# U.S. BSL CLO And Leveraged Finance Key Themes
## Summer Of Our Discontent

Q3 2022

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*This report does not constitute a rating action*

S&P Global
Ratings

# U.S. Leveraged Finance Key Takeaways

- Operating and market conditions will likely remain volatile, with risks weighted to the downside as the Fed prioritizes fighting inflation over supporting growth.
- July marks the third month in a row that speculative-grade downgrades modestly outnumbered upgrades. However, many issuers' balance sheets and operating performance continues to benefit from growth momentum, healthy profit margins, and demand-driven cost pass-through.
- Cash flow deficits are our most significant concern for our issuers rated 'B' and below. This population is large, representing over 60% of our speculative-grade credit portfolio; has high leverage (-45% has S&P Global Ratings' adjusted leverage over 7.5x); has weak cash flow generation (-65% had reported free operating cash flow (FOCF)-to-debt of less than 3%); and has poor cash balances (-42% had cash-to-debt of less than 5%).
- U.S. corporate debt maturities pose seemingly little problem in the next 24 months. The maturity wall for nonfinancial corporates doesn't peak until 2026.
- We expect the trailing-12-month speculative-grade and Leveraged Loan Index default rate to more than double to 3% and 1.75% by March 2023, respectively, but remain below the historical averages of 4.1% and 2.5%.

## Key risks

**Prospect of a recession increasing, estimated at 45% (range 40%-50%), weakening demand (GDP: About 2% in 2022 and 1.6% in 2023)**

- Against the backdrop of higher recession risk amid elevated inflation and aggressive Fed policy tightening, the number of companies issuing negative earnings guidance is rising, and many are revising guidance downward or temporarily suspending it altogether.

**Cost inflation, supply issues, and labor constraints weigh on margins**

- Oil and natural gas prices remain high and could increase further. With the EU and other nations effectively banning Russian oil, the dearth in supply is unlikely to be made up from OPEC or North American shale producers. All of this has been occurring as we have seen COVID-19-driven shutdowns in China.

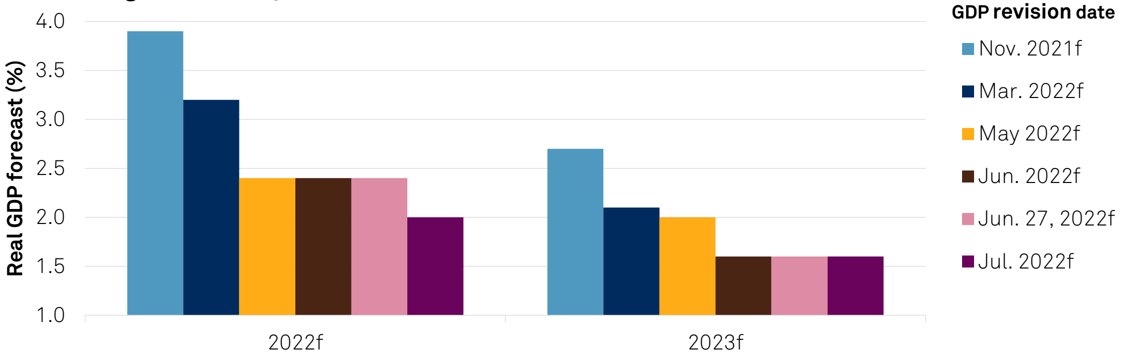
**Sharp market repricing pushes up borrowing costs amid record-high debt levels and rising benchmark rates**

- A sharp and rapid market repricing could hurt liquidity, exchange rates, and capital flows, and cause higher debt-servicing costs and tighter financing conditions, which is especially concerning against the backdrop of record high debt levels

# U.S. Leveraged Finance | What Are We Watching In Second-Half 2022?

## 1. The level and persistence of the slowdown

**Declining U.S. GDP Expectations**



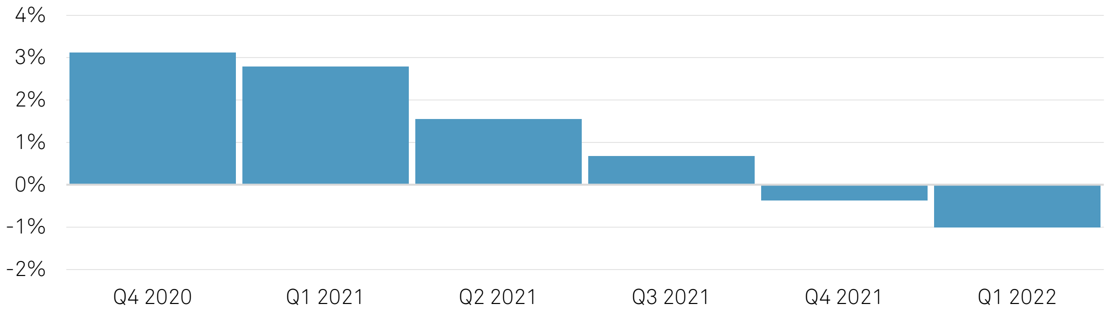

## 2. Consumer spending and earnings growth

**Median EBITDA Growth, Reported LTM – Q-o-Q**

| Issuer credit rating* | Entity count (#) | Q1 2021 (%) | Q2 2021 (%) | Q3 2021 (%) | Q4 2021 (%) | Q1 2022 (%) |
|---|---|---|---|---|---|---|
| BB+ | 100 | 5.0 | 10.4 | 4.3 | 4.3 | 3.6 |
| BB | 112 | 4.3 | 11.3 | 5.7 | 1.9 | 2.1 |
| BB- | 89 | 6.8 | 14.4 | 3.7 | 2.5 | 2.1 |
| B+ | 162 | 7.8 | 15.0 | 6.5 | 6.3 | 4.0 |
| B | 223 | 5.3 | 9.8 | 5.7 | 2.9 | 2.7 |
| B- | 262 | 4.6 | 8.3 | 4.2 | 4.4 | 2.8 |
| CCC+ | 80 | -0.3 | 5.6 | 2.2 | 0.2 | 0.1 |
| CCC | 23 | 2.2 | 3.3 | -6.0 | 8.9 | 4.2 |
| CCC- | 3 | -5.9 | 33.6 | -5.0 | -3.4 | 1.9 |
| CC | 2 | -11.1 | 5.8 | -10.6 | -10.3 | -2.6 |
| **Total** | **1,056** | **5.0** | **10.7** | **4.5** | **3.8** | **2.8** |

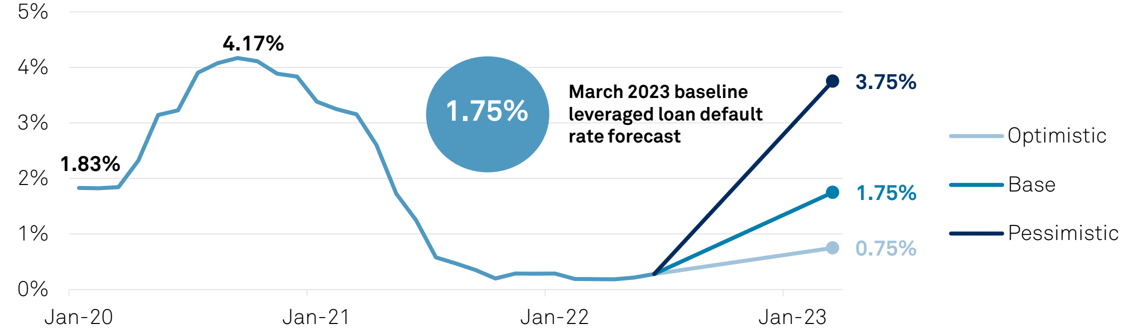
## 3. 'B-' issuer downgrade risk

**Median Free Operating Cash Flow (FOCF)-to-Debt for 'B-' Issuers**




## 4. Defaults rates

**LSTA Leveraged Loan Index**

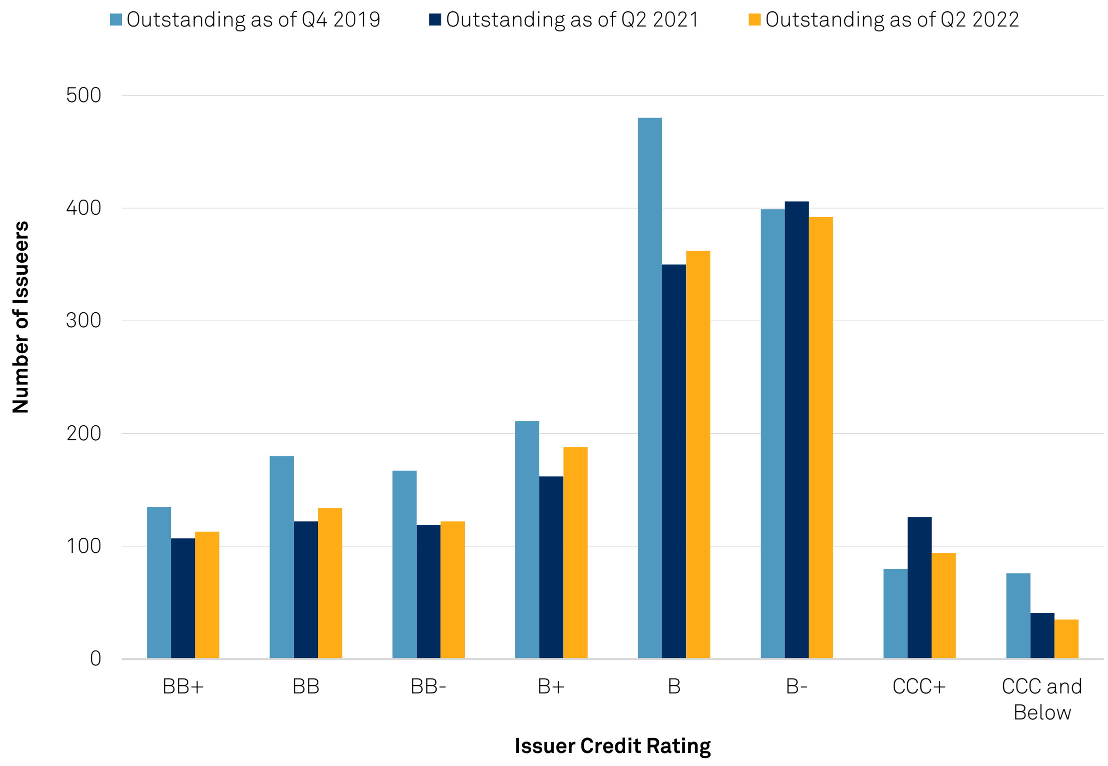



*f-forecast. Source: S&P Global Ratings.*

 *Covers U.S. and Canadian nonfinancial corporate ratings.*

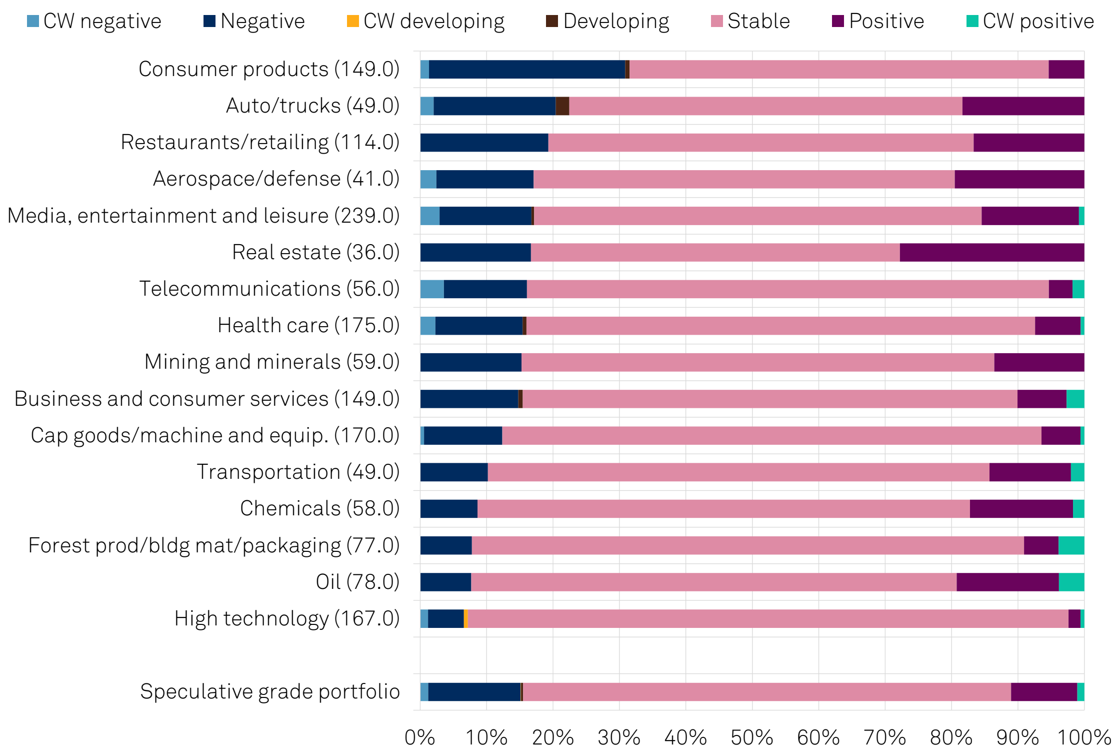
# Ratings Mix | Rating Mix Remains Concentrated At Low Levels; But Ratings With Negative Outlooks Remain Below Historical Averages

## Ratings Distribution By Issuer Credit Rating (ICR): U.S. And Canada




*Note: U.S and Canada corporate ratings. Source: S&P Global Ratings U.S. and Canada ratings.*  *Covers U.S. and Canadian nonfinancial corporate ratings.*

## Rating Outlook By Sector: U.S. And Canada

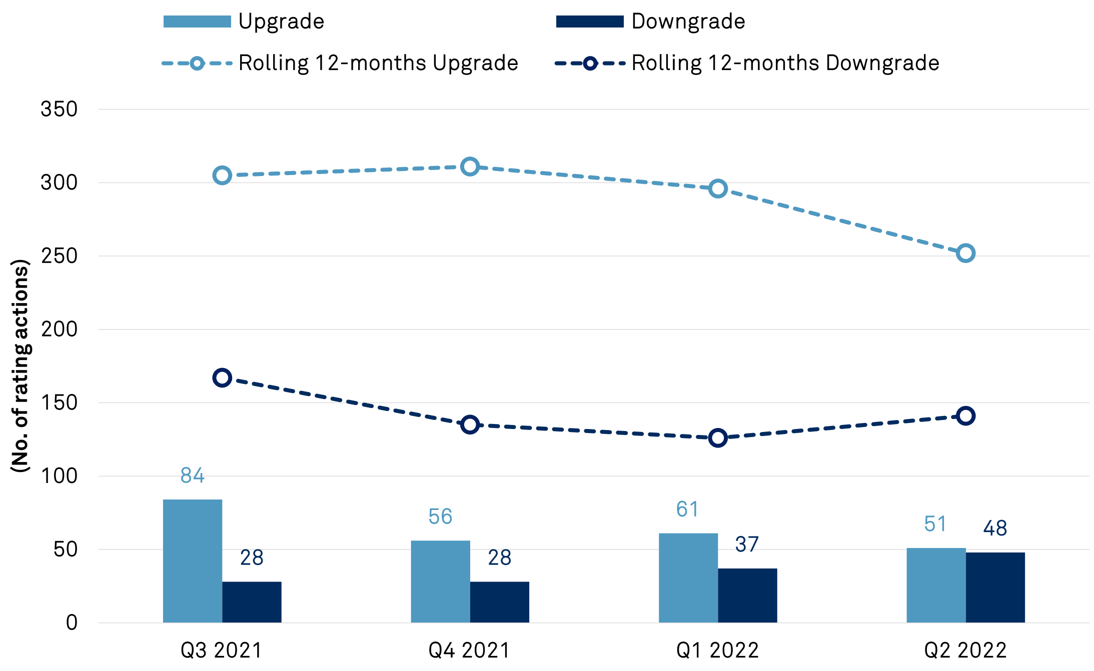



*Data as of July 27, 2022. The numbers within parentheses represents the total number of issuers within the sector. CW--CreditWatch. Source: S&P Global Ratings U.S. and Canada ratings.*  *Covers U.S. and Canadian nonfinancial corporate ratings.*

