

Monthly HG Market Review

Oct '23: rates shock + geopolitics

Oct '23: rates shock + geopolitics

Risk assets underperformed in October on a worsening rates shock and rising geopolitical risks following the October 7 attack in Israel. US data was again very strong for September (see <u>US Watch: Another month, another beat in retail sales</u>), while 3Q advanced US GDP estimate came in at blistering 4.9% (see <u>US Watch: Advance estimate 30 US GDP: how long can this strength last?</u>). As a result, the US Treasury yield curve bear steepened further in October, while interest rate volatility remained elevated.

Higher rates, lower stocks

The continuation of the rates shock meant that all major asset classes were in the red during October. Stocks underperformed (-2.10%), followed by IG corporates (-1.82%) on both wider spreads and higher rates, HY corporates (-1.24%) benefitting from lower duration and Treasuries (-1.32%). The little duration exposure allowed levered loans to outperform in October (-0.02%).

ICE BofA IG index spread 6bps wider in October

The ICE BofA US IG index spread widened 6bps in October for an excess return of -34bps. The September monthly rebalancing added 1bps to the index spread, bringing it to 132bps. October top performing sectors in terms of excess returns were Oil & Gas (+2bps), Automobiles on strong earnings and the end of the UAW strike (-9bps) and the defensive Retail-Discounters (-10bps). Underperforming sectors were the long duration Railroad (-64bps), and rate-sensitive Commercial & Consumer Finance (-53bps) and REITs (-52bps).

Outlook: more resilience

We look for IG spreads to remain resilient in November. The jump in rates and rates volatility was the main driver of wider spreads in October, but rates are now stabilizing around 5% on the 10yr Treasury, which should instead be supportive. On the other hand, the spike in volatility in October was partially offset by a big drop in IG supply. Now with more stability in rates we look for the pace of issuance to accelerate in November. This combination of stronger demand and but also higher supply should allow IG spreads to remain range bound. Longer term we look for rates volatility to decline from the currently elevated levels, which should allow IG spreads to re-test the 2023 tights of about 120bps on ICE BofA index, potentially in December.

Supply

We look for November IG supply in \$80-\$90bn range.

Fund flows

Net inflows to US HG funds & ETFs totaled -0.28% of assets in October (based only on funds reporting weekly), down from -0.08% of assets in September (based on all funds).

01 November 2023

High Grade Credit Strategy United States

Yuri Seliger

Credit Strategist BofAS +1 646 855 7209 yuri.seliger@bofa.com

Jean-Tiago Hamm Credit Strategist BofAS

jean-tiago.hamm@bofa.com

Srini Talagadadeevi Credit Strategist BofAS sreenivasa.rao@bofa.com

BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision.

Refer to important disclosures on page 14 to 16.

Oct '23: rates shock + geopolitics

Risk assets underperformed in October on a worsening rates shock and rising geopolitical risks following the October 7 attack in Israel. US data was again very strong for September (see <u>US Watch: Another month, another beat in retail sales</u>), while 3Q advanced US GDP estimate came in at blistering 4.9% (see <u>US Watch: Advance estimate 3O US GDP: how long can this strength last?</u>). As a result the US Treasury yield curve bear steepened further in October, while interest rate volatility remained elevated (Exhibit 1, Exhibit 2).

Higher rates, lower stocks

The continuation of the rates shock meant that all major asset classes were in the red During October. Stocks underperformed (-2.10%), followed by IG corporates (-1.82%) on both wider spreads and higher rates, HY corporates (-1.24%) benefitting from lower duration and Treasuries (-1.32%). The little duration exposure allowed levered loans to outperform in October (-0.02%).

ICE BofA IG index spread 6bps wider in October

The ICE BofA US IG index spread widened 6bps in October for an excess return of - 34bps. The September monthly rebalancing added 1bps to the index spread, bringing it to 132bps. October top performing sectors in terms of excess returns were Oil & Gas (+2bps), Automobiles on strong earnings and the end of the UAW strike (-9bps) and the defensive Retail-Discounters (-10bps). Underperforming sectors were the long duration Railroad (-64bps), and rate-sensitive Commercial & Consumer Finance (-53bps) and REITs (-52bps).

Exhibit 1: Treasury yield curve bear steepened in August 2yr Treasury yield declined 1bps in August, while. 10yr and 30yr yields increased 15 and 20bps, respectively.

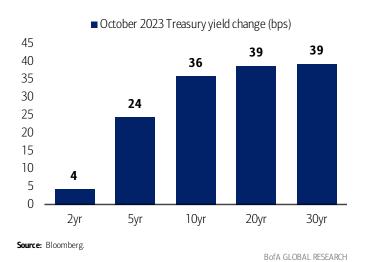


Exhibit 2: Interest rate volatility remained elevated in October 3M MOVE index averaged 128 in October, up form 113 average in September.



Source: Bloomberg

BofA GLOBAL RESEARCH

Outlook: more resilience

We look for IG spreads to remain resilient in November. The jump in rates and rates volatility was the main driver of wider spreads in October, but rates are now stabilizing around 5% on the 10yr Treasury, which should instead be supportive. On the other hand, the spike in volatility in October was partially offset by a big drop in IG supply. Now with more stability in rates we look for the pace of issuance to accelerate in November. This combination of stronger demand and but also higher supply should allow IG spreads to remain range bound. Longer term we look for rates volatility to decline from the

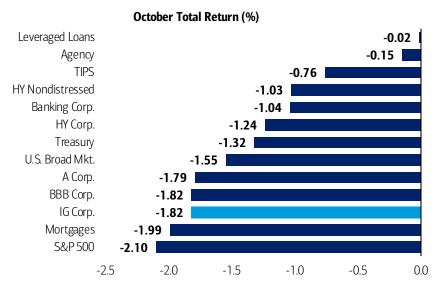


currently elevated levels, which should allow IG spreads to re-test the 2023 tights of about 120bps on ICE BofA index, potentially in December.

