

## 2022 high-yield market year in review

High yield experienced its worst calendar year total return since 2008 and second worst year on record. The primary driver of total returns was sharply higher Treasury rates as persistently high inflation drove the Federal Reserve to conduct the most aggressive tightening of policy rates in 40 years. Spreads widened 164bps given heightened macro concerns regarding the impact to overall demand from tighter monetary policy. We endeavor to highlight many of the drivers and nuances of the year herein.

### Index high-yield returns

#### High-yield return summary\*

	HY	BB	B	CCC
<b>2022 total return</b>	-11.10%	-10.44%	-10.58%	-15.63%
<b>Spread change</b>	+164bps	+87bps	+148bps	+498bps
<b>2022 excess return</b>	-2.91%	-1.51%	-3.15%	-8.96%

Source: ICE (references the ICE BofA U.S. HY CP Constrained Index)

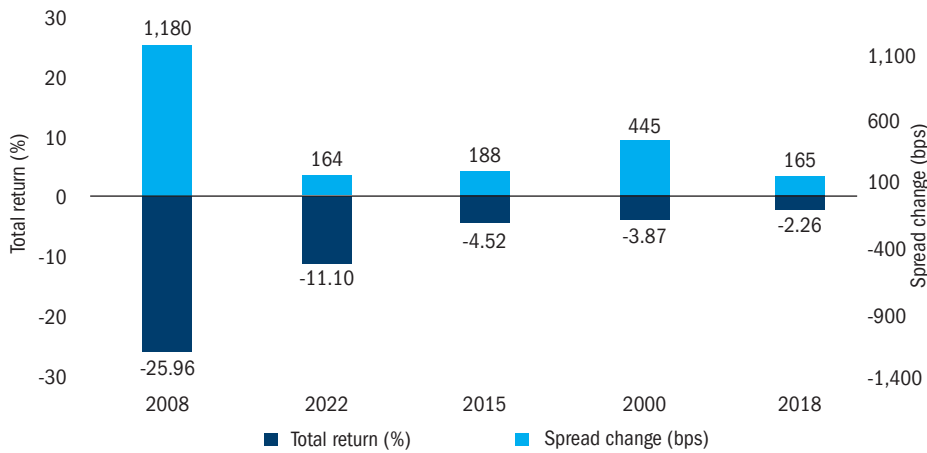
\*All data references the ICE BofA U.S. HY Cash Pay Constrained (JUCCO) Index as of 12/31/22 unless otherwise noted.

### Index return details

The high-yield market in 2022 was characterized by heightened interest rate and spread volatility, and increasing industry and issuer return dispersion as compared to 2021.

- The year's return was driven by a 16.4% price decline only partially offset by 5.3% coupon return.
- Spreads began the year at +323bps, only 12bps wide of the post-COVID low seen in July 2021. Unlike 2021, where spreads spent much of the year in a narrow 40bps range, **2022 saw spreads experience nine separate spread moves of 75bps or more**, ultimately ending the year 164bps wider.
- As evidenced by the much more modest excess return, interest rates were the primary driver of the year's total returns with the five-year U.S. Treasury rate increasing 274bps to 4%, a high since 2007.
  - For example, while the year's -11.1% total return was the second worst on record, it was only the seventh largest in terms of spread widening.
- Unsurprisingly, longer dated issues underperformed in this environment. Issues with maturities in the 0–5 year, 5–8 year and >8 year ranges returned -5.65%, -12.62% and -18.35%, respectively.
- CCC rated securities underperformed materially with a -15.63% total return, as increasing fundamental concerns and certain idiosyncratic credit events weighed on the rating category returns.
- The category's total return was somewhat skewed by its worst performers. The top-10 worst contributors (representing approximately 15% of the index CCC weight) accounted for approximately 40% of total return. These issuers averaged a -40.9% return for the year.
- The worst performing CCC rated issues were concentrated within retail, healthcare, media and telecommunications.

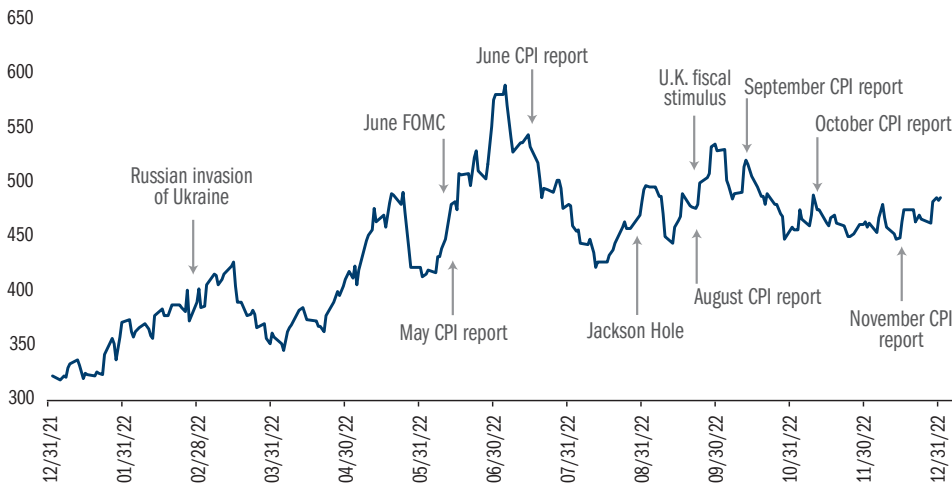
### High-yield negative total return years vs. spread change



Source: Columbia Threadneedle Investments based on ICE data. As of 12/31/22.

**Past performance is not a guarantee of future results.**

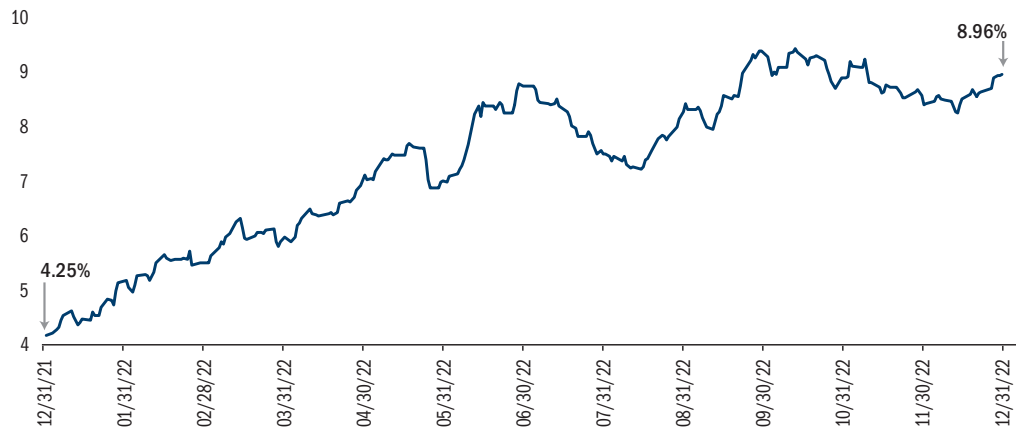
### 1-year high-yield spread-to-worst (bps)