# Ratings Mix | Positive Ratings Momentum Shifts, As Economic Tailwinds Flag And Headwinds Mount

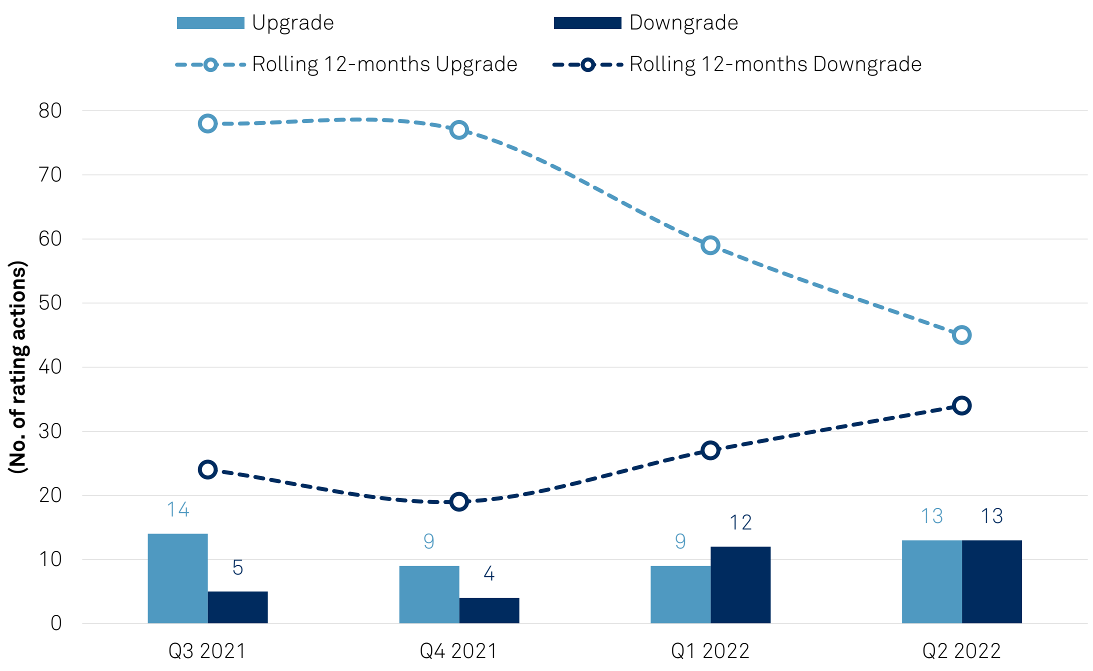
Economic growth and supportive capital markets have boosted speculative-grade issuer ratings (U.S. and Canadian non-financial corporates) in 2021, but the positive net rating momentum stalled in May 2022.

## Speculative-Grade Upgrades And Downgrades




*Source: S&P Global Ratings U.S. and Canada ratings.*  *Covers U.S. and Canadian nonfinancial corporate ratings.*

## Ratings Coming Into/Out Of 'CCC'/'CC' Categories




*Source: S&P Global Ratings U.S. and Canada ratings.*  *Covers U.S. and Canadian nonfinancial corporate ratings.*

# Credit Trends | Leverage Improves Through Q1 2022, While Earnings Growth Slows And Cash Flow Generation Falls

## Speculative-Grade Earnings Growth (U.S. And Canada)

### Median EBITDA Growth, Reported LTM

| | | Q-o-Q (%) | | | | | Y-o-Y (%) |
|---|---|---|---|---|---|---|---|
| Industry | Entity count (no.) | Q1 2021 | Q2 2021 | Q3 2021 | Q4 2021 | Q1 2022 | Q1 2022 |
| Aerospace/defense | 32 | -1.2 | 3.6 | 4.6 | 3.7 | -0.6 | 11.9 |
| Auto/trucks | 35 | 14.8 | 34.6 | 3.7 | 3.5 | 3.3 | 37.3 |
| Business and consumer services | 91 | 3.0 | 5.5 | 3.3 | 3.0 | 2.7 | 14.8 |
| Cap goods/machine and equipment | 108 | 3.6 | 4.2 | 1.9 | 1.9 | 3.6 | 13.4 |
| Chemicals | 33 | 6.7 | 12.1 | 5.5 | 4.9 | 2.3 | 46.4 |
| Consumer products | 90 | 7.4 | 8.1 | 1.6 | 0.3 | -1.1 | 9.2 |
| Forest prod/building material/packaging | 41 | 6.2 | 11.4 | 0.7 | 0.6 | 7.4 | 23.3 |
| Health care | 98 | 8.5 | 6.9 | 3.2 | 0.7 | 0.0 | 12.9 |
| Media, entertainment, and leisure | 152 | 3.4 | 26.3 | 9.4 | 5.8 | 4.7 | 63.4 |
| Mining and minerals | 47 | 6.6 | 22.1 | 15.3 | 11.9 | 11.6 | 78.2 |
| Oil and gas | 68 | -0.6 | 38.0 | 27.3 | 36.3 | 19.0 | 182.6 |
| Restaurants/retailing | 85 | 9.5 | 27.8 | 0.9 | 3.1 | 0.4 | 29.6 |
| Real estate | 20 | 4.6 | 7.1 | 4.6 | 5.6 | 3.6 | 21.7 |
| Technology | 88 | 5.8 | 4.7 | 1. | 0.6 | 1.9 | 9.8 |
| Telecommunications | 42 | 3.5 | 2.9 | 1.4 | -0.5 | -1.6 | 1.9 |
| Transportation | 26 | -1.8 | 22.3 | 12.2 | 10.6 | 1.3 | 59.9 |
| **Total** | **1,056** | **5.0** | **10.7** | **4.5** | **3.8** | **2.8** | **21.9** |

## Speculative-Grade Reported FOCF-to-Debt (U.S. And Canada)

### Median FOCF-To-Debt (%), Reported LTM

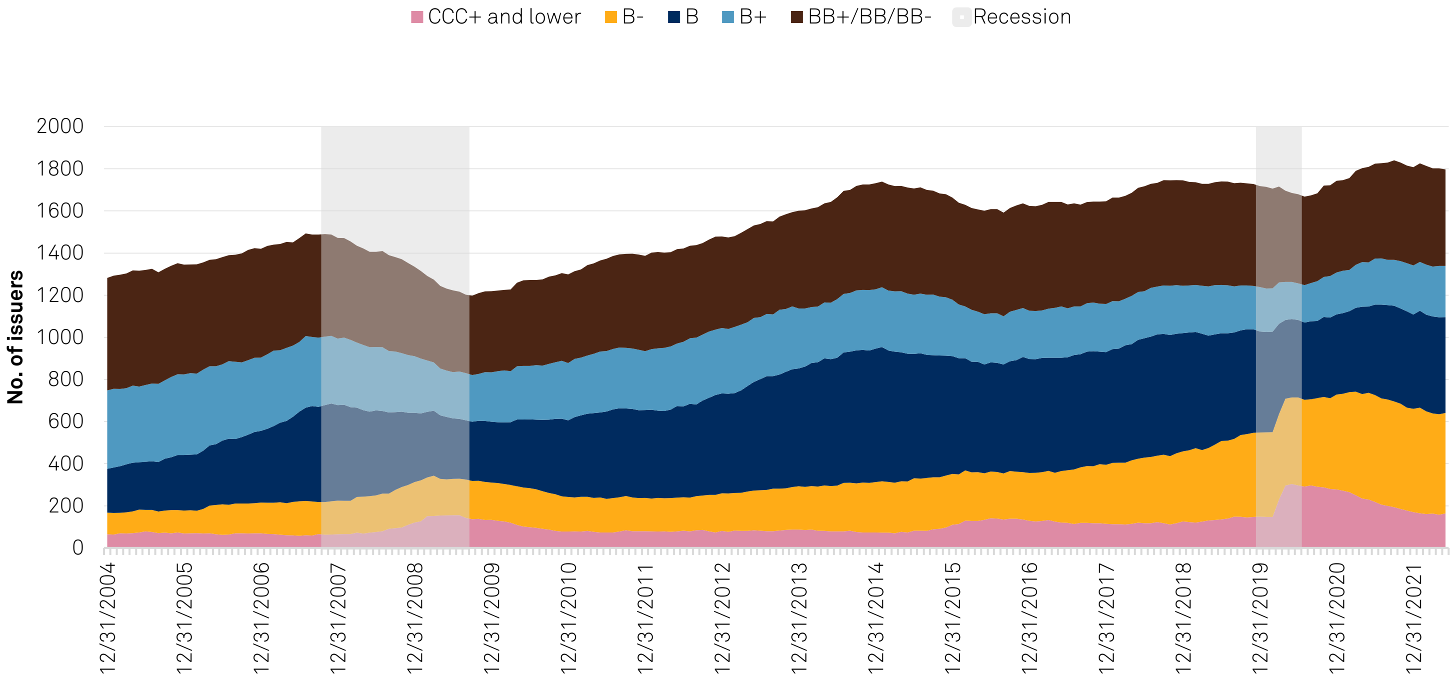
| | | | | LTM | | | | LTM |
|---|---|---|---|---|---|---|---|---|
| Industry | Entity count (no.) | 2019 | 2020 | Q1 2021 | Q2 2021 | Q3 2021 | 2021 | Q1 2022 |
| Aerospace/defense | 32 | 4.2 | 4.5 | 2.5 | 2.5 | 2.6 | 3.5 | 2.4 |
| Auto/trucks | 35 | 6.5 | 8.5 | 8.3 | 11.8 | 1.8 | -0.2 | -2.2 |
| Business and consumer services | 91 | 5.1 | 6.2 | 7.9 | 6.2 | 4.6 | 3.6 | 2.7 |
| Cap goods/machine and equipment | 108 | 3.0 | 8.4 | 9.3 | 5.6 | 2.9 | 0.9 | -0.3 |
| Chemicals | 33 | 3.9 | 4.6 | 5.0 | 5.3 | 7.4 | 4.9 | 1.1 |
| Consumer products | 90 | 5.5 | 8.3 | 8.4 | 5.8 | 3.8 | 2.6 | 0.9 |
| Forest product/building material/packaging | 41 | 10.3 | 14.1 | 14.6 | 9.5 | 4.0 | 3.1 | 0.2 |
| Health care | 98 | 1.7 | 5.0 | 7.2 | 4.6 | 2.9 | 2.0 | 1.1 |
| Media, entertainment, and leisure | 152 | 6.4 | 4.4 | 4.7 | 7.4 | 6.2 | 5.1 | 4.7 |
| Mining and minerals | 47 | 6.1 | 6.4 | 8.2 | 6.0 | 5.9 | 9.8 | 9.1 |
| Oil and gas | 68 | 0.2 | 2.7 | 4.4 | 4.2 | 5.8 | 9.9 | 11.8 |
| Restaurants/retailing | 85 | 4.3 | 13.0 | 14.3 | 14.4 | 11.6 | 9.6 | 6.7 |
| Real estate | 20 | 5.7 | 9.9 | 11.6 | 6.9 | -0.3 | -3.1 | -6.6 |
| Technology | 88 | 3.8 | 8.1 | 8.6 | 7.9 | 8.7 | 6.3 | 5.9 |
| Telecommunications | 42 | 2.1 | 4.1 | 6.1 | 5.5 | 3.8 | 3.0 | 2.5 |
| Transportation | 26 | 1.7 | -1.8 | -1.2 | 1.3 | 0.7 | 3.4 | 3.3 |
| **Total** | **1,056** | **4.3** | **6.6** | **7.1** | **6.3** | **4.7** | **3.9** | **2.8** |

*Covers U.S. and Canadian nonfinancial corporate ratings. Rating as of June 28, 2022; Leverage is calculated as reported gross debt over reported EBITDA, without adjustment by S&P Global Ratings. The sample in this study is rebalanced each quarter following selection criteria, as detailed in the "The Data Used in This Report" section. FOCF--Free operating cash flow. LTM--Last 12 months. Source: S&P Global Ratings U.S. and Canada ratings.* 

# Ratings Mix | Expansion Of Rated Universe At Bottom Rungs Is A Long-Term Trend

### Speculative-Grade Ratings Distribution Over Time Through May 2022

U.S. and Canada Nonfinancial Corporate Issuer Count By Speculative-Grade Rating Category