October 2023 Returns

Exhibit 3: Broad Asset Class Total Return Performance, October 2023

Monthly total return for broad asset classes in October 2023. Stocks underperformed the most (-2.10%).

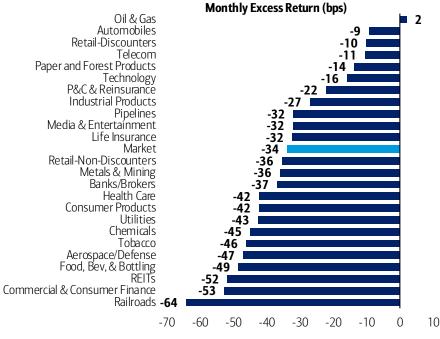


Source: ICE Data Indices, LLC, Bloomberg

BofA GLOBAL RESEARCH

Exhibit 4: High grade sector excess return, October 2023

Market excess return: -34bps. Oil and gas (+2bps) was the top performer, Railroads (-64bps) was the bottom performer.



 $\textbf{Source:} \ \ \mathsf{BofA} \ \mathsf{Global} \ \mathsf{Research}, \ \mathsf{ICE} \ \mathsf{Data} \ \mathsf{Indices}, \ \mathsf{LLC}$



Supply

Previously published here

<u>Situation Room: IG November supply: recovering from the rate shock 30</u> October 2023

IG November supply: recovering from the rate shock

We look for November IG corporate supply in \$80–\$90bn range. That would be similar to \$79bn priced so far in October, but about \$20bn below the \$108bn average volume for the month of November (Exhibit 5).

October vs November

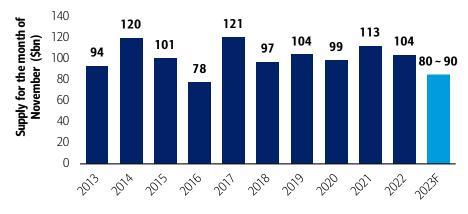
On net we see reasons for issuance to remain below typical levels in November, but not as much as it did in October. We estimate that issuance over the past four weeks came in \$40bn below the typical pace – the same lag as in March during the peak of US regional banks stress (Exhibit 8, Exhibit 9). Market conditions are improving, and we look for the lag to shrink to \$20bn in November.

Drivers of supply in November

We look for a smaller lag between 2023 and typical supply volumes in November due to easing rates shock and a potential deal backlog. First, 10yr Treasury yield jumped 76bps since August, clearing weighing on borrowing costs. However, after peaking at 4.99% on October 19 the yield has stabilized a bit and is currently down 12bps from the cyclical highs (Exhibit 10). Second, rates vol has also increased materially since early September, but similarly to rates it has stabilized at the higher level in October (Exhibit 11). Third, the unusually low levels of issuance in October potentially created a backlog of supply for November.

Exhibit 5: We look US IG supply to remain subdued in November

We look for November IG supply in \$80-\$90bn range, below \$108bn average for the prior five years ex. 2020.

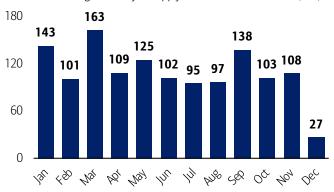


Source: BofA Global Research

Exhibit 6: IG supply averaged \$103bn for the month of October

Supply for the calendar month of October tends to be relatively light.

■ Average monthly IG supply: 2017-2019, 2021-2022 (\$bn)

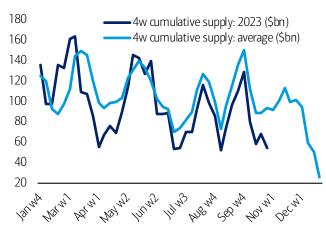


Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 8: October supply has lagged the typical levels

The four-week pace of issuance diverged from the typical levels by \$40bn by the end of October.

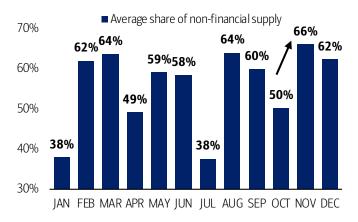


Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 7: Supply in Nov tends to be concentrated in non-financials

On average 66% of supply for the month of November is from non-financial issuers



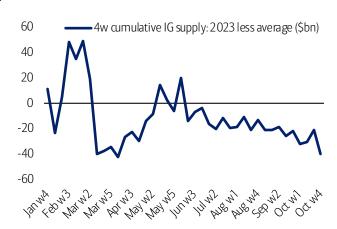
Note: the average is for the period 2017-2019, 2021-2022.

Source: BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 9: Supply lagging in October as much as it did post SVB

The 4-week cumulative supply lag between year 2023 and the average levels was as high in October as it was post SVB in March.



Source: BofA Global Research



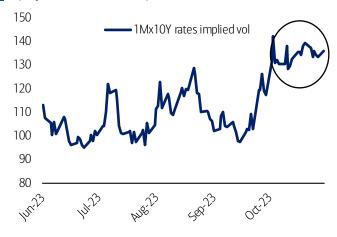
Exhibit 10: 10yr Treasury yields stabilized a bit in late October

10yr Treasury yields are currently down 12bps from the 4.99% cyclical high.



Exhibit 11: Rates vol stabilized at a higher level in October

1Mx10Y rates vol has remained little changed since early October after rising rapidly in the second half of September.



