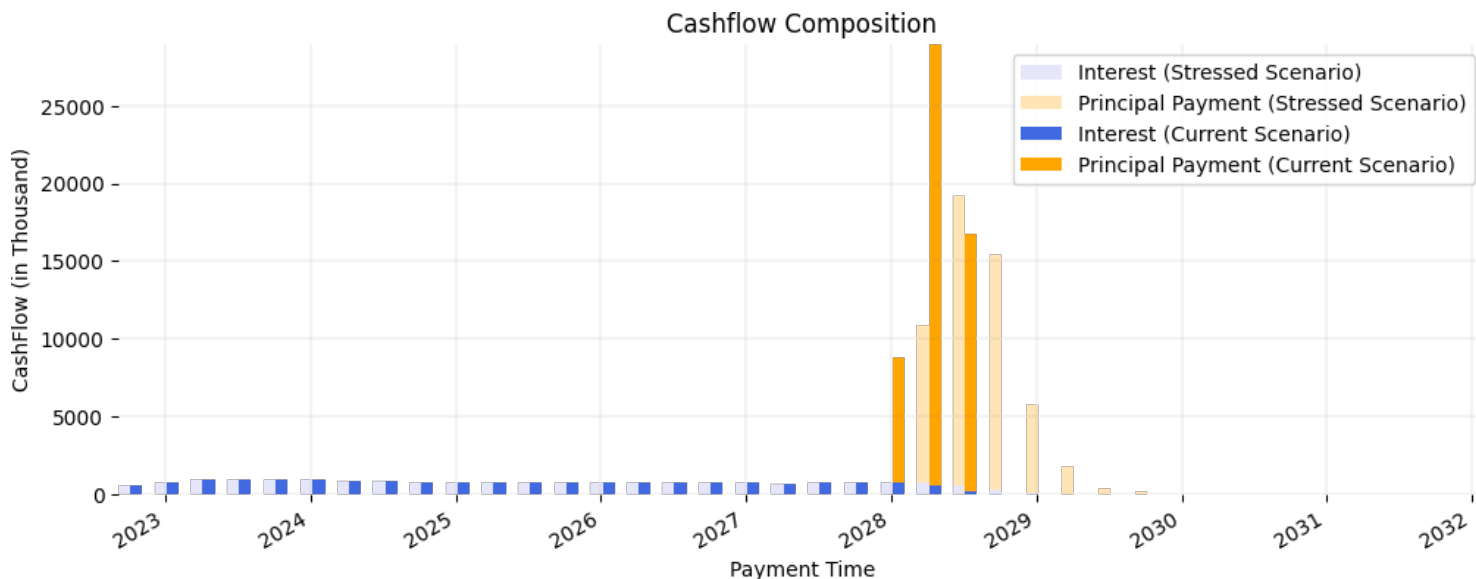


The charts reflect the remaining balance and cashflow forecasting under a) current default and recovery scenario and b) AAA (sf) stress level default and recovery scenario, assuming 50% loss will happen evenly in the first 2 years. The current principal balance of the tranche is \$28.0M. Under current default and recovery scenario, the payment window for this tranche ranges from Oct 20, 2022 to Oct 20, 2028. By the end of the payment period (Oct 20, 2028), 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 Oct 20, 2022 to Oct 22, 2029. By the end of the payment period (Oct 22, 2029), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M.