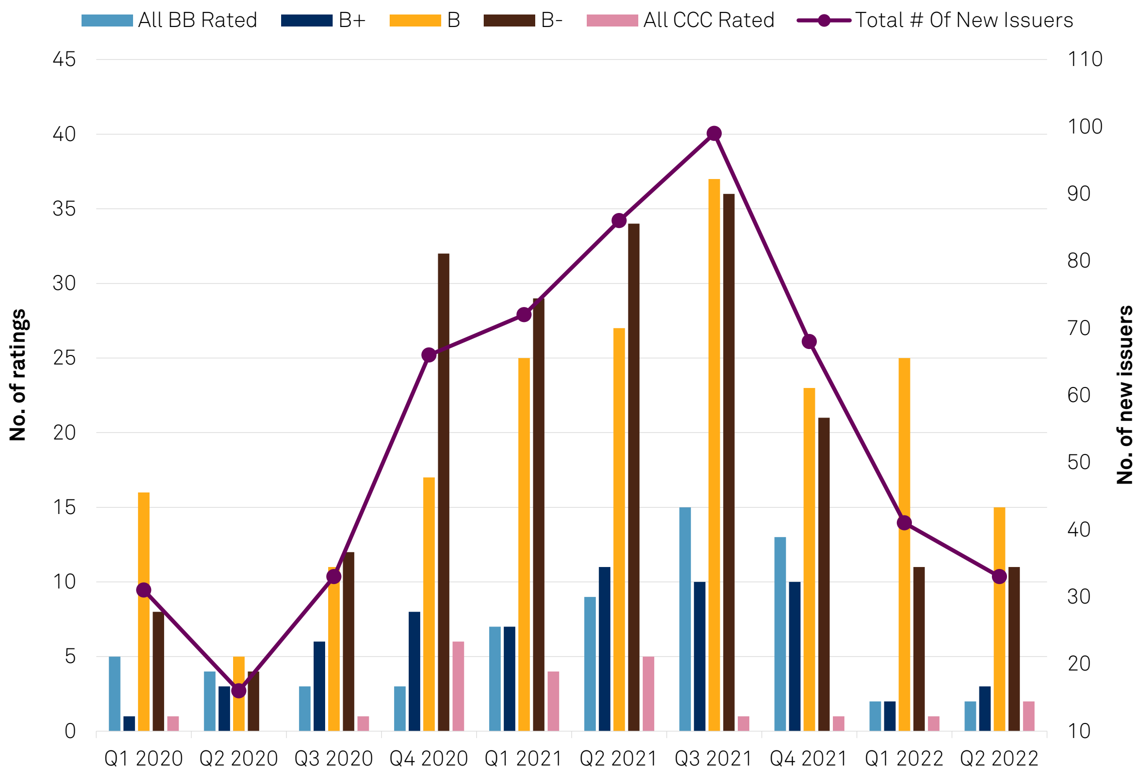



*Data as of May 31, 2022. Source: S&P Global Ratings.*

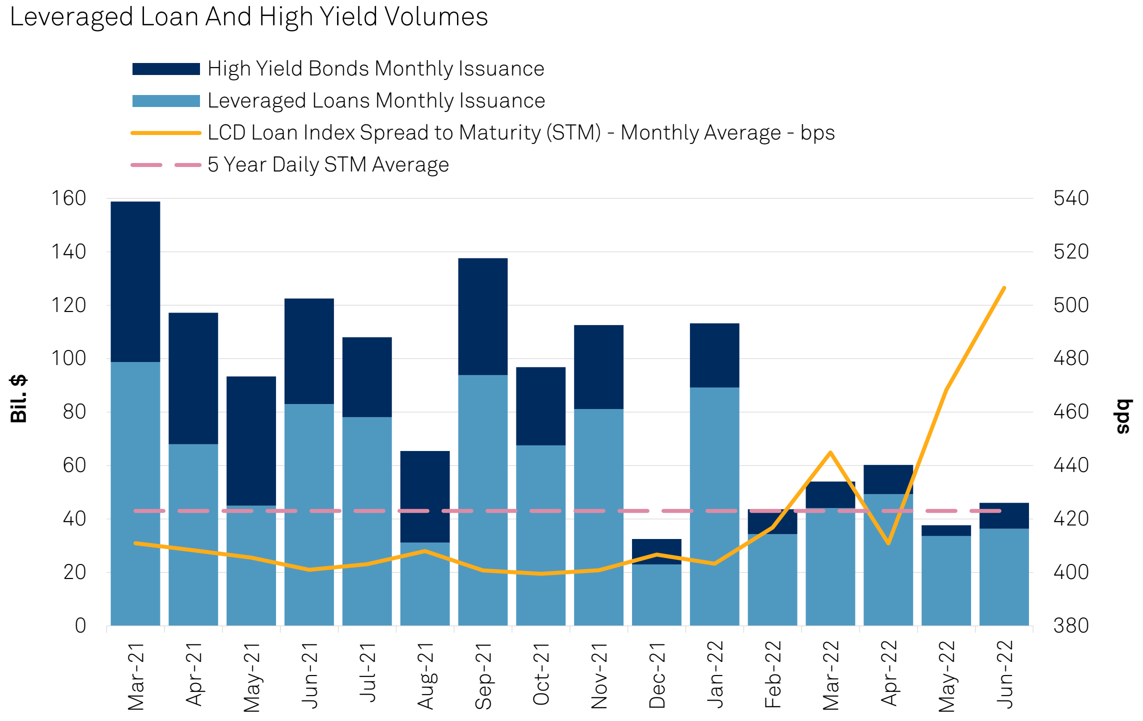

- **Speculative-grade ratings are skewed to 'B' and 'B-'.** These issuers now account for about 52% of the portfolio, up 4.4% from Dec. 2020.
- **Issuers rated 'CCC+' and below have declined to about 9% from about 16% in Dec. 2020.** The median proportion of this population over the 17-year time series is 6%.
- **More than half of current 'B-' issuers had a 'B-' initial rating,** highlighting increasing accommodating financing conditions and higher debt leverage in recent years.

# Credit Creation | Volumes Decline Sharply In First-Half 2022 As Market Uncertainty And High Rates Hold Back Launches And Risk Taking

### New Issuer Ratings
### (U.S. And Canadian Corporate Ratings By Count)




### Monthly U.S. Leveraged Finance Issuance Volumes And Leveraged Loan (LSTA/LCD Index) Credit Spread




*QTD2, as of June 30, 2022. Source: LCD, an offering of S&P Global Market Intelligence.* 

S&P Global Ratings

# Impact Of Rising Costs | Ability To Pass Through Costs; EBITDA Margin Impact Vary By Sector For U.S. And Canadian Issuers

**Average EBITDA Margins in 2022 vs. 2021**

Question: Reflecting your assumptions for costs, product mix and any other relevant factors, how do you expect average EBITDA margins to develop for 2022 versus 2021?

Cost pass-through ability

Question: How easy is it to pass on cost increases?

| | Rise a lot | Rise moderately | Rise a little | Fall a little | Fall moderately | Fall a lot |
|---|---|---|---|---|---|---|
| Very easy | | – Out-of-home entertainment | | – Metals and mining<br>– Regulated utilities | | |
| Somewhat easy | – Airlines<br>– Cruise<br>– Lodging | – Aerospace and defense | – Containers and packaging<br>– Leisure manufacturing<br>– Pharma<br>– Technology<br>– Unregulated power | – Autos<br>– Building materials<br>– Capital goods<br>– Chemicals<br>– Engineering & construction<br>– Freight transportation<br>– Gaming<br>– Homebuilders<br>– REITs<br>– Telecom | | |
| Impossible to generalize | – Oil and gas<br>– Oil refineries | | – Midstream energy | – Business & technology services | | |
| Somewhat difficult | | | | – Healthcare services | – Film and TV programming production | – Retail and restaurants |
| Very difficult | | | | **Sectors most at risk represent -18% of assets in BSL CLOs** | | – Consumer products |

Source: S&P Global Ratings' corporate sector analysts' assessment as of June 23, 2022. See "Credit Conditions North America Q3 2022: Credit Headwinds Turn Stormy," June 28, 2022. 

- Earnings in most corporate sectors have returned to (or exceed) pre-pandemic levels, with some exceptions including the leisure and airline sectors.
- High levels of refinancings in 2021 resulted in improved liquidity, lower corporate debt costs, and an extended maturity wall.
- Despite intensifying downside risks, our rating outlook bias overall remains predominantly stable for now.
- Nevertheless, weakening demand remains a key risk we're monitoring. The number of companies issuing negative earnings guidance is rising, and many are revising guidance downward or are temporarily suspending it.
- The wealth effect that is supporting spending in the face of inflation may be fading.

# Issuer Stress Testing | Increase In ‘B-’ Issuers “At Risk” Of A Downgrade Under Alternative Downside Scenarios

## Aggregate ‘B-’ Issuer Portfolio

| Sample: 463 | | Reported EBITDA Margin Stress | | | | |
|---|---|---|---|---|---|---|
| | | +5% (15.2% median margin) | +0% (14.5%) | -5% (13.7%) | -10% (13%) | -15% (12.3%) |
| Interest Rate Increase | +0% (6% median cash debt cost) | -1% | 22% LTM Q1 2022 | +3% | +5% | +9% |
| Interest Rate Increase | +1% (7%) | +2% | +4% | +8% | +10% | +13% |
| Interest Rate Increase | +2% (8%) | +7% | +8% | +11% | +14% | +21% |
| Interest Rate Increase | +3% (9%) | +10% | +12% | +16% | +20% | +25% |
| Interest Rate Increase | +4% (10%) | +13% | +16% | +19% | +23% | +27% |

**Color Key: Increase in the Percentage of ‘B-’ Issuers “At Risk”**

| 10%< | 10%-19% | 20%+ |
|---|---|---|

Currently, about 22% of our ‘B-’ issuers are highly vulnerable to a rating downgrade based on last-12-month credit measures. Their credit measures met at least three of the following four metrics:

- Reported FOCF deficits * -2 > current cash balances;
- Reported leverage > 8.5x;
- Reported cash interest coverage < 1.1x; and
- Reported FOCF-to-debt < (3%).

If credit measures do not improve as expected, possibly due to a protracted recession, the population of highly vulnerable issuers will sharply increase over the next 12 months.

- For example, the population of ‘B-’ issuers at risk of a downgrade to the ‘CCC’ category would increase by 16% (to 38% of the ‘B-’ cohort in our sample) if EBITDA margins fail to improve and interest rates increase by 4%.

*Last 12-month data reflect the last available financials as of July 29, 2022. For this study, we define “At Risk” if an issuer meets three of the following four credit factors under alternative stress scenarios: (1) reported free operating cash flow (FOCF) deficits * -2 < current cash balances; (2) reported leverage >= 8.5x; (3) reported cash interest coverage <= 1.1x; and (4) reported FOCF-to-debt <= (3%). Source: S&P Global Ratings.*

# Issuer Stress Testing | Increase Of 'B-' Issuers "At Risk" By Sector

## Healthcare 'B-' Issuers

| Sample: 63 | Reported EBITDA Margin Stress | | | | |
|---|---|---|---|---|---|
| Interest Rate Increase | +5% (12.7% median margin) | +0% (12.1%) | -5% (11.5%) | -10% (10.9%) | -15% (10.3%) |
| +0% (5.6% median debt cost) | +0% | 25% LTM Q1'22 | +6% | +6% | +16% |
| +1% (6.6%) | +6% | +6% | +16% | +16% | +17% |
| +2% (7.6%) | +13% | +16% | +19% | +19% | +22% |
| +3% (8.6%) | +16% | +17% | +21% | +24% | +27% |
| +4% (9.6%) | +21% | +22% | +25% | +29% | +32% |

## High Tech 'B-' Issuers

| Sample: 71 | Reported EBITDA Margin Stress | | | | |
|---|---|---|---|---|---|
| Interest Rate Increase | +5% (21% median margin) | +0% (20%) | -5% (19%) | -10% (18%) | -15% (17%) |
| +0% (5.6% median debt cost) | +0% | 14% LTM Q1'22 | +0% | +0% | +4% |
| +1% (6.6%) | +1% | +4% | +7% | +7% | +7% |
| +2% (7.6%) | +7% | +8% | +8% | +13% | +15% |
| +3% (8.6%) | +10% | +13% | +14% | +17% | +21% |
| +4% (9.6%) | +14% | +15% | +17% | +20% | +23% |

## Consumer Product/Restaurants And Retail 'B-' Issuers

| Sample: 55 | Reported EBITDA Margin Stress | | | | |
|---|---|---|---|---|---|
| Interest Rate Increase | +5% (9.6% median margin) | +0% (9.1%) | -5% (8.7%) | -10% (8.2%) | -15% (7.8%) |
| +0% (6.3% median debt cost) | -2% | 29% LTM Q1'22 | +2% | +5% | +7% |
| +1% (7.3%) | +0% | +2% | +7% | +7% | +11% |
| +2% (8.3%) | +7% | +7% | +11% | +11% | +22% |
| +3% (9.3%) | +7% | +9% | +18% | +18% | +29% |
| +4% (10.3%) | +13% | +18% | +24% | +25% | +36% |

*Last 12-month data reflect the last available financials as of July 29, 2022. For this study, we define "At Risk" if an issuer meet three of the following four credit factors under alternative stress scenarios: (1) reported free operating cash flow (FOCF) deficits * -2 < current cash balances; (2) reported leverage >= 8.5x; (3) reported cash interest coverage <= 1.1x; and (4) reported FOCF-to-debt <= (3%). Source: S&P Global Ratings.*

# Issuer Stress Testing | Increase Of ‘B-’ Issuers “At Risk” By Sector (continued)

## Media, Entertainment, And Leisure ‘B-’ Issuers

| Sample: 51 | | Reported EBITDA Margin Stress | | | | |
|---|---|---|---|---|---|---|
| | | +5% (19% median margin) | +0% (18.1%) | -5% (17.2%) | -10% (16.3%) | -15% (15.4%) |
| Interest Rate Increase | +0% (6.5% median debt cost) | -4% | 22% LTM Q1’22 | +2% | +6% | +6% |
| | +1% (7.5%) | +6% | +6% | +6% | +8% | +10% |
| | +2% (8.5%) | +8% | +8% | +10% | +10% | +14% |
| | +3% (9.5%) | +10% | +12% | +12% | +14% | +18% |
| | +4% (10.5%) | +12% | +16% | +16% | +22% | +24% |

## Business And Consumer Products ‘B-’ Issuers

| Sample: 54 | | Reported EBITDA Margin Stress | | | | |
|---|---|---|---|---|---|---|
| | | +5% (12.3% median margin) | +0% (11.8%) | -5% (11.2%) | -10% (10.6%) | -15% (10%) |
| Interest Rate Increase | +0% (6.2% median debt cost) | +0% | 26% LTM Q1’22 | +2% | +2% | +7% |
| | +1% (7.2%) | +0% | +2% | +7% | +9% | +15% |
| | +2% (8.2%) | +6% | +6% | +11% | +13% | +22% |
| | +3% (9.2%) | +7% | +9% | +20% | +22% | +26% |
| | +4% (10.2%) | +13% | +13% | +20% | +24% | +26% |

## Capital Goods/Machine And Equipment ‘B-’ Issuers

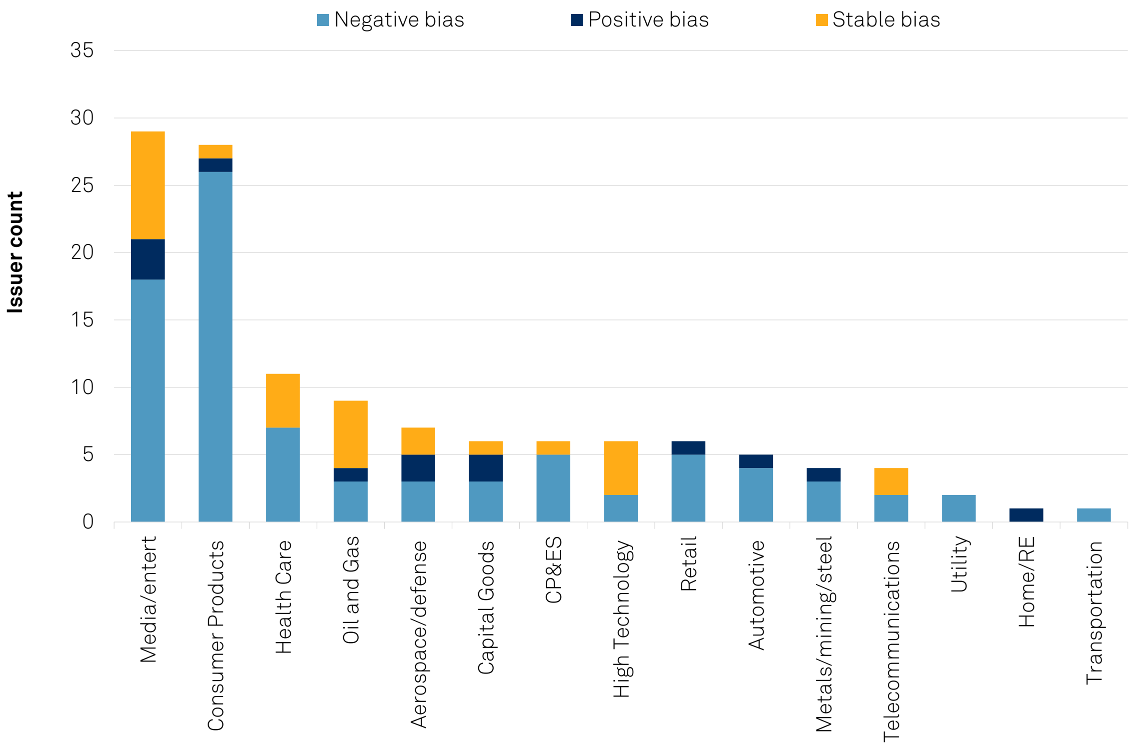
| Sample: 57 | | Reported EBITDA Margin Stress | | | | |
|---|---|---|---|---|---|---|
| | | +5% (13.3% median margin) | +0% (12.7%) | -5% (12.1%) | -10% (11.4%) | -15% (10.8%) |
| Interest Rate Increase | +0% (5.7% median debt cost) | -5% | 26% LTM Q1’22 | +7% | +11% | +12% |
| | +1% (6.7%) | +4% | +5% | +7% | +11% | +14% |
| | +2% (7.7%) | +5% | +9% | +11% | +21% | +26% |
| | +3% (8.7%) | +11% | +14% | +18% | +26% | +32% |
| | +4% (9.7%) | +14% | +19% | +23% | +28% | +33% |