Source: ICE (references the ICE BofA U.S. HY CP Constrained Index)

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### 1-year high-yield yield-to-worst (%)



Source: ICE (references the ICE BofA U.S. HY CP Constrained Index)

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## By industry

- There was notable sector level return dispersion over the year after lower-than-normal dispersion in 2021.
- Energy was the best performing sector for the second consecutive year. Oil (WTI) prices finished the year only 5.5% higher, however, the average spot price over the year was 24% higher than 12/31/21 levels and reached an intra-year high of \$123.70 following Russia's invasion of Ukraine.
- Other notable outperformers included transportation and capital goods with -6.16% and -6.41% total returns, respectively.
- While all ICE Level 3 sectors exhibited negative total returns during the year, the retail, healthcare, media and banking sectors were the notable laggards with returns of -17.19%, -16.27%, -15.84% and -14.71%, respectively.

### Quarterly progression of industry returns (%)

	Q1	Q2	Q3	Q4	YTD
Automotive	-6.20	-8.45	-0.58	4.33	-10.92
Banking	-8.03	-8.76	-4.42	6.34	-14.71
Basic industry	-5.58	-10.23	-0.48	6.84	-9.88
Capital goods	-3.85	-8.37	0.22	5.99	-6.41
Consumer goods	-8.17	-8.39	-0.98	5.23	-12.34
Energy	-2.40	-8.21	1.24	4.24	-5.46
Financial services	-4.95	-10.66	-0.35	4.76	-11.35
Healthcare	-4.42	-12.43	-3.78	3.96	-16.27
Insurance	-3.52	-8.88	0.06	4.57	-8.02
Leisure	-2.76	-10.23	0.45	4.49	-8.37
Media	-4.83	-11.63	-1.06	1.13	-15.84
Real estate	-3.75	-10.69	-1.04	3.61	-11.86
Retail	-5.87	-11.74	-2.03	1.74	-17.19
Services	-3.44	-9.53	0.55	4.55	-8.18
Technology and electronics	-4.50	-9.62	-1.85	2.76	-12.94
Telecommunications	-5.48	-9.99	-1.51	4.26	-12.63
Transportation	-3.60	-7.88	1.69	3.91	-6.16
Utility	-5.23	-7.25	0.12	3.78	-8.67
<b>Total</b>	<b>-4.51</b>	<b>-9.93</b>	<b>-0.68</b>	<b>4.06</b>	<b>-11.10</b>

Source: Columbia Threadneedle Investments based on ICE data. As of 12/31/22.

**Past performance is not a guarantee of future results.**

## Quarterly recaps

### Quarterly progression of high-yield returns (%)

	Q1	Q2	Q3	Q4	2022
<b>BB</b>	-5.25	-8.65	-0.82	4.33	-10.44
<b>B</b>	-3.47	-10.63	-0.61	4.29	-10.58
<b>CCC</b>	-3.92	-13.51	-0.41	1.94	-15.63
<b>Total*</b>	<b>-4.51</b>	<b>-9.93</b>	<b>-0.68</b>	<b>4.06</b>	<b>-11.10</b>

\*Referencing the ICE BofAML U.S. HY Cash Pay Constrained Index

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## First quarter 2022

The ICE BofA U.S. High Yield, Cash Pay, Constrained Index (the Benchmark) returned -4.51% over the first quarter. Higher quality and longer dated issues underperformed. BB, B and CCC rated issues returned -5.25%, -3.47% and -3.92%, respectively. Issues with maturities in the 0–5 year, 5–8 year and >8 year ranges returned -2.24%, -4.55% and -8.47%, respectively. Overall spreads widened 39bps over the quarter.

Sharply higher interest rates, Russia's invasion of Ukraine and associated economic fallout and record outflows drove negative total returns. Significant intra-day volatility at times during the quarter led to challenging trading conditions as broker dealers responded with wider bid/ask spreads and at times carrying little inventory. The invasion of Ukraine helped drive oil (WTI) prices to their highest levels since mid-2014 with the commodity increasing 30% to \$100.28/bbl over the quarter. Prices were briefly as high as \$123.70/bbl on March 8, a level not seen since 2008.

Elevated inflation data and ongoing labor market normalization drove Treasury rates sharply higher in anticipation of Fed tightening, particularly on the short end. To wit, futures markets had priced in three fed funds rate hikes for all of 2022 entering the quarter but added an additional six hikes over the period (for a total of nine). The Treasury curve flattened materially with two-, five- and ten-year rates increasing 160bps, 120bps and 83bps, respectively.

## Second quarter 2022

The ICE BofA U.S. High Yield, Cash Pay, Constrained Index (the Benchmark) returned -9.93% over the second quarter. Higher quality issuers outperformed with BB, B and CCC rated issues returning -8.65%, -10.63% and -13.51%, respectively. Longer dated issues underperformed. Issues with maturities in the 0–5 year, 5–8 year and >8 year ranges returned -7.21%, -11.17% and -12.79%, respectively. Overall spreads ended 215bps wider.

High-yield bonds experienced their third worst quarterly total return on record, surpassed only by the fourth quarter of 2008 and first quarter of 2020. Persistently high inflation data drove an acceleration of Fed tightening expectations and higher U.S. Treasury rates. Spreads also widened sharply driven by heightened equity volatility and mounting investor concerns around slowing growth and the ability for both corporations and consumers to withstand both persistently high inflation and tighter monetary policy.

## Third quarter 2022

The ICE BofA U.S. High Yield, Cash Pay, Constrained Index (the Benchmark) returned -0.68% over the third quarter driven by increased interest rates. Spreads tightened 47bps during the quarter. Lower rated issuers outperformed with BB, B and CCC rated issues returning -0.82%, -0.61% and -0.41%, respectively. Longer dated issues underperformed. Issues with maturities in the 0–5 year, 5–8 year and >8 year ranges returned 0.45%, -1.29% and -2.40%, respectively.

High-yield bonds experienced their third consecutive negative quarterly total return, albeit only modestly negative as compared to the first and second quarters of 2022. Total returns were driven primarily by the sharp increase in interest rates as high-yield spreads were tighter over the period. The quarter was a tale of two halves as the high-yield market experienced its highest monthly total return since April 2009 in July amid lower interest rates, better than feared corporate earnings and expectations for a more moderate pace of Fed tightening. However, total returns were sharply negative over the second half of the quarter as persistently high and broadening inflation data and aggressive Fed commentary reversed market hopes for more accommodative Fed policy, resulting in a steady rise in interest rates. Spreads (referencing the ICE BofA U.S. HY CP Constrained Index) ended the quarter more than 100bps wide of the mid-August tights as fundamental concerns mounted given the aggressive Fed tightening path, lower earnings outlook revisions, elevated equity volatility and softening economic data.

