

# CLO Monthly Overview

July 14, 2022

In this monthly report, we provide an overview of the current US CLO market, covering CLO issuance, performance, rating updates, and CLO manager performance. We discuss the current market risks and challenges, and highlight emerging themes and trends.

## Executive Summary

- BSL CLO new issuance totaled \$11.81bn in June, slightly down from \$11.91bn in May. The year-to-date (YTD) issuance stood at \$63.53bn by the end of June, only 11% lower than YTD 2021. The new issuance spreads widened significantly with the most recent AAA spreads over 200 bps.
- Issuance has been helped by market tactics of splitting warehouse lines and “print and sprint”. There are also more static deals and deals with shorter reinvestment and non-call terms. Year-to-date shorter term BSL issuance volume jumped to 29% of overall new issuance, comparing to 4.3% in the full year 2021.
- The weighted average price of CLO loans dropped below 92 at June monthend from 99 in January, with 16.7% below 90 at the end of June vs. 3.0% at the beginning of this year.
- Fundamental remains resilient with CLO loan default rate at 0.32% in June (down 2 bps from May), but there are concerns around the rise of B3/B- concentration in face of economic downturn. Meanwhile, downgrades of CLO collateral assets escalated in June, with the number of downgrades to B3 or below more than four times of upgrades from B3 or below (per Moody’s).
- We evaluate manager performance in four major aspects, accounting for size, collateral quality, equity favor and active management. We aggregated and derived a ranking matrix for manager performance based on 11 different metrics including AUM, WAS/WARF, Diversity, Junior OC cushion, Caa/CCC %, Second Lien %, Defaulted %, Weighted Average Price, Notional Par Build, Equity Cash on Cash %, and Equity NAV.

**Miles Li**  
[miles.li@lseg.com](mailto:miles.li@lseg.com)

**Luke Lu**  
[an.lu@lseg.com](mailto:an.lu@lseg.com)

**Loy Weng**  
[loy.weng@lseg.com](mailto:loy.weng@lseg.com)

**Andrei Iusan**  
[andrei.iusan@lseg.com](mailto:andrei.iusan@lseg.com)

## Contents

1.	Issuance .....	3
1.1.	New Issuance Volume .....	3
1.2.	Refinance/Reset/Reissue Volume .....	5
1.3.	New Issuance Spreads .....	5
1.4.	Refinance/Reset/Reissue Spreads .....	7
2.	Performance.....	8
2.1.	Collateral Performance by Industry.....	8
2.2.	Tests and Triggers .....	10
2.3.	Collateral Assets .....	10
2.4.	Collateral Loan Price Bucket Migration .....	12
2.5.	SOFR Transition .....	14
3.	Rating Updates .....	15
3.1.	CLO Tranche Rating Actions .....	15
3.2.	CLO Asset Rating Actions.....	17
4.	CLO Manager Analysis .....	18
4.1.	Manager Size .....	18
4.2.	Collateral Performance .....	19
4.2.1	WAS/WARF.....	19
4.2.2	Diversity Score .....	20
4.2.3	Junior OC Cushion.....	20
4.2.4	Caa/CCC Loans .....	21
4.2.5	Second-Lien Loan .....	22
4.2.6	Defaulted Loans .....	22
4.2.7	Weighted Average Price .....	23
4.3.	Equity Favor .....	23
4.3.1	Par Build.....	23
4.3.2	Equity Cash on Cash .....	25
4.3.4	Equity Market Value NAV.....	25
4.4.	Trading Activity.....	26
4.4.1	Portfolio Turnover Rate and Sell Rate .....	26
4.5.	Manager Ranking Matrix .....	27

# 1. Issuance

## 1.1. New Issuance Volume

BSL CLO new issuance totaled \$11.81bn in June, down slightly from \$11.91bn in May, while the year-to-date (YTD) issuance stood at \$63.53bn by the end of June, around 11% lower than YTD 2021 (Exhibit 1). The total issuance (BSL+MM+Static) YTD was also lower than the same period of 2021 (\$71.30bn vs \$80.74bn), however 2022 remains on track to become the second highest year for issuance if the issuance pace holds for the 2<sup>nd</sup> half of the year (Exhibit 3).

That said, macroeconomic headwinds in recent months have indeed hampered new issuance with many warehoused loans being underwater after steep price drop in recent months. In response, the market developed a practice of splitting underwater warehouse lines, which allows issuers to buy additional loans at cheaper price to achieve lower blended asset cost. And the terms for the new issuance have also transitioned to a shorter time frame to alleviate duration concern amid market volatility. During the first half of 2022, 47 short term BSL deals (out of the 133 new issued BSL deals) were issued with a reinvestment period less than 4.5 years or a non-call period shorter than 1.5 years, surpassing 39 (out of 322 deals) of the full year 2021. In terms of the volume, short term deals YTD accounted for 29% of the total BSL CLO issuance vs. 4.3% of full year 2021. Issuers also turned to “print and sprint”<sup>1</sup> to take advantage of the deep discounts in the loan market, and to the static deal structure for shorter duration and higher deal leverage. YTD there have been 5 static deals vs. 3 for the same period last year.

**Exhibit 1: BSL CLO new issuance volume (\$bn)**

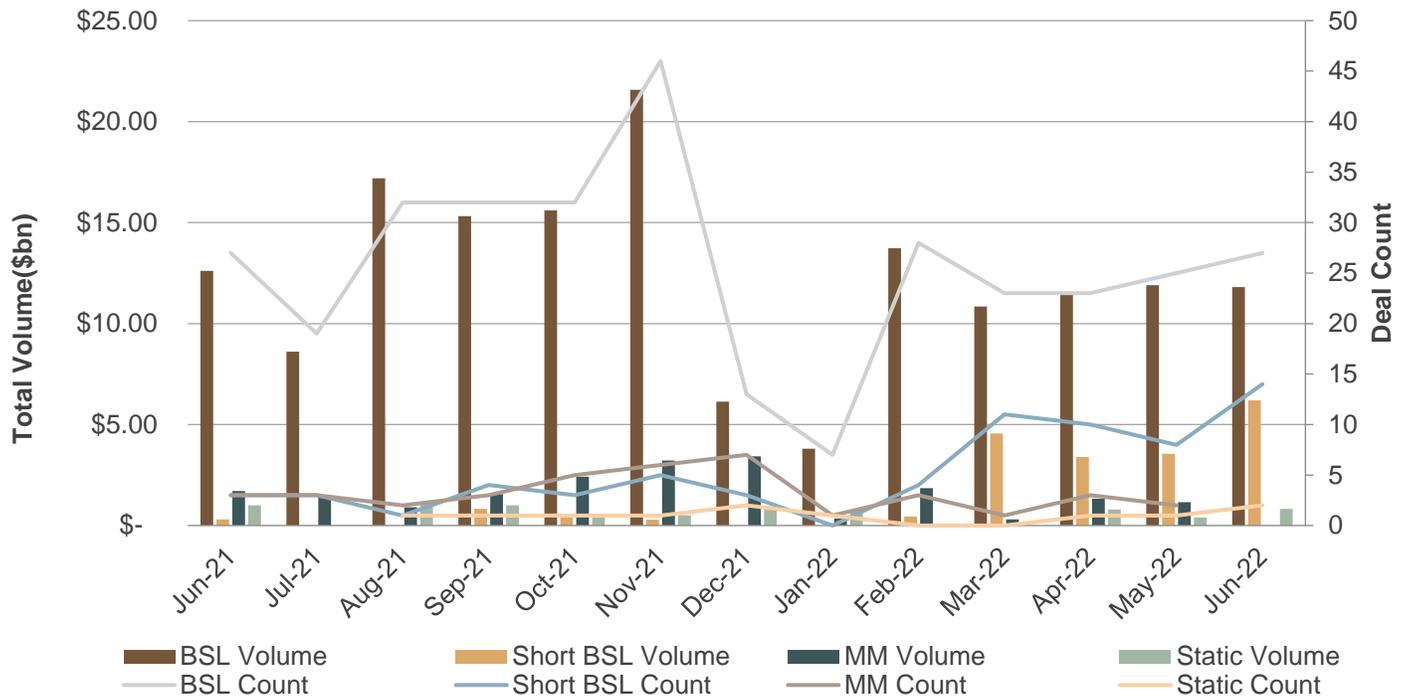
New Issuance	Jun-22	May-22	Apr-22	Jun-21	YTD 2022	YTD 2021	Full Year 2021
BSL (\$bn)	11.81	11.91	11.44	12.61	63.53	71.43	155.87
Short BSL (\$bn)	6.20	3.55	3.39	0.31	18.15	5.19	6.71
MM (\$bn)	0	1.15	1.32	1.71	4.98	7.20	20.15
Static (\$bn)	0.83	0.40	0.80	1.00	2.79	2.11	4.93
BSL Deal Count	27	25	23	27	133	148	322
Short BSL Count	14	8	10	3	47	20	39
MM Deal Count	0	2	3	3	10	15	39
Static Deal Count	2	1	1	1	5	3	8

Source: Refinitiv LPC (July 2022)

In Exhibit 2, we also show the monthly CLO market new issuance volume along with the deal counts for the past 12 months.

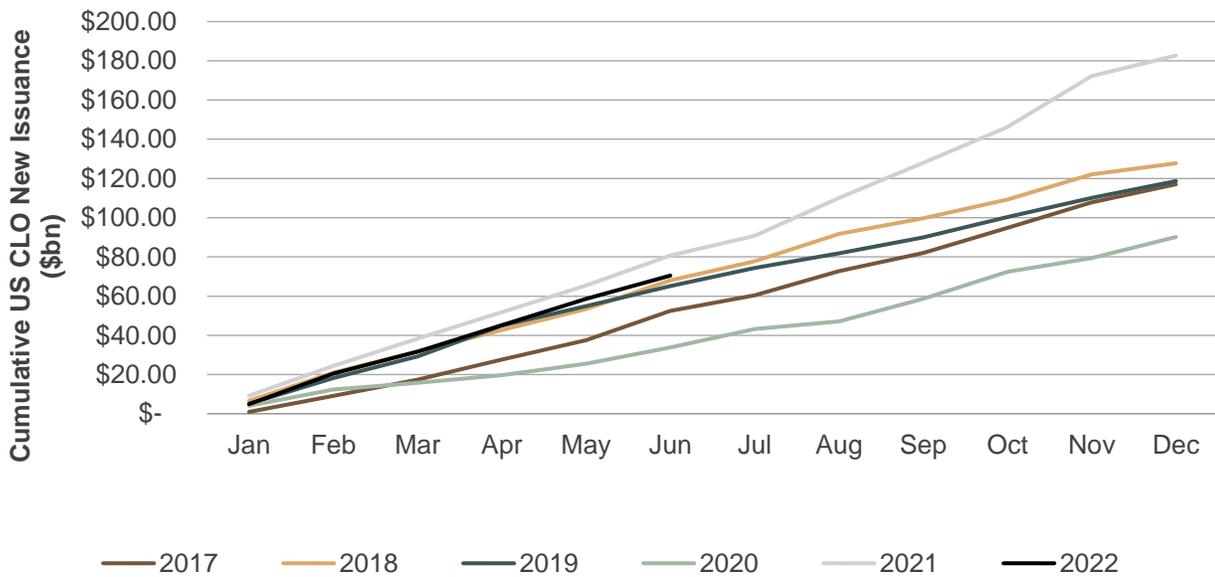
<sup>1</sup> Issuers price deals first and then purchase and ramp up the collateral portfolio

**Exhibit 2: Monthly new issuance volume(\$bn) and number of deals for the past 12 months**



Source: Refinitiv LPC (July 2022)

**Exhibit 3: Monthly new issuance pace vs. past five years**



Source: Refinitiv LPC (July 2022)

## 1.2. Refinance/Reset/Reissue Volume

After the record year of 2021, the refinance/reset/reissue market slowed down dramatically this year due to wider spreads for CLO liabilities. There has been only one deal (refinance) during the last four months.

**Exhibit 4: BSL CLO Refinance/Reset/Reissue volume**

BSL	Jun-22	May-22	Apr-22	Jun-21	YTD 2022	YTD 2021	Full Year 2021
Refinance Deal Size (\$bn)	-	0.28	-	9.15	3.90	66.48	106.43
Reset Deal Size (\$bn)	-	-	-	16.16	12.13	57.31	107.56
Reissue Deal Size (\$bn)	-	-	-	0.40	0	1.61	2.35
Refi Deal Count	0	1	0	24	10	174	270
Reset Deal Count	0	0	0	30	24	115	232
Reissue Deal Count	0	0	0	1	0	4	5

Source: Refinitiv LPC (July 2022)

Similarly, the refinance/reset/reissue activities for MM CLOs have also dropped to \$6.18bn YTD from \$12.81bn for the same period last year.