*Last 12-month data reflect the last available financials as of July 29, 2022. For this study, we define “At Risk” if an issuer meet three of the following four credit factors under alternative stress scenarios: (1) reported free operating cash flow (FOCF) deficits * -2 < current cash balances; (2) reported leverage >= 8.5x; (3) reported cash interest coverage <= 1.1x; and (4) reported FOCF-to-debt <= (3%). Source: S&P Global Ratings.*

# ‘CCC’ Category | ‘CCC’ Issuers Account For About 9% Of U.S. Issuers (Down From 16% At Dec. 2020)...But Only 4% Of BSL CLO Assets

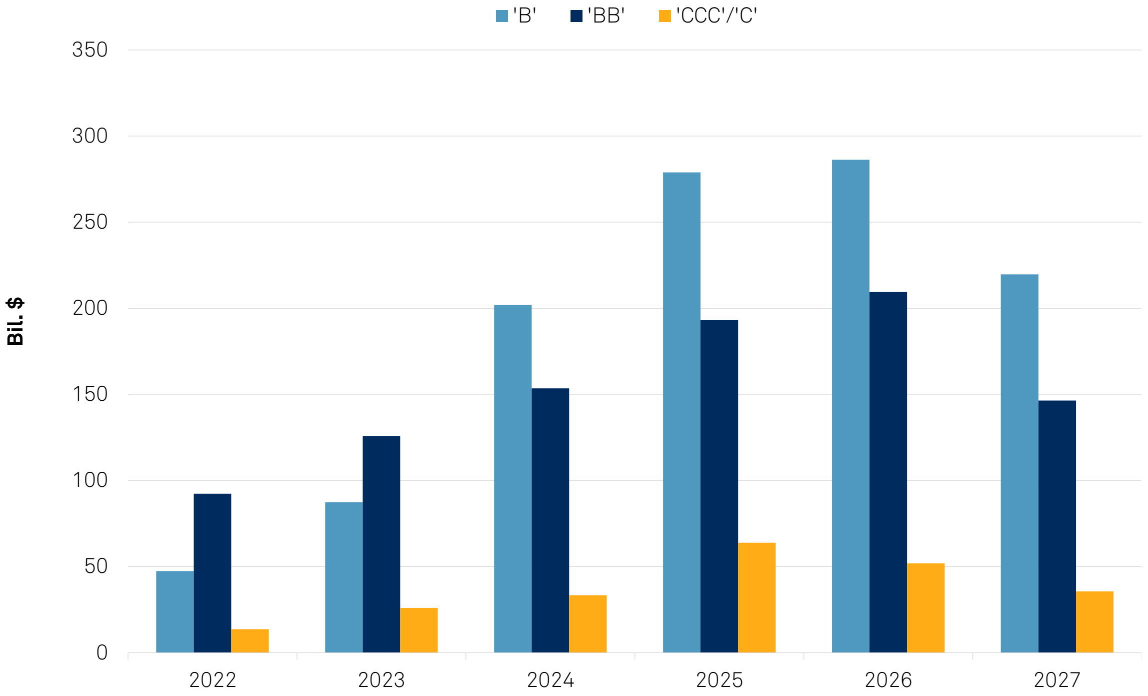
### The Consumer Products Sector Is Most Exposed To The Operating Environment

'CCC' Industry Exposure By Issuer Count (U.S. and Canada)




*Data as of June 30, 2022. CP&ES--Chemicals, packaging, and environmental services. Retail--Retail/restaurants. Media/entert--Media and entertainment. Home/RE--Homebuilders/real estate co. Forest--Forest products and building materials. Source: S&P Global Ratings Research.* 

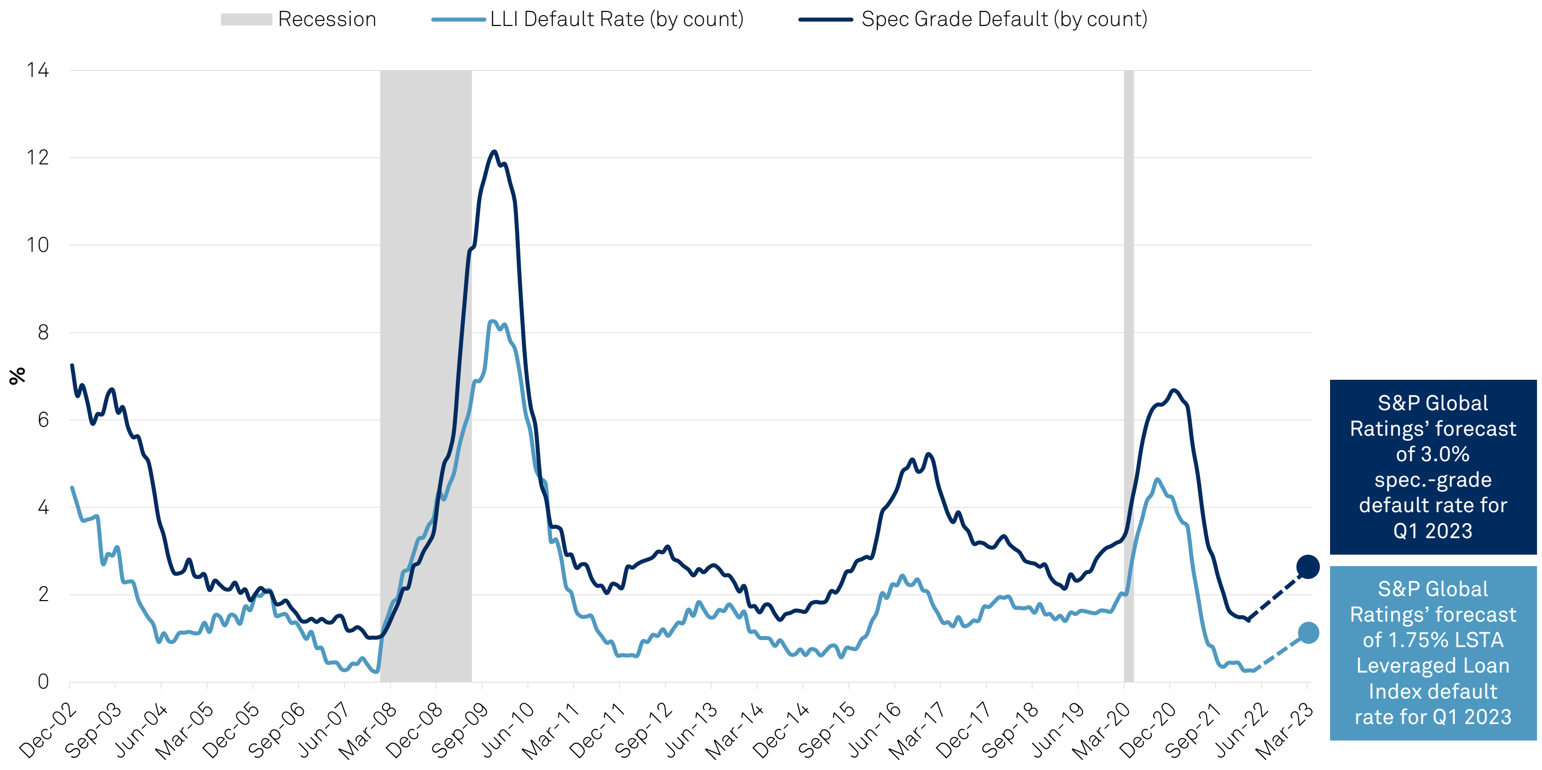
### The North American 'CCC+' And Below Maturity Wall Remains Largely Manageable




*Data as of Dec. 31, 2021. Sources: S&P Global Ratings Research and Thomson Reuters.* 

# U.S. Default Rates | Expected To Double To 3% By Q12023, But Remain Below Historical Averages (4.1% For SG Overall, 2.5% For LLI)

## LTM Default Rates (in %, by issuer count)




### Overview: Very low in 2021

- Our overall spec.-grade (SG) default rate is calculated on an issuer count basis for all bond and loan defaults, **including** selective defaults.
- Default rates for the LSTA US Leveraged Loan Index (LLI) **exclude** bond defaults and selective defaults.
- Selective defaults are significant, representing ~47% of all speculative-grade defaults in 2020 and ~69% in 2021.
- After spiking in late 2020, default rates have declined rapidly.

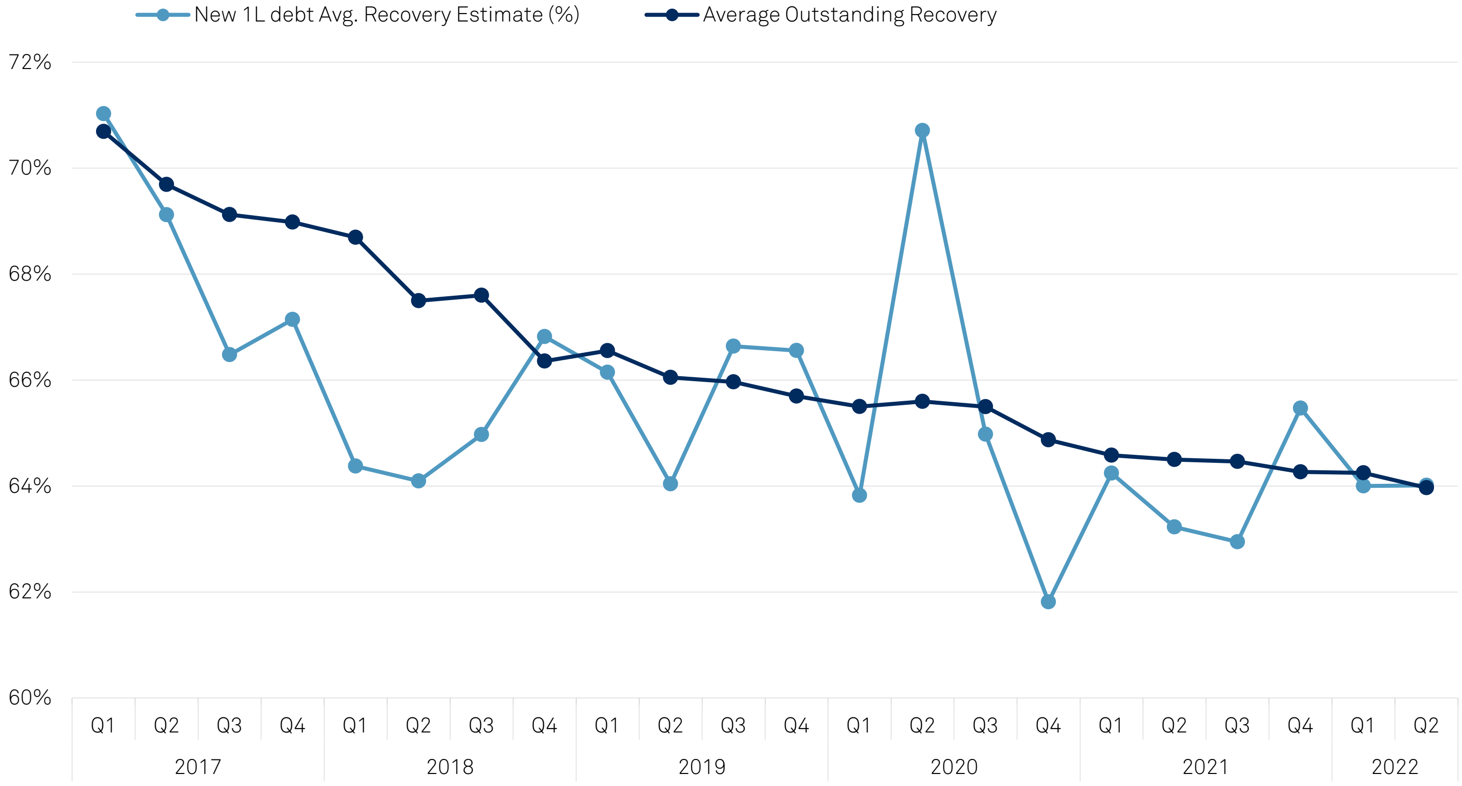
### Forward-view: default risks increasing

- For the U.S., our speculative-grade default forecast (issuer count) for first-quarter 2023 is 3.00% (base case; range 1.75%-6.00%).
- For the LSTA Leveraged Loan Index default rate (issuer count) first-quarter 2023 is 1.75% (base case; range 0.75%-3.50%).