## Fourth quarter 2022

The ICE BofA U.S. High Yield, Cash Pay, Constrained Index (the Benchmark) returned 4.06% during the fourth quarter. Lower rated issuers underperformed materially as BB, B and CCC rated issues returned 4.33%, 4.29% and 1.94%, respectively. Longer dated issues outperformed. Issues with maturities in the 0–5 year, 5–8 year and >8 year ranges returned 3.54%, 4.39% and 4.81%, respectively. Overall spreads ended 43bps tighter.

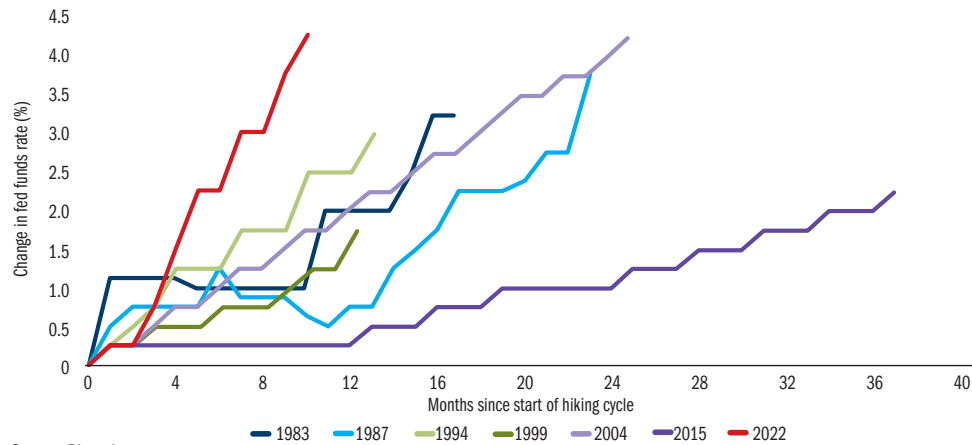
High-yield bonds delivered the first positive quarterly total return of the year in the fourth quarter and the highest quarterly return since Q4 2020. Bond prices advanced given supportive technicals, better than feared third quarter earnings results, easing inflation data and strong equity returns. Despite a strong total return and equity market rally, lower rated issuers underperformed with ongoing concerns around the impact to fundamentals of continuing Fed tightening.

## Notable Items

### Federal Reserve activity

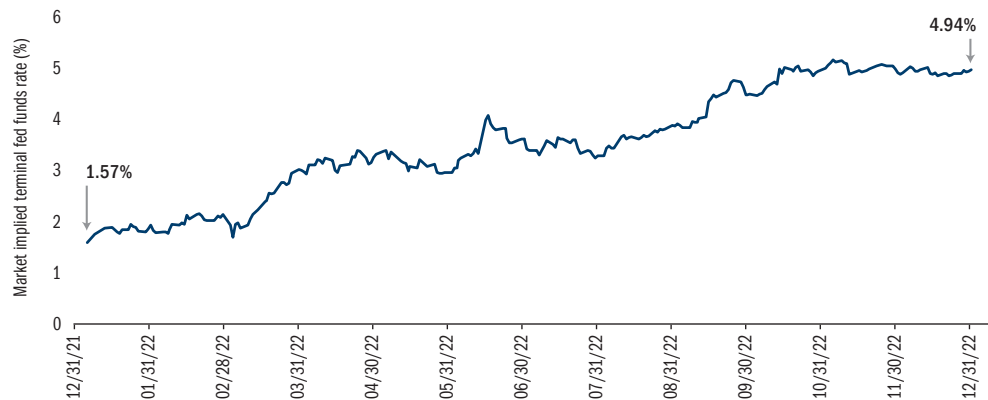
- While not specific to U.S. High Yield, the most aggressive fed funds tightening cycle over the last 40 years was the primary driver of the asset class total return. The chart below highlights the speed and magnitude as compared to previous hiking cycles.
- The fed funds rate increased 425bps over seven hikes, four of which were +75bps. At 12/31/21, futures markets were pricing in three 25bps hikes for the entirety of 2022.
- Further, expectations for the terminal fed funds rate, as estimated by Morgan Stanley, increased from 1.57% to begin the year to just under 5% at year-end 2022.

### Federal Reserve hiking cycles since 1982



Source: Bloomberg

### Morgan Stanley market implied U.S. terminal rate index (%)



Source: Morgan Stanley, Bloomberg

## ETF return summary

- Three of the largest high yield focused ETFs — JNK, HYG and USHY returned -12.20%, -10.99% and -11.19% (net of fees), respectively.
- All three of the largest-high-yield ETFs experienced more premium/discount volatility as compared to prior year. Further, JNK, HYG and USHY saw their premiums increase 0.29%, 0.44% and 0.21% over the course of the year, aiding total returns.

### Quarterly progression of notable high-yield ETF returns (net of fees)

	Q1	Q2	Q3	Q4	2022
SPDR Bloomberg HY (JNK)	-4.88	-10.39	-1.69	4.77	-12.20
iShares iBoxx HY HYG)	-4.73	-9.48	-1.72	5.03	-10.99
iShares Broad USD High Yield (USHY)	-4.84	-9.68	-1.46	4.87	-11.19

Source: Bloomberg, iShares

## Rising stars/fallen angels

- 2022 rising star activity of \$107.2b far outpaced fallen angels at just \$15.4b, providing a notable boost to market technicals.
- Rising star activity was concentrated in healthcare, energy, consumer goods and telecom.

### 2022 rising stars

Ticker	Issuer	Par (\$b)	Sector
KHC	KRAFT HEINZ	17,104	Consumer goods
CNC	CENTENE	15,677	Healthcare
TMUS	T-MOBILE USA	11,786	Telecoms
HCA	HCA INC	10,841	Healthcare
FCX	FREEPORT-MCMORAN	8,342	Metals
NGLS	TARGA RESOURCES PARTNERS	5,997	Energy
DB	DEUTSCHE BANK	5,500	Financials
CDWC	CDW LLC	4,975	Technology
VICI	VICI PROPERTIES	4,750	Gaming
EQT	EQT CORP	4,350	Energy
CQP	CHENIERE ENERGY PARTNERS	4,194	Energy
DCP	DCP MIDSTREAM	3,775	Energy
CIT	CIT GROUP	2,650	Financials
TOL	TOLL BROTHERS	2,000	Real estate
AA	ALCOA	1,750	Metals
RDN	RADIAN GROUP	1,425	Financials
HXL	HEXCEL CORP	700	Capital goods
MTZ	MASTEC INC	600	Capital goods
KORS	MICHAEL KORS	450	Retail
OCINV	OCI NV	324	Chemicals