**Exhibit 5: MM CLO Refinance/Reset/Reissue volume**

MM	Jun-22	May-22	Apr-22	Jun-21	YTD 2022	YTD 2021	Full Year 2021
Refinance Deal Size (\$bn)	-	-	-	1.22	0.24	2.24	2.96
Reset Deal Size (\$bn)	0.31	-	2.06	0.40	5.94	7.69	17.92
Reissue Deal Size (\$bn)	-	-	-	2.48	-	2.48	0.71
Refi Deal Count	0	0	0	4	1	8	11
Reset Deal Count	1	0	4	1	10	14	31
Reissue Deal Count	0	0	0	4	0	4	2

Source: Refinitiv LPC (July 2022)

## 1.3. New Issuance Spreads

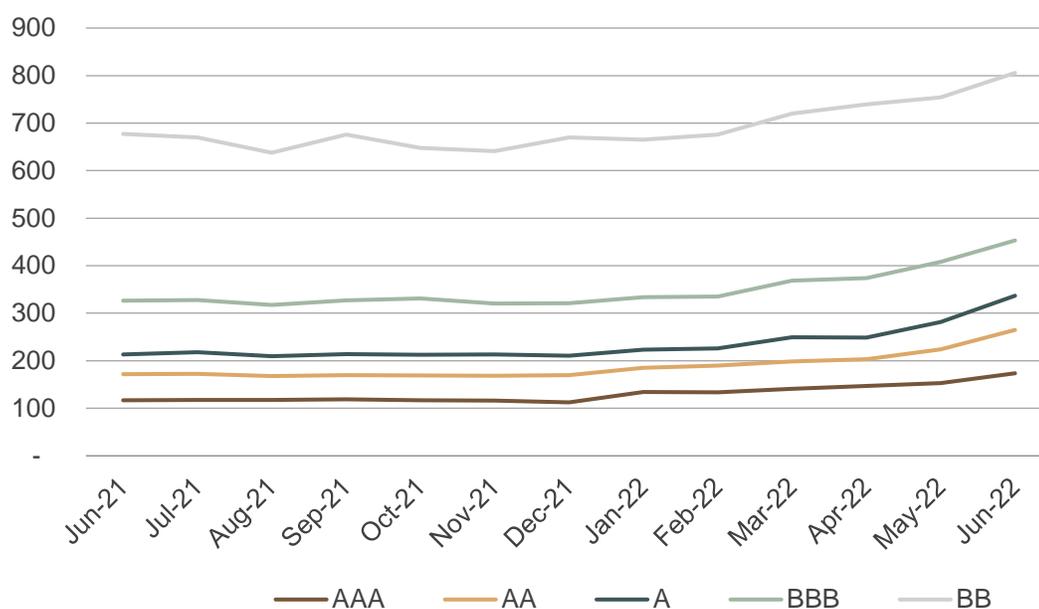
There were 27 BSL new issues in June 2022, with the widest print of SOFR + 220 for AAAs. The monthly average new issue spreads across the capital structure have all reached a 12-month high (Exhibit 6, 7), with AAA spread widened 21bps to 174 bps in June, 41 bps over the 12-month low of 134 bps, and BBs at 806bps, 140bps wider than the beginning of 2022. Amid the market volatility, CLO issuers have been forced to widen spreads to attract investors in the primary market, as many U.S. primary banks are boycotting the primary market AAAs in favor of relatively cheaper offers in the secondary market. Recent Fed's increase of Stress Capital Buffer requirement for banks may further reduce banks' demand for CLO notes. Furthermore, NAIC's proposal on Risk Based Capital calculation may also negatively impact the demand from insurers.

**Exhibit 6: BSL CLO new issuance average spread (bps) vs. 12-month High/Low**

New Issued BSL	Jun-22	May-22	Apr-22	12-Month High	12-Month Low
AAA Avg Spread	174	153	147	174	134
AA Avg Spread	265	224	203	265	185
A Avg Spread	337	282	249	337	224
BBB Avg Spread	453	408	374	453	334
BB Avg Spread	806	754	740	806	665

Source: Refinitiv LPC (July 2022)

**Exhibit 7: BSL CLO new issuance average spreads (bps) by ratings for past 12 months**



Source: Refinitiv LPC (July 2022)

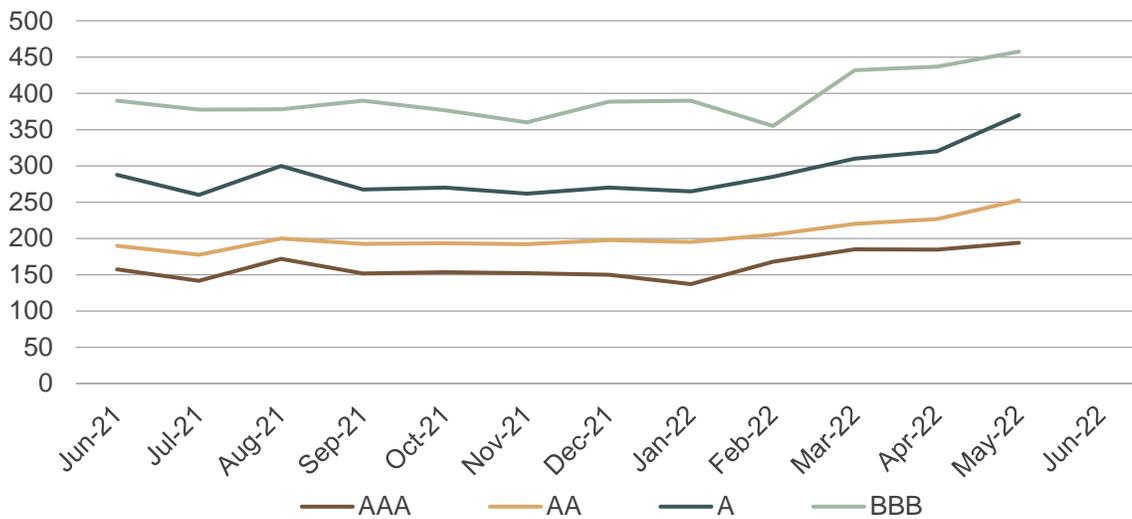
Likewise, the new issue spreads for MM CLOs reached 12-month highs across the capital stack. There was no MM deal issuance in June.

**Exhibit 8: MM CLO new issuance average spread vs. 12-month High/Low**

New Issued MM	Jun-22	May-22	12-Month High	12-Month Low
AAA Avg Spread	-	194	194	137
AA Avg Spread	-	253	253	178
A Avg Spread	-	370	370	260
BBB Avg Spread	-	458	458	355

Source: Refinitiv LPC (July 2022)

**Exhibit 9: USD MM CLO new issuance average spreads by rating categories for past 12 months**



Source: Refinitiv LPC (June 2022)

## 1.4. Refinance/Reset/Reissue Spreads

The only one recent BSL refi/reset/reissue is a deal that was refinanced in May with an AAA spread at 145 bps over SOFR post refinance (down from 192 bps originally). And the single MM reset deal in June registered 215 bps for AAA spread.

**Exhibit 10: Recent BSL CLO Refi/Reset/Reissue average spread vs. 12-month High/Low**

Refi/Reset/Reissue BSL	Jun-22	May-22	12-Month High	12-Month Low
AAA Avg Spread	-	145	145	110
AA Avg Spread	-	205	205	165
A Avg Spread	-	259	259	214
BBB Avg Spread	-	400	400	316
BB Avg Spread	-	819	819	647

Source: Refinitiv LPC (July 2022)

**Exhibit 11: Recent MM CLO Refi/Reset/Reissue average spread vs. 12-month High/Low**

Refi/Reset/Reissue MM	Jun-22	May-22	12-Month High	12-Month Low
AAA Avg Spread	215	-	215	128
AA Avg Spread	290	-	290	186
A Avg Spread	420	-	420	260
BBB Avg Spread	514	-	514	372

Source: Refinitiv LPC (July 2022)

## 2. Performance

### 2.1. Collateral Performance by Industry

As a June snapshot shown in Exhibit 12, the top 10 industries accounted for nearly 70% of the total collateral par across the BSL CLO universe, with CCC or below (per Moody's) ranging from 0.18% to 6.88% (vs. 4.51% market average), default rate ranging from 0% to 0.81% (vs. 0.32% market average), and price below 90 ranging from 1.35% to 32.29% (vs. 15.88% market average).

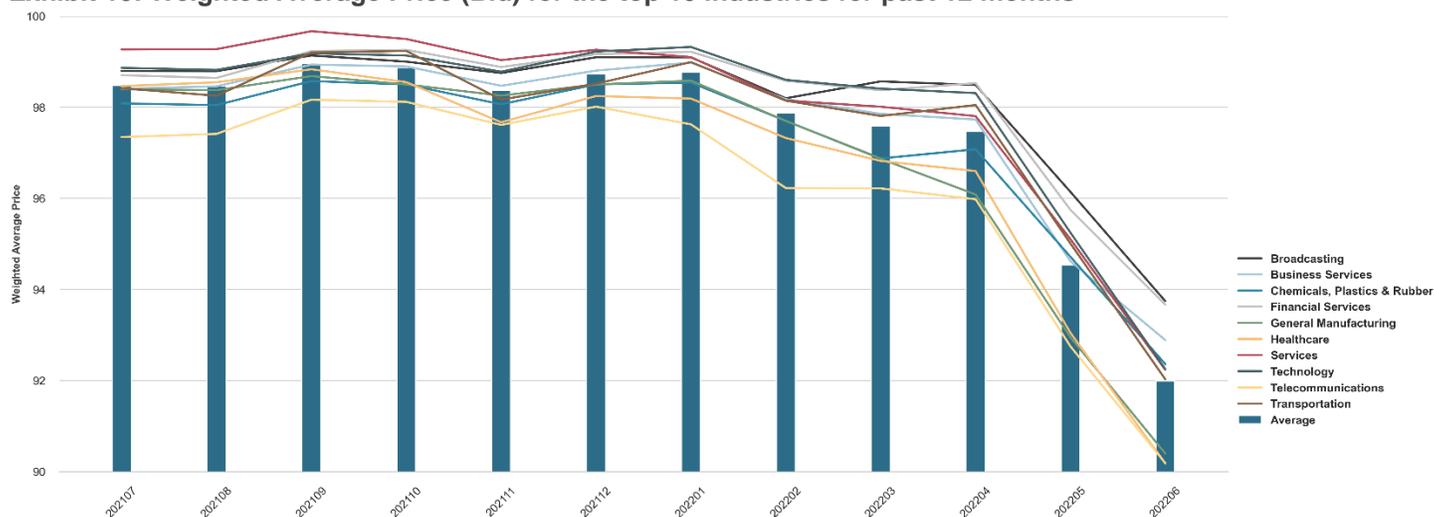
**Exhibit 12: Snapshot of industry concentration for BSL CLO collateral universe**

Industry	CLO Exposure (%)	CCC or below (%)	Defaulted (%)	Price<90 (%)
Technology	12.98	3.16	0.13	19.44
Financial Services	11.37	0.83	0.02	4.45
Healthcare	8.26	6.88	0.80	21.35
General Manufacturing	7.41	5.71	0.00	25.12
Business Services	6.95	5.34	0.06	9.65
Services	5.48	2.06	0.28	14.16
Telecommunications	4.86	3.87	0.81	24.86
Chemicals, Plastics & Rubber	4.54	3.73	0.08	13.43
Broadcasting	3.71	0.18	0.00	1.35
Transportation	3.50	3.65	0.18	32.29
<b>Overall Market Average</b>		<b>4.51</b>	<b>0.32</b>	<b>15.88</b>

Source: Refinitiv LPC (July 2022)

Since April, the collateral price across all the major industries have dropped steeply. Loan prices of the top 10 largest industries were mostly over 98 in 2021, and now are all below 94. Technology, Transportation, and Services are the three industries seeing the biggest decline month over month (MoM) in June, with a dollar price drop of 3.0, 2.98 and 2.87 respectively. The overall market average loan price slumped to 91.99 at the end of June, down 2.54 from May.

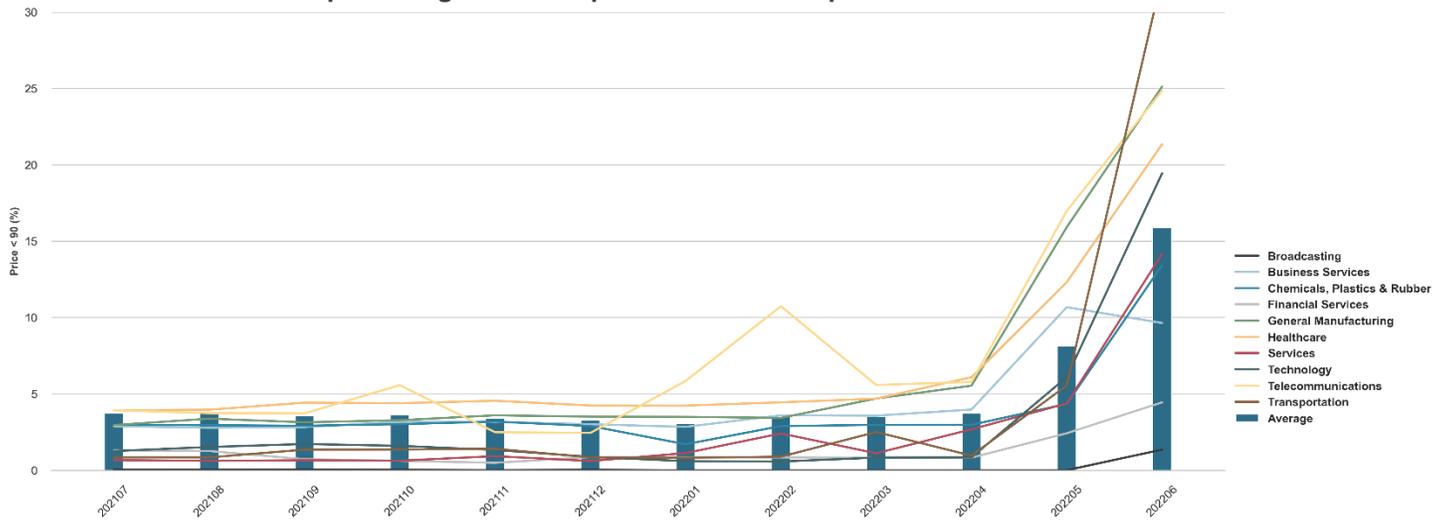
**Exhibit 13: Weighted Average Price (Bid) for the top 10 industries for past 12 months**



Source: Refinitiv LPC (July 2022)

As the loan price declined broadly, the lower priced loan bucket (<90 dollar price) has doubled to 15.88% in June from May, reflecting market stress and increased credit concern.

