

Vale

Downgrade Vale's belly to MW

Rating Change - Credit

Downgrade belly to MW

We downgrade VALEBZ 32s, 33s, 36s and 39s bonds to Marketweight (MW) from Overweight (OW) as we see less upside given yields of 5.8%-6.0% being inside Codelco's belly (6.2-6.3%), SQM 33s (6.1%) and Gerdau 44s (6.5%). We affirm our MW for the other bonds on the curve. Moreover, we think the headlines on Fundão's liabilities are a short-term overhang (see: New Mariana overhang yet too soon to assume any financial impact). Vale has a solid balance sheet, with expanded net leverage (including Brumadinho and Samarco's provisions) of 0.95x as of 3Q23.

New potential R\$47.6bn (\$9.7bn) Fundão's liability

The first instance of a Brazilian federal court ruled against Vale, BHP and Samarco on a lawsuit requesting collective moral damages from the Fundão's dam rupture in 2015. The judge ordered the payment of R\$47.6bn (\$9.7bn), with interest accrual since 2015 to be applied over the amount. Vale said it will appeal the decision. This potential new liability was a surprise, and it is not related to current negotiations for the settlement of the R\$155bn lawsuit from public prosecutor from Fundão's dam collapse. The balance sheet provision for it (50% Vale / 50% BHP) would be booked under NPV with limited effect on Vale's leverage, as the full amount (\$4.8bn) represents 0.3x of LTM EBITDA.

BoD deciding on renewal of current CEO's term

Vale's Board of Directors (BoD) has until the end of the month to decide whether to renew the current CEO's term (Mr. Eduardo Bartolomeo) or appoint a new CEO. The current CEO's three-year term ends in May '24. Local news (Estadão newspaper on Jan 25th 2024) suggested that the government may appoint Brazil's former Finance Minister, Mr. Guido Mantega, as the company's new CEO. As Vale has no controlling shareholder group today, the BoD composed of 13 members (eight independents) would vote for the election of a new CEO if the term is not renewed. The main shareholders include: Capital Group (10.5%), Previ (8.7%, pension fund), Mitsui (6.3%), Blackrock (6.1%) and Cosan (4.9%). The Brazilian government holds golden shares in Vale, with veto powers over certain decisions, but not over the election of the CEO.

26 January 2024

Global Emerging Markets | Corporate Credit LatAm | Brazil Metals & Mining

Carlos Assumpcao, CFA Research Analyst Merrill Lynch (Brazil) +55 11 2188 4025 carlos.assumpcao@bofa.com

Anne Milne Research Analyst BofAS +1 646 855 4096 anne.milne@bofa.com

GEMS Corporate Credit Rsch BofAS +1 646 855 4096

See Team Page for List of Analysts

Exhibit 1: Indicative pricing

As of 01/25/2024

Bonds	Rec	Bid-P	YTW	OAS
VALEBZ 26	MW	102.18	5.25	106
VALEBZ 30	MW	90.09	5.55	150
VALEBZ 32	MW	108.09	5.85	175
VALEBZ 33	MW	101.43	5.89	176
VALEBZ 34	MW	118.07	5.79	167
VALEBZ 36	MW	108.18	5.93	172
VALEBZ 39	MW	107.88	6.06	176
VALER7 42	MW	97.66	5.81	140

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

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 4 to 8. Analyst Certification on page 3. Valuation &

Refer to important disclosures on page 4 to 8. Analyst Certification on page 3. Valuation 8 Risk on page 2.

