

Liquid Insight

Vol vacuum favors summer carry

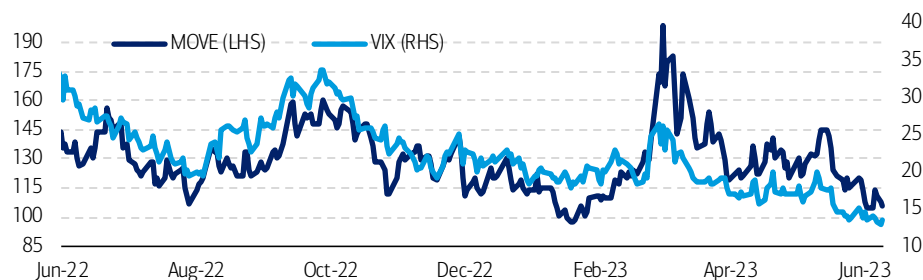
Key takeaways

- Implied vol has dropped, including in rates. Lower vol + slower Fed = front end underweight, long duration bias, flat curve
- Low vol over the summer also favors: (1) seasonal trends (2) carry trades (3) long inflation bias
- Preferred carry: vol surface normalization, long 2Y swap spreads, reach for yield

By M. Cabana, B. Braizinha, R. Axel, & M. Swiber

Exhibit 1: MOVE & VIX indices (ppts)

MOVE is testing recent lows, VIX is at post-COVID lows



Source: Bloomberg

BofA GLOBAL RESEARCH

Vol drop favors carry, seasonals, & inflation protection

Implied vol across markets has fallen sharply (Exhibit 1). Drivers for the vol drop include resilient global data, slower global central bank tightening cycles, some signs of slowing inflation, and a defensively positioned market. In this note, we focus on the decline in US rate vol and discuss implications for the US rates market.

The recent decline in US rates vol is likely driven by a slower Fed and view that Fed hikes are closer to the end vs the beginning. A Fed closer to cycle end should limit the potential for large rate surprises and support lower vol. This has supported a disinversion of US rate vol term structure, one of our core '23 vol views (see the report [Mid-Year Update](#)).

A hawkish but slower Fed + lower vol reinforces three of our core rates views: (1) remain underweight front end, (2) trade duration and recent 10Y range with a tactical long bias, and (3) position for a flatter 2s10s curve.

The current Fed stance + a strong but slowly moderating economy should reinforce relatively range-bound trading into the summer and Q3. It also supports three key trading themes for the summer: (1) summer seasonals, (2) positive carry expressions, and (3) inflation hedge to any long duration exposure.

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 6 to 8. Analyst Certification on page 5.

12573296

Timestamp: 27 June 2023 12:31AM EDT

27 June 2023

Rates and Currencies Research
Global

Global Rates & Currencies Research
MLI (UK)

Mark Cabana, CFA

Rates Strategist
BofAS
+1 646 855 9591
mark.cabana@bofa.com

Bruno Braizinha, CFA

Rates Strategist
BofAS
+1 646 855 8949
bruno.braizinha@bofa.com

Ralph Axel

Rates Strategist
BofAS
+1 646 855 6226
ralph.axel@bofa.com

Meghan Swiber, CFA

Rates Strategist
BofAS
+1 646 855 9877
meghan.swiber@bofa.com

Adarsh Sinha

FX Strategist
Merrill Lynch (Hong Kong)
+852 3508 7155
adarsh.sinha@bofa.com

Janice Xue

Rates Strategist
Merrill Lynch (Hong Kong)
+852 3508 8587
janice.xue@bofa.com

See Team Page for List of Analysts

Liquid Insight

Recent Publications

- 26-Jun-23 [Do rates still matter for FX?](#)
- 22-Jun-23 [Halftime for G10 FX](#)
- 21-Jun-23 [Norges & Riksbank previews: Norges has more work left, but may take its time](#)
- 20-Jun-23 [Too much Goldilocks for comfort](#)
- 19-Jun-23 [Bank of England preview: lots to do](#)
- 15-Jun-23 [US rates, softer landing, & hawkish Fed](#)
- 14-Jun-23 [The clock is ticking](#)
- 13-Jun-23 [ECB Preview: still ground to cover](#)
- 12-Jun-23 [June FOMC Meeting: Skip to assess lags](#)
- 8-Jun-23 [Is inflation an existential threat to the inflation-linked market?](#)

BofA GLOBAL RESEARCH

If we are right and the US rates long end remains range bound over the summer, we suggest investors focus on three key themes: (1) summer seasonals (2) positive carry expressions (3) inflation hedge to any long duration exposure.

We initially discussed these themes in our most recent [Global Rates Weekly](#).