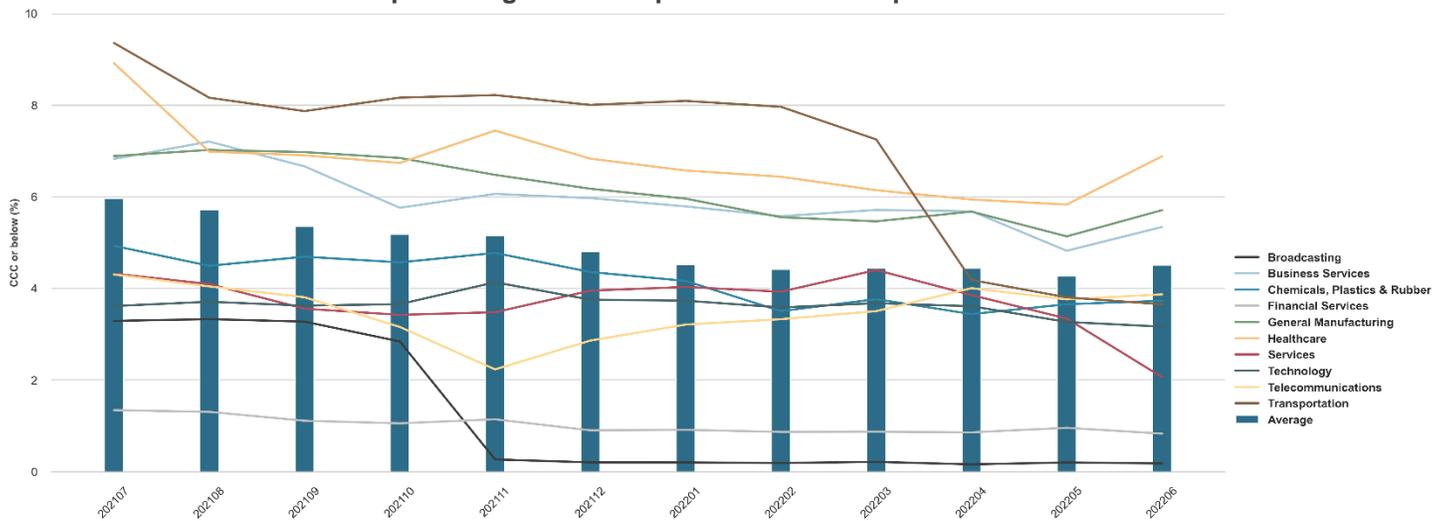
**Exhibit 14: Price<90 loan percentage for the top 10 industries for past 12 months**



Source: Refinitiv LPC (July 2022)

The CCC concentration has generally declined or remained steady in the last 12 months across all the major industries, although there have been more downgrades to CCC or below in recent months. The Healthcare industry tops in this metrics at 10.08%, with a rise of 0.50% MoM.

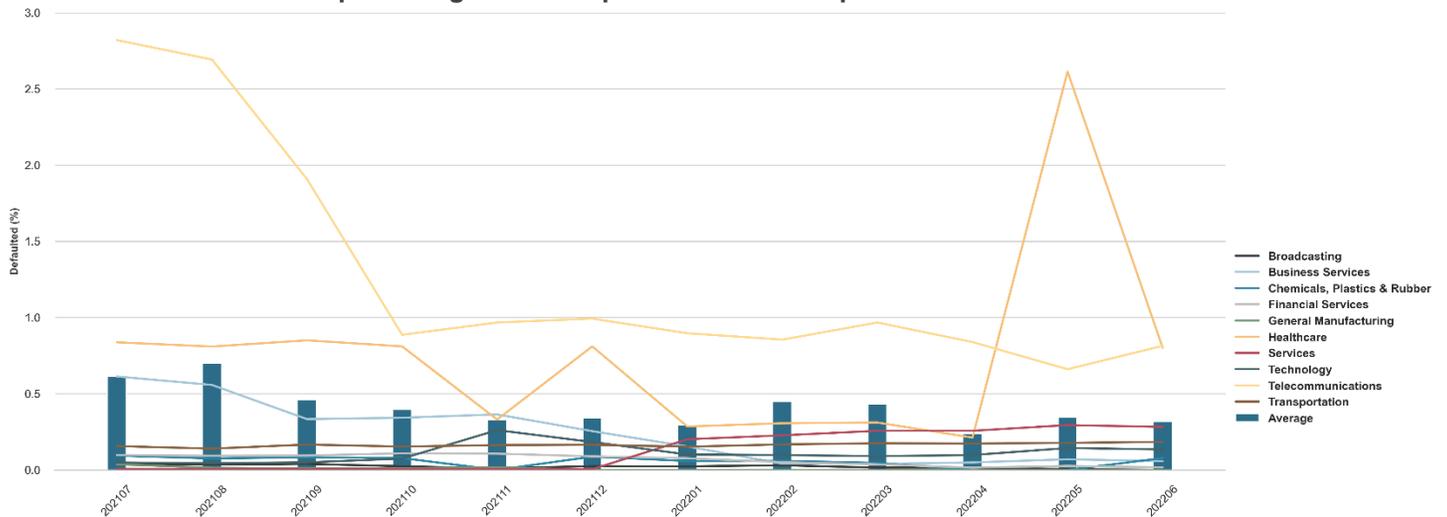
**Exhibit 15: CCC or below loan percentage for the top 10 industries for past 12 months**



Source: Refinitiv LPC (July 2022)

In contrast to the drastic downward movement of loan prices, the overall default rate still remains low YTD, at 32 bps in June (down 2 bps MoM). Healthcare shows large volatility with a default rate of 80 bps in June.

## Exhibit 16: Defaulted loan percentage for the top 10 industries for past 12 months



Source: Refinitiv LPC (July 2022)

## 2.2. Tests and Triggers

Most CLO collateral quality tests and performance tests remained in good shape as reported in June, as the percentages of deals failing the CCC/Caa, Diversity, WARF, and WAS are all in the single digits, and the Interest Diversion test and Junior OC tests also performed well with both failing rates under 2%.

## Exhibit 17: Most recent deal test breach

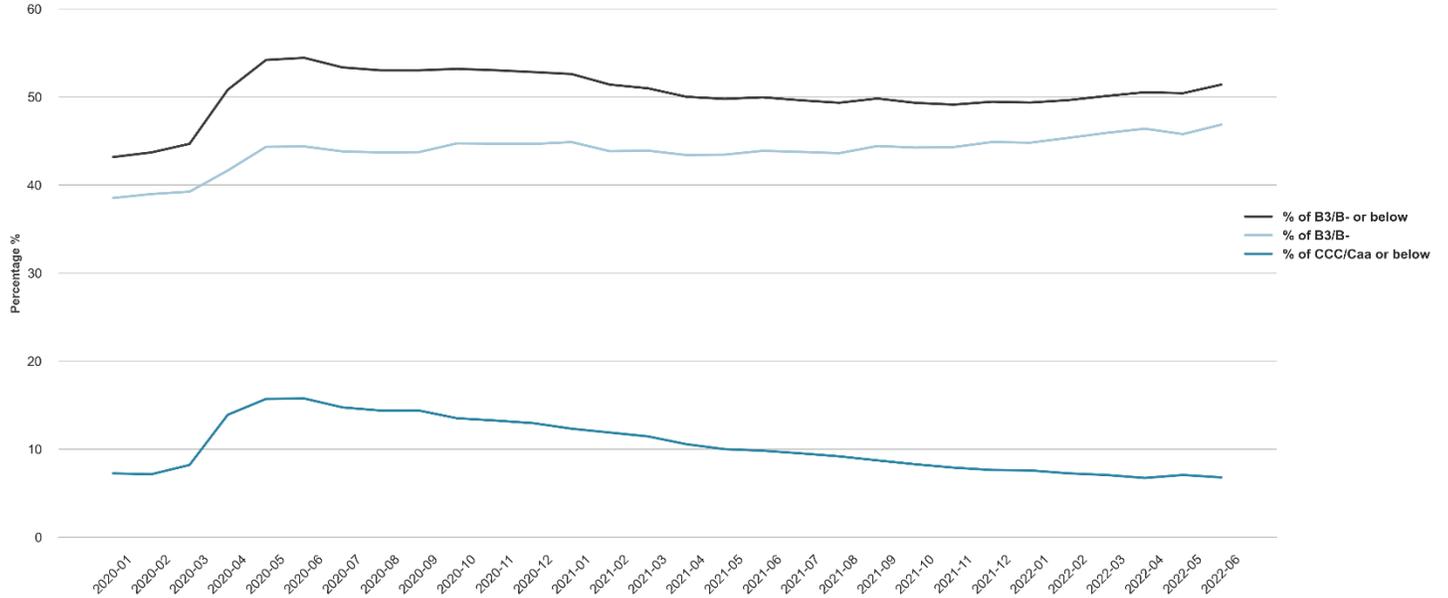
Test Category	Failed Deal Count	Total Deal Count	% of Failing
Caa	45	1060	4.25
CCC	70	759	9.22
Diversity	76	1118	6.80
WAL	162	1151	14.07
WARF	91	1114	8.17
WAS	57	1129	5.05
Interest Diversion	19	1075	1.77
Junior OC	22	1189	1.85

Source: Trepp, YieldBook (July 2022)

## 2.3. Collateral Assets

B3/B- rating group is usually considered as a precautionary sign for potential CCC test breach, as it is just one notch away from CCC bucket. The B3/B- bucket has been on the rise over the last 12 months, gaining 3% to 46.9% in June, leading to higher B3/B- or below bucket, while the CCC/Caa or below percentage has continued to decline post Covid. The B3/B- concentration can potentially become a concern for credit fundamental as many loan issuers struggle to weather the economic downturn.

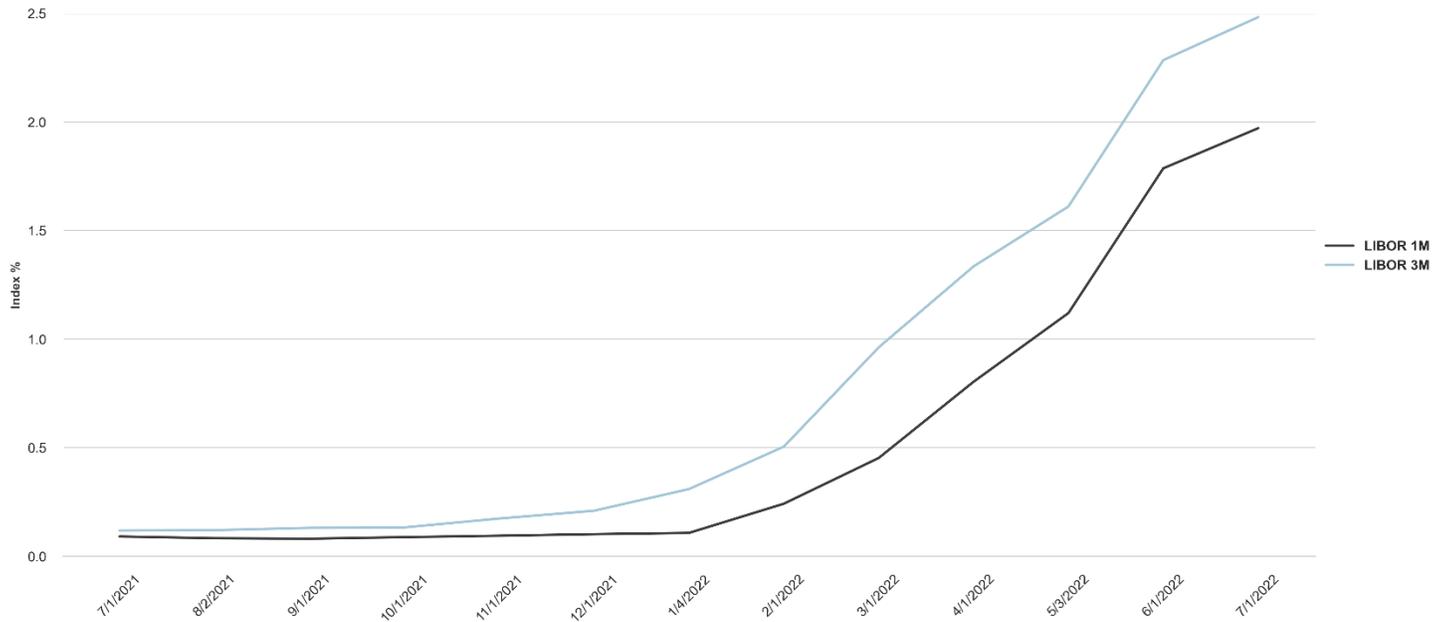
### Exhibit 18: The rise of B3/B- rated asset concentration



Source: Trepp, YieldBook (July 2022)

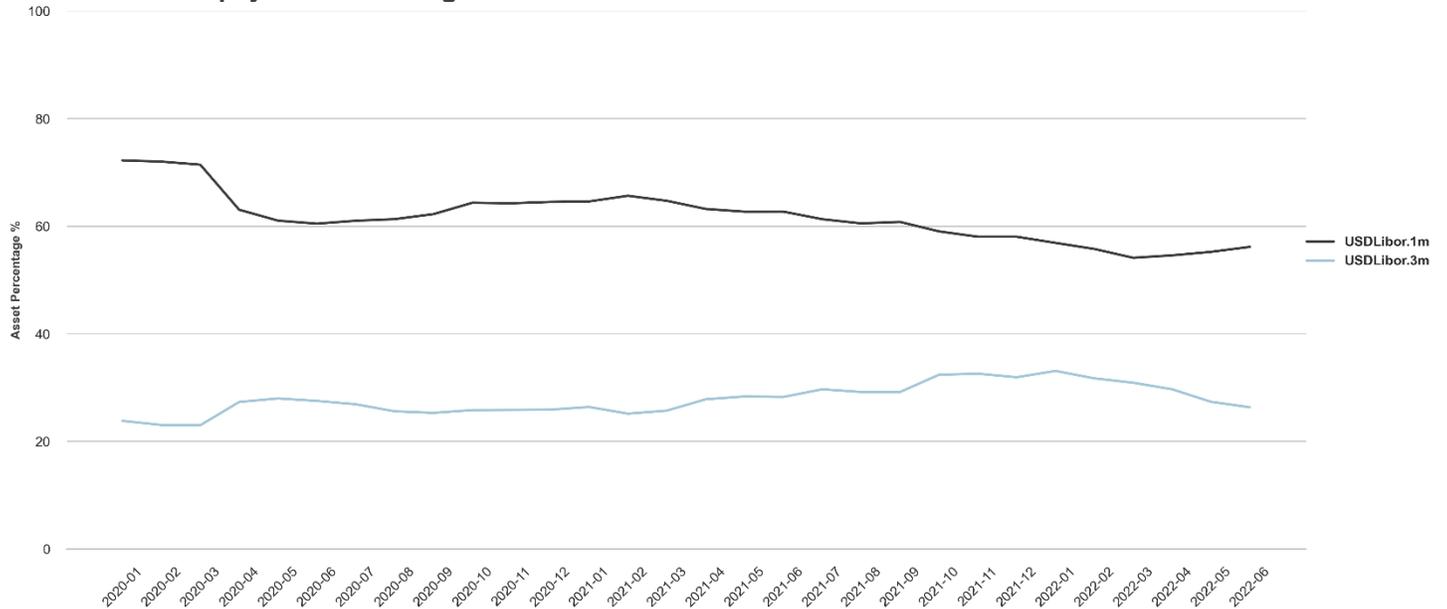
For the LIBOR based loans in the CLO collateral pool, percentage of loan payment based on LIBOR 1M has increased in the past two months as the USD LIBOR 3M - LIBOR 1M curve steepened. Loan payment switching from LIBOR 3M to LIBOR 1M will squeeze the arbitrage margin for CLOs and have negative impact on equity cash flows.