Source: Bloomberg

BofA GLOBAL RESEARCH

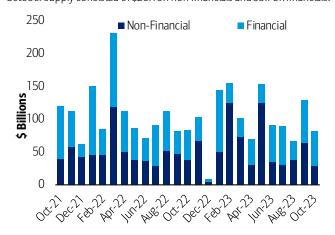
October supply review

IG gross supply totaled to 81.8bn in October, lower than \$128.5bn in Sep '23 and \$83.2bn in Oct '22. October 2023 supply consisted of \$53.7bn financials and \$28.1bn non-financial issuer bonds.

IG new issue performance improved in October. The average new issue concession decreased to 3.6bps in October from 9.4bps in September, while the average break performance was little changed at 2.8bps in October from 2.9bps tighter in September. As a result, the overall performance of new issues, which we define as new issue concession plus break performance, improved to +0.8bps in October from +6.5bps in September (Exhibit 14).

Exhibit 12: Monthly US IG supply volume

October supply consisted of \$28.1bn non-financials and 53.7bn financials.

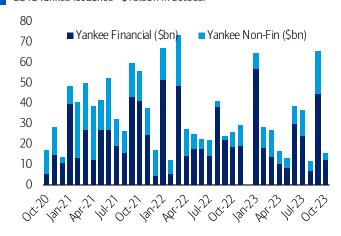


Source: Bloomberg, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 13: US IG Yankee supply

US IG Yankee issuance = \$15.5bn in October

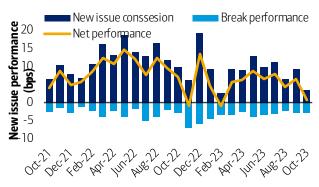


Source: Bloomberg, BofA Global Research



Exhibit 14: Monthly new issue supply performance

US IG new issue performance tightened in October.

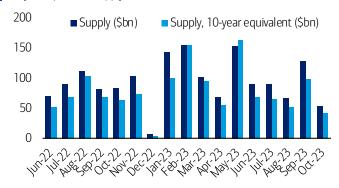


Source: Bloomberg, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 15: Monthly gross and 10-year equivalent supply volumes

10-year equivalent supply = \$42.2bnin October



BofA Global Research, Bloomberg

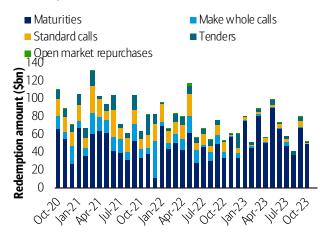
BofA GLOBAL RESEARCH

Redemptions

Redemptions totaled \$51.6bn in October, including \$49.2bn of contractual maturities and \$2.4bn of additional redemptions (Exhibit 16). Gross supply less all redemptions increased to +\$30.2bn in Oct from \$48.4bn in Sep (Exhibit 17).

Exhibit 16: US IG maturities and additional redemptions

US IG redemptions = \$51.6bn in October.



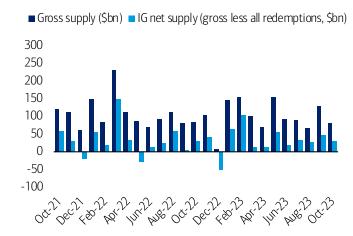
Note: Detailed redemption amounts data by type is grouped by effective dates.

Source: Bloomberg, ICE Data Indices, LLC, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 17: US IG gross and net supply

US IG gross supply = \$81.8bn and net supply = \$30.2bn in Oct.



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Exhibit 18: US IG gross supply and redemption

Exhibit shows IG gross supply, maturities, additional redemptions and net supply by month

Month	Gross supply (\$bn)	Maturities	Make whole calls	Standard calls	Tenders	Open market repurchases	Total redemptions	IG net supply (gross less all redemptions, \$bn)	Coupons
Jan-18	133.3	72.4	4.1	5.3	6.9	0.0	88.7	44.6	24.4
Feb-18	98.4	46.4	2.0	5.8	4.1	0.0	58.2	40.1	22.0
Mar-18	125.2	65.6	15.4	4.2	14.1	1.6	100.8	24.4	28.4
Apr-18	124.3	74.3	20.0	1.7	1.7	0.0	97.7	26.5	22.7
May-18	127.6	80.6	3.5	18.3	3.1	0.0	105.5	22.1	24.9
Jun-18	120.4	43.9	10.9	9.3	5.7	1.8	71.6	48.8	22.5
Jul-18	67.3	47.9	6.3	5.9	0.2	0.2	60.5	6.8	24.4
Aug-18	91.8	36.3	2.9	2.8	1.3	0.3	43.6	48.2	22.0
Sep-18	146.2	29.0	6.0	4.1	8.9	1.8	49.7	96.4	28.4
Oct-18	96.2	29.7	7.4	4.0	3.8	0.4	45.4	50.7	22.7
Nov-18	97.4	52.6	6.8	1.4	3.9	0.2	64.8	32.5	24.9
Dec-18	9.1	31.2	16.9	3.5	12.8	0.8	65.1	-56.0	22.5
Jan-19	118.3	72.6	1.6	2.0	3.2	0.0	79.4	38.9	25.5

Exhibit 18: US IG gross supply and redemptionExhibit shows IG gross supply, maturities, additional redemptions and net supply by month