*Measures of LLI defaults exclude non-loan defaults and selective defaults. LTM--Last 12 months. Sources: Default, Transition, and Recovery: Global Corporate Default articles.*
*https://www.capitaliq.com/CIQDotNet/CreditResearch/SPResearch.aspx?DocumentId=51666471&From=SNP_CRS.*

# Recovery Rates | First-Lien Recovery Expectations Are Now Well Below Historical Averages

## Expected Recovery On Newly Issued And Outstanding First-Lien Debt (U.S. And Canada)

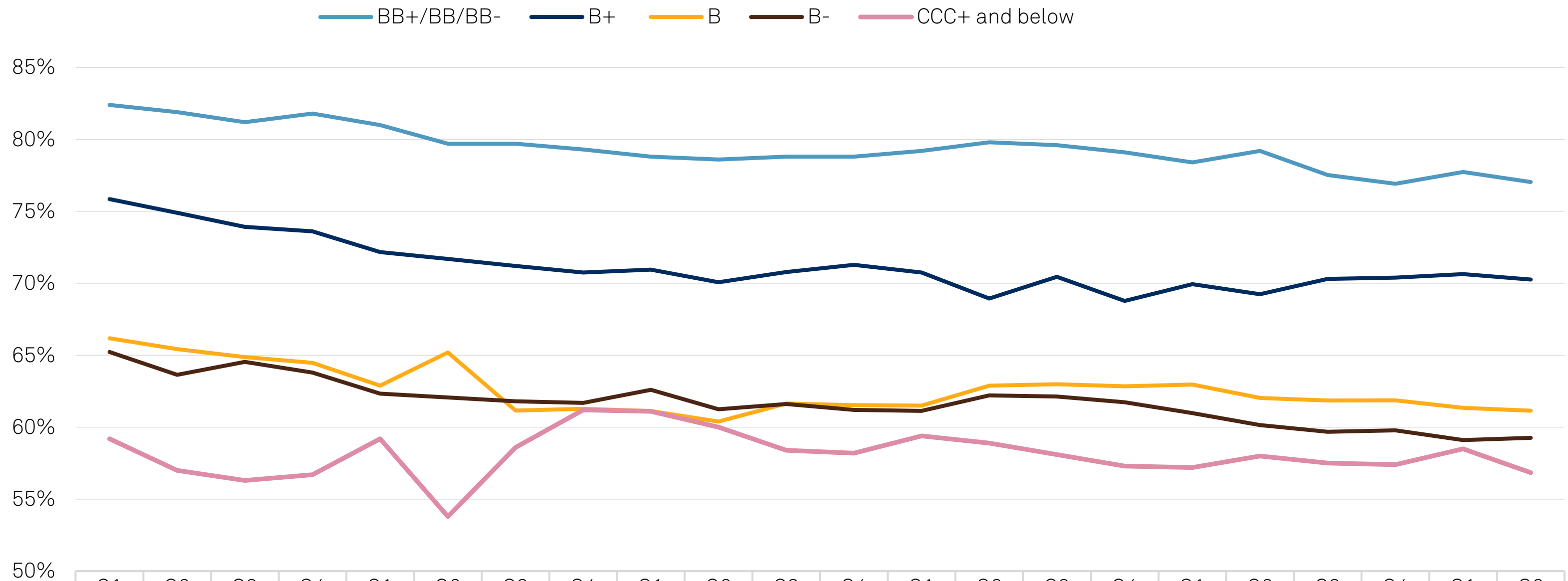



- Estimated recoveries on first lien debt have declined gradually.
- **Average expected recoveries are materially lower than long-term U.S.** historical averages for first-lien debt of 75%-80% (past 35 years).
- Additionally, average actual first-lien recovery rates in recent years have been lower, with significant variability.
- **Higher total debt leverage, higher first-lien debt leverage, and reduced junior debt cushions** are fundamental drivers of the decline.
- Covenant-Lite term loans also contribute to lower recovery expectations, although its a secondary factor.

*Data through June 30, 2022, based on the rounded point-estimates included in our recovery ratings for rated non-financial corporate entities in the U.S. and Canada. Source: S&P Global Ratings.*

# Recovery Rates | First-Lien Recovery Expectations Vary By Rating Level

## Average Recovery Estimate Of First-Lien Debt: U.S. And Canada



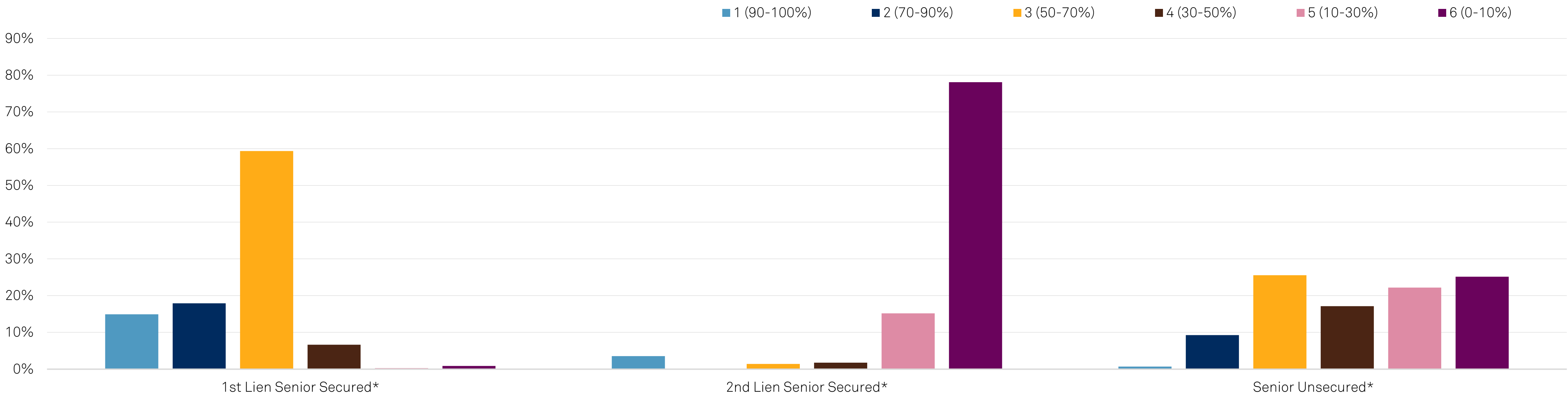

| | Q1 2017 | Q2 2017 | Q3 2017 | Q4 2017 | Q1 2018 | Q2 2018 | Q3 2018 | Q4 2018 | Q1 2019 | Q2 2019 | Q3 2019 | Q4 2019 | Q1 2020 | Q2 2020 | Q3 2020 | Q4 2020 | Q1 2021 | Q2 2021 | Q3 2021 | Q4 2021 | Q1 2022 | Q2 2022 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| BB+/BB/BB- | 82.4% | 81.9% | 81.2% | 81.8% | 81.0% | 79.7% | 79.7% | 79.3% | 78.8% | 78.6% | 78.8% | 78.8% | 79.2% | 79.8% | 79.6% | 79.1% | 78.4% | 79.2% | 77.5% | 76.9% | 77.7% | 77.0% |
| B+ | 75.9% | 74.9% | 73.9% | 73.6% | 72.2% | 71.7% | 71.2% | 70.8% | 71.0% | 70.1% | 70.8% | 71.3% | 70.8% | 68.9% | 70.5% | 68.8% | 69.9% | 69.2% | 70.3% | 70.4% | 70.6% | 70.3% |
| B | 66.2% | 65.4% | 64.9% | 64.5% | 62.9% | 65.2% | 61.2% | 61.3% | 61.1% | 60.4% | 61.7% | 61.5% | 61.5% | 62.9% | 63.0% | 62.8% | 63.0% | 62.0% | 61.9% | 61.9% | 61.3% | 61.1% |
| B- | 65.2% | 63.6% | 64.5% | 63.8% | 62.3% | 62.1% | 61.8% | 61.7% | 62.6% | 61.3% | 61.6% | 61.2% | 61.1% | 62.2% | 62.1% | 61.7% | 61.0% | 60.2% | 59.7% | 59.8% | 59.1% | 59.3% |
| CCC+ and below | 59.2% | 57.0% | 56.3% | 56.7% | 59.2% | 53.8% | 58.6% | 61.2% | 61.1% | 60.0% | 58.4% | 58.2% | 59.4% | 58.9% | 58.1% | 57.3% | 57.2% | 58.0% | 57.5% | 57.4% | 58.5% | 56.8% |

- Average recovery expectations for first-lien debt vary by Issuer rating.
- Higher-rated issuers, which tend to be less levered with larger junior debt cushions, tend to have higher recoveries.
- **Average recovery expectations have drifted down since 2017.**
- Overall average first-lien recoveries (prior slide) also reflect **a higher concentration of lower-rated entities ('B' and 'B-').**

*Data through June 30, 2022, based on the rounded point-estimates included in our recovery ratings for rated non-financial corporate entities in the U.S. and Canada, includes public and private ratings for bank loans and notes. Source: S&P Global Ratings.* 

# Recovery Ratings By Debt Type | Relative Priority Matters

## Recovery Rating Distribution: First- And Second-Lien Senior Secured vs Senior Unsecured (U.S. And Canada)




| Point Estimate by Debt type | 1L Debt | 2L Debt | Senior Unsecured |
|---|---|---|---|
| Median | 60% | 0% | 30% |
| Average | 64% | 8% | 34% |

*All data as of June 30, 2022. Source: S&P Global Ratings Research.*

# The Big Picture | CLO Key Insights

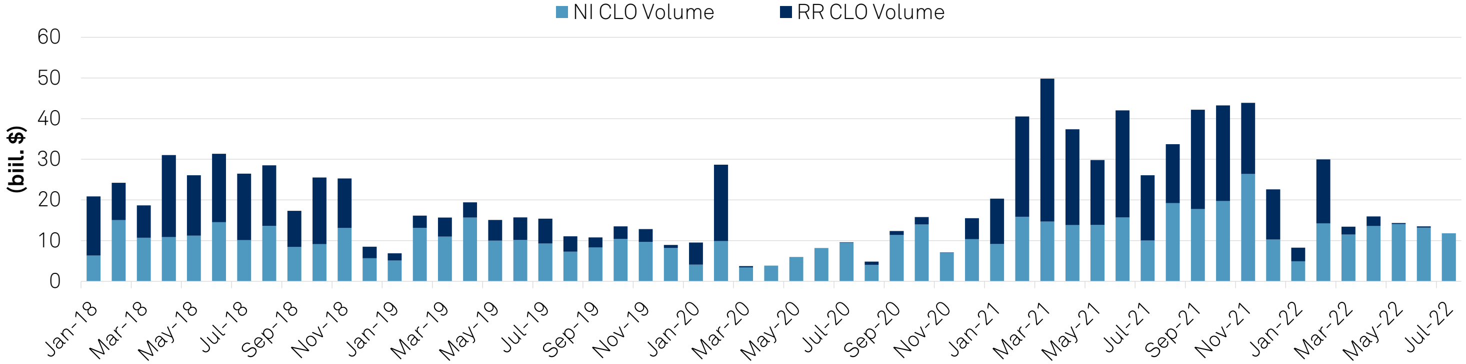
- Despite negative market sentiment, **CLO credit metrics have so far remained steady**. Since the start of the year, the average BSL CLO 'CCC' asset basket has come down (to 4.00% from 4.94%), the SPWARF is nearly unchanged (2,726 now versus 2,700 back in January), and exposure to non-performing assets has crept up (to 0.34% from 0.17%) along with exposure to ratings on CreditWatch negative (to 1.46% versus 0.88%).
- **The average junior overcollateralization (O/C) test cushion edged slightly upward** in July, to 4.47% from 4.37%. This is due to improvement in credit metrics and, in some cases, managers gaining par by purchasing assets at a discount.
- **We're keeping an eye out for changes that could signal a near-term weakening of collateral credit quality** like a large increase in corporate ratings on CreditWatch negative or being lowered into the 'CCC' rating category. The average BSL CLO has around 4% of its assets in its 'CCC' basket, but there is a significant difference between CLOs originated before and after the outset of the pandemic in early 2020. The average pre-COVID-19 CLO has a 'CCC' basket of about 5.00% and a handful are already exceeding their 7.5% maximum 'CCC' asset threshold.
- **CLO issuance is down but not out**, with new issue CLO origination volume about 12% lower than it was at this point in 2021, a record year for CLO issuance. However, dramatically wider CLO tranche spreads have had an impact. In Q2 and July, half of all new issue CLOs have had reinvestment periods of four years or shorter, compared with about 25% in Q1 2022. Additionally, CLO reset and refinancing volume this year is down more than 80% from last year.
- **Volatile loan prices and turbulent credit conditions make this a credit picker's market**. Collateral managers are reviewing sectors and companies that may be most impacted in a rising rate, slowing growth environment, and, in some cases, reconfiguring their portfolios. Year-to-date portfolio turnover stands at about 21.9%.

# U.S. CLO New Issuance Slows; Refinancings And Resets Grind To A Halt

## U.S. CLO Issuance By Year (2018-2021) And 2022 Forecast

| | New issue CLOs | | CLO resets and refinancings | |
|---|---|---|---|---|
| Year | (Bil. $) | CLO count (no.) | (Bil. $) | CLO count (no.) |
| 2018 | $128.86 | 241 | $155.89 | 316 |
| 2019 | $118.47 | 247 | $43.79 | 94 |
| 2020 | $93.54 | 219 | $31.28 | 105 |
| 2021 | $186.66 | 378 | $244.74 | 552 |
| 2021 (through July) | $93.22 | 193 | $155.36 | 345 |
| 2022 (through July) | $84.20 | 178 | $24.342 | 46 |
| 2022 S&P forecast | $130.00 | - | $75.00 | - |

## U.S. CLO Issuance By Month (2018-July 2022

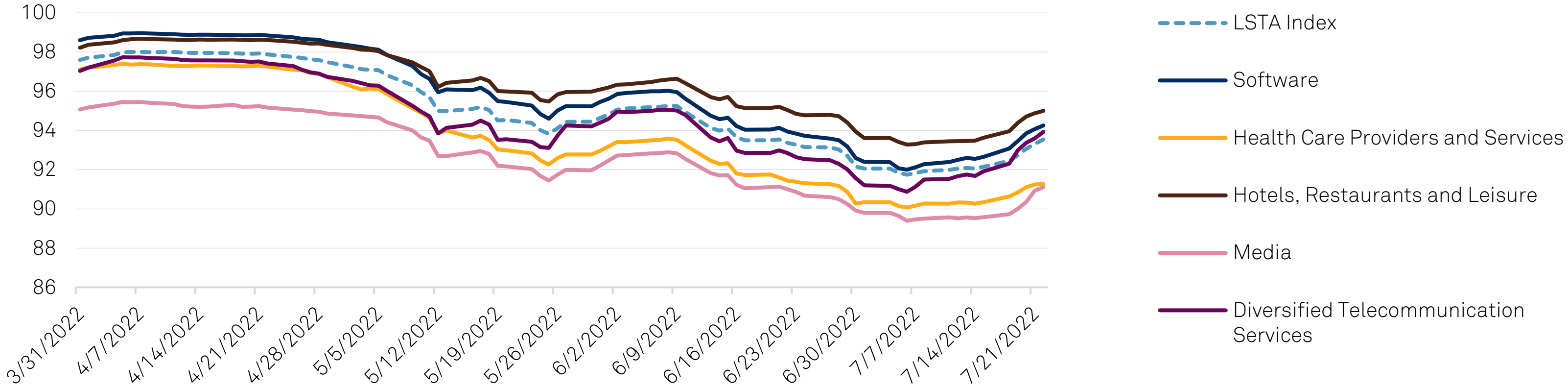



*Source: S&P Global Ratings.* 

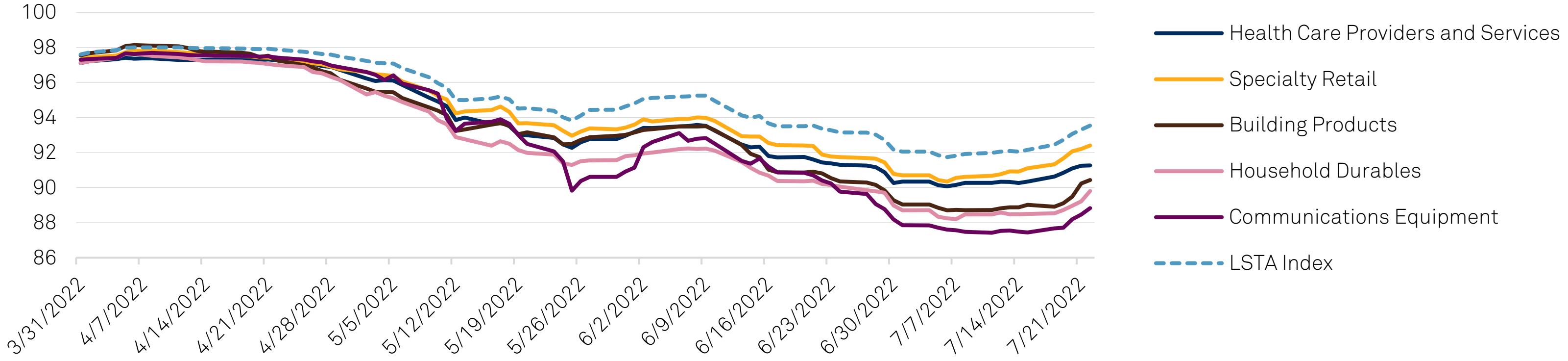
- We expect U.S. CLO new issuance in 2022 to be fairly robust by historical standards, but not reaching the levels seen in 2021. **We forecast $130 billion in new issuance for the year, down from our prior forecast of $160 billion.**
- Our CLO issuance expectations have tempered since the start of 2022 as market conditions (including investor concerns over inflation, rising interest rates, supply chain issues, and a potential recession) have slowed loan issuance and driven CLO tranche spreads dramatically wider.
- New CLO issuance has been running at a pace of about $11.7 billion per month, compared to $13.4 billion per month for the same period last year. Most of the CLOs getting done now have shorter (or no) reinvestment period and non-call.
- CLO refinancing and reset issuance shattered records in 2021 ($245 billion) as CLO spreads tightened and were "in the money" for many tranches, including CLOs issued in 2020 with a short non-call period.
- After February 2022, issuance of CLO refinancings and resets ground to a near halt given wider spreads.