### Exhibit 19: LIBOR 3M vs. LIBOR 1M



Source: Refinitiv Workspace (July 2022)

## Exhibit 20: Loan payment switching from LIBOR 3M to LIBOR 1M



Source: Trepp, Yieldbook (July 2022)

High yield bonds came back to CLO collateral portfolio after Volcker rule amendment in 2020, and it has been gaining momentum this year. CLO managers are taking advantage of the price weakness of high yield bonds to build par, and the higher ratings (BB on average vs. B for leveraged loans) to improve WARF. Exhibit 21 shows the top 10 managers with the highest bond exposure in their collateral pool as of June vs. market average of 1.46%.

## Exhibit 21: Top 10 managers with highest bond exposure in collateral portfolio

Manager	Bond (%)
Shenkman Capital Management, Inc.	4.32
PineBridge Investments LLC	3.76
HPS	3.48
Alcentra	3.46
GSO/Blackstone	2.58
Irradiant	2.58
Symphony Asset Management	2.53
Sound Point Capital Management	2.47
AEGON USA Investment Management	2.43
Carlyle	2.39
<b>Market Average</b>	<b>1.46</b>

Source: Trepp, Yieldbook (July 2022)

## 2.4. Collateral Loan Price Bucket Migration

Loan prices have slumped in the last two months amid rate hikes and worsening economic outlook, manifested by the loan price bucket migration (Exhibit 22). The price below 90 bucket now accounts for 16.65%, versus only 3.0% in January, while percentage of loans with price over 100 has shrunk to a mere 0.10% in June vs. 10.30% at beginning of 2022.

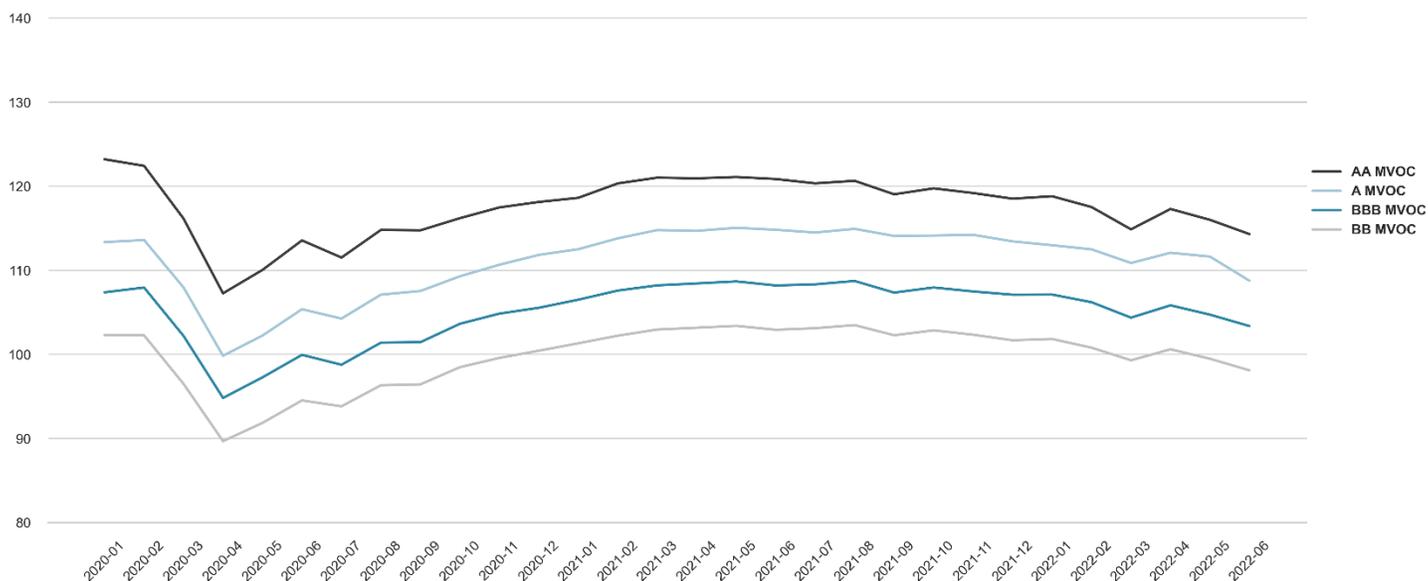
### Exhibit 22: Loan price migration in the last 12 months

ASO PERIOD	% Price 0 - 70	% Price 70 - 80	% Price 80 - 85	% Price 85 - 90	% Price 90 - 95	% Price 95 - 100	% Price over 100
2021-07	0.77	0.98	0.48	0.98	3.07	80.66	10.53
2021-08	0.71	1.05	0.48	0.95	3.14	81.09	9.45
2021-09	0.69	0.46	0.87	1.08	2.20	68.29	22.65
2021-10	0.72	0.45	0.92	1.13	1.89	70.46	21.03
2021-11	0.71	0.80	0.67	1.02	2.69	87.65	4.49
2021-12	0.65	0.67	0.98	0.67	2.74	78.18	12.54
2022-01	0.61	0.99	0.86	0.54	2.02	80.25	10.30
2022-02	0.87	0.89	0.78	0.98	3.05	89.90	0.95
2022-03	1.17	0.64	0.50	1.16	4.63	88.56	0.59
2022-04	1.18	0.80	0.46	1.19	6.05	86.57	0.70
2022-05	1.28	1.63	1.26	4.31	22.90	64.91	0.27
2022-06	1.78	2.20	2.95	9.72	53.91	25.99	0.10

Source: Refinitiv LPC (July 2022)

Declining asset prices are also affecting the MVOCs across all the CLO notes, especially the junior tranches, with a clear downward trend in the recent months, which is highlighted by the BB MVOC dropping below par (to 98.11) in June.

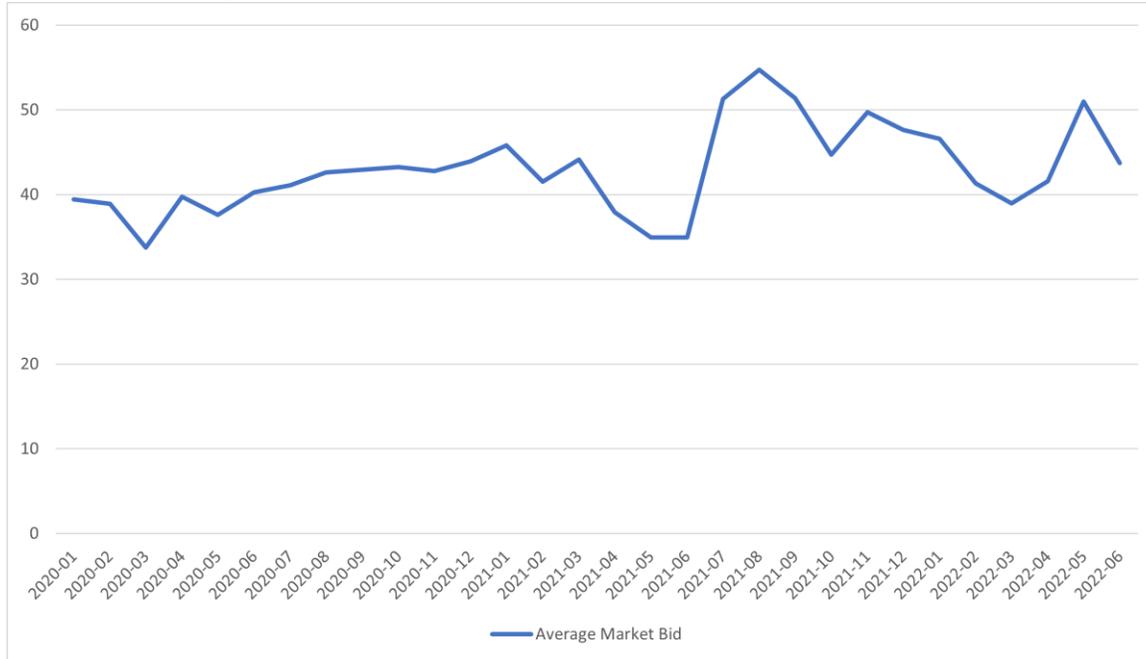
### Exhibit 23: MVOC movement by rating



Source: Trepp, Yieldbook (July 2022)

The bid price for defaulted loans has been ranging from 40s to 50s since the beginning of 2022, and remained relatively steady with an average bid price of 43.7 in June, down slightly comparing to the 12-month average of 46.9. It remains to be seen whether defaulted loan price or recovery will decline as economy slows down and recession looms.

**Exhibit 24: Average Bid Price for defaulted loans in BSL CLOs**



Source: Trepp, Yieldbook (July 2022)

## 2.5. SOFR Transition

The loans issued with SOFR indices ramped up quickly in 2022, to 10.20% of total outstanding CLO loans in June, up from 1.11% in January.

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**Exhibit 25: LIBOR/SOFR based loan percentage in CLOs**

ASO PERIOD	% LIBOR based	% SOFR based
2021-07	99.11	0.00
2021-08	98.93	0.00
2021-09	99.15	0.00
2021-10	99.12	0.00
2021-11	99.05	0.07
2021-12	98.54	0.49
2022-01	97.90	1.11
2022-02	94.98	3.74
2022-03	92.49	6.11
2022-04	91.03	7.57
2022-05	88.91	9.49
2022-06	88.11	10.20

Source: Trepp, Yieldbook (July 2022)

## 3. Rating Updates

### 3.1. CLO Tranche Rating Actions

In June, a total of 69 tranches reported a MoM S&P rating change, out of which 45 notched up while the other 24 were downgraded, resulting in an upgrade/downgrade ratio of 1.88. The biggest move-up was from CCC- to B, translating to a positive 4 notches, while the biggest fall was from A to BBB- for a change of negative 4 notches.

**Exhibit 26: S&P CLO tranche rating change MoM in June (the left most are prior ratings)**

	AAA	AA+	AA	AA-	A+	A	A-	BBB+	BBB	BBB-	BB+	BB	BB-	B+	B	B-	CCC+	CCC	CCC-
AAA	904	1	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AA+	0	77	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
AA	3	4	671	1	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0
AA-	1	0	0	41	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A+	0	1	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0
A	0	1	1	2	4	611	1	0	0	2	0	0	0	0	0	0	0	0	0
A-	0	0	0	0	0	0	42	0	0	0	0	0	0	0	0	0	0	0	0
BBB+	0	0	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0
BBB	0	0	0	0	1	0	0	1	38	1	0	0	0	0	0	0	0	0	0
BBB-	0	0	0	0	0	0	0	3	7	543	2	0	3	0	0	0	0	0	0
BB+	0	0	0	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	0
BB	0	0	0	0	0	0	0	0	0	0	0	16	1	0	0	0	0	0	0
BB-	0	0	0	0	0	0	0	0	0	1	1	4	427	6	0	0	0	0	0
B+	0	0	0	0	0	0	0	0	0	0	0	0	4	79	0	0	0	0	0
B	0	0	0	0	0	0	0	0	0	0	0	0	1	0	42	1	0	0	0
B-	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	118	0	0	0
CCC+	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	21	0	0
CCC	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	0
CCC-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	97

Source: Trepp, YieldBook (July 2022)

Separately for Moody's rating actions, 51 tranches had a MoM rating change in June, with 39 upgrades and 12 downgrades. The upgrade/downgrade ratio of 3.25 is higher than that of S&P.