Month	Gross supply (\$bn)	Maturities	Make whole calls	Standard calls	Tenders	Open market repurchases	Total redemptions	IG net supply (gross less all redemptions, \$bn)	Coupons
Feb-19	106.6	49.7	3.2	4.9	21.5	0.0	79.3	27.3	22.4
Mar-19	121.7	65.8	16.1	5.0	7.1	0.2	94.2	27.5	31.8
Apr-19	95.9	52.3	5.8	3.5	5.6	0.6	67.8	28.2	25.1
May-19	110.8	66.8	6.3	3.8	3.6	0.0	80.5	30.3	27.3
Jun-19	85.5	42.9	5.4	4.2	6.6	0.2	59.2	26.3	24.5
Jul-19	101.4	44.3	5.2	1.1	6.6	0.0	57.2	44.2	25.5
Aug-19	84.9	42.6	5.4	2.8	12.3	0.6	63.6	21.3	22.4
Sep-19	166.5	72.9	15.4	10.9	14.2	0.3	113.8	52.7	31.8
Oct-19	85.2	55.1	19.2	6.3	12.7	0.0	93.2	-8.0	25.1
Nov-19	104.2	39.2	8.5	9.1	7.6	0.4	64.9	39.3	27.3
Dec-19	24.0	26.6	18.0	26.6	11.2	0.0	82.4	-58.4	24.5
Jan-20	152.3	65.6	7.9	7.3	2.3	0.0	83.0	69.3	27.2
Feb-20	96.7	36.6	6.9	2.9	2.7	0.0	49.0	47.7	23.0
Mar-20	261.4	73.2	22.4	16.0	14.2	0.4	126.2	135.2	32.5
Apr-20	297.4	36.7	2.2	5.6	11.2	0.0	55.6	241.7	26.1
May-20	261.9	59.2	7.7	17.8	11.9	0.0	96.6	165.4	27.5
Jun-20	176.8	60.9	19.4	9.3	18.1	0.0	107.8	69.0	24.3
Jul-20	68.9	46.9	14.3	11.5	9.2	0.0	81.9	-13.0	24.8
Aug-20	143.5	35.3	11.1	9.4	14.7	0.6	71.2	72.3	21.3
Sep-20	168.4	45.7	19.9	18.3	25.1	0.0	109.1	59.4	31.4
Oct-20	87.0	65.9	14.6	18.8	11.0	0.1	110.4	-23.4	28.3
Nov-20	98.6	54.8	7.8	17.0	8.6	0.2	88.4	10.1	30.7
Dec-20	42.4	26.4	20.9	15.5	8.3	0.2	71.2	-28.8	26.8
Jan-21	137.9	67.2	7.5	18.1	12.1	0.0	104.8	33.1	24.6
Feb-21	119.9	35.3	9.4	11.2	11.0	0.0	67.0	52.9	21.2
Mar-21	202.5	60.7	23.1	30.1	17.0	0.0	130.9	71.6	31.7
Apr-21	124.3	63.9	16.1	19.4	3.5	0.0	102.8	21.5	27.8
May-21	136.7	61.8	14.2	10.5	7.7	0.0	94.3	42.5	30.3
Jun-21	139.1	40.9	15.9	30.7	16.6	0.0	104.2	34.9	26.2
Jul-21	90.7	39.6	15.4	12.3	4.8	0.0	72.1	18.6	25.0
Áug-21	88.3	31.0	9.1	16.3	5.5	0.0	61.9	26.5	20.6
Sep-21	160.4	52.1	19.8	15.9	16.1	0.0	103.9	56.6	30.2
Oct-21	120.4	33.8	10.1	10.6	8.7	0.0	63.3	57.0	27.8
Nov-21	112.6	38.1	6.9	14.3	22.8	0.0	82.2	30.3	30.3
Dec-21	62.4	10.7	42.0	19.1	11.3	0.0	83.2	-20.8	26.2
Jan-22	149.7	69.5	4.5	19.6	1.1	0.0	94.8	55.0	24.4
Feb-22	84.6	43.3	6.6	13.8	2.1	0.0	65.8	18.8	21.4
Mar-22	231.8	50.5	9.9	13.5	9.0	0.0	82.9	148.9	32.2
Apr-22	112.6	42.6	12.5	15.8	9.1	0.0	80.1	32.5	28.4
May-22	87.1	61.1	19.7	24.4	9.2	3.0	117.5	-30.4	29.6
Jun-22	70.6	28.1	14.6	7.7	5.9	0.0	56.3	14.2	24.3
Jul-22	90.9	45.9	2.1	12.9	5.3	0.0	66.2	24.7	24.4
Aug-22	112.6	30.6	9.2	6.9	7.1	0.6	54.5	58.1	21.4
Sep-22	81.4	49.1	9.9	11.5	5.9	0.0	76.4	5.0	32.2
Oct-22	83.2	33.3	6.4	11.8	1.4	0.2	53.1	30.1	28.4
Nov-22	103.9	56.6	1.0	1.3	2.0	0.3	61.2	42.6	29.6
Dec-22	8.1	33.3	6.1	5.5	15.5	0.1	60.5	-52.5	24.3
Jan-23	144.6	74.4	1.2	3.3	0.5	0.0	79.5	65.0	26.1
Feb-23	154.8	45.0	2.4	0.9	2.6	0.0	50.9	103.9	23.9
Mar-23	101.7	80.6	2.4	2.2	2.9	0.1	88.2	13.5	35.0
Apr-23	69.4	50.5	1.3	4.0	0.5	0.5	56.8	12.5	31.1
May-23	153.9	89.8	0.9	2.4	5.3	0.0	98.3	55.5	29.6
Jun-23	91.3	65.7	1.7	3.9	1.0	0.1	72.3	19.0	25.1
Jul-23	89.7	46.6	4.4	4.1	3.1	0.0	58.2	31.6	26.1
Aug-23	67.2	37.4	0.0	0.0	3.9	0.0	41.3	25.9	23.9
Sep-23	128.4	67.2	0.0	7.0	4.8	0.1	80.0	48.4	35.0
Oct-23	81.8	49.2	0.9	1.6	0.4	0.4	51.6	30.2	31.1
OCI-23	01.0	73.∠	0.0	1.0	0.4	0.4	0.1ر	JU.Z	١.١ د

Source: Bloomberg, ICE Data Indices, LLC, BofA Global Research



Quantitative Review

Returns

Performance data include year-to-date sector returns, sector spreads, and a table summarizing a number of sector statistics such as size, performance and rating. At the issuer level, the top 25 names lost 2bps in terms of excess return in October while the bottom 25 large issuers lost 71bps in terms of excess return.