# U.S. BSL CLOs | Loans Prices Drop In Q2 2022…

**Five Largest Industry Categories In U.S. BSL Portfolios**




**Five Widely Held Industry Categories With Significant Drop In Loan Prices**






- The five largest industry categories in BSL CLO collateral pools (top chart) make up about 32% of the assets in U.S. BSL CLO portfolios.
- Prices of hotels/restaurants/leisure issuer loans are now higher than software, while loans from healthcare providers & services issuers now trade notably below the loan index.
- The five industries with the largest drop in loan prices (bottom chart) make up about 13% of the assets in U.S. BSL CLO portfolios.
- For example, a widely held loan from communications equipment issuer Avaya experienced a significant price decline in May of 2022 around the time its rating was lowered to B-/Outlook Negative from B+/Stable, and then subsequently lowered again in July.

# ...But Credit Metrics In 2022 Remain Stable So Far

- The CLO Insights 2022 Index U.S. BSL Index (2022 Index) is an index of about 600 S&P Global Ratings-rated U.S. broadly syndicated loan (BSL) collateralized loan obligations issued across 121 different CLO managers.
- Credit metrics across the Index were largely unchanged in July, although exposure to obligors with ratings on Outlook negative or CreditWatch negative continued their trend of edging slightly upward.
- Weighted average loan prices were 93.81 at the end of July, up from 92.19 at the start of July, reversing a five-month downward trend.
- Average portfolio turnover across BSL CLOs in the Index since the start of the 2022 has approached 21.86% year to date, with some managers heavily trading their portfolios and building par during the month.

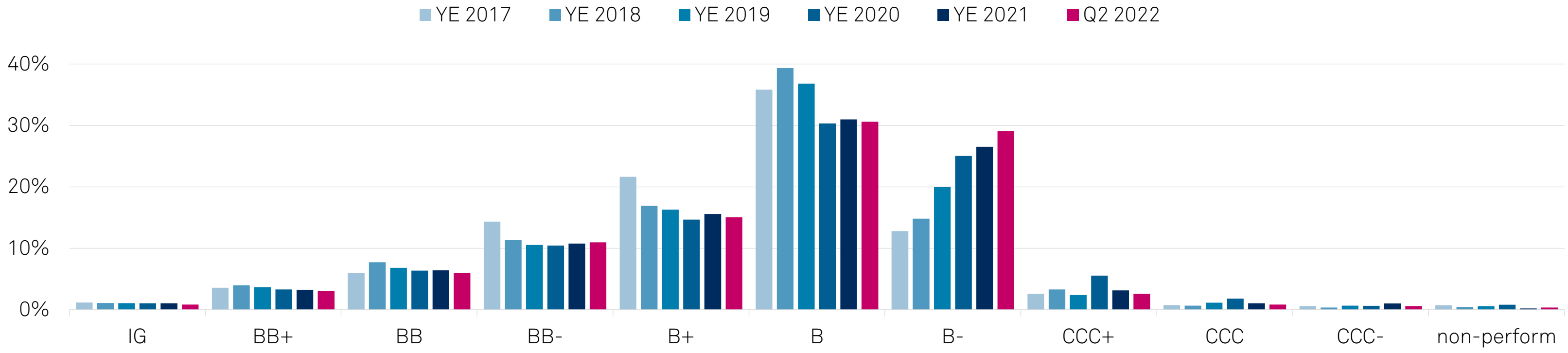
## CLO BSL Index Metrics (CLO Insights 2022 U.S. BSL Index)

| As of date | 'B-' (%) | 'CCC' category (%) | Nonperforming category (%) | SPWARF | WARR (%) | Watch negative (%) | Negative outlook (%) | Weighted avg. price of portfolio ($) | Jr. O/C cushion (%) | % of target par | Turnover (%) |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Jan. 1st, 2022 | 26.41 | 4.94 | 0.17 | 2700 | 60.44 | 0.88 | 12.33 | 98.79 | 4.37 | 99.68 | 0.00 |
| Feb. 1st, 2022 | 27.16 | 4.27 | 0.37 | 2708 | 60.43 | 0.28 | 11.94 | 98.83 | 4.41 | 99.68 | 5.68 |
| Mar. 1st, 2022 | 27.09 | 4.26 | 0.39 | 2708 | 60.41 | 0.11 | 11.35 | 98.02 | 4.40 | 99.68 | 8.15 |
| Apr. 1st, 2022 | 27.44 | 4.17 | 0.13 | 2690 | 60.45 | 1.06 | 10.86 | 97.88 | 4.31 | 99.69 | 11.35 |
| May. 1st, 2022 | 27.76 | 4.26 | 0.14 | 2700 | 60.45 | 1.20 | 9.83 | 97.57 | 4.30 | 99.70 | 14.46 |
| Jun. 1st, 2022 | 27.70 | 4.14 | 0.20 | 2706 | 60.48 | 1.27 | 10.46 | 94.60 | 4.39 | 99.71 | 16.66 |
| Jul. 1st, 2022 | 28.59 | 4.01 | 0.35 | 2720 | 60.27 | 1.35 | 11.08 | 92.19 | 4.45 | 99.74 | 19.55 |
| Aug. 1st, 2022 | 28.70 | 4.00 | 0.34 | 2726 | 60.32 | 1.46 | 11.53 | 93.81 | 4.47 | 99.78 | 21.86 |

*(i)Based off trustee reports dated within one month prior to being available to us at the start of each month. This index includes only 2021 vintage and prior transactions that have closed with CLO liabilities indexed to LIBOR (excludes 2022 vintage CLOs that would be indexed to SOFR). BSL CLO--Broadly syndicated loan collateralized loan obligation. SPWARF--S&P Global Ratings' weighted average rating factor. WARR--Weighted average recovery rate. O/C--Overcollateralization. SOFR--Secured Overnight Financing Rate.* 

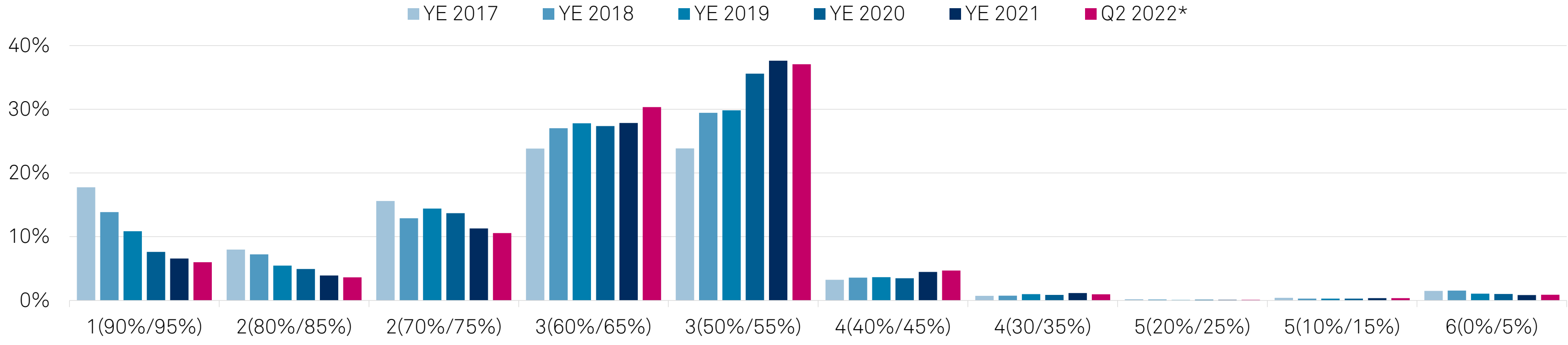
# U.S. BSL CLO Ratings Mix Shows Increase in Loans From 'B-' Rated Companies And Loans With Lower Recovery Ratings

## Rating Distribution For Assets In Reinvesting U.S. BSL CLOs (2017-Q2 2022)




**Note for Q1 2022. (i)NR not included. NR--Not rated. Source: S&P Global Ratings.*

## Recovery Ratings For Assets In Reinvesting U.S. BSL CLOs (2017–Q2 2022)(i)

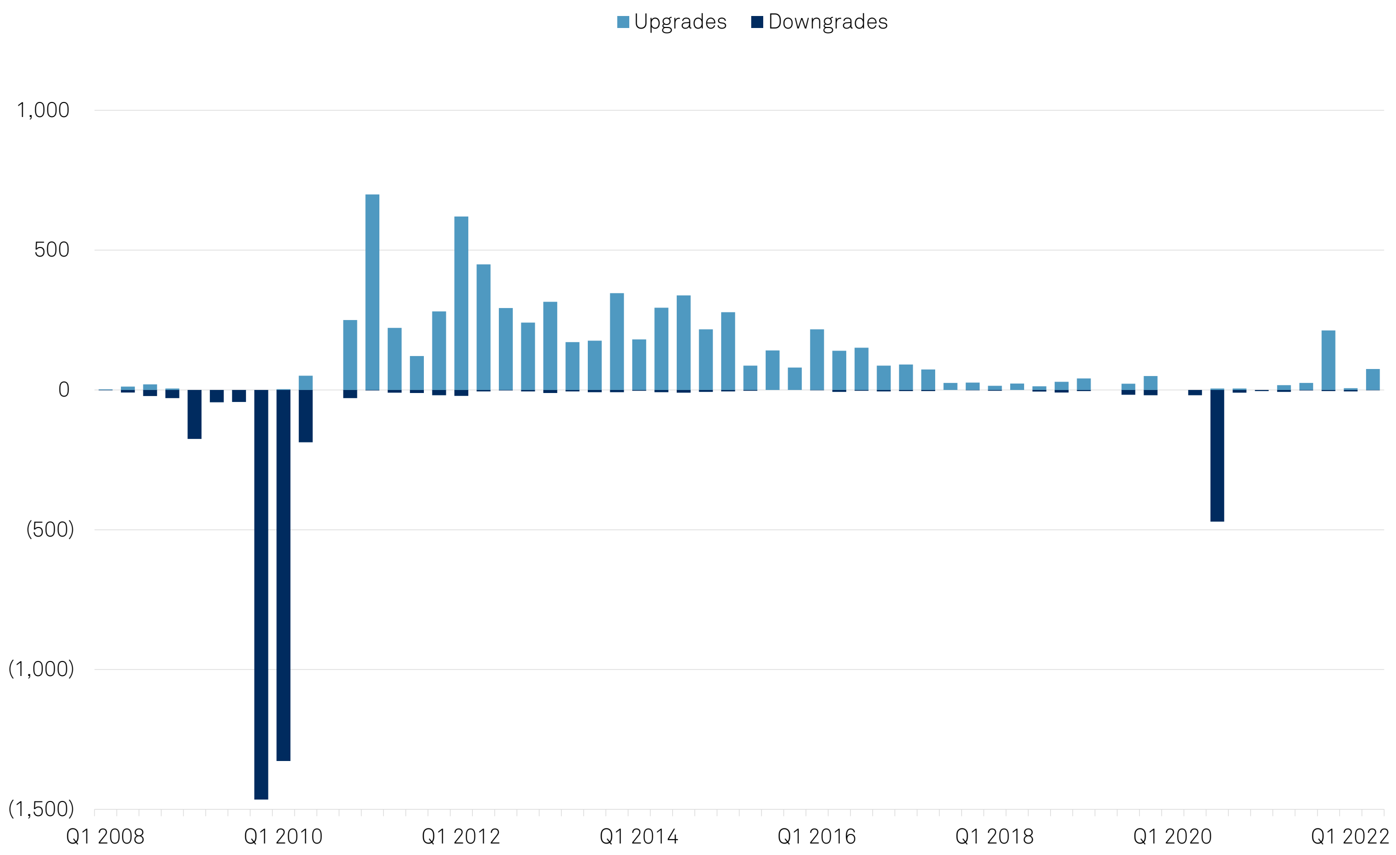



*(i)NR not included. NR--Not rated. Source: S&P Global Ratings.* 

- Loans from issuers rated 'B-' now comprise over 29% of CLO portfolios, more than double the proportion they were four years ago.
- Historically, companies rated 'B-' are more likely to see a downgrade (by definition, into the 'CCC' range or lower) or default than loans from companies rated 'B' or higher, even in benign economic periods.
- Over the past several years, there has also been a significant increase in loans with a recovery rating of '3' and point estimates of either 50% or 55% (i.e., the 3L category in the chart).
- These currently make up about 37% of total CLO asset par, compared with about 30% prior to the COVID-19 pandemic.

# U.S. CLO Ratings | No CLO 'AAA' Tranche Ratings Lowered Since 2011

## U.S. CLO Rating Upgrades And Downgrades (2008-Q2 2022)

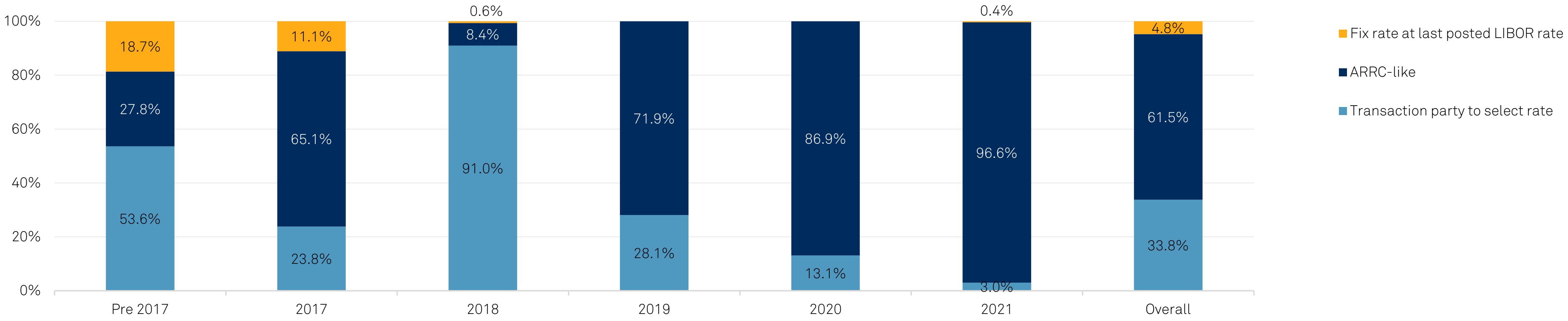



Source: S&P Global Ratings. 