**Exhibit 27: Moody's CLO tranche rating change MoM in June (the left most are prior ratings)**

	Aaa	Aa1	Aa2	Aa3	A1	A2	A3	Baa1	Baa2	Baa3	Ba1	Ba2	Ba3	B1	B2	B3	Caa1	Caa2	Caa3	Ca	C
<b>Aaa</b>	1094	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Aa1</b>	5	150	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Aa2</b>	3	4	474	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Aa3</b>	0	1	0	67	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>A1</b>	0	1	0	1	35	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>A2</b>	0	0	1	2	3	463	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>A3</b>	0	0	0	0	3	1	68	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Baa1</b>	0	0	0	0	0	0	0	22	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Baa2</b>	0	0	0	0	1	1	1	0	33	1	0	0	0	0	0	0	0	0	0	0	0
<b>Baa3</b>	0	0	0	0	0	0	0	1	3	437	0	0	0	0	0	0	0	0	0	0	0
<b>Ba1</b>	0	0	0	0	0	0	0	0	0	1	70	0	0	0	0	0	0	0	0	0	0
<b>Ba2</b>	0	0	0	0	0	0	0	0	0	0	1	25	0	0	0	0	0	0	0	0	0
<b>Ba3</b>	0	0	0	0	0	0	0	0	0	0	1	0	479	0	0	0	0	0	0	0	0
<b>B1</b>	0	0	0	0	0	0	0	0	0	0	0	0	1	82	0	0	0	0	0	0	0
<b>B2</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	41	0	0	0	0	0	0
<b>B3</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	94	1	0	2	0	0
<b>Caa1</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	47	0	7	0	0
<b>Caa2</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	34	0	0	0
<b>Caa3</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	162	0	0
<b>Ca</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
<b>C</b>	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6

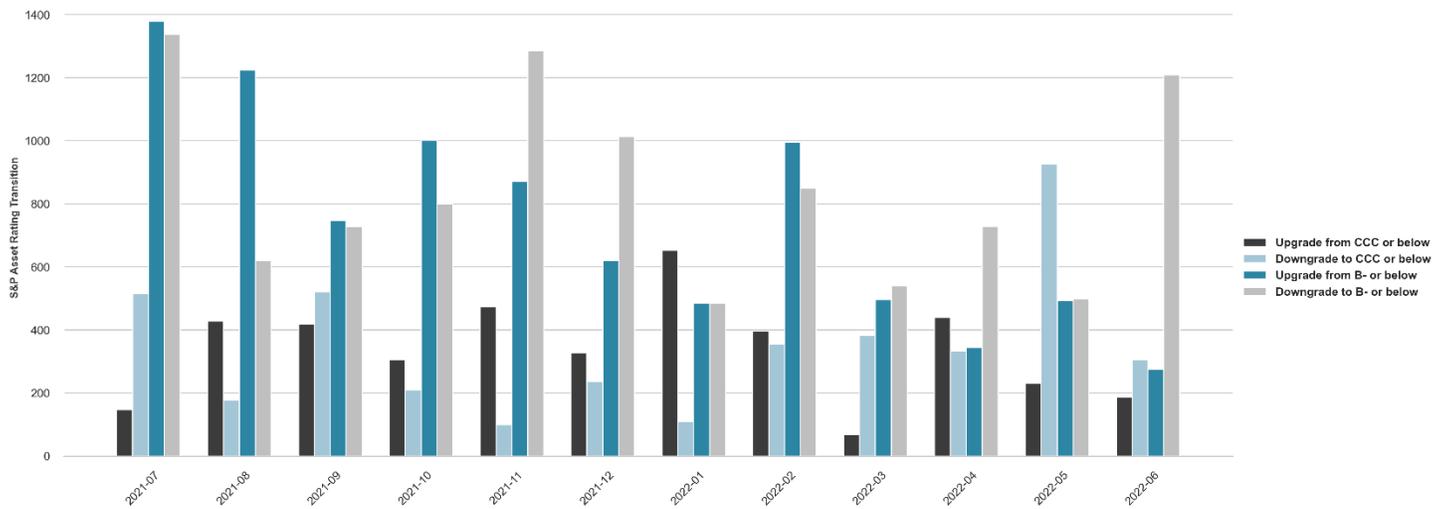
Source: Trepp, YieldBook (July 2022)

### 3.2. CLO Asset Rating Actions

In contrast to CLO tranche rating changes, there were a lot more downgrades than upgrades for CLO assets in June, reflecting an overall credit deterioration in the collateral loan universe as corporates struggled to cope with high inflation, supply chain disruption, and labor pressure.

Out of all the S&P rated CLO collateral assets, there were 4,022 rating changes MoM in June 2022, out of which 305 (7.58%) were downgraded into the CCC or below bucket, and 1,209 (30.06%) were downgraded to the B- or below. Meanwhile, 188 assets (4.67%) were upgraded out of the CCC bucket and 305 (6.84%) were upgraded out of the B-group.

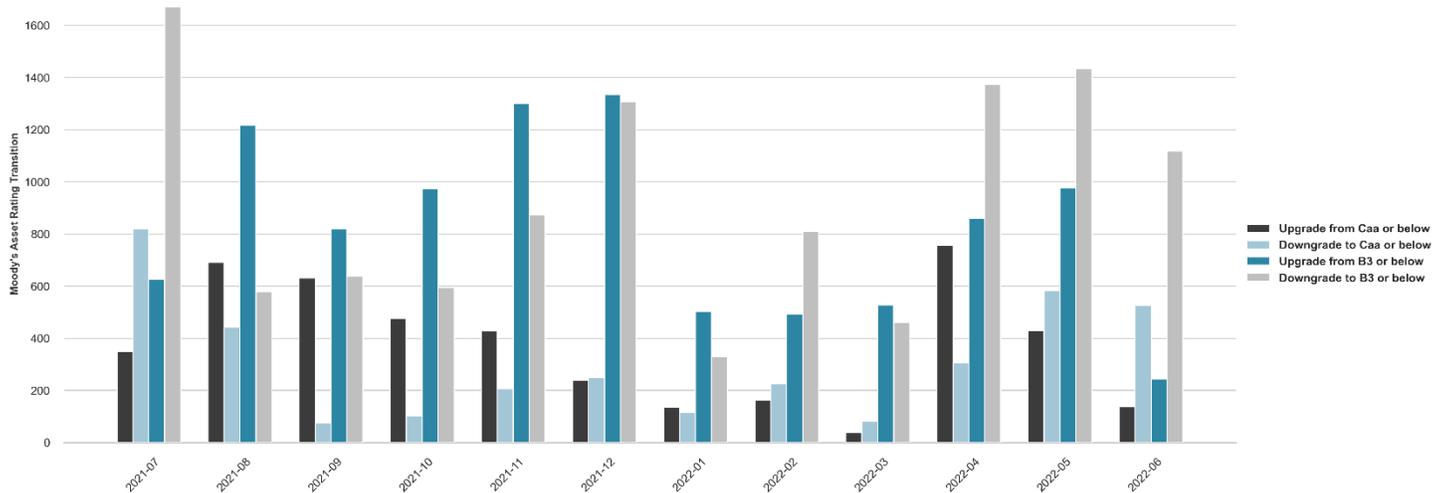
## Exhibit 28: S&P CLO asset rating changes in the last 12 months



Source: Trepp, YieldBook (July 2022)

Moody's ratings changed for 3,312 CLO assets MoM in June. Among these assets, 526 (15.88%) were downgraded into the Caa or below bucket and 1,118 (33.76%) were downgraded into the B3 or below bucket, while 137 assets (4.14%) were upgraded out of Caa or below bucket and 244 (7.37%) were upgraded out of B3 or below bucket.

## Exhibit 29: Moody's CLO asset rating changes in the last 12 months



Source: Trepp, YieldBook (July 2022)

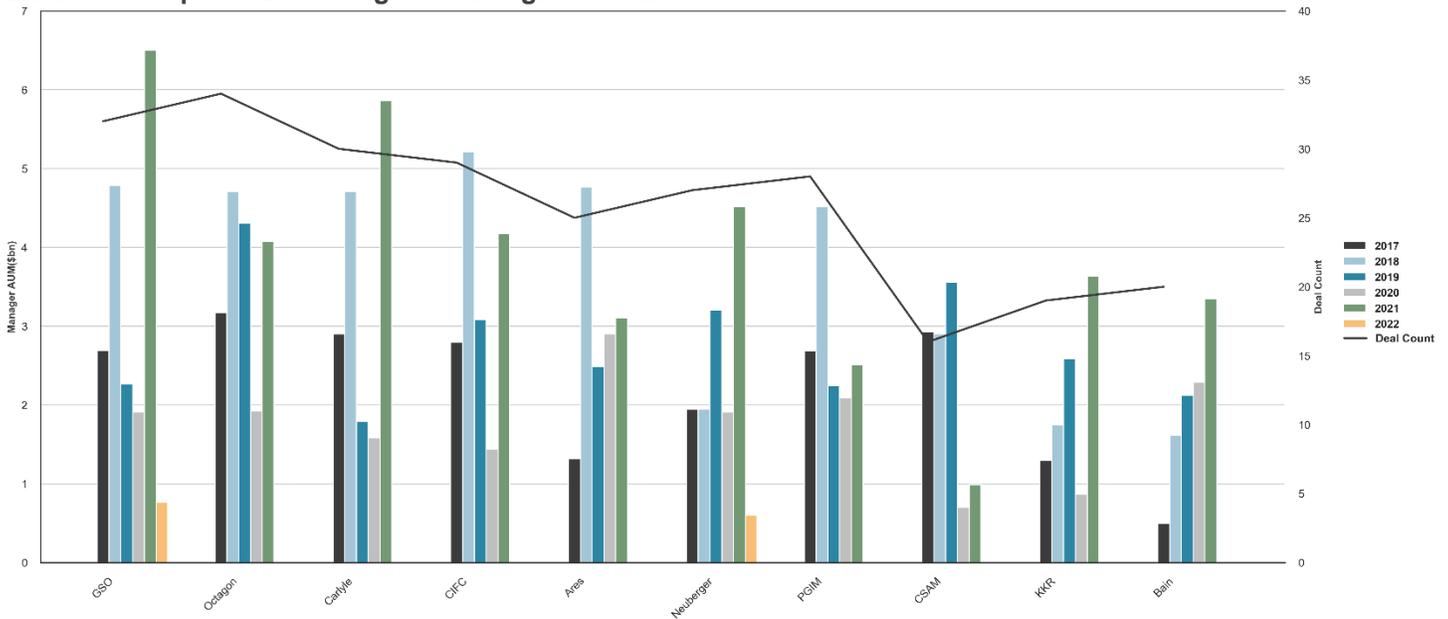
## 4. CLO Manager Analysis

In this analysis, we focus on the BSL CLO managers with at least two USD denominated deals outstanding and BSL CLO deals remaining in their reinvestment period. The deals must have at least two trustee reports published. The data covers 1,014 CLO deals under 101 manager names.

### 4.1. Manager Size

The manager size can be measured by total Assets Under Management (AUM) or deal count. Exhibit 30 shows top 10 managers with the highest current outstanding AUM.

**Exhibit 30: Top 10 CLO managers with highest AUM**



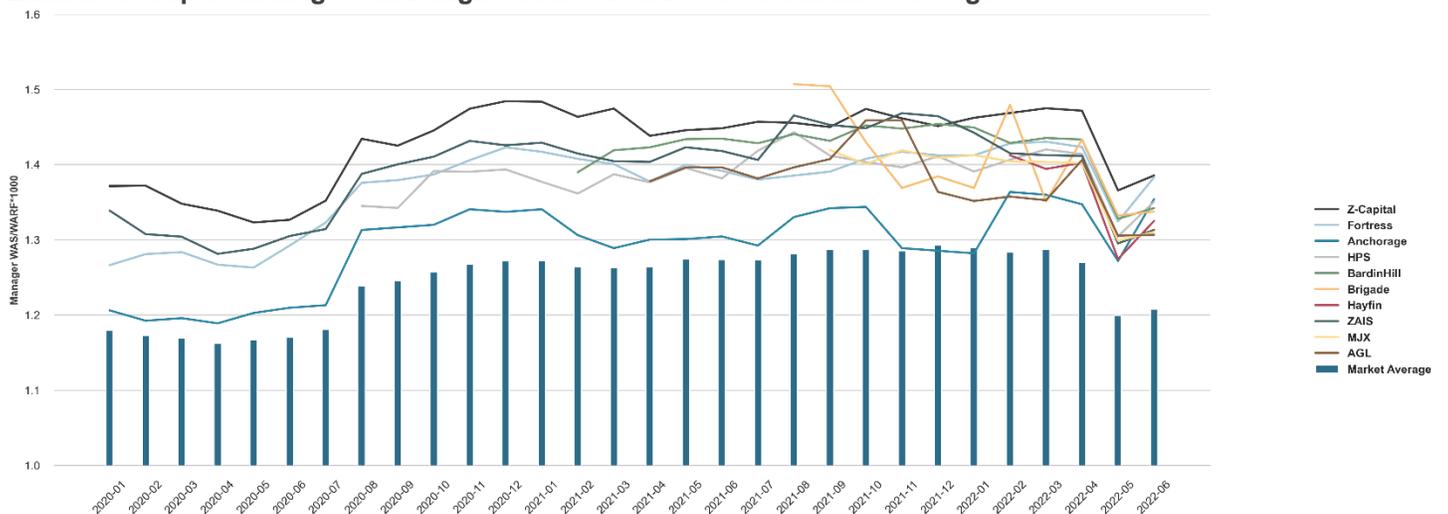
Source: Trepp, Yieldbook (July 2022)

## 4.2. Collateral Performance

### 4.2.1 WAS/WARF

A ratio of WAS/WARF takes into account Weighted Average Spread (WAS) and Weighted Average Rating Factor (WARF), two major risk metrics for CLO loans. It essentially measures the risk/reward trade-off for asset selection. In general, managers with a higher WAS/WARF ratio are good at picking up excess spreads from higher quality loans.