Ratings trends

Net upgrades (upgrades less downgrades, including Fallen Angels) for credits in ICE BofA US IG corporate index COAO declined to -\$3.8bn (net downgrade) in October from +\$40.7bn in September. Net LTM upgrades moderated to +7.4% of index notional in October from +9.6% of index notional in September. At the sector level Telecom and Retail Non-Discounters contributed the most to the overall index negative rating actions in October (including watch (75% weight) and outlook (25% weight) changes), while Automobiles, Banks Brokers and Utilities contributed the most to positive rating actions.

Fund flows

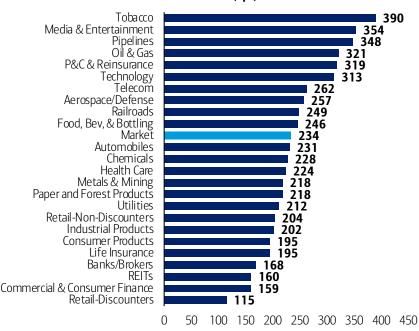
Net inflows to US IG bond funds and ETFs decreased to -0.28% of assets in October (based only on funds reporting daily) from -0.08% of assets in September (based on all funds).

Appendix: Performance Data

Exhibit 19: High Grade YtD sector excess return

Year-to-date excess return for HG corporate market sectors, through October 31, 2023. Results include hybrid and subordinated securities.

Year 2023 Excess Return (bps)

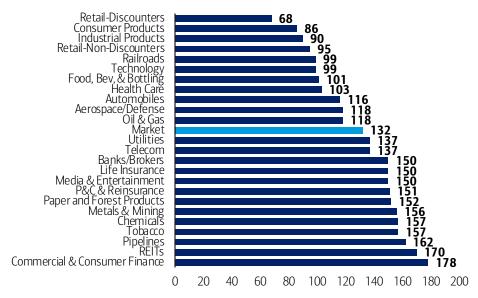


Source: BofA Global Research, ICE Data Indices, LLC



Exhibit 20: High grade spreads by sector (bps)

Sector spreads for BofA US IG Corporate Index COAO as of October 31 2023.



Note: Results include subordinated and hybrid securities.

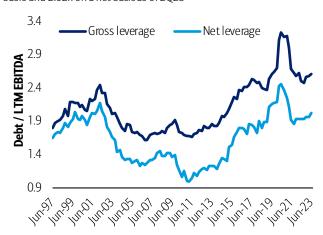
Source: BofA Global Research, ICE Data Indices, LLC

BofA GLOBAL RESEARCH

Leverage and coverage

Exhibit 21: Net and gross leverage: ex. Utilities

US IG industrial (ex. financial & utility) leverage ratio was 2.61x on a gross basis and 2.02x on a net basis as of 2Q23



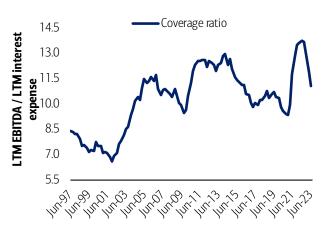
Note: Medians based on the US HG universe (ex. Fins and Utilities). Universe is rebalanced each quarter.

Source: Bloomberg, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 22: Coverage: ex. Utilities

US IG industrial (ex. financial & utility) coverage ratio was 11.08x as of 2Q23



Note: Medians based on the US HG universe (ex. Fins and Utilities). Universe is rebalanced each quarter.

Source: Bloomberg, BofA Global Research

BofA GLOBAL RESEARCH

Note: High grade market fundamental statistics are all median values for U.S. nonfinancial issuers in our benchmark USD high grade index COAO.



High grade sector historical performance

Exhibit 23: High Grade Sector Performance as of October 31, 2023
Sector spreads and performance for BofA HG U.S. Corporate Master COAO. Results include subordinated and hybrid securities