- Downgrades to U.S. CLO 1.0 ratings in 2009 and 2010 were mostly driven by the effects of Great Financial Crisis (GFC) as well as our CLO criteria change.
- Upgrades to U.S. CLO 1.0 and U.S. CLO 2.0 ratings after the GFC were mostly driven by improvement in corporate credit and CLO tranche amortization.
- U.S. CLO reset activity reduced the volume of U.S. CLO 2.0 amortization from 2017, leading to a reduction in volume of upgrades.
- No 'AAA' rated CLO tranche has been downgraded since 2011.
- Downgrades are mostly to junior U.S. CLO 2.0 ratings in late 2020 due to the pandemic.
- Upgrades to U.S. CLO 2.0 ratings in 2021 were due to improvement in corporate credit as companies--and CLO collateral pools--saw a tailwind from the pandemic recovery.

# U.S. BSL CLOs | LIBOR Fallback Language Varies By CLO Vintage

- Corporate loan issuance linked to SOFR is also underway, and the proportion of SOFR loans is growing in U.S. CLO collateral pools. Most existing CLO transactions can transition their notes to SOFR from LIBOR once a majority of assets are indexed to rates other than LIBOR
- For current transactions, **fallbacks on about 35% of outstanding pre-2022 CLOs call for the collateral manager to select a replacement rate, while approximately 60% use Alternative Reference Rates Committee (ARRC)-style fallback language**. ARRC-type fallbacks are likely to provide the most consistency in a transition away from LIBOR because of their objective steps to a new rate.
- **A small portion of CLO notes outstanding (roughly 5%) have liability fallbacks that fix at the last quoted LIBOR rate**; these would likely be eligible for legislative relief under U.S. federal law passed on March 15th (the Adjustable Interest Rate (Libor) Act).
- While allowing the CLO manager to select the replacement rate is common, there could be variation in how managers apply new rates, what rates and spread adjustments they ultimately select, how soon rates are changed, and how much basis risk may occur between assets and liabilities.




*Source: LIBOR Transition, Excess Spread, And U.S. CLO Ratings, published June 30th, 2022.* 

# U.S. CLOs | Evolution Of Prohibited Industries In CLO Indentures

- We reviewed more than 1,500 U.S. CLO indentures from transactions originated between 2014 and Q1 2022, including new issue CLO and CLO resets.
- Starting in 2016, a small proportion of CLOs had prohibitions on loans to tobacco issuers. Since then, an increasing proportion of CLOs have added excluded categories and the list of prohibited sectors has grown.
- We found that the excluded categories lacked standardization and varied from CLO to CLO; that the threshold for including a company (whether based on proportion of revenue from a given activity or other factors varied and were sometimes subjective; and most CLO indentures didn't contemplate monitoring ESG factors for companies after they had been added to the portfolio.
- For full published article, see "Good Intentions, Limited Impact: ESG-Excluded Sectors Proliferate In U.S. CLO Indentures," published May 16, 2022.

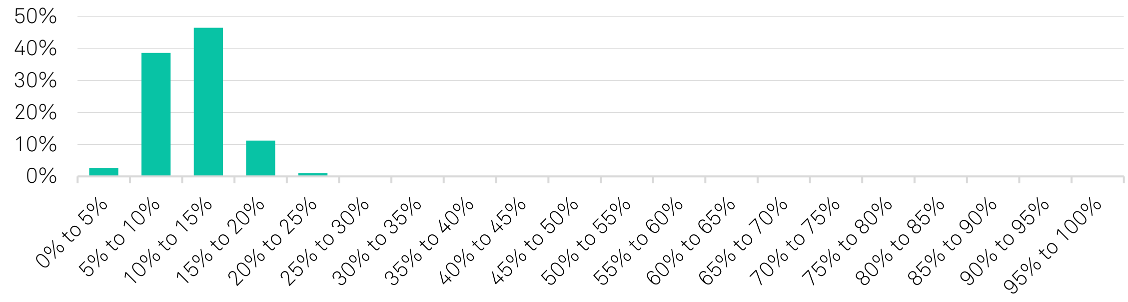
## Growth In Breadth And Depth Of Prohibited Industries From 2016 Through 2021

| Year of indenture | % with prohibited industries | Comment |
|---|---|---|
| 2014 | 0.00 | None |
| 2015 | 0.00 | |
| 2016 | 1.64 | Mostly tobacco |
| 2017 | 11.25 | |
| 2018 | 14.34 | |
| 2019 | 17.51 | Other sectors added |
| 2020 | 24.17 | |
| 2021 | 41.03 | |
| Q1 2022 | 74.36 | |

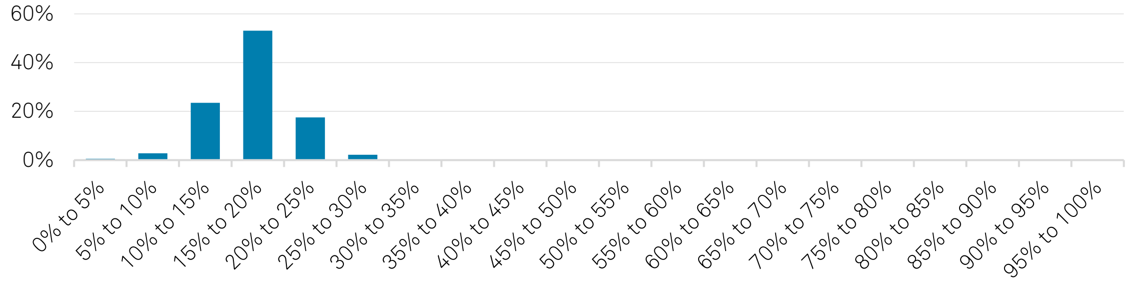
| 2016 | 2017 | 2018 | 2019 | 2020 | 2021 |
|---|---|---|---|---|---|
| **Tobacco** | Tobacco | Tobacco | Tobacco | Tobacco | Tobacco |
| | | | **Controversial weapons** | Controversial weapons | Controversial weapons |
| | | | **Coal mining** | Coal mining | Coal Mining |
| | | | **Oil sand industry** | **Pornography/adult entertainment** | Pornography/adult entertainment |
| | | | **Palm oil and products** | Oil sand industry | Oil sand industry |
| | | | | Palm oil and products | Prostitution |
| | | | | **Opioids** | Palm oil and products |
| | | | | **Predatory/payday lending** | Predatory/payday lending |
| | | | | **Prostitution** | **Harmful animal welfare/wildlife** |
| | | | | | **Pesticides/hazardous chemicals** |
| | | | | | Opioids |
| | | | | | **Private prisons** |
| | | | | | **Marijuana/illegal drugs/narcotics** |
| | | | | | **Sanctions/illegal activities** |
| | | | | | **Gambling** |
| | | | | | **Soybean oil** |

# BSL CLOs | Exposure To Companies With Low ESG Credit Indicators

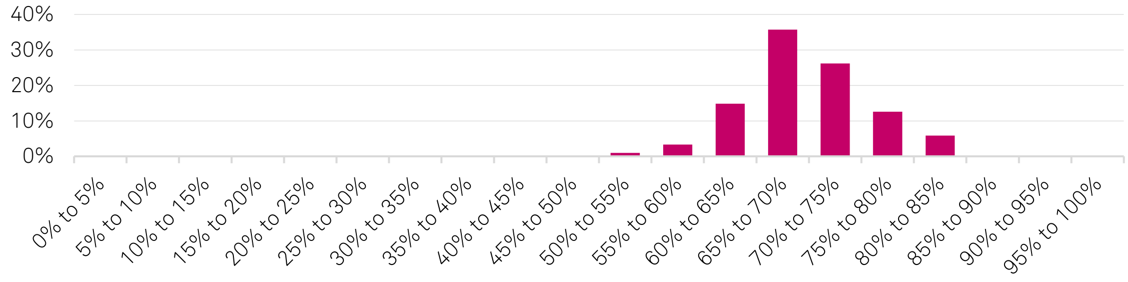
**Environment Credit Indicators**




**Social Credit Indicators**




**Governance Credit Indicators**

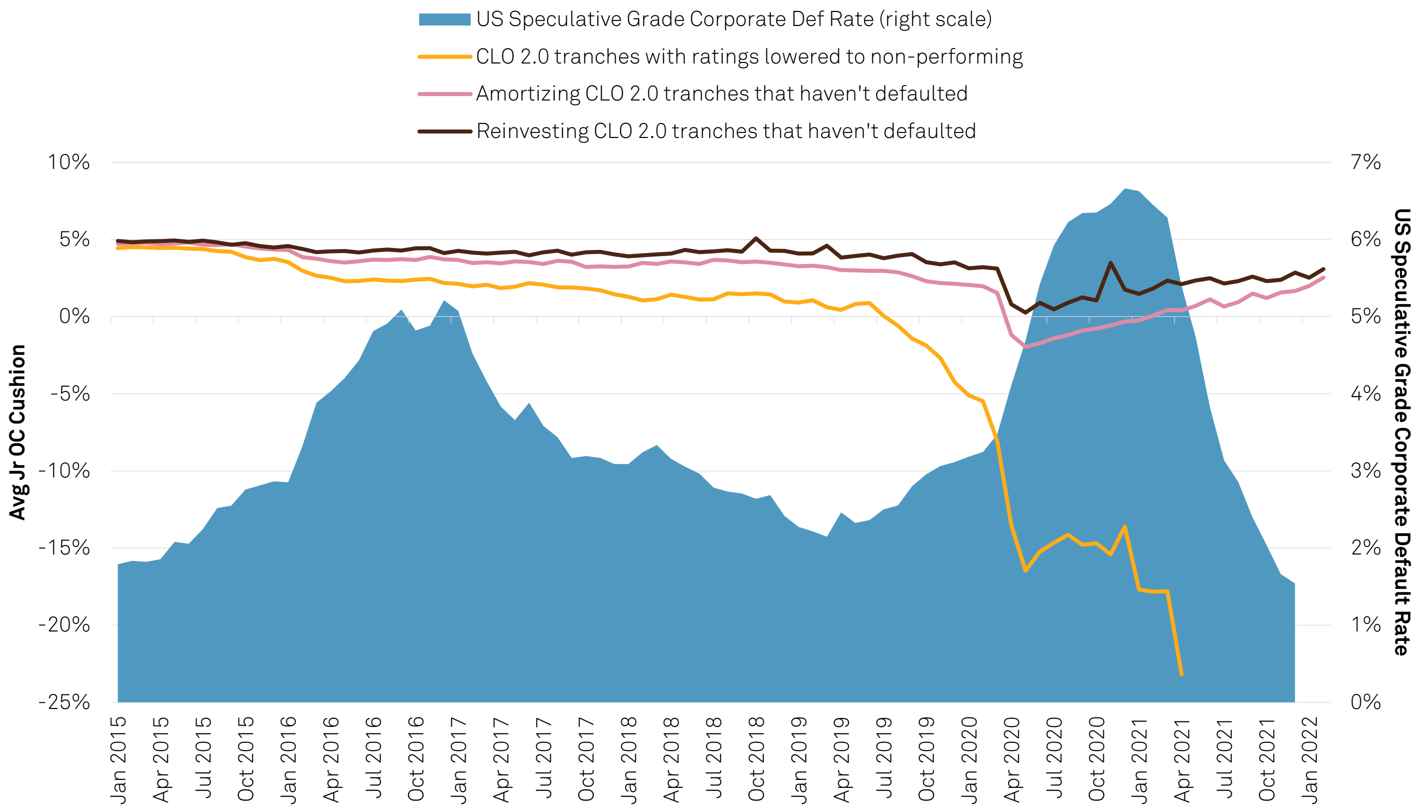



- A large majority of CLO exposures that have a negative Environmental (E3 to E-5) credit indicator are due to climate transition risk factors; about 12% of rated U.S. BSL CLOs have greater than 15% portfolio exposure to issuers with a negative E credit indicator.
- The majority of CLO exposures that have a negative Social (S3 to S5) credit indicator are due to health and safety and social capital factors; about 20% of rated U.S. BSL CLOs have greater than 20% portfolio exposure to issuers with a  negative S credit indicator.
- The large majority of CLO exposure that have a negative Governance (G3 to G5) credit indicator are due to governance structure factors; roughly 20% of rated U.S. BSL CLOs have greater than 75% portfolio exposure to issuers with a negative G credit indicator.
- Many BSL issuers have a negative G credit indicator due to governance structure factors because they are financial sponsor controlled (about 90% of ‘B-’ rated issuers held within U.S. BSL CLOs have a negative Governance credit indicator).
- About 81% of U.S. BSL CLO portfolio exposures have a negative E, S or G credit indicator.

*Source: The Influence Of Corporate ESG Factors In Our Credit Rating Analysis Of U.S. BSL CLO Obligors, published May 19, 2022.* 

# The Dirty (Almost) Dozen: What Separates Defaulting U.S. CLO 2.0 Tranches From The Rest

### Avg Jr. O/C Cushions For O/S And Defaulted Pre-2015 Vintage CLO 2.0s




- Pre-2015 vintage CLO 2.0s had notable exposure to energy- and retail-related issuers during their reinvestment periods.
- Most have since paid off through optional redemptions.
- Some have been reset and are still reinvesting today.
- Some are still amortizing today.
- Most of the U.S. CLO tranches currently rated within the 'CCC' category are from CLO 2.0s that originally closed before 2015.
- A small subset have seen their junior ratings lowered multiple times to a non-performing rating.

Source: *CLO Spotlight: The Dirty (Almost) Dozen: What Separates Defaulting U.S. CLO 2.0 Tranches From The Rest, published July 7, 2022). 