### 2022 fallen angels

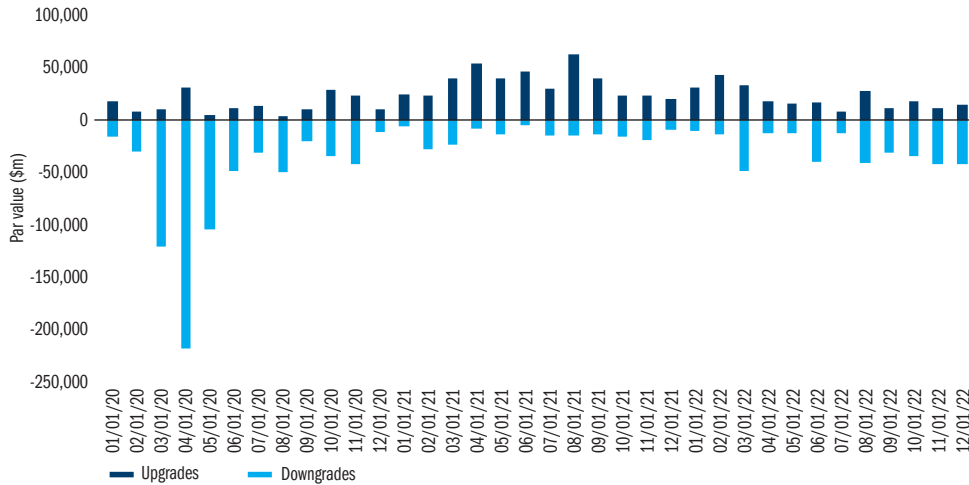
Ticker	Issuer	Par (\$b)	Sector
LVS	LAS VEGAS SANDS	4,000	Gaming
WDC	WESTERN DIGITAL	3,300	Technology
OPI	OFFICE PPTY INCOME TRST	2,050	Financials
LVL	LEVEL 3 FINANCING	1,500	Telecoms
KSS	KOHL'S CORP	1,280	Retail
TOLHOS	TOLEDO HOSPITAL	993	Healthcare
URI	UNITED RENTALS	750	Capital goods
OHNAT	OHIO NAT FINANCIAL SRVS	675	Financials
SCS	STEELCASE	450	Real estate
PACW	PACIFIC WESTERN BANK	400	Financials

Source: Bank of America

## Upgrades/downgrades

While upgrades to investment grade far exceeded downgrades to high yield, rating agency activity within the asset class was more mixed, reversing 2021's trend of net positive activity. By par value, downgrades outpaced upgrades by 1.4:1 ratio.

### ICE BofA U.S. High Yield CP Constrained Index: Upgrade/downgrade face

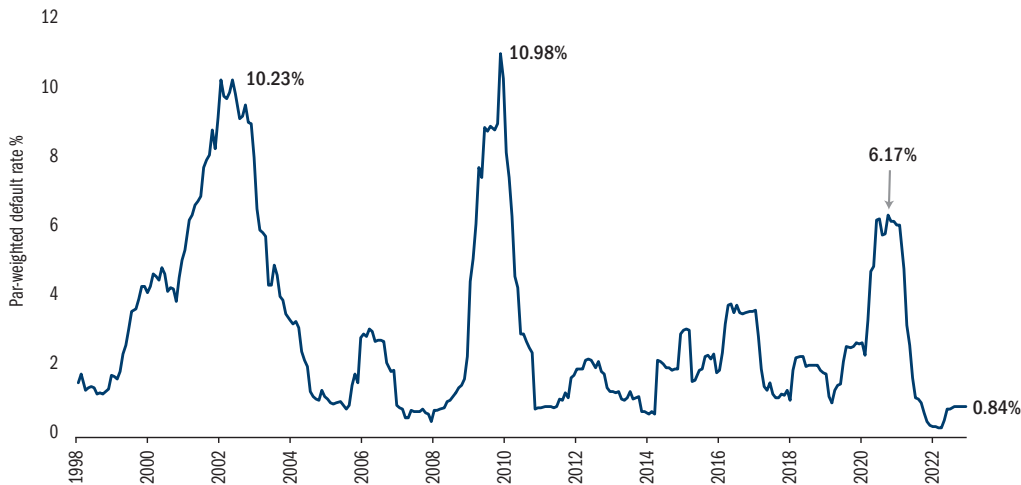


Source: Bank of America

## Defaults, recoveries and distressed exchanges

- Default activity increased from 2021's record low but remained well below long-term averages with the J.P. Morgan par-weighted default rate ending the year at 0.84%
- Per J.P. Morgan data, there were seven defaults on \$12.2b of par during the year.
- Distressed exchange activity increased over the year as well with two sizeable exchanges from Bausch Health (BHCCN) and Diamond Sports Group (DSPORT) as detailed below. Including distressed exchanges in the default rate roughly doubles it to 1.65%.

### J.P. Morgan par-weighted default rate (%)



Source: J.P. Morgan

## 2022 high-yield defaults

Issuer	Ticker	Bonds (par, \$b)	Sector	Date
Endo Pharmaceuticals	ENDP	5,895	Healthcare	07/15/22
Talen Energy	TLN	2,952	Utilities	05/09/22
TPC Group	TPCG	1,083	Chemicals	02/01/22
Altera Infrastructure	TOO	975	Energy	07/15/22
Ruby Pipeline	RPLL	475	Energy	03/31/22
Revlon, Inc.	REV	431	Consumer products	06/15/22
Service King	SVKING	375	Automotive	04/01/22

Source: J.P. Morgan.

## 2022 high-yield distressed exchanges

Issuer	Ticker	Bonds (par, \$b)	Sector	Date
Bausch Health	BHCCN	5,595	Healthcare	09/27/22
Diamond Sports Group	DSPORT	3,039	Media	03/14/22
Seagate	STX	975	Technology	11/22/22
Geo Group	GEO	575	Services	08/19/22
Bombardier	BBDBCN	375	Capital goods	06/27/22
Diebold Nixdorf	DBD	327	Technology	12/27/22
Envision Healthcare	EVHC	200	Healthcare	04/29/22
Rite Aid	RAD	200	Retail	06/27/22
Bed Bath & Beyond	BBBY	155	Retail	11/14/22

Source: J.P. Morgan.

- The average recovery rate in 2022 remained above long-term averages at 55%, with an admittedly small sample set.