## Tranche A2

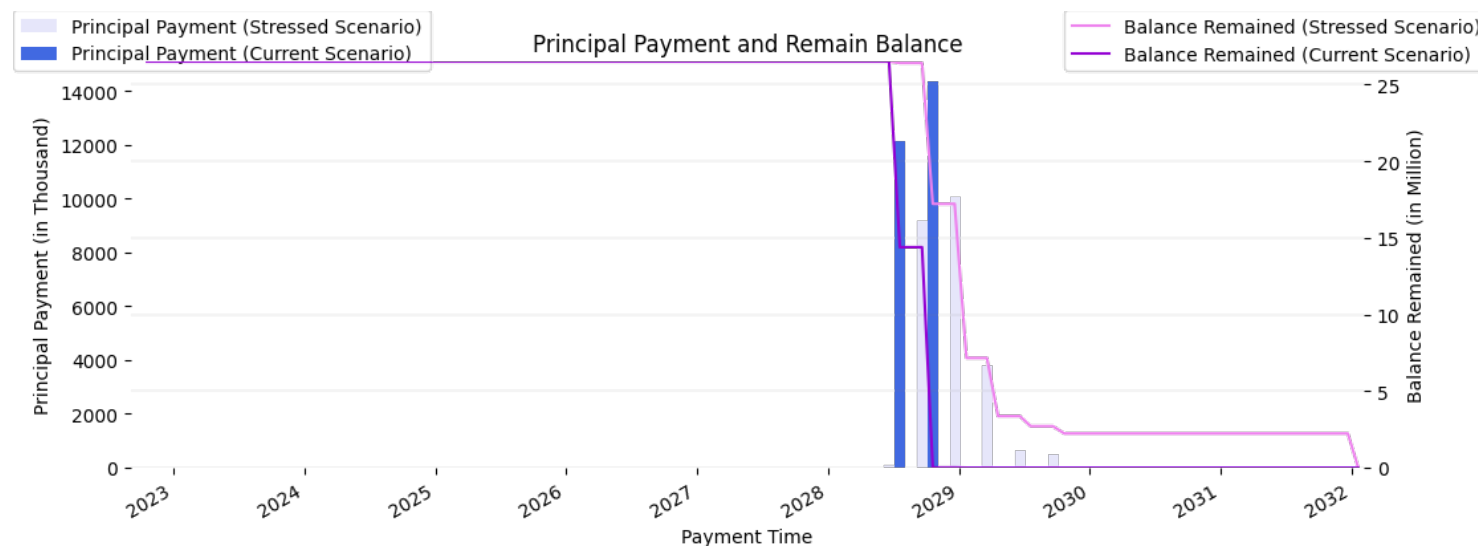
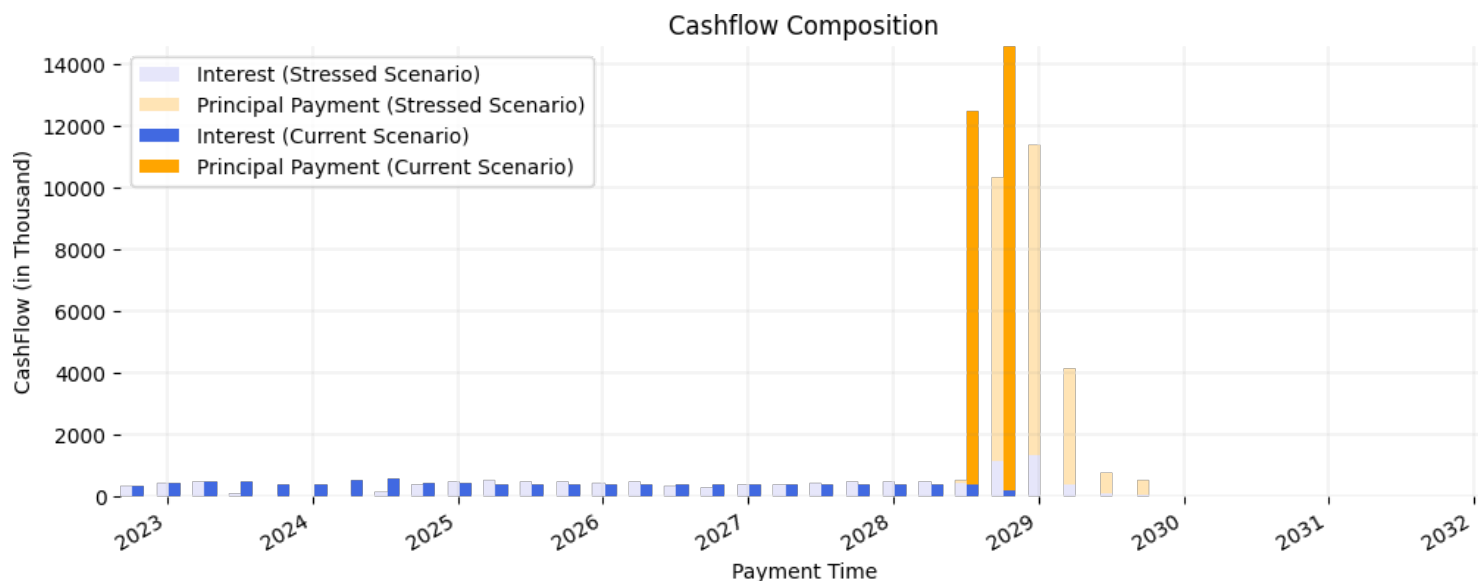
Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	53.0	IC TEST TRIGGER	115.0
CURRENT BALANCE (\$ Million)	53.0	CURRENT IC	155.4
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	114.1
EJR MODEL IMPLIED RATING	AAA (sf)	CURRENT OC	121.2
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0