Timestamp: 26 January 2024 09:11AM EST

Valuation

Exhibit 2: Indicative pricing

As of 01/25/2024

Ticker	Issuer/Bond	Rec	O/S (US\$ mn)	Coupon	Ask Price	YTW	Effec. Dur.	OAS	Z-Spr	Ratings
ANTOLN	ANTOLN 30	Overweight	500	2.375	82.8	5.47	6.0	141	173	NR/BBB/BBB+
ANTOLN	ANTOLN 32	Overweight	500	5.625	99.7	5.66	6.4	155	191	NR/BBB/BBB+
CDEL	CDEL 25	Restricted	397	4.500	98.7	5.37	1.5	94	101	Baa1/BBB+/BBB+
CDEL	CDEL 27	Restricted	1268	3.625	94.5	5.38	3.1	131	153	Baa1/BBB+/BBB+
CDEL	CDEL 29	Restricted	1100	3.000	88.1	5.47	5.0	145	172	Baa1/BBB+/BBB+
CDEL	CDEL 30	Restricted	1000	3.150	87.9	5.56	5.3	153	181	Baa1/BBB+/BBB+
CDEL	CDEL 31	Restricted	800	3.750	88.9	5.70	5.9	163	195	Baa1/BBB+/BBB+
CDEL	CDEL 33	Restricted	900	5.125	94.6	5.91	6.8	180	215	Baa1/BBB+/BBB+
CDEL	CDEL 34	Restricted	1300	5.950	99.1	6.08	7.3	195	230	//
CDEL	CDEL 35	Restricted	500	5.625	96.0	6.11	8.2	194	231	Baa1/BBB+/BBB+
CDEL	CDEL 36	Restricted	500	6.150	99.2	6.24	8.6	204	243	Baa1/BBB+/BBB+
CDEL	CDEL 48	Restricted	600	4.850	80.8	6.42	11.2	171	264	NR/NR/NR
CDEL	CDEL 43	Restricted	950	5.625	92.2	6.32	11.4	189	250	Baa1/BBB+/BBB+
CDEL	CDEL 42	Restricted	750	4.250	77.5	6.34	11.9	193	251	Baa1/BBB+/BBB+
CDEL	CDEL 44	Restricted	980	4.875	82.7	6.39	12.1	194	257	Baa1/BBB+/BBB+
CDEL	CDEL 53	Restricted	1200	6.300	96.9	6.54	12.7	218	281	Baa1/BBB+/BBB+
CDEL	CDEL 47	Restricted	1250	4.500	77.5	6.35	12.8	193	257	Baa1/BBB+/BBB+
CDEL	CDEL 49	Restricted	1300	4.375	76.4	6.25	13.2	184	248	Baa1/BBB+/BBB+
CDEL	CDEL 50	Restricted	2680	3.700	67.6	6.23	14.0	183	248	Baa1/BBB+/BBB+
CDEL	CDEL 51	Restricted	500	3.150	61.1	6.11	15.2	171	238	Baa1/BBB+/BBB+
GGBRBZ	GGBRBZ 27	Overweight	427	4.875	98.6	5.30	3.3	124	146	NR/BBB-/BBB
GGBRBZ	GGBRBZ 30	Overweight	500	4.250	94.7	5.30	5.1	123	154	NR/BBB-/BBB
GGBRBZ	GGBRBZ 44	Marketweight	481	7.250	108.5	6.48	10.8	204	264	Baa3/BBB-/BBB
SCCO	SCCO 25	Overweight	500	3.875	98.1	5.49	1.2	92	88	Baa1/BBB+/BBB+
SCCO	SCCO 35	Marketweight	1000	7.500	115.8	5.61	8.0	146	182	Baa1/BBB+/BBB+
SCCO	SCCO 40	Marketweight	1100	6.750	111.3	5.68	10.0	137	185	Baa1/BBB+/BBB+
SCCO	SCCO 42	Marketweight	1200	5.250	94.3	5.75	11.6	134	192	Baa1/BBB+/BBB+
SCCO	SCCO 45	Marketweight	1500	5.875	99.7	5.90	12.0	147	209	Baa1/BBB+/BBB+
SCCOMX	SCCOMX 50	Overweight	1000	4.500	78.0	6.22	13.7	182	247	Baa1/BBB+/BBB+
VALEBZ	VALEBZ 26	Marketweight	470	6.250	102.3	5.25	2.2	106	121	Baa3/BBB-/BBB
VALEBZ	VALEBZ 30	Marketweight	1500	3.750	90.3	5.55	5.5	150	180	Baa3/BBB-/BBB
VALEBZ	VALEBZ 32	Marketweight	279	7.200	109.0	5.85	6.3	175	208	Ba1/BBB-/BBB
VALEBZ	VALEBZ 34	Marketweight	641	8.250	118.4	5.79	7.0	167	201	Baa3/BBB-/BBB
VALEBZ	VALEBZ 33	Marketweight	1500	6.125	101.6	5.89	7.0	176	212	Baa3/BBB-/BBB
VALEBZ	VALEBZ 36	Marketweight	1335	6.875	108.4	5.93	8.6	172	212	Baa3/BBB-/BBB
VALEBZ	VALEBZ 39	Marketweight	1146	6.875	108.2	6.06	9.7	176	223	Baa3/BBB-/BBB
VALEBZ	VALEBZ 42	Marketweight	491	5.625	97.9	5.81	11.2	140	198	Baa3/BBB-/BBB

Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Valuation & risk

Vale (VALEBZ)

Our MW for Vale's bonds (26s, 30s, 32s, 33s, 36s, 39s and 42s) reflect our view that spreads are fairly valued vs. LatAm IG Metals & Mining peers.

Vale should remain with very low leverage levels despite volatility of iron ore prices given its strong capital structure and competitive position in the global cash cost curve of the industry. Excess cash generation should remain being used for distribution to shareholders and for liability management. Company's very low leverage ratios offers a large cushion from 1) potential extra liabilities from the ongoing renegotiation with authorities on Samarco's accident, 2) new liabilities, 3) SEC charges and/or 4) lower iron ore prices.

Upside risks to our call are: 1) higher demand & metals prices, 2) ratings upgrade, 3)



additional sale of non-core assets and 4) settlement and agreement with authorities on pending litigations. Downside risks are: 1) volatility and lower demand and prices, 2) increased costs, 3) higher leverage, 4) ratings downgrade, 5) problems on tailing dams, 6) declined growth in China, 7) legal proceedings and contingencies/liabilities.

Vale Canada (VALEBZ)

Our MW for Vale's bonds (26s, 30s, 32s, 33s, 36s, 39s and 42s) reflect our view that spreads are fairly valued vs. LatAm IG Metals & Mining peers.

Vale should remain with very low leverage levels despite volatility of iron ore prices given its strong capital structure and competitive position in the global cash cost curve of the industry. Excess cash generation should remain being used for distribution to shareholders and for liability management. Company's very low leverage ratios offers a large cushion from 1) potential extra liabilities from the ongoing renegotiation with authorities on Samarco's accident, 2) new liabilities, 3) SEC charges and/or 4) lower iron ore prices.

Upside risks to our call are: 1) higher demand & metals prices, 2) ratings upgrade, 3) additional sale of non-core assets and 4) settlement and agreement with authorities on pending litigations. Downside risks are: 1) volatility and lower demand and prices, 2) increased costs, 3) higher leverage, 4) ratings downgrade, 5) problems on tailing dams, 6) declined growth in China, 7) legal proceedings and contingencies/liabilities.

Vale Overseas Ltd (VALEBZ)

Our MW for Vale's bonds (26s, 30s, 32s, 33s, 36s, 39s and 42s) reflect our view that spreads are fairly valued vs. LatAm IG Metals & Mining peers.

Vale should remain with very low leverage levels despite volatility of iron ore prices given its strong capital structure and competitive position in the global cash cost curve of the industry. Excess cash generation should remain being used for distribution to shareholders and for liability management. Company's very low leverage ratios offers a large cushion from 1) potential extra liabilities from the ongoing renegotiation with authorities on Samarco's accident, 2) new liabilities, 3) SEC charges and/or 4) lower iron ore prices.

Upside risks to our call are: 1) higher demand & metals prices, 2) ratings upgrade, 3) additional sale of non-core assets and 4) settlement and agreement with authorities on pending litigations. Downside risks are: 1) volatility and lower demand and prices, 2) increased costs, 3) higher leverage, 4) ratings downgrade, 5) problems on tailing dams, 6) declined growth in China, 7) legal proceedings and contingencies/liabilities.