								Exce	Excess Return (bps)		• '	os) Spread Change (bps)				Total Retur
Sector	Rating	OAS	Duration	Yield	Price	Face (\$bn)	% Mkt Value	MTD	QTD	YTD	YOY	MTD	QTD	YTD	YOY	QTD
Aerospace/Defense	BBB2	118	7.2	6.23	85.7	150.2	1.75	-47	-47	257	513	8	8	-9	-37	-228
Automobiles	BBB1	116	3.7	6.18	91.6	191.7	2.38	-9	-9	231	401	4	4	-13	-45	-50
Banks/Brokers	A2	150	4.4	6.58	89.1	1,911.2	23.13	-37	-37	168	400	11	11	6	-30	-104
Basic Materials	BBB2	155	6.6	6.57	86.1	346.1	4.06	-35	-35	235	565	7	7	-6	-43	-195
Building Materials	BBB2	137	6.7	6.41	83.9	25.3	0.29	-20	-20	341	591	5	5	-22	-48	-183
Chemicals	BBB2	157	6.7	6.60	84.1	131.7	1.51	-45	-45	228	507	8	8	1	-32	-209
Homebuilders	BBB2	157	4.6	6.53	88.1	15.3	0.18	-39	-39	312	592	18	18	-11	-54	-111
Metals & Mining	BBB1	156	7.1	6.59	87.6	128.2	1.53	-36	-36	218	653	6	6	-12	-57	-220
Paper and Forest Products	BBB2	152	5.3	6.52	88.4	45.7	0.55	-14	-14	218	488	3	3	-3	-39	-118
Commercial Services	А3	112	7.9	6.16	81.5	112.3	1.24	-26	-26	335	570	7	7	-17	-38	-240
Consumer Products	A2	86	6.0	5.86	86.7	72.5	0.85	-42	-42	195	358	8	8	-10	-28	-176
Energy	BBB1	137	7.0	6.43	86.1	716.8	8.39	-13	-13	332	562	4	4	-15	-35	-188
Oil & Gas	А3	118	7.2	6.23	85.1	409.3	4.74	2	2	321	542	1	1	-16	-33	-180
Pipelines	BBB2	162	6.7	6.70	87.4	307.5	3.66	-32	-32	348	591	6	6	-16	-39	-199
Finance	А3	150	5.0	6.52	87.1	435.3	5.15	-40	-40	199	392	13	13	0	-31	-130
Commercial & Consumer Finance	BBB1	178	3.8	6.76	90.1	154.4	1.89	-53	-53	159	379	22	22	11	-35	-92
Finance-Other Services	А3	134	5.7	6.37	85.4	280.9	3.26	-33	-33	220	399	9	9	-5	-27	-152
Food, Bev, & Bottling	А3	101	7.4	6.05	84.9	319.1	3.68	-49	-49	246	441	7	7	-12	-29	-239
Health Care	А3	103	7.8	6.09	83.4	834.7	9.47	-42	-42	224	422	6	6	-8	-25	-250
ndustrial Products	А3	90	5.7	5.93	87.2	213.8	2.53	-27	-27	202	355	5	5	-7	-25	-148
nsurance	A2	150	6.6	6.58	84.9	366.9	4.23	-29	-29	239	468	5	5	-5	-28	-187
Insurance-Other	BBB1	145	7.6	6.47	83.5	36.3	0.41	-30	-30	293	550	4	4	-10	-35	-229
Life Insurance	A2	150	5.9	6.57	85.8	229.8	2.68	-32	-32	195	407	7	7	-2	-24	-159
Multi-Line Insurance	BBB1	162	7.9	6.77	85.8	24.4	0.28	-18	-18	318	586	3	3	-2	-25	-233
P&C & Reinsurance	А3	151	8.0	6.57	82.5	76.3	0.86	-22	-22	319	574	4	4	-10	-33	-237
Leisure	BBB2	163	3.9	6.59	90.2	29.8	0.36	-53	-53	261	795	18	18	-30	-125	-98
Media & Entertainment	BBB1	150	7.9	6.55	79.8	335.5	3.64	-32	-32	354	619	4	4	-20	-48	-245
Media-Cable	BBB1	158	8.7	6.64	78.1	155.6	1.65	-55	-55	306	537	7	7	-10	-33	-301
Media-Diversified	BBB1	144	7.2	6.47	81.3	179.9	1.99	-13	-13	395	690	2	2	-28	-59	-198
Real Estate Dev & Mgt	A3	178	5.4	6.71	85.0	8.0	0.09	-51	-51	205	319	11	11	0	-12	-161
REITs	BBB1	170	5.2	6.68	83.9	283.1	3.23	-52	-52	160	396	13	13	2	-34	-154
Retail	A2	95	7.2	5.99	83.3	321.9	3.64	-32	-32	182	416	5	5	-4	-27	-216
Food & Drug Retailers	BBB2	153	6.9	6.60	81.2	28.8	0.32	-44	-44	140	342	9	9	12	-7	-214
Retail-Discounters	A1	68	7.0	5.72	87.1	56.0	0.66	-10	-10	115	239	0	0	0	-11	-185
Retail-Non-Discounters	A3	95	7.3	5.99	82.6	237.1	2.66	-36	-36	204	469	6	6	-6	-32	-224
Fechnology	A2	99	7.1	6.02	83.3	557.3	6.31	-16	-16	313	552	3	3	-15	-36	-195
Telecom	BBB2	137	7.9	6.40	80.8	336.0	3.69	-11	-11	262	499	3	3	-12	-35	-221
Tobacco	BBB1	157	6.5	6.62	85.5	88.5	1.03	-46	-46	390	830	5	5	-26	-78	-204
Fransportation	BBB1	124	8.2	6.32	82.5	193.5	2.17	-64	-64	252	554	9	9	-12	-37	-289
Railroads	A3	99	10.0	6.09	78.9	111.0	1.19	-64	-64	249	536	5	5	-12	-32	-363
Transportation-Other	BBB2	154	6.0	6.59	87.4	82.4	0.98	-64	-64	252	574	12	12	-13	-45	-199
Utilities	A3	137	7.8	6.43	83.0	794.8	8.98	-43	-43	212	499	7	7	-13	-35	-249

Source: ICE Data Indices, LLC, BofA Global Research

BofA GLOBAL RESEARCH

Exhibit 24: Summary of fallen angels, October 2023

Number of IG issuers downgraded to HY in October 2023: 0.

Ticker None	Rating	N Bonds	Par, \$mn	Avg. Price	Avg. Yield	Avg. OAS						
Source: Bof.	Source: Rof A Global Research ICE Data Indices IIIC											

BofA GLOBAL RESEARCH

Exhibit 25: Summary of rising stars, October 2023

Number of HY issuers upgraded to IG in October 2023: 4.

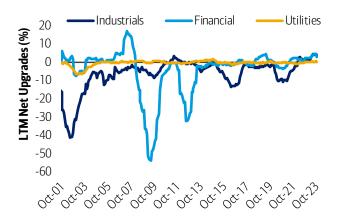
Ticker	Rating	N Bonds	Par, \$mn	Avg. Price	Avg. Yield	Avg. OAS
INTLWT	BBB3	1	410	94.47	6.51	164
IT	BBB3	3	2,200	85.85	6.97	209
MTH	BBB3	3	1,000	90.67	7.22	225
SFCCN	BBB3	1	550	93.09	6.95	207
Total		8	4.160	88.95	6.98	208

Source: BofA Global Research, ICE Data Indices, LLC



Exhibit 26: Net LTM upgrades and rising stars as percent of HG index notional.