## Par-weighted default and recovery rates (%)

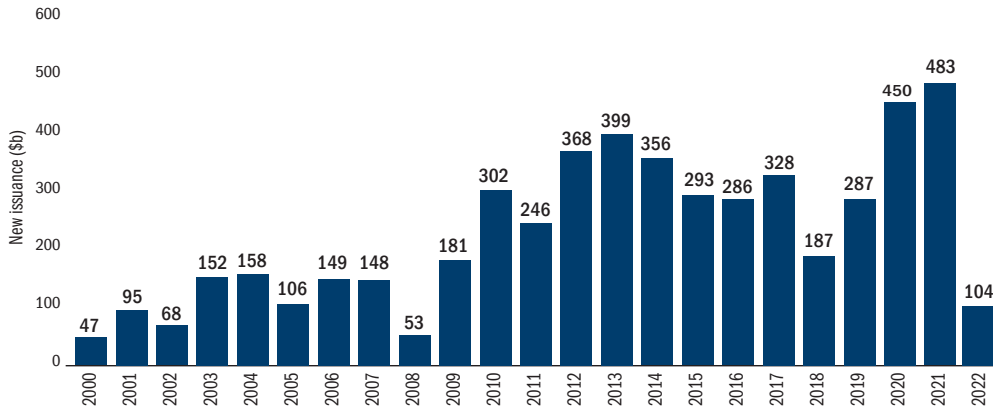
	Defaults	Recovery
Utilities	7.6	82.9
Healthcare	4.3	54.4
Chemicals	3.1	48.8
Consumer Products	1.4	5.0
Energy	0.8	47.6
Automotive	0.5	100.0
<b>Total</b>	<b>0.84</b>	<b>55.3</b>

Source: J.P. Morgan.

## New issues

- Following the most active year on record, new issuance (according to J.P. Morgan) declined 78% y/y in 2022 and was the lowest amount of new issuance since 2008 as higher interest rates significantly reduced opportunistic refinancing activity.
- There was no deterioration in issuance by credit quality. Issuance by rating for the year was 46%, 42% and 12% for BB, B and CCC rated issuers, respectively, with CCC issuance in-line with the rating category's index share.
- Following a record high 128 debut issuers to the U.S. HY market in 2021, 2022 saw a record low 27 debut issuers.

Annual high-yield bond new issue volume (\$b)



Source: J.P. Morgan.

High-yield new issuance: Percent of total issuance (%)

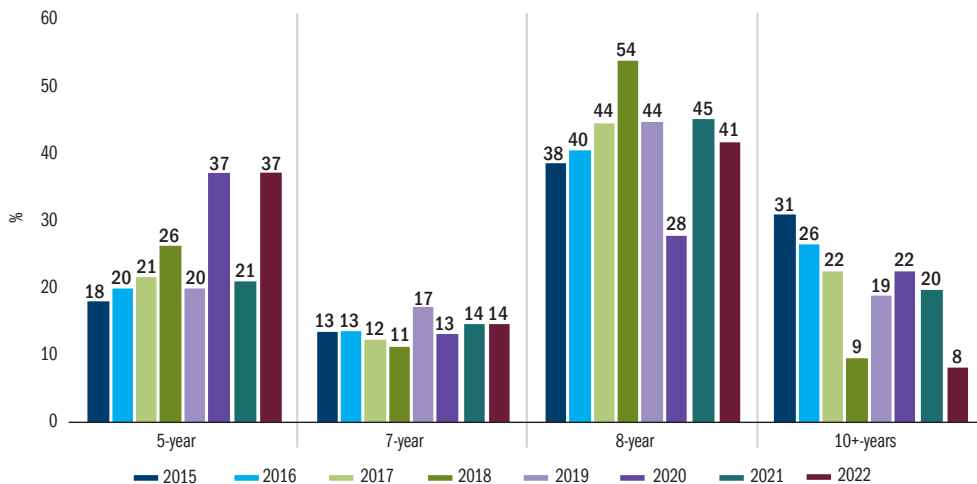
Rating	Q1	Q2	Q3	Q4	2022
Split BBB	0.0	0.0	0.0	2.1	0.3
BB	27.9	53.0	52.7	31.9	38.7
Split BB	5.1	3.3	1.9	24.3	7.0
B	44.1	26.4	45.4	38.4	39.4
Split B	4.7	0.0	0.0	0.0	2.2
CCC	18.2	17.3	0.0	1.8	12.2
NR	0.0	0.0	0.0	1.5	0.2
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Use of proceeds	Q1	Q2	Q3	Q4	2022
Acquisition finance	24.9	28.3	38.1	27.5	28.4
General corporate	26.2	18.1	11.1	27.8	21.9
Refinancing	48.9	53.6	50.8	44.7	49.7
Dividend/other	0.0	0.0	0.0	0.0	0.0
<b>Total</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>	<b>100.0</b>

Source: J.P. Morgan.

- The market saw a notable increase in issuance of five-year maturity paper, primarily sourced from the 10+ year bucket, as issuers sought to avoid locking in sharply higher yields for longer maturities.

High-yield issuance by tenor (%)

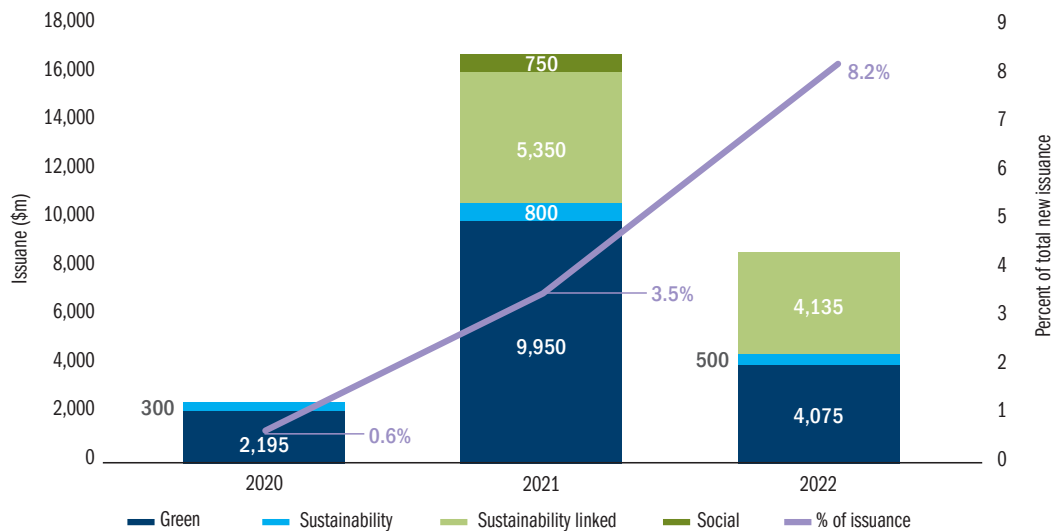


Source: ICE (referencing the ICE BofA U.S. HY Index).