Analyst Certification

I, Carlos Assumpcao, CFA, hereby certify that the views expressed in this research report accurately reflect my personal views about the subject securities and issuers. I also certify that no part of my compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

Special Disclosures

Some of the securities discussed herein should only be considered for inclusion in accounts qualified for high risk investment.

BofA Securities is currently acting as exclusive Financial Advisor to Manara Minerals Investment Company LLC in connection with its proposed strategic partnership with Vale S.A. on Vale Base Metals Limited, which was announced on 27 Jul 2023.



Security/Loan pricing

Vale Canada Ltd / VALEBZ

	Amt		Ratings			Yield	Spread
Security		Maturity date	Moody's/S&P/Fitch	Price	Price date	(%)	(bps)
7.2, Senior, USD, 2032:B	297	15-SEP-2032	Ba1/BBB-/BBB	108.31	25-Jan-2024	5.95	185

For pricing information refer to "Other Important Disclosures" below.

B=Bond; L=Loan; CS=Capital Security (Not including Equity Preferred); CDS=Credit Default Swap; EP=Equity Preferred

Vale Overseas Ltd / VALEBZ

	Amt		Ratings			Yield	Spread
Security		Maturity date	Moody's/S&P/Fitch	Price	Price date	(%)	(bps)
6.875, Senior, USD, 2036:B	1,616	21-NOV-2036	Baa3/BBB-/BBB	107.65	25-Jan-2024	6.01	176
6.875, Senior, USD, 2039:B	1,331	10-NOV-2039	Baa3/BBB-/BBB	107.96	25-Jan-2024	6.08	172
8.25, Senior, USD, 2034:B	478	17-JAN-2034	Baa3/BBB-/BBB	118.38	25-Jan-2024	5.80	165
6.25, Senior, USD, 2026:B	1,706	10-AUG-2026	Baa3/BBB-/BBB	101.92	25-Jan-2024	5.43	120
3.75, Senior, USD, 2030:B	1,500	08-Jul-2030	Baa3/BBB-/BBB	90.13	25-Jan-2024	5.59	154
6.125, Senior, USD, 2033:B	1,500	12-JUN-2033	Baa3/BBB-/BBB	101.39	25-Jan-2024	5.93	181

For pricing information refer to "Other Important Disclosures" below.

B=Bond; L=Loan; CS=Capital Security (Not including Equity Preferred); CDS=Credit Default Swap; EP=Equity Preferred

Vale / VALEBZ

	Amt		Ratings			Yield	Spread
Security		Maturity date	Moody's/S&P/Fitch	Price	Price date	(%)	(bps)
5.625, Senior, USD, 2042:B	520	11-SEP-2042	Baa3/BBB-/BBB	97.65	25-Jan-2024	5.83	138

For pricing information refer to "Other Important Disclosures" below.

B=Bond; L=Loan; CS=Capital Security (Not including Equity Preferred); CDS=Credit Default Swap; EP=Equity Preferred

Disclosures

Important Disclosures

Credit opinion history

Vale Canada Ltd / VALEBZ

Security	Date ^{R1}	Action	Recommendation	Price
7.2, Senior, USD, 2032:B	31-Dec-2022		Marketweight	
	28-Apr-2023	Upgrade	Overweight	107.75
	27-Jul-2023	Restricted	NA	NA
	31-Jul-2023	Coverage Resumed	Overweight	
	26-Jan-2024	Downgrade	Marketweight	108.31

Table reflects credit opinion history as of previous business day's close. First date of recommendation within the last 36 months, if for an issuer or within the last 12 months, if for a security or loan. The investment opinion system is contained at the end of the report under the heading "BofA Global Research Credit Opinion Key."

Pricing information in the table is provided for each action where available. In the case of bonds, loans, capital securities and equity preferreds, the price shown reflects the nominal cash price for the security; and in the case of CDS, the price shown reflects the spread, on the date of the relevant action.