LTM net downgrades as shares of index notional moderated significantly for financials (6.64% to 2.71%) in October



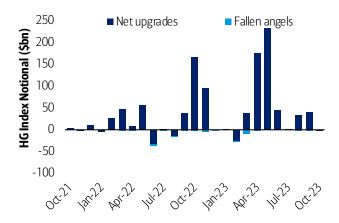
Note: Net upgrades equal to the total notional upgraded each month less the total notional that was downgraded. Rising stars are credit that migrated from HY Master (H0A0) to HG Master (C0A0) during the month.

Source: BofA Global Research, ICE Data Indices, LLC

BofA GLOBAL RESEARCH

Exhibit 27: HG Index upgrade and fallen angel volumes.

Net upgrades for credits in the US IG corporate Index totaled -\$3.8bn in Oct.



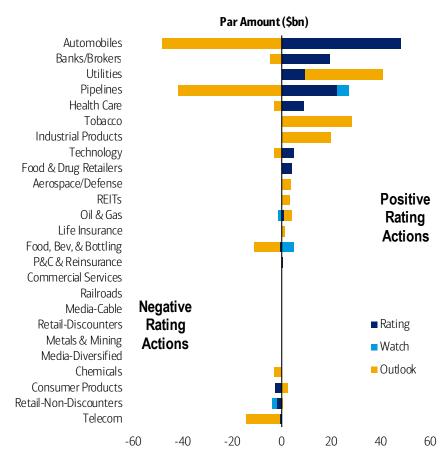
Note: Net upgrades equal to the total notional upgraded each month less the total notional that was downgraded. Fallen angels are credit that migrated from HG Master (COAO) to HY Master (HOAO) during the month.

Source: BofA Global Research, ICE Data Indices, LLC

BofA GLOBAL RESEARCH

Exhibit 28: October 2023 rating actions by sector, percent of HG index market value

Data include rating action by any of the three agencies (Moody's, S&P, Fitch).

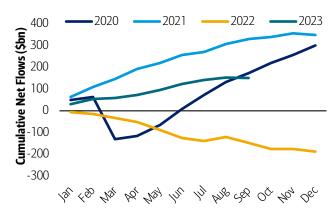


Source: BofA Global Research, ICE Data Indices, LLC



Exhibit 29: LTM mutual fund net flows in HG credit funds

Cumulative outflows YtD have been larger than last year.



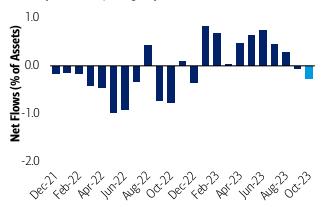
Note: Weekly-only mutual fund flows for the latest month, all-funds flows for earlier months.

Source: BofA Global Research, EPFR

BofA GLOBAL RESEARCH

Exhibit 30: Monthly HG fund and ETF flows

Net inflows to US IG bond funds and ETFs = -0.28% of assets in October (based only on funds reporting daily)



Note: Weekly-only mutual fund flows for the latest month, all-funds flows for earlier months.

Source: BofA Global Research, EPFR

BofA GLOBAL RESEARCH

Exhibit 31: Monthly top and bottom performers

Top and bottom excess-retum performers in BofA HG Master Index (COAO). Results include hybrids and subordinated securities

		dits				Bot	Bottom 25 Credits				
Rnk	Name	Ticker	Excess Return	OAS Chg	Weight	Rnk	Name	Ticker	Excess Return	OAS Chg	Weight
1	Sinopec Group	SINOPE	29	-3	0.22	1	Capital One Financial	COF	-97	31	0.32
2	Meta Platforms, Inc.	META	28	-3	0.22	2	Burlington Northern Santa Fe, LLC	BNSF	-90	8	0.22
3	Enterprise Products Partners LP	EPD	21	-1	0.31	3	Gilead Sciences, Inc.	GILD	-89	11	0.25
4	AT&T Corp	T	18	0	0.91	4	Enbridge Inc	ENBCN	-83	13	0.26
5	Walt Disney Co	DIS	7	0	0.41	5	The Charles Schwab Corporation	SCHW	-82	23	0.24
6	Verizon Communications	VZ	5	1	0.87	6	Altria Group	MO	-82	11	0.22
7	Apple Inc.	AAPL	0	0	0.95	7	TransCanada PipeLines Ltd.	TRPCN	-81	12	0.25
8	General Motors Co	GM	-1	3	0.59	8	Truist Bank	TFC	-80	24	0.32
9	MidAmerican Energy Company	BRKHEC	-2	0	0.45	9	PG&E Corp	PCG	-80	14	0.38
10	Toyota Motor Credit	TOYOTA	-3	2	0.40	10	Raytheon Technologies Corp	RTX	-78	11	0.34
11	Microsoft Corporation	MSFT	-3	0	0.47	11	HCA	HCA	-78	13	0.39
12	Amazon.com Inc	AMZN	-5	0	0.67	12	Home Depot	HD	-73	8	0.44
13	Philip Morris International Inc.	PM	-7	2	0.36	13	BAT Capital Corp	BATSLN	-71	9	0.38
14	Energy Transfer LP	ET	-8	5	0.38	14	Union Pacific Corp	UNP	-66	6	0.31
15	Broadcom Corp	AVGO	-10	3	0.43	15	Lowe's Companies, Inc.	LOW	-66	8	0.39
16	Hyundai Capital America	HYNMTR	-11	7	0.22	16	Comcast Cable	CMCSA	-65	7	0.90
17	Wal-Mart Stores	WMT	-11	0	0.38	17	Enel SPA	ENELIM	-64	11	0.23
18	ONEOK, Inc.	OKE	-11	3	0.21	18	Standard Chartered plc	STANLN	-62	13	0.32
19	Commonwealth Bank of Australia	CBAAU	-11	2	0.23	19	Florida Power & Light	NEE	-62	12	0.52
20	Dell Inc	DELL	-13	4	0.20	20	Bristol-Myers Squibb Company	BMY	-60	5	0.32
21	Intel Corporation	INTC	-15	2	0.53	21	Prudential Financial Inc	PRU	-60	10	0.25
22	AbbVie Inc.	ABBV	-15	2	0.59	22	Dominion Resources	D	-60	9	0.38
23	Rabobank Nederland	RABOBK	-16	8	0.24	23	Duke	DUK	-59	7	0.64
24	Mizuho Bank	MIZUHO	-16	5	0.30	24	US Bancorp	USB	-59	17	0.33
25	Mercedes-Benz Group AG	MBGGR	-16	5	0.20	25	Lockheed Martin Corporation	LMT	-59	5	0.21
	Average (Market Weighted)		-2	1	10.75		Average (Market Weighted)		-71	12	8.83