## ESG issuance

- Green, sustainability and sustainability-linked, and social bond issuance continued to increase as a percent of market activity with proceeds largely concentrated in green and sustainability-linked issuance.
- Such bonds remain a small portion of the U.S. high-yield market with fewer than 40 issues currently included in the ICE BofA U.S. HY indices, accounting for roughly 2% of overall market value.
- For background, these categories are defined as follows:
  - A **green bond** is categorized as such if the net proceeds of the instrument will be applied toward green projects or activities that promote climate change mitigation or adaptation, or other environmental sustainability purposes.
  - A **sustainability bond** indicates the proceeds will be applied toward projects that are dedicated to environmentally sustainable outcomes (a combination of green and social activities as eligible projects).
  - A **social bond** indicates the proceeds will be applied toward projects that promote improved social welfare and positive social impact directly for underprivileged, low income, marginalized, excluded or disadvantaged populations.
  - A **sustainability-linked bond (SLB)** indicates the issuer is committing explicitly (including in the bond documentation) to future improvements in corporate level sustainability outcome(s) within a predefined timeline. Unlike green, sustainability or social bonds, SLB proceeds may be used for general purposes.

### Green, sustainability and social U.S. high-yield issuance

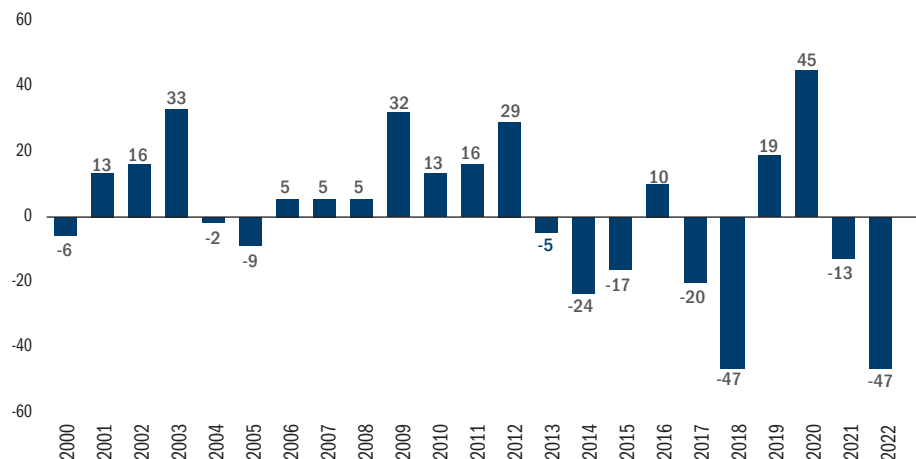


Source: Bloomberg, ICE.

## High-yield flows

- Retail fund outflows totaled \$47b for the year, making 2022 the largest calendar year outflow on record, just ahead of 2018's \$46.9b outflow.
- As detailed in the sources/uses table below, the worst flows were concentrated in the first half of the year with a notable reversal in Q4.

### Annual high-yield bond fund flows (\$b)



Source: J.P. Morgan.

## Index changes

- The market value of the high-yield asset class decreased 25% over the year to \$1.2t with a 16% price decline and \$92b of net rising stars the primary drivers.
- The issuer count decreased 5%, declining a net 49 issuers (measuring unique tickers) and now totals 905.
  - Referencing the ICE BofA U.S. HY index year-end data, the HY issuer count peaked in 2014 at 1,087 issuers.
- Natural index turnover declined considerably from 2020/2021 levels.
  - The ICE BofA U.S. HY Index began the year with approximately \$1.52t of par value and ended with \$1.36t.
  - Throughout the year the market received \$107b of new issuance and \$15b of fallen angels. Combined, these two represent approximately 8% of beginning par value, as compared to 35% in 2021.
  - These contributions were offset by approximately \$306b of calls/tenders/maturities/rising stars/defaults.
    - Calls/tenders/maturities – \$187b, rising stars – \$107b, defaults – \$12b

### High-yield market value (\$b)



Source: ICE (references the ICE BofA U.S. HY Index).

## U.S. high-yield market sources/uses of cash

	Q1'22	Q2'22	Q3'22	Q4'22	YTD
Calls/tenders/maturities	55	61	34	38	187
Rising stars	46	16	19	26	107
Coupon payments	28	25	25	24	101
Retail fund flows	-27	-18	-9	7	-47
<b>Total sources</b>	<b>101</b>	<b>85</b>	<b>69</b>	<b>94</b>	<b>349</b>

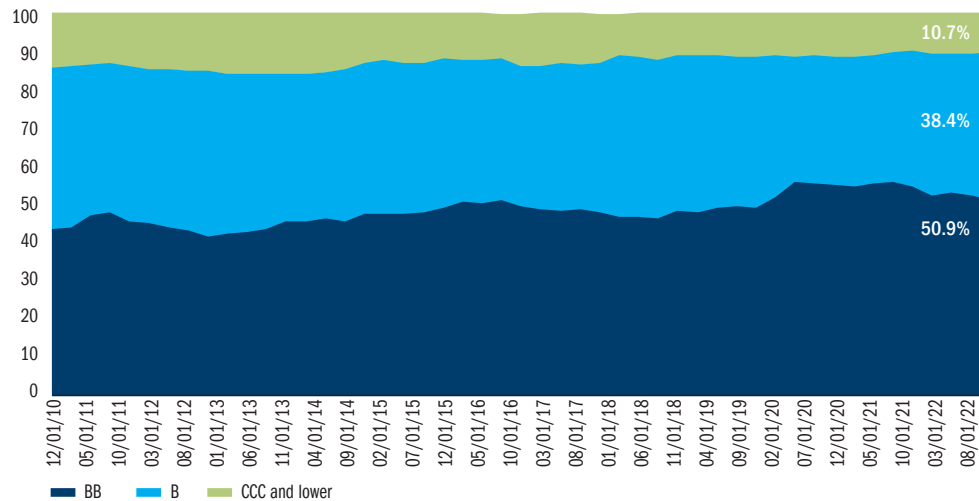
  

	Q1'22	Q2'22	Q3'22	Q4'22	YTD
Gross issuance	47	25	19	17	107
Fallen angels	0	5	2	9	15
<b>Total uses</b>	<b>47</b>	<b>29</b>	<b>21</b>	<b>25</b>	<b>122</b>

Source: Bank of America, J.P. Morgan

- The rating allocation of the high-yield market was relatively stable over the year. The BB portion of the ICE BofA U.S. HY CP Constrained Index declined to 51% from 54% to begin the year with significant net rising star activity.
- The CCC portion of the market increased to 10.7% from 10.1% over the year.

## Rating allocation (%)



Source: ICE (references the ICE BofA U.S. HY CP Constrained Index).

There were a few notable industry weight changes over the year:

- Healthcare saw the largest change in weight with nearly 200bps of market value upgraded to investment grade over the year from Centene (CNC, ~100bps) and HCA, Inc (HCA, ~86bps).
- Similarly, the energy sector saw four sizeable rising stars as well: Targa Resources (NGLS, ~44bps), DCP Midstream (DCP, ~35bps), EQT Corp (EQT, ~31bps) and Cheniere Energy Partners (CQP, ~28bps). Occidental Petroleum (OXY) also drove the reduction with tender activity.
- Consumer goods declined entirely due to the upgrade to investment grade of Kraft Heinz (KHC, ~133bps) following a two-year stint in high yield.
- Leisure increased with the downgrade to high yield of Las Vegas Sands (LVS, ~31bps) and net issuance from cruise line operators Royal Caribbean (RCL, ~27bps) and Carnival Corp (CCL, ~26bps).
- Technology and electronics also increased with a large new issue from Tibco Software (TIBX, ~29bps) and fallen angel Western Digital (WDC, ~25bps)
- Lastly, net new issuance from Charter Communications (CHTR, ~34bps) was the largest individual driver of the media sector increase.