The charts reflect the remaining balance and cashflow forecasting 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 \$53.0M. Under current default and recovery scenario, the payment window for this tranche ranges from Oct 20, 2022 to Oct 22, 2029. By the end of the payment period (Oct 22, 2029), 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 Oct 20, 2022 to Oct 22, 2029. By the end of the payment period (Oct 22, 2029), the principal balance should be paid in full. Total interest payments of the tranche will approximately \$0.0M.

## Tranche B

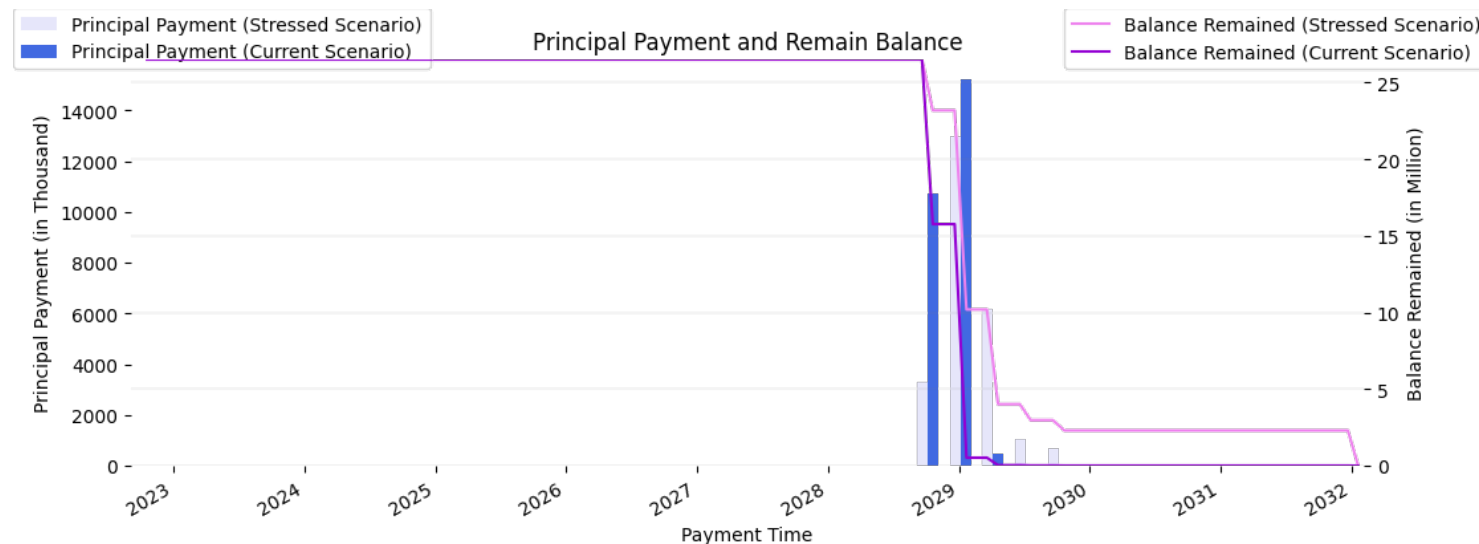
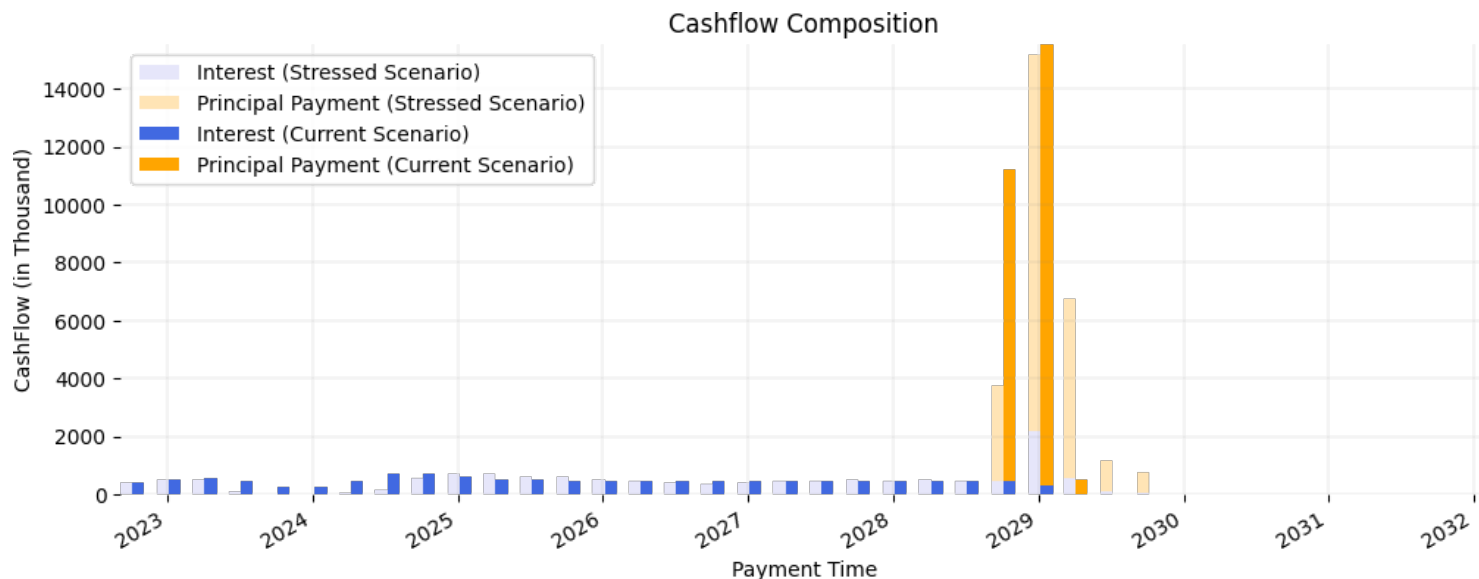
Title	Value	Title	Value
ORIGINAL BALANCE (\$ Million)	26.5	IC TEST TRIGGER	115.0
CURRENT BALANCE (\$ Million)	26.5	CURRENT IC	155.4
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	114.1
EJR MODEL IMPLIED RATING	A+ (sf)	CURRENT OC	121.2
UNCOVERED BALANCE (assets at MV) (\$ Million)	0.0	UNCOVERED RATIO (assets at MV) (%)	0.0
UNCOVERED BALANCE (assets at Par) (\$ Million)		UNCOVERED RATIO (assets at Par) (%)	0.0