 $B=Bond; L=Loan; CS=Capital \ Security \ (Not including \ Equity \ Preferred); EP=Equity \ Preferred; CDS=Credit \ Default \ Swap$

Vale Overseas Ltd / VALEBZ

Tuic Ofciscus Ltu / Titlebl				
Security	Date ^{R2}	Action	Recommendation	Price
6.875, Senior, USD, 2036:B	31-Dec-2022		Overweight	
	27-Jul-2023	Restricted	NA	NA
	31-Jul-2023	Coverage Resumed	Overweight	
	26-Jan-2024	Downgrade	Marketweight	107.65
6.875, Senior, USD, 2039:B	31-Dec-2022		Overweight	
	27-Jul-2023	Restricted	NA	NA
	31-Jul-2023	Coverage Resumed	Overweight	
	26-Jan-2024	Downgrade	Marketweight	107.96
8.25, Senior, USD, 2034:B	31-Dec-2022		Overweight	
	22-Feb-2023	Downgrade	Marketweight	117.27
	28-Apr-2023	Upgrade	Overweight	116.19
	27-Jul-2023	Restricted	NA	NA
	31-Jul-2023	Coverage Resumed	Overweight	
	01-Aug-2023	Downgrade	Marketweight	116.55



Vale Overseas Ltd / VALEBZ

Security	Date ^{R2}	Action	Recommendation	Price
6.25, Senior, USD, 2026:B	31-Dec-2022		Marketweight	
	22-Feb-2023	Upgrade	Overweight	102.12
	28-Apr-2023	Downgrade	Marketweight	103.07
	27-Jul-2023	Restricted	NA	NA
	31-Jul-2023	Coverage Resumed	Marketweight	
3.75, Senior, USD, 2030:B	31-Dec-2022		Overweight	
	28-Apr-2023	Downgrade	Marketweight	88.75
	27-Jul-2023	Restricted	NA	NA
	31-Jul-2023	Coverage Resumed	Marketweight	
6.125, Senior, USD, 2033:B	01-Aug-2023	Initial	Overweight	100.50
	26-Jan-2024	Downgrade	Marketweight	101.39

Table reflects credit opinion history as of previous business day's close. First date of recommendation within the last 36 months, if for an issuer or within the last 12 months, if for a security or loan. The investment opinion system is contained at the end of the report under the heading "BofA Global Research Credit Opinion Key."

Pricing information in the table is provided for each action where available. In the case of bonds, loans, capital securities and equity preferreds, the price shown reflects the nominal cash price for the security; and in the case of CDS, the price shown reflects the spread, on the date of the relevant action.

B=Bond; L=Loan; CS=Capital Security (Not including Equity Preferred); EP=Equity Preferred; CDS=Credit Default Swap

Vale / VALEBZ

Security	Date ^{R3}	Action	Recommendation	Price
5.625, Senior, USD, 2042:B	31-Dec-2022		Marketweight	
	27-Jul-2023	Restricted	NA	NA
	31-Jul-2023	Coverage Resumed	Marketweight	

Table reflects credit opinion history as of previous business day's close.⁸³First date of recommendation within the last 36 months, if for an issuer or within the last 12 months, if for a security or loan. The investment opinion system is contained at the end of the report under the heading "BofA Global Research Credit Opinion Key."

Pricing information in the table is provided for each action where available. In the case of bonds, loans, capital securities and equity preferreds, the price shown reflects the nominal cash price for the security; and in the case of CDS, the price shown reflects the spread, on the date of the relevant action.

B=Bond; L=Loan; CS=Capital Security (Not including Equity Preferred); EP=Equity Preferred; CDS=Credit Default Swap

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.

Corporate Credit Issuer Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R4	Count	Percent
Buy	144	37.21%	Buy	119	82.64%
Hold	193	49.87%	Hold	163	84.46%
Sell	50	12.92%	Sell	37	74.00%

⁸⁴ Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only corporate credit issuer recommendations. A corporate credit issuer rated Overweight is included as a Buy, a corporate credit issuer rated Marketweight is included as a Hold, and a corporate credit issuer rated Underweight is included as a Sell.