### Industry changes

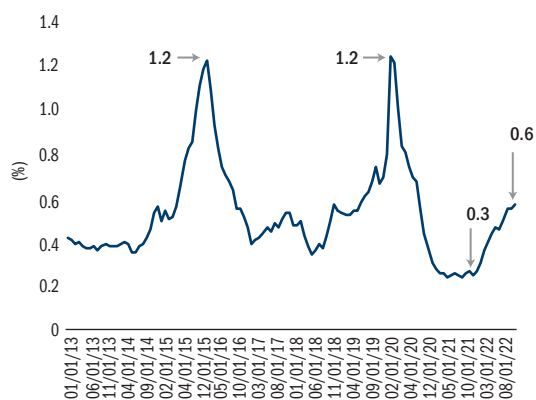
Industry	Weight %			Industry	Weight %		
	12/31/21	12/31/22	Quintile change		12/31/21	12/31/22	Quintile change
Automotive	3.80	3.43	↘ -0.37	Leisure	6.40	7.86	↗ 1.45
Banking	1.37	0.88	↘ -0.49	Media	8.36	9.25	↗ 0.89
Basic industry	7.94	7.93	↔ -0.02	Real estate	4.21	4.04	↘ -0.16
Capital goods	5.96	6.45	↗ 0.48	Retail	5.27	5.38	↗ 0.12
Consumer goods	4.81	3.85	↘ -0.97	Services	6.20	6.54	↗ 0.34
Energy	13.41	12.32	↘ -1.09	Technology & electronics	4.21	5.38	↗ 1.17
Financial services	4.94	4.99	↗ 0.05	Telecommunications	7.08	6.56	↘ -0.51
Healthcare	9.97	7.83	↘ -2.14	Transportation	1.83	2.29	↗ 0.47
Insurance	1.38	1.57	↗ 0.19	Utility	2.87	3.08	↗ 0.21

Source: ICE (references the ICE BofA U.S. HY CP Constrained Index).

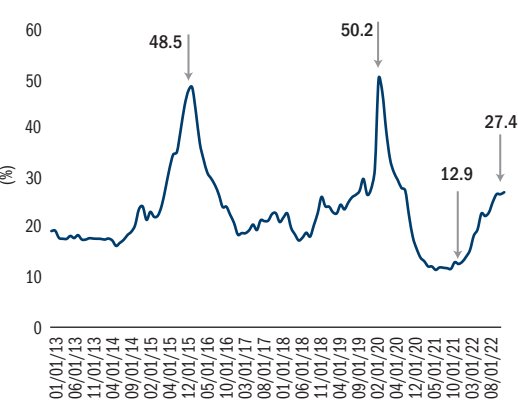
### Spread dispersion

- Dispersion increased over the year following historically low levels in 2021.
- The “tail” as defined by the highest yielding 300bps of market value yielded just over 27% as of 12/31/22, up from 13% at year-end 2021.

Tail contribution to YTW (%)



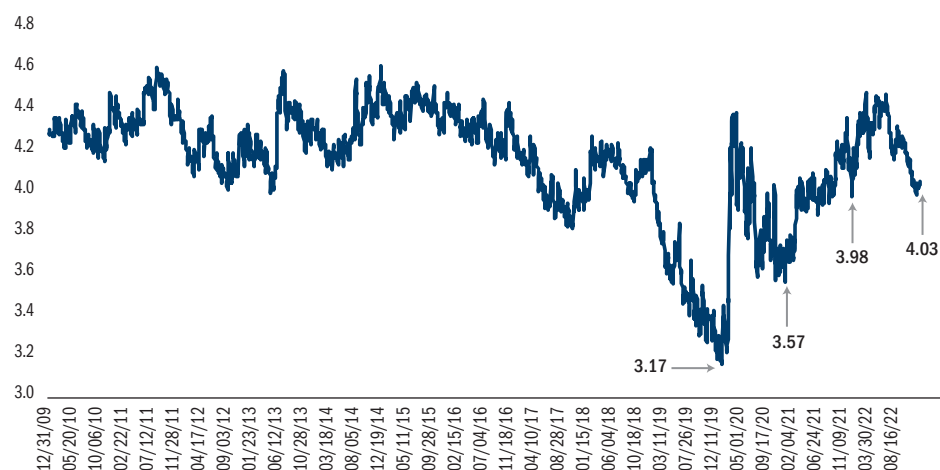
Tail YTW (%)



Source: ICE (references the ICE BofA U.S. HY CP Constrained Index).

The effective duration of the high-yield market was effectively unchanged over the year at 4.03 years, ending the period in line with five- and 10-year averages although it was as high as 4.5 years during Q2.

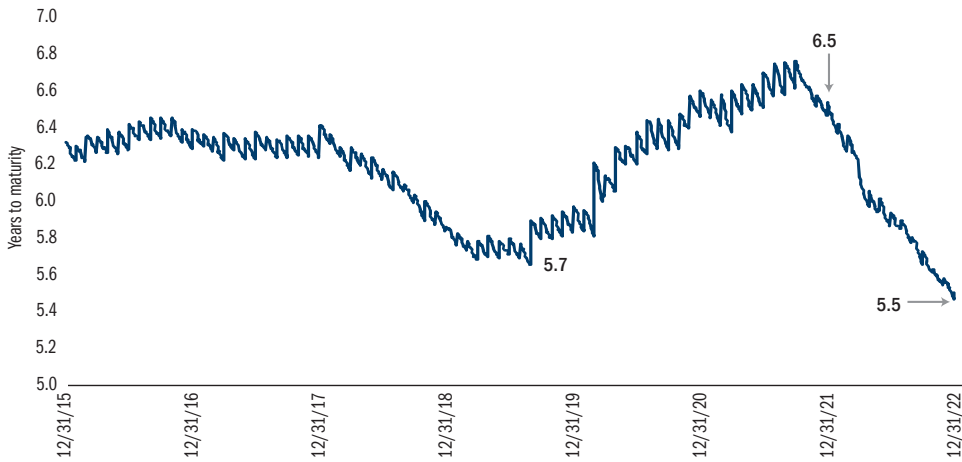
Effective duration (years)



Source: ICE (references the ICE BofA U.S. HY CP Constrained Index).