**Exhibit 31: Top 10 managers with highest WAS/WARF ratio vs. market average**

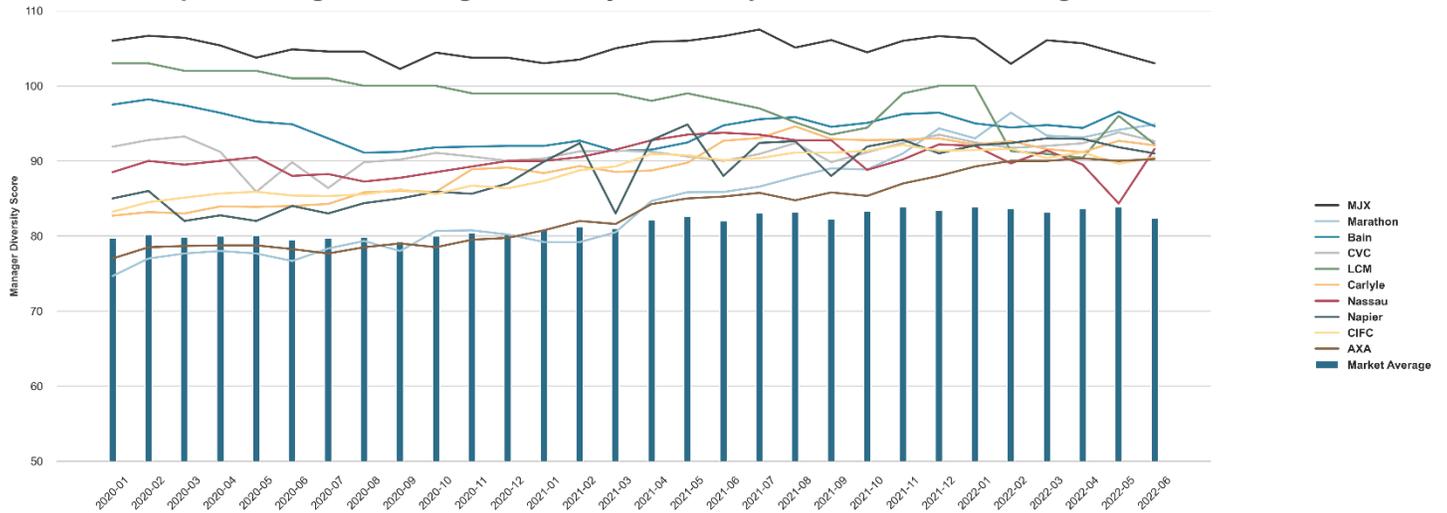


Source: Trepp, Yieldbook (July 2022)

## 4.2.2 Diversity Score

Diversity scores have remained in low 80s in the last 12 months, though there's a slight decrease in June from May. Top managers generally have the Diversity scores over 90.

**Exhibit 32: Top 10 managers with highest Moody's Diversity score vs. market average**



Source: Trepp, Yieldbook (July 2022)

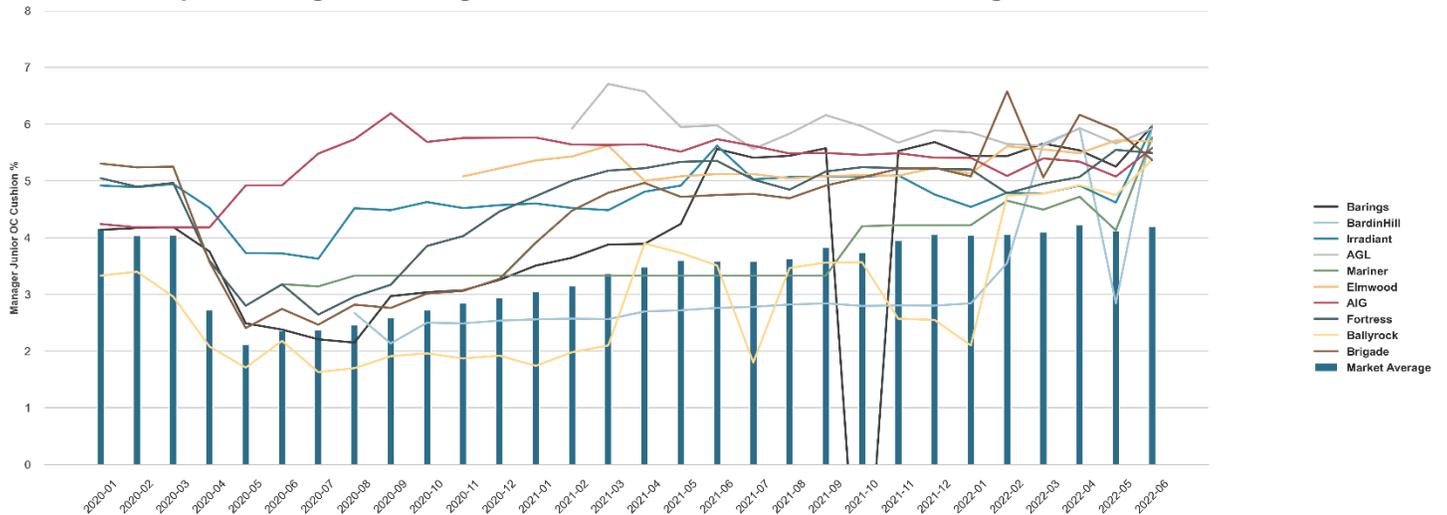
## 4.2.3 Junior OC Cushion

The Junior Over Collateralization (OC) cushion is calculated as the actual OC result<sup>2</sup> subtracting the OC threshold for the most junior debt tranche that requires an OC test. The junior OC cushion indicates how much buffer the deal has before the first dollar loss of the debt structure.

The overall Junior OC cushion has been improving steadily since third quarter of 2020, rising to 4.20% in June (up 8 bps MoM), comparing to below 3% for much of 2020.

<sup>2</sup> OC = (Par value of all performing assets + Cash + Recovery value of defaulted assets – Haircut for excess distressed assets) / Sum of par value of all liability tranches more senior or equally senior to the tranche associated with the tranche being tested on

**Exhibit 33: Top 10 managers with highest Junior OC cushion vs. market average**

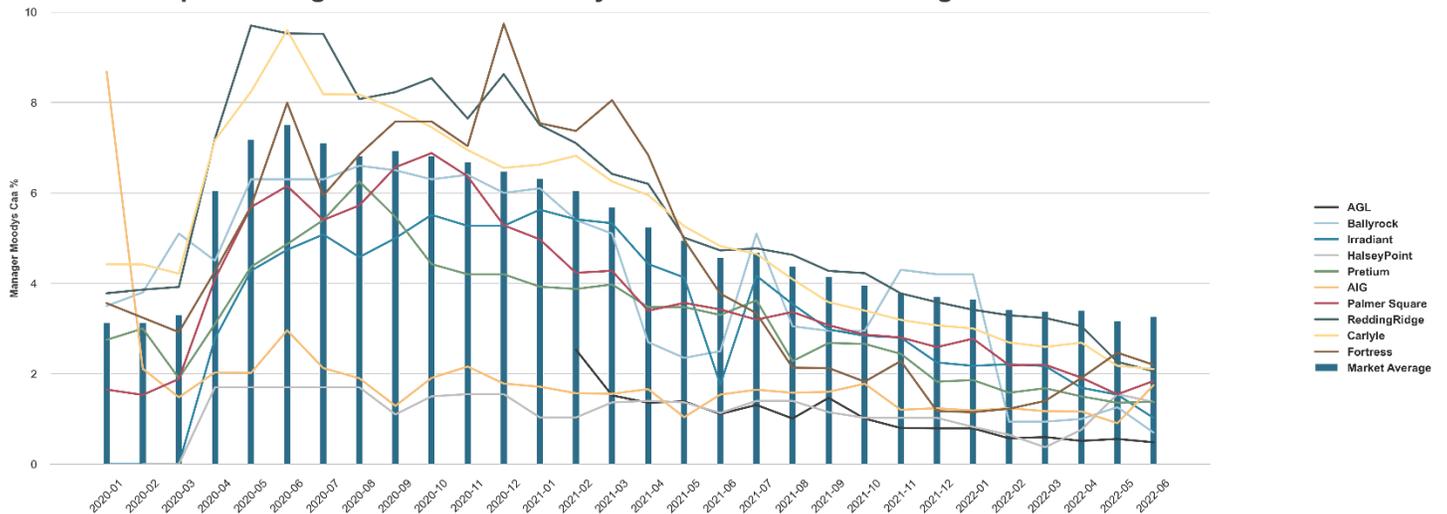


Source: Trepp, Yieldbook (July 2022)

#### 4.2.4 Caa/CCC Loans

Caa% has been trending down over the past two years, though it rose slightly in June for the market average (3.26% vs. 3.18% in May), as Moody's rating downgrades started to pick up for CLO assets.

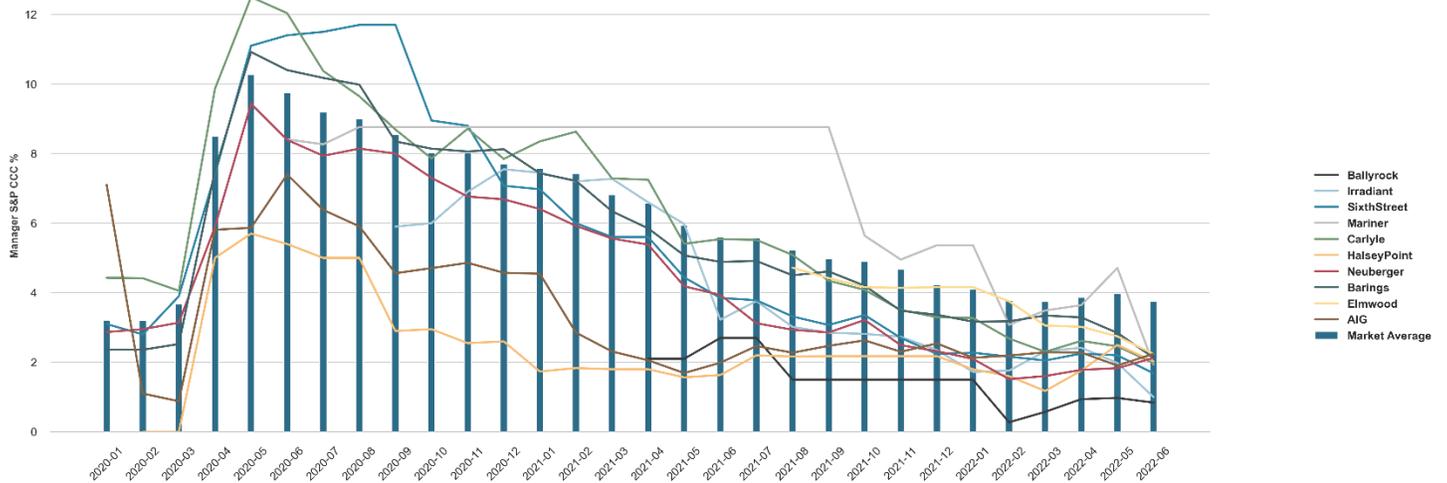
**Exhibit 34: Top 10 managers with lowest Moody's Caa % vs. Market Average**



Source: Trepp, Yieldbook (July 2022)

On the other hand, the market average S&P CCC% actually decreased from May (3.98%) to June (3.75%). As the vast majority of BSL CLO deals have a CCC% threshold of 7.5%, there is still a sufficient buffer before deals fail this test. The top managers have CCC% around 2% or below.

**Exhibit 35: Top 10 managers with lowest S&P CCC % vs. market average**

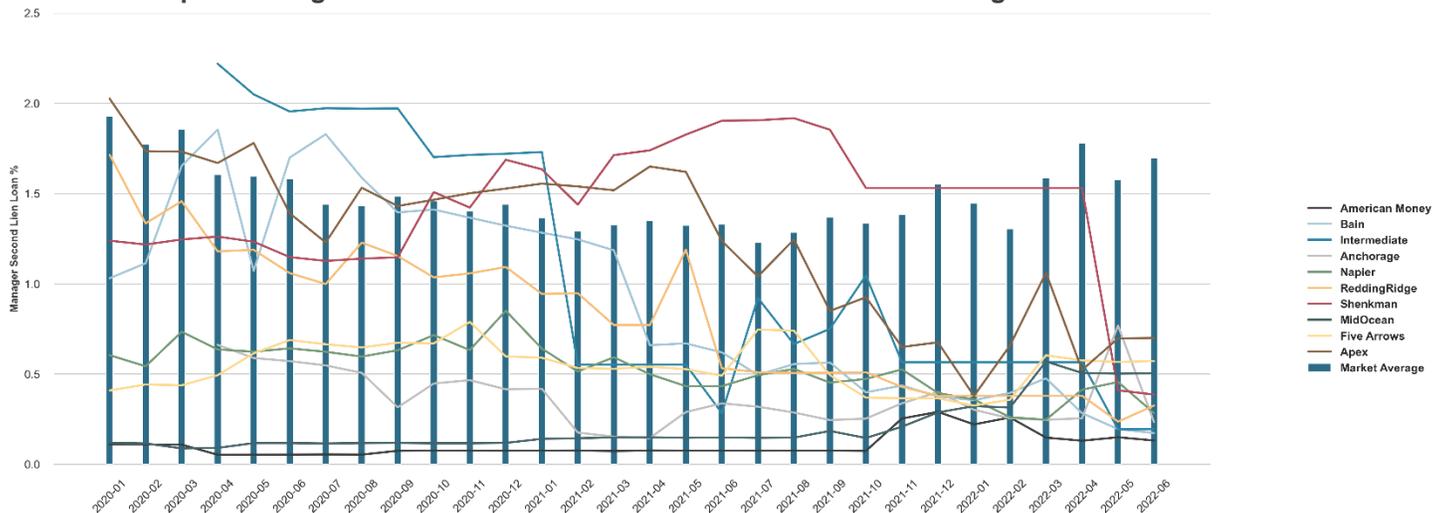


Source: Trepp, Yieldbook (July 2022)

### 4.2.5 Second-Lien Loan

Second-lien exposure within CLO collateral portfolio, while remaining low, has been trending up since 2021, reaching 1.70% in June. The top managers in this category are all well below 1%.