The charts reflect the remaining balance and cashflow forecasting 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 \$26.5M. Under current default and recovery scenario, the payment window for this tranche ranges from Oct 20, 2022 to Oct 22, 2029. By the end of the payment period (Oct 22, 2029), 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 Oct 20, 2022 to Oct 22, 2029. By the end of the payment period (Oct 22, 2029), 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)	26.5	IC TEST TRIGGER	110.0
CURRENT BALANCE (\$ Million)	26.5	CURRENT IC	141.1
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	107.9
EJR MODEL IMPLIED RATING	BB+ (sf)	CURRENT OC	113.0
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

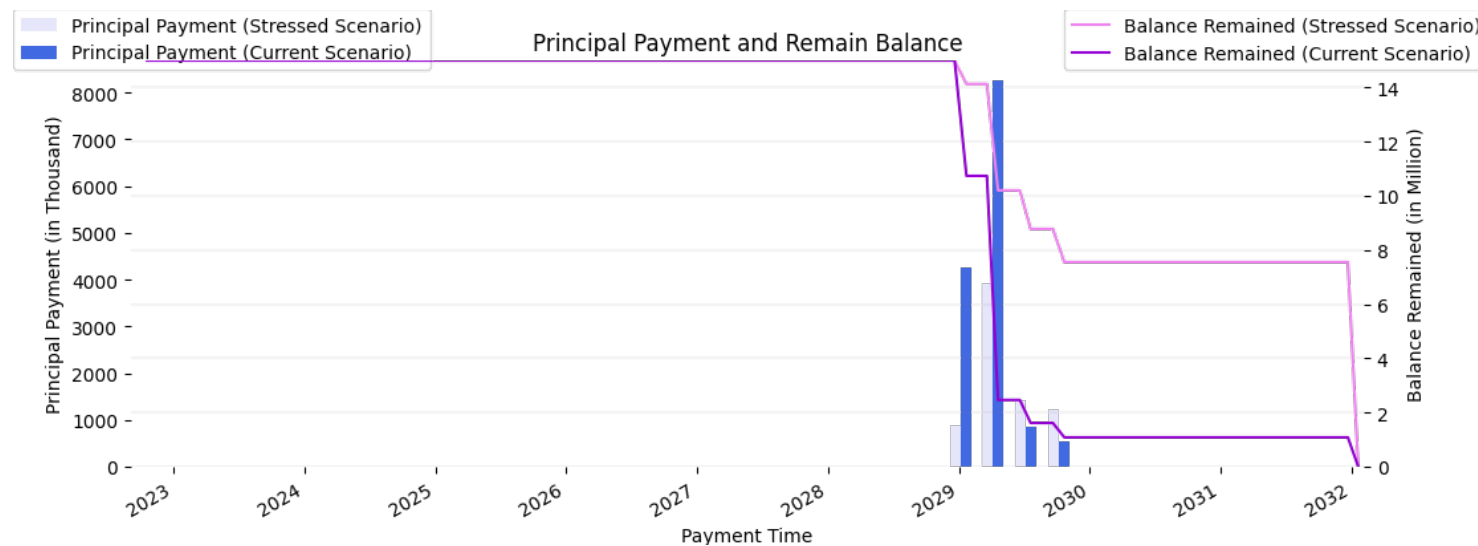
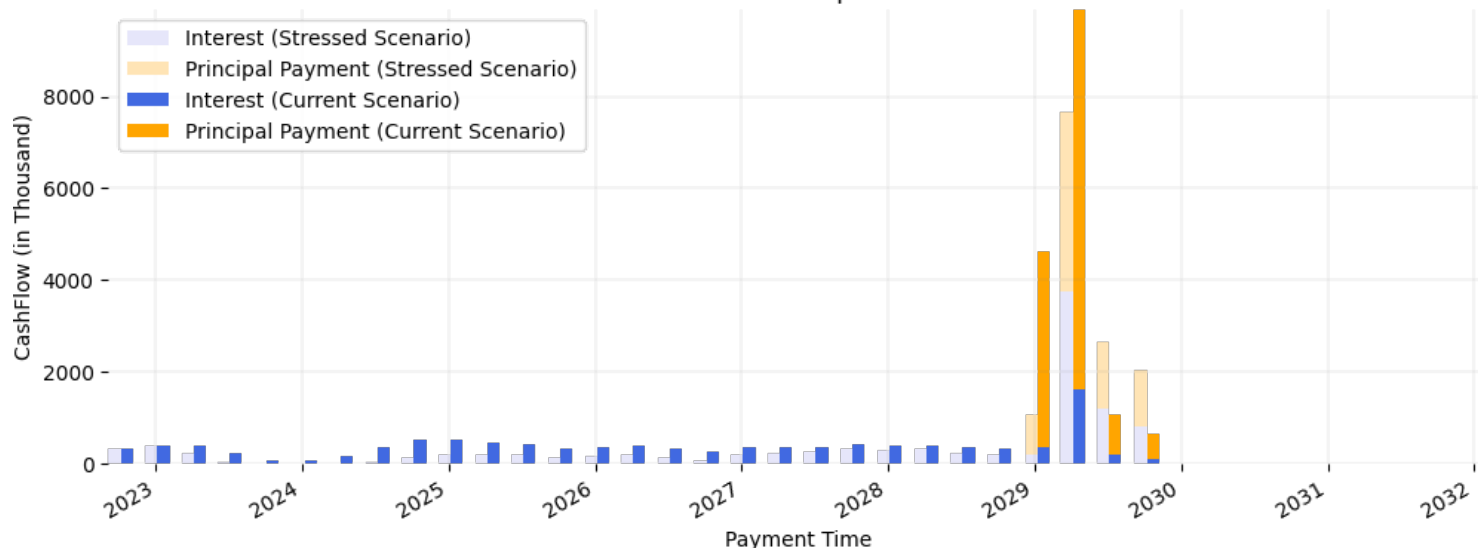