Source: ICE Data Indices, LLC, BofA Global Research

Disclosures

Important Disclosures

BofA Global Research Credit Opinion Key

BofA Global Research provides recommendations on an issuer's bonds (including corporate and sovereign external debt securities), loans, capital securities, equity preferreds and CDS as described below. Convertible securities are not rated. An issuer level recommendation may also be provided for an issuer as explained below. BofA Global Research credit recommendations are assigned using a three-month time horizon.

Issuer Recommendations: If an issuer credit recommendation is provided, it is applicable to bonds and capital securities of the issuer except bonds and capital securities specifically referenced in the report with a different credit recommendation. Where there is no issuer credit recommendation, only individual bonds and capital securities with specific recommendations are covered. Loans, CDS and equity preferreds are rated separately and issuer recommendations do not apply to them.

BofA Global Research credit recommendations are assigned using a three-month time horizon:

Overweight: Spreads and /or excess returns are likely to outperform the relevant and comparable market over the next three months.

Marketweight: Spreads and/or excess returns are likely to perform in-line with the relevant and comparable market over the next three months.

Underweight: Spreads and/or excess returns are likely to underperform the relevant and comparable market over the next three months.

BofA Global Research uses the following rating system with respect to Credit Default Swaps (CDS):

Buy Protection: Buy CDS, therefore going short credit risk. **Neutral:** No purchase or sale of CDS is recommended. **Sell Protection:** Sell CDS, therefore going long credit risk.

Due to the nature of strategic analysis, the issuers or securities recommended or discussed in this report are not continuously followed. Accordingly, investors must regard this report as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or securities.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America Corporation, including profits derived from investment banking. The analyst(s) responsible for this report may also receive compensation based upon, among other factors, the overall profitability of the Bank's sales and trading businesses relating to the class of securities or financial instruments for which such analyst is responsible.

BofA Securities fixed income analysts regularly interact with sales and trading desk personnel in connection with their research, including to ascertain pricing and liquidity in the fixed income

Other Important Disclosures

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

This report may refer to fixed income securities or other financial instruments that may not be offered or sold in one or more states or jurisdictions, or to certain categories of investors, including retail investors. Readers of this report are advised that any discussion, recommendation or other mention of such instruments is not a solicitation or offer to transact in such instruments. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor for information relating to such instruments. Rule 144A securities may be offered or sold only to persons in the U.S. who are Qualified Institutional Buyers within the meaning of Rule 144A under the Securities Act of 1933, as amended. SECURTIES OR OTHER FINANCIAL INSTRUMENTS DISCUSSED HEREIN MAY BE RATED BELOW INVESTMENT GRADE AND SHOULD THEREFORE ONLY BE CONSIDERED FOR INCLUSION IN ACCOUNTS OUALIFIED FOR SPECULATIVE INVESTMENT.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

The securities or other financial instruments discussed in this report may be traded over-the-counter. Retail sales and/or distribution of this report may be made only in states where these instruments are exempt from registration or have been qualified for sale.

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

This report, and the securities or other financial instruments discussed herein, may not be eligible for distribution or sale in all countries or to certain categories of investors, including retail investors.

Information relating to Affiliates of BofAS, MLPF&S and Distribution of Affiliate Research Reports:

Refer to BofA Global Research policies relating to conflicts of interest.

"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no. 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code). BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofaml.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI, BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSFC); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch (Canada): Merrill Lynch (Mexico): Merrill Lynch (Mexico): Merrill Lynch (Mexico) (Mexico): Merrill Lynch (Mexico) (Mexico) (Mexico): Merrill Lynch (Mexico) (Mexi CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch (Israel): Merrill Lynch (Israel): Merrill Lynch (Israel) (Israel): Merrill Lynch (Israel): Merr Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch K.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company:



Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSFC; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securit

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities. This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, scenurities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned in this report. Investors in such securities and instruments effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information. In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

Copyright and General Information:

Copyright 2023 Bank of America Corporation. All rights reserved. iQdatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities. Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public inform

This information has been prepared independently of any issuer of securities mentioned herein and not in connection with any proposed offering of securities or as agent of any issuer of any securities. None of BofAS any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to seek tax advice based on their particular circumstances from an independent tax professional.



The information herein (other than disclosure information relating to BofA Securities and its affiliates) was obtained from various sources and we do not guarantee its accuracy. This information may contain links to third-party websites. BofA Securities is not responsible for the content of any third-party website or any linked content contained in a third-party website. Content contained on such third-party websites is not part of this information and is not incorporated by reference. The inclusion of a link does not imply any endorsement by or any affiliation with BofA Securities. Access to any third-party website is at your own risk, and you should always review the terms and privacy policies at third-party websites before submitting any personal information to them. BofA Securities is not responsible for such terms and privacy policies and expressly disclaims any liability for them.

All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein.

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies. Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.