- With the increase in shorter dated issuance, lack of opportunistic refinancing activity and the tendency for rising stars to have longer maturities, the market's average years to maturity declined a full year to 5.5 years, the lowest in index history.

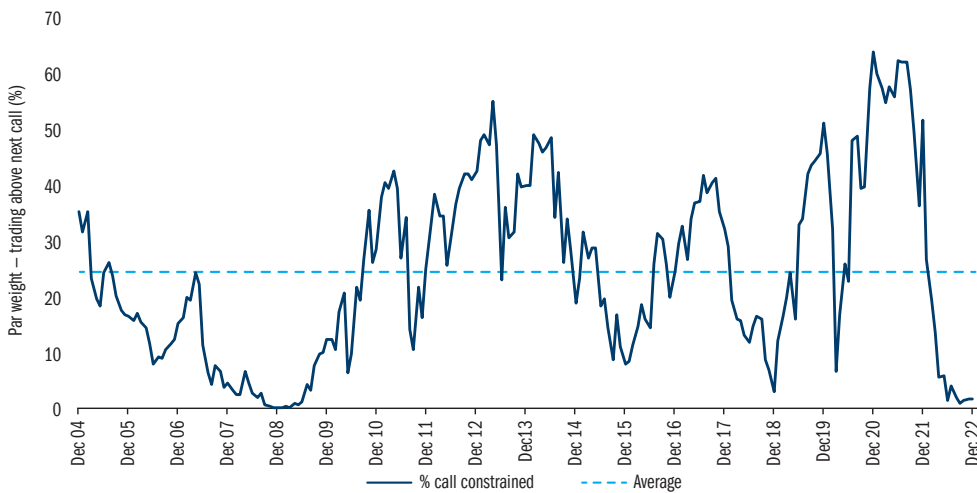
**Years to maturity**



Source: ICE (references the ICE BofA U.S. HY CP Constrained Index).

The percentage of total bonds trading above their next call price collapsed to just 2% given the significant price decline. The average index price on 12/31/22 was 85.99.

**Par weighted % trading above next call**



Source: ICE (references the ICE BofA U.S. HY CP Constrained Index).

## Bank loans

### Leveraged loan return summary (%)\*

	BL	BB	B	CCC
<b>2022 total return</b>	-1.06	2.80	-0.90	-13.26

### By industry (%)

Top performers		Bottom performers	
Energy	7.4	Consumer products	-4.2
Utilities	5.2	Healthcare	-2.7
Transportation	3.9	Metals and mining	-2.5
Financial	2.7	Telecommunications	-2.5
Paper and packaging	1.8	Retail	-1.7

\*Referencing the Credit Suisse Leveraged Loan Index.

**Past performance is not a guarantee of future results.**

- The Credit Suisse Leveraged Loan index returned -1.06%, significantly outperforming the ICE BofA U.S. HY CP Constrained Index and the rest of fixed income.
- While loans outperformed most asset classes, 2022 was the worst total return for the asset class since 2008 and just the third negative calendar year total return ever.
- There was significant dispersion by rating quality within the asset class with BB, B and CCC rated loans returned 2.80%, -0.90% and -13.26%, respectively.
- There was also notable dispersion between the top and bottom performing sectors as detailed above.
- The comparability of loans versus high-yield bonds remains lower than in the past.
  - The loan market is lower rated from a credit perspective, there are substantial mismatches in industry composition (energy, technology and services being meaningful examples), and the overlap of issuers is only about 25% by issuers but closer to 35% by market value.
  - Strategist estimates from J.P. Morgan, Morgan Stanley and Deutsche Bank put loan asset class leverage 0.75x–1x higher than high-yield bonds while the same estimates have interest coverage approximately 1x lower for loans.

## Investment-grade bonds/other

### Other fixed-income 2022 returns (%)

<b>Investment grade*</b>	-15.49	<b>10-year Treasury**</b>	-16.69
<b>AAA</b>	-18.99	<b>Bloomberg U.S. Agg.</b>	-13.01
<b>AA</b>	-16.04	<b>Bloomberg Global Agg.</b>	-16.25
<b>A</b>	-14.73	<b>JPM EM Corporate</b>	-13.82
<b>BBB</b>	-15.90	<b>ICE BofAML Euro HY Const.</b>	-11.42

\* Referencing the ICE BofAML U.S. Corporate Index.

\*\* FTSE 10-year Treasury Index.

**Past performance is not a guarantee of future results.**

- Investment-grade bonds returned -15.49%, the worst year on record for the asset class by a factor of 3x. Previously, the worst year on record was 1975 with a return of -4.94%.
- European currency high yield (referencing the ICE BofA European Currency HY Constrained Index, HPCO) performed generally in-line its U.S. high-yield counterpart.

**Index descriptions:**

The **ICE BofA U.S. HY Cash Pay Constrained Index** is an unmanaged index that measures the performance of high-yield bonds.

The **ICE BofA Merrill Lynch U.S. High Yield Constrained Bond Index** is a commonly used benchmark index for high-yield corporate bonds.

The **ICE BofA U.S. HY Energy E&P Index** tracks the performance of the U.S. dollar-denominated, below-investment-grade, corporate debt publicly issued by energy companies in the U.S. domestic market.

The **Bloomberg U.S. High Yield 2% Issuer Constrained Index** is an unmanaged index composed of U.S. high-yield, fixed-rate corporate bonds. Index weights for each issuer are capped at 2%.

The **BofA Merrill Lynch 10-Year T-Bill Index** is an unmanaged market index of U.S. Treasury securities that assumes reinvestment of all income.

The **ICE BofA Merrill Lynch U.S. High Yield Constrained Bond Index** is a commonly used benchmark index for high-yield corporate bonds.

The **Bloomberg Treasury Index** tracks the total return of U.S. Treasury notes.

The **Credit Suisse Leveraged Loan Index** provides broad and comprehensive total return metrics of the universe of syndicated term loans.

The **Bloomberg U.S. Aggregate Corporate Bond Index** consists of publicly issued, fixed-rate, nonconvertible, investment-grade debt securities.

The **Bloomberg Global Aggregate Bond Index** is an unmanaged, broad-based, market-capitalization-weighted index that is designed to measure the broad global markets for U.S. and non-U.S. corporate, government, governmental agency, supranational, mortgage-backed and asset-backed fixed-income securities.

The **JPM EM Corporate Debt Index** tracks total returns for traded external corporate debt instruments in emerging markets.

The **ICE BofA ML Euro HY Constrained Index** tracks the performance of EUR and GBP denominated below investment-grade corporate debt publicly issued in the eurobond, sterling domestic or euro domestic markets.

The **ICE BofA ML U.S. Corporate Index** measures market performance of USD-denominated investment-grade corporate debt publicly issued in the U.S. domestic market.

It is not possible to invest directly in an index.

**Non-investment-grade (high-yield or junk) securities present greater price volatility and more risk to principal and income than higher rated securities.**

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