The charts reflect the remaining balance and cashflow forecasting under a) current default and recovery scenario and b) BB+ (sf) stress level default and recovery scenario, assuming 50% loss will happen evenly in the first 2 years. The current principal balance of the tranche is \$26.5M. Under current default and recovery scenario, the payment window for this tranche ranges from Oct 20, 2022 to Oct 22, 2029. By the end of the payment period (Oct 22, 2029), 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 Oct 20, 2022 to Oct 22, 2029. By the end of the payment period (Oct 22, 2029), 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)	15.0	IC TEST TRIGGER	
CURRENT BALANCE (\$ Million)	15.0	CURRENT IC	
TRANCHE SPECIFIC STRESSED PD		OC TEST TRIGGER	105.8
EJR MODEL IMPLIED RATING	BB (sf)	CURRENT OC	108.9
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

Cashflow Composition



The charts reflect the remaining balance and cashflow forecasting 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 \$15.0M. Under current default and recovery scenario, the payment window for this tranche ranges from Oct 20, 2022 to Apr 22, 2030. By the end of the payment period (Apr 22, 2030), 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 Oct 20, 2022 to Apr 22, 2030. By the end of the payment period (Apr 22, 2030), 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 EJ'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, EJ updates the cashflow and ratings monthly based on the availability of the trustee reports.
5. EJ'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 1 published by Apr 22, 2020, the General Methodology for Rating Asset Backed and Structured Finance Obligations version 2 published by Apr 26, 2021.

### **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. A description 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. A statement containing an overall assessment of the quality of information available and considered in the credit rating as required by Paragraph (a)(1)(ii)(I) 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 EJRs 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 EJRs CLO Methodology, EJRs attempts to calculate the weighted average default probability of the portfolio by using EJRs Weighted Average Rating Score (WARS) approach. EJRs ratings of CLO tranches are based on the estimated losses (EL) generated by applying default scenarios based on likelihood of occurrence. However, EJRs credit ratings are not based on absolute measures of probability of default and expected loss. EJRs 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 EJRs has determined that this disclosure doesn't apply to this report.

## Disclaimer

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### **Analyst Signature:**

THE QUANT TEAM

Date Prepared

11/03/22

### **Reviewer Signature:**

THE QUANT TEAM

Date Prepared

11/03/22