Credit Opinion History Tables for the securities referenced in this research report are available on the Price Charts and Credit Opinion History Tables website, or call 1-800-MERRILL to have them mailed.

The issuer is or was, within the last 12 months, an investment banking client of BofAS and/or one or more of its affiliates: Vale Canada, Vale Overseas, Vale SA.

BofAS or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: Vale Canada, Vale Overseas, Vale SA.

The issuer is or was, within the last 12 months, a non-securities business client of BofAS and/or one or more of its affiliates: Vale Canada, Vale Overseas, Vale SA.

BofAS or an affiliate has received compensation for investment banking services from this issuer within the past 12 months: Vale Canada, Vale Overseas, Vale SA.

BofAS or an affiliate expects to receive or intends to seek compensation for investment banking services from this issuer or an affiliate of the issuer within the next three months: Vale Canada,

Vale Overseas, Vale SA.

BofAS together with its affiliates beneficially owns one percent or more of the common stock of this issuer. If this report was issued on or after the 9th day of the month, it reflects the ownership position on the last day of the previous month. Reports issued before the 9th day of a month reflect the ownership position at the end of the second month preceding the date of the report: Vale SA.



BofAS or one of its affiliates has a significant financial interest in the fixed income instruments of the issuer. If this report was issued on or after the 15th day of the month, it reflects a significant financial interest on the last day of the previous month. Reports issued before the 15th day of the month reflect a significant financial interest at the end of the second month preceding the report: Vale Overseas, Vale SA.

BofAS or one of its affiliates trades or may trade as principal in the debt securities (or in related derivatives) that are the subject of this research report: Vale Canada, Vale Overseas, Vale SA. The issuer is or was, within the last 12 months, a securities business client (non-investment banking) of BofAS and/or one or more of its affiliates: Vale Canada, Vale Overseas, Vale SA. BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall 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

From time to time research analysts conduct site visits of covered issuers. BofA Global Research policies prohibit research analysts from accepting payment or reimbursement for travel expenses from the issuer for such visits.

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.

SECURITIES OR OTHER FINANCIAL INSTRUMENTS DISCUSSED HEREIN MAY BE RATED BELOW INVESTMENT GRADE AND SHOULD THEREFORE ONLY BE CONSIDERED FOR INCLUSION IN ACCOUNTS QUALIFIED 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 Prudential 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 (Hong Kong): Merr (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 Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de 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 Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.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, securities 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.

This report may contain a trading idea or recommendation which highlights a specific identified near-term catalyst or event impacting a security, issuer, industry sector or the market generally that presents a transaction opportunity, but does not have any impact on the analyst's particular "Overweight" or "Underweight" rating (which is based on a three month trade horizon). Trading ideas and recommendations may differ directionally from the analyst's rating on a security or issuer because they reflect the impact of a near-term catalyst or event.

Certain investment strategies and financial instruments discussed herein may only be appropriate for consideration in accounts qualified for high risk investment.

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 2024 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.

Subject to the quiet period applicable under laws of the various jurisdictions in which we distribute research reports and other legal and BofA Securities policy-related restrictions on the publication of research reports, fundamental equity reports are produced on a regular basis as necessary to keep the investment recommendation current.

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.



Research Analysts

Carlos Assumpcao, CFA

Research Analyst Merrill Lynch (Brazil) carlos.assumpcao@bofa.com

Anne Milne

Research Analyst BofAS

anne.milne@bofa.com

Nicolas Riva, CFA Research Analyst BofAS nicolas.riva@bofa.com

Jason Amoratis

Research Analyst BofAS jason.amoratis@bofa.com

Peter Bowley Research Analyst

peter.bowley@bofa.com

Kay Hope Research Analyst MLI (UK) kay.hope@bofa.com

Ali Dhaloomal

Research Analyst MLI (UK) ali.dhaloomal@bofa.com

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