**Exhibit 36: Top 10 managers with lowest Second Lien loan % vs. market average**

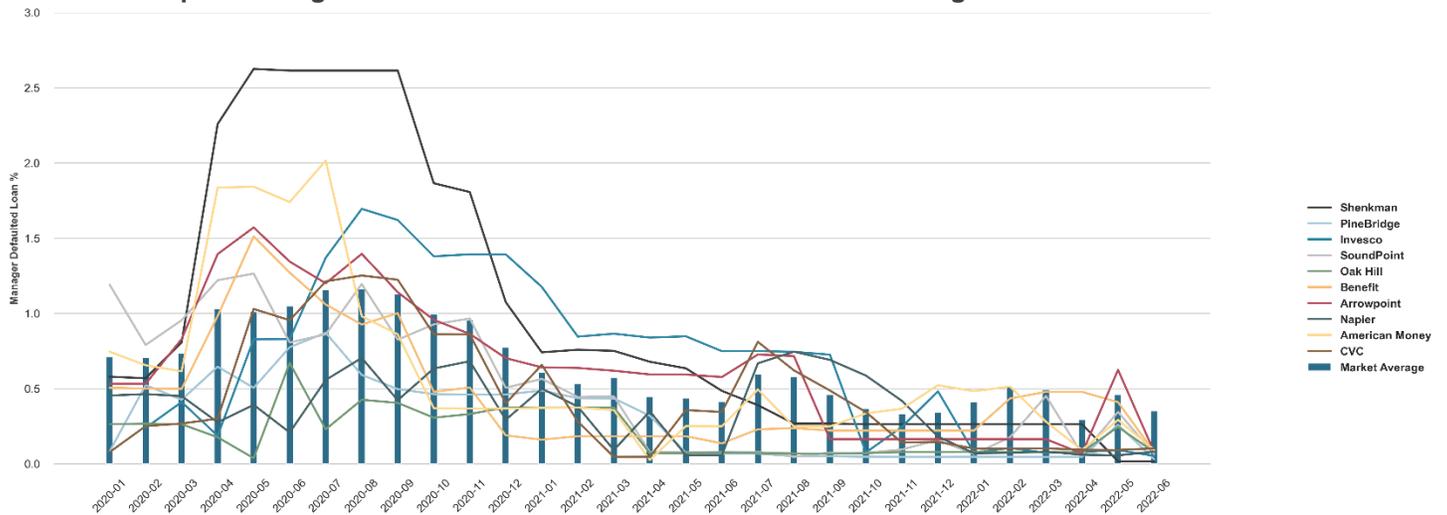


Source: Trepp, Yieldbook (July 2022)

### 4.2.6 Defaulted Loans

In June, the default rate of the CLO loans continued to stay at a low level – below 0.5% as in most months since April 2021. Currently only 13 CLO deals had more than 1% defaulted loans. More than half of the managers reported less than 0.1% default rate, reflecting a benign credit picture, at least for now.

**Exhibit 37: Top 10 managers with lowest defaulted loan % vs. market average**

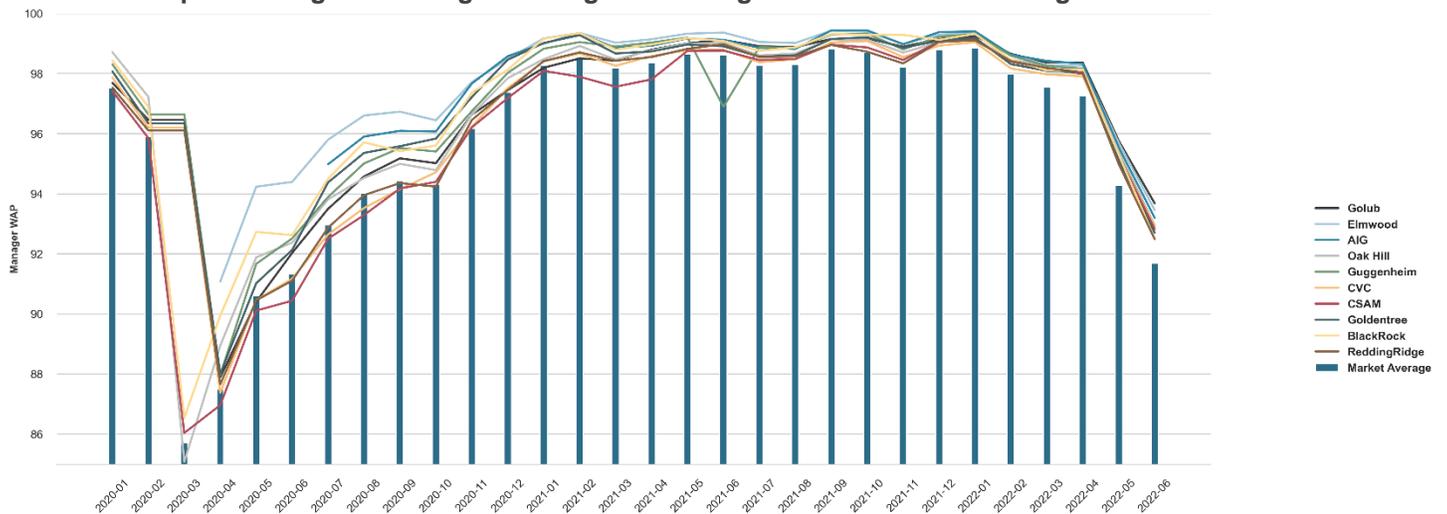


Source: Trepp, Yieldbook (July 2022)

### 4.2.7 Weighted Average Price

Amid the recent market turbulence, the average market price for CLO collateral loans fell to 91.7 in June monthend, hitting the lowest spot since July 2020. Even the top managers have average loan prices falling below 94. That said, the current environment can present opportunities for active CLO managers to pick credits and build par by buying deeply discounted loans.

**Exhibit 38: Top 10 managers with highest Weighted Average Price vs. market average**



Source: Refinitiv LPC (July 2022)

## 4.3. Equity Favor

### 4.3.1 Par Build

The Collateral Notional Par Build metrics helps evaluate manger performance of strengthening collateralization by comparing the most recent notional collateral par versus the effective date target par. Here we annualized all the par build metrics to account for deal seasoning.

The market average Notional Par Build declined to 0.18% in June, down from 0.24% in May, while the top managers were able to achieve par build over 0.7%.

### Exhibit 39: Top 10 managers with highest Notional Par Build vs. market average

ASOFPERIOD	BardinHill	AGL	Partners Group	Fortress	ReddingRidge	CSAM	Intermediate	Irradiant	Barings	ZAIS	Market Average
2020-01			0.10	-0.50	1.17	-2.19	0.43	0.30	-1.57	2.16	-0.43
2020-02			-0.88	-2.82	0.75	-0.35	0.81	0.30	-1.18	2.71	-0.06
2020-03			1.80	-0.05	2.10	-0.25	0.52	0.38	-1.55	2.53	-0.03
2020-04			-0.91	-0.27	2.72	0.06	0.52	0.04	-1.11	3.32	-0.22
2020-05			-0.42	0.71	2.84	0.75	0.67	0.04	-1.29	3.77	-0.15
2020-06			-0.42	0.71	2.84	0.87	0.49	-0.76	-1.65	2.17	-0.23
2020-07			-0.42	0.71	2.64	0.93	0.35	-0.56	-2.30	-0.09	-0.35
2020-08	4.44		0.07	0.71	2.97	0.78	0.57	0.56	-1.86	0.05	-0.26
2020-09	3.39		0.07	0.71	1.43	0.22	0.80	-0.33	-2.09	0.04	-0.39
2020-10	4.95		-1.72	0.71	2.01	0.43	1.11	0.60	-1.71	-1.05	-0.10
2020-11	4.49		-2.86	-2.98	2.63	0.22	0.74	1.79	-1.87	1.17	-0.21
2020-12	0.56		-2.97	-0.14	1.88	-0.14	0.27	0.76	-2.25	0.62	-0.49
2021-01	-0.64		-1.64	-0.14	0.57	-0.82	-0.93	0.44	-1.80	0.46	-0.60
2021-02	-0.64	2.89	0.26	-4.54	1.83	-0.31	0.01	0.58	-1.82	-0.13	-0.41
2021-03	4.95	1.55	0.75	-2.91	2.36	0.18	-0.41	0.91	-1.90	0.32	-0.36
2021-04	3.74	1.68	-0.01	-2.91	1.61	0.43	-0.31	0.84	-1.71	0.51	-0.14
2021-05	-0.51	0.69	-0.14	-3.18	2.51	0.43	-0.15	1.20	-1.62	0.71	-0.12
2021-06	-0.47	0.05	-0.17	-3.48	1.26	1.32	-0.24	1.74	-1.88	-1.57	-0.35
2021-07	4.07	1.02	-0.91	-3.48	2.94	0.90	-0.19	0.75	-0.84	0.34	0.07
2021-08	-0.41	-0.49	1.10	-2.64	2.11	0.47	-0.16	1.12	-0.77	0.48	0.07
2021-09	1.70	0.97	-0.96	-2.02	1.90	-0.85	-0.35	0.59	-0.30	0.07	-0.22
2021-10	-0.42	0.25	-0.34	-1.99	2.15	-0.37	0.24	1.11	-0.29	0.28	-0.05
2021-11	-0.39	1.15	-0.69	-1.36	1.93	0.04	-0.08	0.33	-0.39	0.93	-0.04
2021-12	3.11	0.96	0.20	-2.72	1.48	0.47	0.69	0.09	-0.45	0.41	0.14
2022-01	1.34	0.08	-1.09	-0.91	0.40	-0.41	-0.11	-0.30	-0.14	0.02	-0.16
2022-02	3.22	1.26	1.95	1.10	0.76	0.20	0.05	0.33	0.45	-0.04	0.39
2022-03	3.14	1.24	0.49	1.08	0.93	0.59	0.04	0.25	0.39	0.08	0.32
2022-04	-0.29	0.75	1.34	0.53	1.11	0.28	0.11	0.19	0.15	0.28	0.20
2022-05	-0.25	0.99	1.60	0.73	0.77	0.42	0.36	0.14	-0.10	0.87	0.24
2022-06	3.90	1.21	1.15	0.98	0.93	0.80	0.79	0.77	0.76	0.72	0.18

Source: Trepp, Yieldbook (July 2022)

The other Par Build metrics, Price Adjusted Par Build (PAPB), accounts for the market value of collateral loans. The PAPBs have been deteriorating in 2022 due to falling loan prices, to -2.38% in June for the market average.

### Exhibit 40: Top 10 managers with highest Price Adjusted Par Build vs. market average

ASOFPERIOD	ReddingRidge	BardinHill	ZAIS	Guggenheim	Symphony	Tetragon	LCM	Selx	Octagon	TCW Asset	Market Average
2020-01	-2.83		3.93	-2.56	-1.62				-2.64		-2.42
2020-02	-1.97		4.21	-3.23	1.94				-0.32		-2.34
2020-03	-1.97		4.21	-3.23	1.94				-0.12		-3.35
2020-04	-1.97		-0.80	-3.23	1.94				-3.11		-2.85
2020-05	-1.97		-0.13	-3.23	1.94				-2.63		-2.25
2020-06	-1.97		-0.13	-3.23	1.94		-2.19		0.35		-2.18
2020-07	-1.97		-0.13	-3.23	1.94		-1.87		-1.81		-2.40
2020-08	-1.97	-4.13	-0.13	-3.23	-4.07		-1.90		-1.56		-2.69
2020-09	-1.97	-3.69	-0.13	-3.23	-3.18		-1.90		-2.54		-3.32
2020-10	-4.82	-1.16	-0.13	-3.23	-2.33		-0.83		-1.13		-2.89
2020-11	-3.00	-1.40	2.14	-4.19	-1.55		-0.78		-2.59		-2.90
2020-12	-2.39	-3.71	2.42	-4.09	-0.88		-0.57		-1.32		-2.63
2021-01	-0.93	-2.58	3.05	-4.85	-0.07		-0.31		-0.32		-2.11
2021-02	0.56	-2.27	3.51	-2.42	0.83		-0.08	-0.56	-0.08		-1.62
2021-03	0.90	3.36	3.53	-2.51	2.43		-0.20	0.32	0.13		-1.61
2021-04	0.31	2.21	3.50	-2.19	1.57		-0.20	-0.41	-0.18		-1.32
2021-05	0.61	-2.12	3.46	-1.77	1.33		-0.08	-0.41	-0.13		-1.30
2021-06	0.02	-1.90	-4.94	-1.93	1.73		0.12	-0.72	-0.27		-1.40
2021-07	1.78	2.74	-0.74	1.44	0.69		-0.42	-0.58	-0.44		-0.99
2021-08	0.62	-2.07	-0.72	1.57	-0.42	-1.06	0.12	-1.05	-0.52	-4.62	-1.16
2021-09	0.58	0.27	-1.38	0.84	-0.32	-1.06	0.24	-1.72	-0.01	-3.65	-1.18
2021-10	0.47	-1.51	-1.57	0.67	0.01	-1.06	0.54	-0.78	0.17	-2.61	-0.80
2021-11	0.29	-1.60	-0.71	0.95	1.82	-1.06	-0.19	-0.60	0.66	-0.47	-0.83
2021-12	-0.44	1.67	-2.08	1.12	0.83	-1.06	-0.19	-0.90	0.03	-0.36	-0.84
2022-01	-0.92	0.11	-1.72	-0.31	0.15	-1.06	-0.31	-0.66	-0.08	-0.48	-0.91
2022-02	-0.35	2.00	-1.25	-0.30	0.23	-0.19	0.52	-0.49	-0.09	-1.03	-0.67
2022-03	-2.25	0.55	-0.65	-0.49	-1.05	-0.66	-0.80	-0.65	-1.45	-1.29	-1.55
2022-04	-1.36	-2.17	-1.53	-2.08	0.20	-0.62	-0.24	-0.85	-1.01	-1.36	-1.35
2022-05	-1.95	-3.41	-2.01	-0.55	-2.02	-0.89	-0.92	-1.19	-1.63	-0.98	-2.18
2022-06	0.83	-0.22	-0.33	-0.60	-1.07	-1.24	-1.42	-1.66	-1.68	-1.81	-2.38

Source: Trepp, Yieldbook (July 2022)

## 4.3.2 Equity Cash on Cash

The cash-on-cash ratio is calculated as the total cash received divided by the outstanding face amount of the note, usually serving as a performance measure for the equity note. As CLO notes receive payment on a quarterly basis, this metrics is also quarterly. Equity cash on cash for the first two quarters of 2022 came in around 4%, reflecting healthy CLO arbitrages during the period.