# U.S. CLO Tranche Defaults | As Of Q2 2022

## U.S. CLO 1.0 And 2.0 Default Summary By Original Rating

| | CLO 1.0 Transactions (2009 and prior) | | | CLO 2.0 Transactions (2010 and later) | | |
|---|---|---|---|---|---|---|
| | Original rating(i) | Defaults(ii) | Currently rated(i) | Original rating(i) | Defaults(ii) | Currently rated(i) |
| AAA (sf) | 1,540 | 0 | 0 | 3,330 | 0 | 1,501 |
| AA (sf) | 616 | 1 | 0 | 2,665 | 0 | 1,220 |
| A (sf) | 790 | 5 | 0 | 2,220 | 0 | 1,069 |
| BBB (sf) | 783 | 9 | 0 | 2,004 | 0 | 1,052 |
| BB (sf) | 565 | 22 | 0 | 1,652 | 3 | 885 |
| B (sf) | 28 | 3 | 0 | 373 | 7 | 191 |
| Total | 4,322 | 40 | 0 | 12,244 | 10 | 5,918 |

## Likely Future Defaults: U.S. CLO Tranches Currently Rated 'CCC-' Or 'CC'

| Transaction | Tranche | Year originated | Original rating | Current rating |
|---|---|---|---|---|
| Halcyon Loan Advisors Funding 2012-1 Ltd. | D | 2012 | BB (sf) | CC (sf) |
| Halcyon Loan Advisors Funding 2013-1 Ltd. | D | 2013 | BB (sf) | CC (sf) |
| Hull Street CLO Ltd. | E | 2014 | BB (sf) | CC (sf) |
| Hull Street CLO Ltd. | F | 2014 | B (sf) | CC (sf) |

*(i)As of end  forth-quarter 2021. (ii)As of March 17, 2022.*
*Source: U.S. CLO Defaults As Of March 17, 2022, published March 23, 2022.*

# U.S. CLO Tranche Defaults | As Of Q2 2022 (continued)

- S&P Global Ratings has rated **more than** 16,000 U.S. CLO tranches since our first CLOs in the mid-1990s. Our CLO ratings history **spans three recessionary periods**: the dot.com bust of 2000-2001, the global financial crisis in 2008-2009, and the recent COVID-19-driven downturn in 2020.
- Over that period, a total of 50 U.S. CLO tranches **have defaulted**: 40 U.S. CLO tranches from CLO 1.0 transactions originated in 2009 or before, and another 10 U.S. CLO 2.0 tranches.
- On the date these 10 US CLO2.0 tranches were lowered to 'D (sf)', the reported outstanding tranche balance available to us ranged from 2.5% to just over 100% (due to payment-in-kind [PIK]) of their original issuance amount; tranches originally rated within the 'BB (sf)' category averaged 34%, while tranches originally rated within the 'B (sf)' category averaged 53%.
- Across three other CLO 2.0s, there is one tranche rated 'CCC- (sf)' and another three rated 'CC (sf)' that are **likely to default** in the future for similar reasons.
- Additionally, there are 29 additional tranches currently rated 'CCC+ (sf)' and six tranches rated 'CCC (sf)' that are potential defaults based on the ratings assigned.
- CLO 2.0 defaults/potential defaults are so far **limited to junior tranches from earlier vintage 2.0 deals** originated in 2014 and prior that experienced both the energy and commodity downturns in 2015-2016 and the stress of the 2020 pandemic.

# Rating Stress Scenarios | How Might A Downturn Affect BSL CLO Ratings?

- Negative sentiment in the CLO market has increased markedly in recent quarters, and investors and issuers alike are keeping a wary eye out for an uptick in corporate ratings downgrades. Much of the focus has been to gauge the potential for how CLO ratings might be affected by another recession.
- We recently generated a series of stress scenarios to test the resiliency of our U.S. BSL CLO ratings. Each scenario envisions a proportion of corporate loan issuers experiencing either a payment default or selective default, then assumes that a proportion of the remaining (i.e., non-defaulted) obligors see a rating transition (for example, see their issuer rating lowered into the 'CCC' range).
- Our analysis shows the fundamentals of the CLO structure protecting senior noteholders.

**Summary of BSL CLO Rating Stress Scenarios**

| | Actual (Q2 2022) | 5/10 scenario | 10/20 scenario | 15/30 scenario | 20/40 scenario | GFC scenario | Pandemic scenario |
|---|---|---|---|---|---|---|---|
| Number of US BSL CLOs in sample | 636 | 636 | 636 | 636 | 636 | 636 | 636 |
| Number of loans | 2807 | 2807 | 2807 | 2807 | 2807 | 2807 | 2807 |
| Number of issuers | 1884 | 1884 | 1884 | 1884 | 1884 | 1884 | 1884 |
| Number of issuers upgraded | NA | 0 | 0 | 0 | 0 | 419 | 224 |
| Number of issuers downgraded | NA | 526 | 747 | 1029 | 1222 | 815 | 754 |
| Number of issuers rated within 'CCC' category | 253 | 259 | 405 | 503 | 633 | 309 | 357 |
| Number of issuers with nonperforming rating | 44 | 307 | 382 | 566 | 629 | 392 | 234 |
| Average SPWARF of CLO portfolios | 2704 | 3110 | 3612 | 4196 | 4793 | 4110 | 3385 |
| Average 'CCC' exposure of portfolios (%) | 4.08% | 10.23% | 20.08% | 30.40% | 40.59% | 13.48% | 12.72% |
| Average Nonperforming assets of portfolios (%) | 0.22% | 4.58% | 9.85% | 14.81% | 19.70% | 16.33% | 5.39% |
| Conventional vs. Selective Defaults Assumed in Scenario | NA | 100% / 0% | 100% / 0% | 100% / 0% | 100% / 0% | 67.9% / 32.1% | 53.9% / 46.1% |
| Recoveries Assumed for Conventional/Selective Defaults | NA | 45% / NA | 45% / NA | 45% / NA | 45% / NA | 45% / 80% | 45% / 80% |
| Average Par Loss Under Scenario | NA | -2.48% | -5.38% | -8.11% | -10.80% | -5.99% | -1.49% |

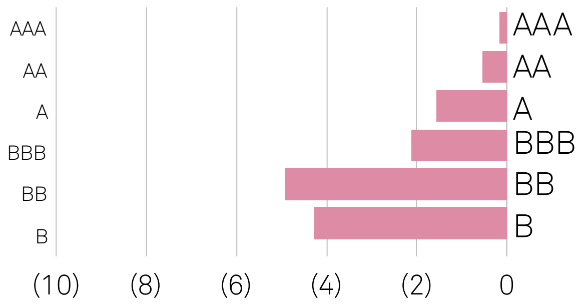
# Rating Stress Scenarios | How Might A Downturn Affect BSL CLO Ratings? (continued)

**Scenario** | **Impact across CLO sample** | **Model-determined impact: average notches off current rating**

GFC scenario

Current CLO assets experience rating transitions like those seen during the GFC in 2008-2009; 815 issuers see ratings lowered, including 348 issuers that default, and 419 issuers see ratings raised

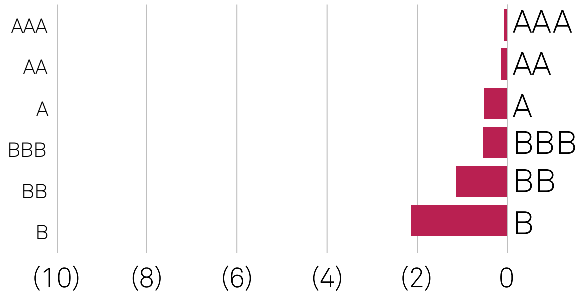
55% of CLO assets experience rating actions (42.2% downgraded, 12.7% upgraded); average 'CCC' bucket increases to 13.5%; average nonperforming exosure increases to 16.3%; average par loss of 6.0%




Pandemic scenario

Current US BSL CLO assets experience rating transitions like those seen during the 2020 Pandemic; 754 issuers see ratings lowered, including 190 issuers that default, and 224 issuers see ratings raised

41.2% of CLO exposures experience rating actions (36.2% downgraded, 5.0% upgraded); average 'CCC' bucket increases to 12.7%; average nonperforming exposure increases to 5.4%; average par loss of 1.5%



# Rating Stress Scenarios | How Might A Downturn Affect BSL CLO Ratings? (continued)

### Cash Flow Results Under GFC Scenario (2022)

| Current rating category | 0 (%) | -1 (%) | -2 (%) | -3 (%) | -4 (%) | -5 (%) | -6 (%) | ≥ -7 (%) | Avg notches | Investment grade (%) | Speculative grade (%) | 'CCC' (%) | Non-performing(%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 'AAA' | 85.86 | 14.14 | | | | | | | -0.14 | 100.00 | | | |
| 'AA' | 60.27 | 25.77 | 13.02 | 0.40 | 0.40 | 0.13 | | | -0.55 | 100.00 | | | |
| 'A' | 18.50 | 20.45 | 54.14 | 1.65 | 3.46 | 1.05 | | 0.75 | -1.58 | 98.05 | 1.95 | | |
| 'BBB' | 6.30 | 47.98 | 13.34 | 13.64 | 9.75 | 3.15 | 2.10 | 3.75 | -2.16 | 8.25 | 91.75 | 1.20 | 2.10 |
| 'BB' | 3.45 | 8.05 | 5.56 | 9.20 | 11.88 | 8.81 | 9.96 | 43.10 | -5.01 | | 100.00 | 30.08 | 43.10 |
| 'B' | 2.19 | 2.19 | 2.19 | 4.37 | 54.10 | 6.56 | 28.42 | | -4.39 | | 100.00 | 9.84 | 86.89 |

### Cash Flow Results Under Pandemic Scenario (2022)

| Current rating category | 0 (%) | -1 (%) | -2 (%) | -3 (%) | -4 (%) | -5 (%) | -6 (%) | ≥ -7 (%) | Avg notches | Investment grade (%) | Speculative grade (%) | 'CCC' (%) | Non-performing(%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 'AAA' | 94.99 | 5.01 | | | | | | | -0.05 | 100.00 | | | |
| 'AA' | 89.53 | 9.66 | 0.81 | | | | | | -0.11 | 100.00 | | | |
| 'A' | 59.25 | 31.58 | 9.17 | | | | | | -0.50 | 100.00 | | | |
| 'BBB' | 51.12 | 46.48 | 2.25 | 0.15 | | | | | -0.51 | 55.47 | 44.53 | | |
| 'BB' | 22.22 | 54.21 | 15.71 | 4.98 | 1.72 | 0.57 | 0.38 | 0.19 | -1.14 | | 100.00 | 2.68 | 0.19 |
| 'B' | 24.04 | 14.21 | 21.31 | 8.74 | 27.32 | 2.73 | 1.64 | | -2.16 | | 100.00 | 30.60 | 27.87 |

# Rating Stress Scenarios | How Might A Downturn Affect BSL CLO Ratings? (continued)

5/10 scenario

**Cash Flow Results Under “5-10” Scenario (2022)**

| Current rating category | 0 (%) | -1 (%) | -2 (%) | -3 (%) | -4 (%) | -5 (%) | -6 (%) | ≥-7 (%) | Avg notches | Investment grade (%) | Speculative grade (%) | ‘CCC’ (%) | Non-performing(%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ‘AAA’ | 97.37 | 2.63 | | | | | | | -0.03 | 100.00 | | | |
| ‘AA’ | 93.02 | 6.44 | 0.54 | | | | | | -0.08 | 100.00 | | | |
| ‘A’ | 74.74 | 18.20 | 7.07 | | | | | | -0.32 | 100.00 | | | |
| ‘BBB’ | 68.07 | 30.43 | 0.75 | 0.75 | | | | | -0.34 | 71.21 | 28.79 | | |
| ‘BB’ | 40.61 | 41.95 | 8.43 | 5.56 | 1.92 | 0.96 | 0.19 | 0.38 | -0.92 | | 100.00 | 2.87 | 0.38 |
| ‘B’ | 28.96 | 11.48 | 14.75 | 8.74 | 31.69 | 3.28 | 1.09 | | -2.17 | | 100.00 | 31.15 | 30.05 |

10/20 scenario

**Cash Flow Results Under “10-20” Scenario (2022)**

| Current rating category | 0 (%) | -1 (%) | -2 (%) | -3 (%) | -4 (%) | -5 (%) | -6 (%) | ≥-7 (%) | Avg notches | Investment grade (%) | Speculative grade (%) | ‘CCC’ (%) | Non-performing(%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ‘AAA’ | 70.59 | 29.41 | | | | | | | -0.29 | 100.00 | | | |
| ‘AA’ | 49.80 | 27.79 | 22.01 | 0.13 | 0.13 | 0.13 | | | -0.73 | 100.00 | | | |
| ‘A’ | 19.25 | 21.35 | 53.68 | 2.56 | 2.41 | 0.75 | | | -1.50 | 99.10 | 0.90 | | |
| ‘BBB’ | 13.64 | 52.77 | 11.99 | 9.45 | 6.45 | 2.55 | 1.50 | 1.65 | -1.66 | 15.29 | 84.71 | 0.90 | 0.30 |
| ‘BB’ | 3.26 | 12.26 | 15.13 | 12.07 | 14.56 | 11.11 | 7.09 | 24.52 | -4.07 | | 100.00 | 31.80 | 24.52 |
| ‘B’ | 2.73 | 3.28 | 2.19 | 6.01 | 53.55 | 9.29 | 22.95 | | -4.24 | | 100.00 | 19.13 | 77.05 |

15/30 scenario

**Cash Flow Results Under “15-30” Scenario (2022)**

| Current rating category | 0 (%) | -1 (%) | -2 (%) | -3 (%) | -4 (%) | -5 (%) | -6 (%) | ≥-7 (%) | Avg notches | Investment grade (%) | Speculative grade (%) | ‘CCC’ (%) | Non-performing(%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ‘AAA’ | 25.91 | 73.84 | 0.25 | | | | | | -0.74 | 100.00 | | | |
| ‘AA’ | 9.80 | 10.74 | 62.95 | 3.22 | 7.52 | 5.50 | | 0.27 | -2.06 | 99.73 | 0.27 | | |
| ‘A’ | 1.50 | 2.86 | 39.25 | 10.23 | 22.41 | 20.00 | 1.80 | 1.95 | -3.28 | 76.24 | 23.76 | 0.15 | |
| ‘BBB’ | 0.45 | 7.80 | 8.70 | 9.00 | 20.84 | 11.24 | 9.90 | 32.08 | -5.35 | 0.60 | 99.40 | 16.49 | 14.99 |
| ‘BB’ | 0.19 | 0.38 | 1.15 | 0.77 | 2.49 | 2.49 | 3.64 | 88.89 | -6.75 | | 100.00 | 8.43 | 88.70 |
| ‘B’ | | 1.09 | | | 59.02 | 6.01 | 33.88 | | -4.70 | | 100.00 | 1.09 | 98.91 |

20/40 scenario

**Cash Flow Results Under “20-40” Scenario (2022)**

| Current rating category | 0 (%) | -1 (%) | -2 (%) | -3 (%) | -4 (%) | -5 (%) | -6 (%) | ≥-7 (%) | Avg notches | Investment grade (%) | Speculative grade (%) | ‘CCC’ (%) | Non-performing(%) |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ‘AAA’ | 7.01 | 86.36 | 3.75 | 2.00 | 0.75 | 0.13 | | | -1.04 | 100.00 | | | |
| ‘AA’ | 1.48 | 2.15 | 20.67 | 6.85 | 13.96 | 47.79 | 1.61 | 5.50 | -4.10 | 97.58 | 2.42 | | |
| ‘A’ | | | 4.96 | 2.71 | 9.32 | 42.56 | 9.17 | 31.28 | -5.93 | 16.99 | 83.01 | 3.76 | 1.35 |
| ‘BBB’ | | 0.15 | 0.45 | 1.20 | 2.40 | 3.45 | 5.70 | 86.66 | -9.06 | | 100.00 | 15.29 | 70.61 |
| ‘BB’ | | | | | | 0.19 | | 99.81 | -7.04 | | 100.00 | 0.19 | 99.81 |
| ‘B’ | | | | | 60.11 | 6.01 | 33.88 | | -4.74 | | 100.00 | | 100.00 |

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