**Exhibit 41: Top 10 Managers with highest equity cash on cash % vs. market average**

ASO PERIOD	CarVal	Barings	Anchorage	Elmwood	Ballyrock	MidOcean	Brigade	CSAM	Allstate	Generate Advisors	Market Average
2020Q1	3.23	4.11	5.02		2.55	4.22	3.39	4.14	4.25	4.94	4.37
2020Q2	3.24	4.00	4.74		2.58	4.00	3.24	4.45	4.08	5.24	4.12
2020Q3	3.13	3.63	4.37		2.53	3.75	3.22	4.78	3.84	4.44	3.85
2020Q4	3.19	3.79	4.36		2.65	3.66	4.03	3.91	3.90	4.45	4.11
2021Q1	3.24	3.70	4.26		2.75	3.56	4.78	3.93	3.96	4.43	3.90
2021Q2	3.11	3.09	4.28		2.92	3.64	3.99	3.93	3.98	4.38	3.75
2021Q3	3.03	3.19	6.42	7.76	4.04	3.50	4.25	2.99	3.47	4.31	3.81
2021Q4	6.76	4.19	6.88	6.83	4.73	3.78	4.43	4.91	6.15	4.30	4.12
2022Q1	5.64	4.09	5.65	5.24	6.70	6.84	6.45	5.55	5.43	4.39	3.96
2022Q2	13.37	7.08	6.30	6.19	6.18	6.08	5.64	5.50	5.38	5.24	4.15

Source: Trepp, Yieldbook (July 2022)

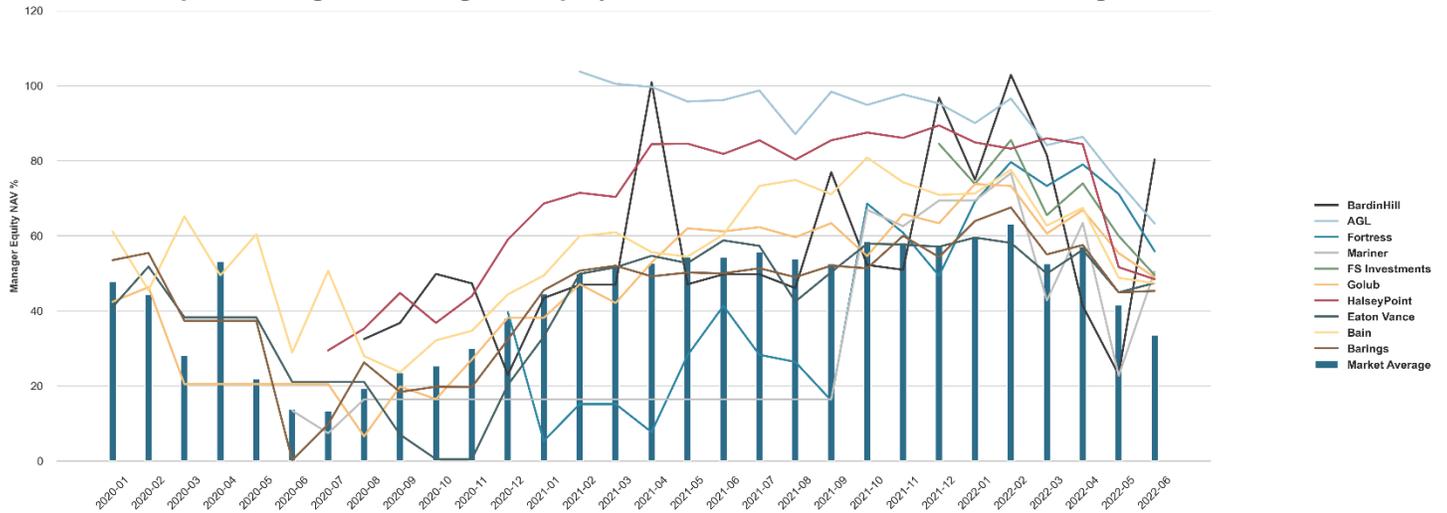
## 4.3.4 Equity Market Value NAV

The equity market value Net Asset Value (NAV)<sup>3</sup> estimates how much collateral value is left for the equity holder after all debt tranches are paid back in full, assuming all collateral assets are liquidated at market value immediately.

The market average equity NAV fell substantially in recent months along with loan price slump, reaching low to mid 30s in June, which is near the level observed in November 2020. The technical headwind may continue to pressure equity market value NAV in the near term.

<sup>3</sup> Equity market value NAV = (Collateral Market Value + Cash – Total balance of Debt tranches)/Equity Face Amount

**Exhibit 42: Top 10 managers with highest equity market value NAV % vs. market average**



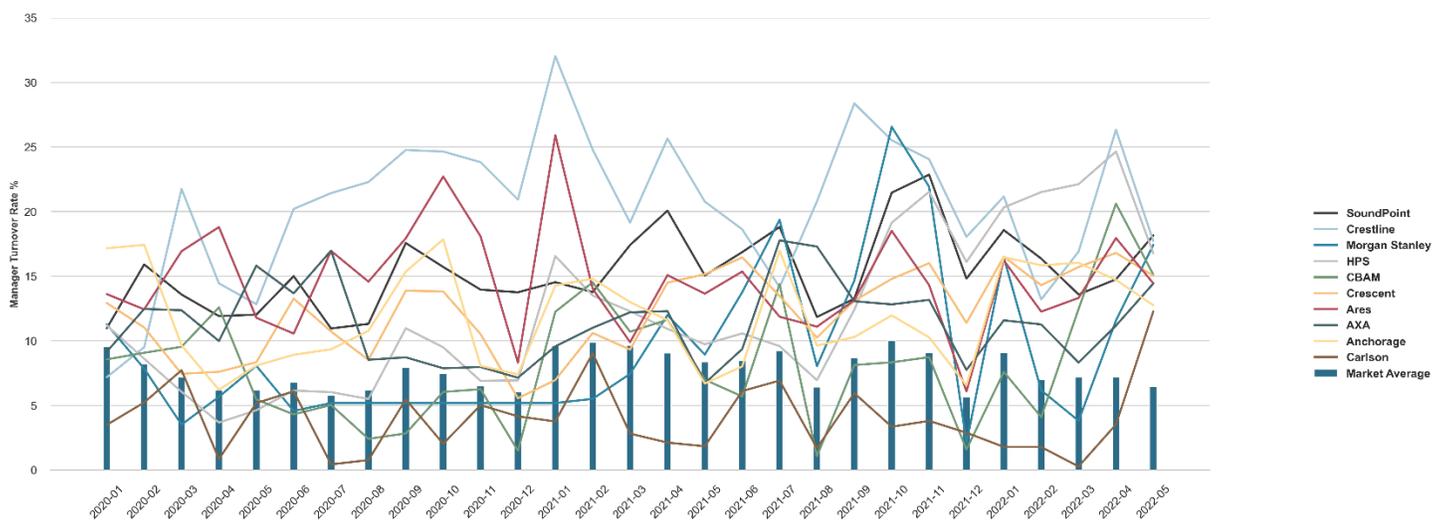
Source: Trepp, Yieldbook (June 2022)

## 4.4. Trading Activity

### 4.4.1 Portfolio Turnover Rate and Sell Rate

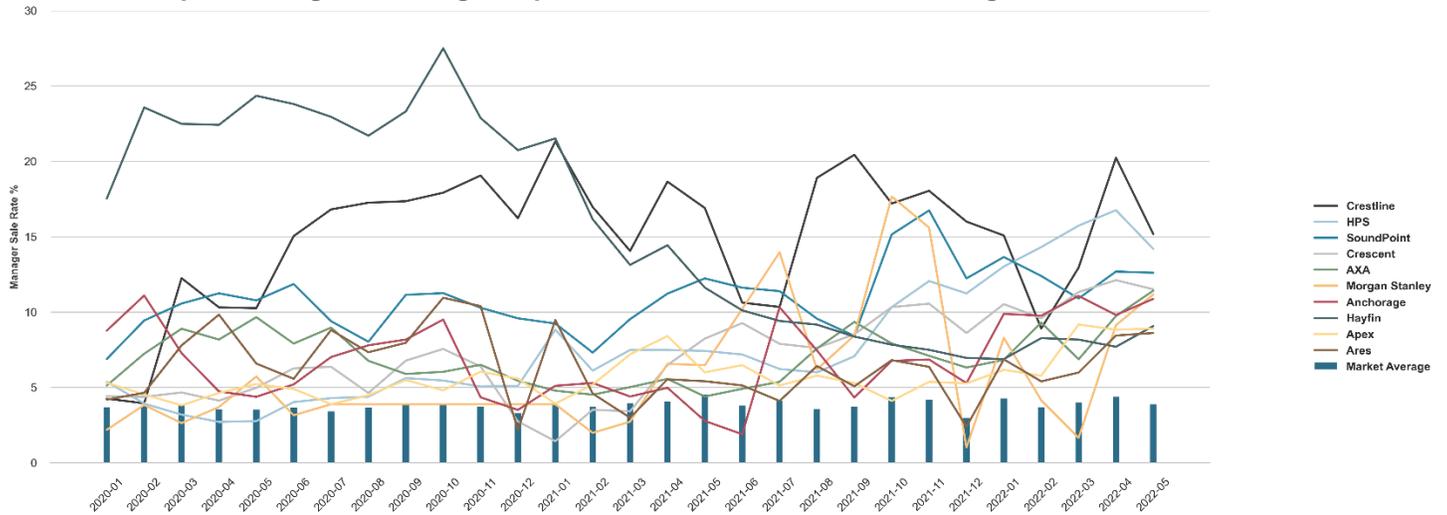
Portfolio turnover rate and selling rate are good indicators for the activeness of CLO managers. Both metrics slowed down in June, with market average turnover rate down to 6.48% (from 7.21% in May), and the sell rate down to 3.91% (from 4.43% in May), due to tougher liquidity condition.

**Exhibit 43: Top 10 managers with highest portfolio Turnover Rate vs. market average**



Source: Trepp, Yieldbook (June 2022)

**Exhibit 44: Top 10 Managers with highest portfolio Sale Rate vs. market average**



Source: Trepp, Yieldbook (June 2022)

## 4.5. Manager Ranking Matrix

We developed a ranking mechanism based on 11 metrics, including AUM, WAS/WARF, Diversity, Junior OC cushion, Caa/CCC %, Second Lien %, Defaulted %, Weighted Average Price, Notional Par Build, Equity Cash on Cash %, and Equity NAV. Trading style metrics are excluded from the ranking as they are more subjective.

The value of each metrics is converted to a normalized score, which is calculated as  $(\text{value of metrics} - \text{mean value}) / \text{standard deviation}$ . The final ranking score for each manager is the sum of the 11 normalized scores with equal weight.

Lastly, we assigned the manager performance quartiles based on the ranking scores of each manager (quartile 1 the highest in ranking and quartile 4 the lowest), and sorted the manager names alphabetically within each quartile (Exhibit 45).

## Exhibit 45: Managers Ranking Matrix

Quartile 1	Quartile 2	Quartile 3	Quartile 4
AGL CLO Credit Management LLC	AIG	AEGON USA Investment Management	40 86 Advisors, Inc.
Acentra	American Money Management Corporation	Allstate Investment Management Company	AXA Investment Managers
Angelo, Gordon & Co LP	Ares Management	Apex Credit Partners LLC	Anchorage Capital Group
Bain Capital Credit, L.P.	Assured Investment Management	Arrowpoint Asset Management	Carlson Capital
Ballyrock Investment Advisors LLC	BlackRock Financial Management, Inc.	CBAM	Columbia Management Investment Advisors, LLC
BardinHill	CVC Credit Partners	Canaras Management Limited	Crescent Capital Group
Barings LLC	CarVal	Canyon Capital Advisors LLC	Crestline Denali Capital, L.P.
Benefit Street Partners	Hayfin	Credit Suisse Asset Management	DoubleLine Capital LP
Brigade Capital Management, LLC	Investcorp Credit Management	Goldentree Asset Management	Eaton Vance Management
CIFC	Mariner Investment Group	HalseyPoint Asset Management	Five Arrows
Carlyle	Napier Park Global Capital LLC	Intermediale Capital Group	Fortress
Elmwood	Oaktree Capital Management	Invesco	Golub Capital Management CLO
FS Investments	Onex Credit Partners	KKR Financial Corporation	Greywolf Capital Management LP
First Eagle Investment Management	PGIM	LCM Asset Management LLC	Guggenheim Investment Management, LLC
First Eagle Investment Management	PPM America	Marathon Asset Management LLC	HPS
GSO/Blackstone	Palmer Square Capital Management	MidOcean Credit Fund Management	MacKay Shields
Generate Advisors	Partners Group	Morgan Stanley Investment Management	Man GLG
Gulf Stream	Pretium	Nassau Credit Corp	Marble Point
Irradiant	Shenkman Capital Management, Inc.	New York Life Investment Management LLC	Orchard First Source Asset Management, LLC
MJX Asset Management, LLC	Symphony Asset Management	Oak Hill Advisors	PineBridge Investments LLC
Neuberger Berman	TCW Asset Management	Park Avenue Institutional Advisers LLC	Sculptor Capital Management
Octagon Credit Advisors	Teachers Advisors	Seix Advisors	TICP
Redding Ridge	Trinitas	Sound Point Capital Management	Tetragon Credit Partners
Rockford Tower	Voya Alternative Asset Management LLC	Steele Creek Investment Management LLC	Triumph Capital Advisors / Trinitas Capital Management
Sixth Street Partners	Wellfleet Credit Partners LLC	ZAIS Group Inc.	Vibrant Capital CLO
			Z-Capital

Source: Trepp, Yieldbook (July 2022)

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### Americas

+1 646 989 2200

### EMEA

+44 20 7334 8963

### Asia-Pacific

Hong Kong +852 2164 3333

Tokyo +81 3 6441 1440

Taipei +866 2 8726 9778

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