Summer seasonals: de-risk while the sun shines

US & global rates tend to rally over the summer, especially in July (Exhibit 2; for detail see [Bond market seasonality](#)). Rates then typically sell off in the fall, especially in October.

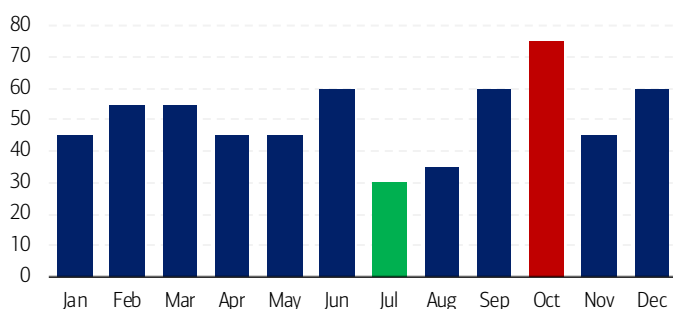
Our technical strategist Paul Ciana attributes the July rates rally & fall sell-off to shifts in investor risk behavior. Investors tend to de-risk over the quieter summer months and re-risk in the fall. The de-risking behavior corresponds to fixed income flow activity; EPFR monthly flow data shows fixed income inflows 70% of the time in July and consistent outflows in the fall since 2007.

Paul notes that July is historically a good time to be long the 10Y US treasury. The golden cross still suggests a July rally, too. Technicals continue to suggest longs with 10y yield below 3.90%. In a low vol and range bound market, seasonals can matter.

We recommend investors respect these patterns and use that to trade duration with a bullish bias in the recent range.

Exhibit 2: Yield up ratio

Yields decline most frequently in Jul, increase most frequently in Oct



Source: BofA Global Research, Bloomberg, data over the last 20 years

BofA GLOBAL RESEARCH

Positive carry: vol surface & short front-end spreads

An environment of minimal Fed surprise risk, US economic soft landing, & low vol also supports positive carry market expressions, as we argued in [Postcard from Europe](#). Our preferred US rates carry expression is for further vol surface steepening, 2Y swap spread longs, 2Y shorts; positive carry in risky assets also appears attractive.

Short left side vol: Reacceleration odds increased over the last month, from around 30% to around 40% currently. Rates pushed higher accordingly, but the dynamic of volatility failed to exhibit the usual directionality with forwards. Instead, we have seen broadly lower vol with the under-performance of gamma and left side and steepening of the term structure of volatility (see Exhibit 3 and [Grinding lower](#)).

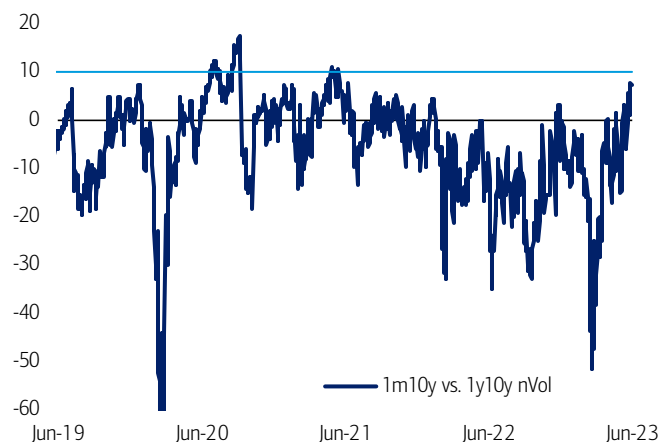
The recent vol dynamic seems to indicate: (1) some skepticism the recent reacceleration expectations may become a more significant structural driver of a selloff, with the vol grid instead likely reflecting a context where slowdown expectations continue to be priced at a 6m horizon on a rolling basis; and (2) a more regular and predictable central bank policy. Both suggest a more favorable carry environment over coming months.

Carry strategies are essentially short vol, and on the volatility grid we continue to like expressing this bias on the left side of the grid (short the left side outright – expiries between 6-12m on 1y-2y underlyings – or versus right side vol).

2Y swap spread longs: we think owning 2y spreads is solid carry trade with attractive ROE. The market has been short front end spreads due to (1) large UST bill supply surge post debt limit (2) banks reducing their UST positions. Our front end coverage has recently noted that bill demand has been strong & cash has been leaving Fed ON RRP with only modest bill market cheapening (see [ON RRP dropping, bills not cheapening](#)). Bank holdings of USTs continue to fall but have recently slowed / stabilized (Exhibit 4). The biggest headwinds for front end spreads have recently surprised positively.

Exhibit 3: 1y10y vs 1m10y vol spread

Term structure of volatility deserialized decisively in recent weeks

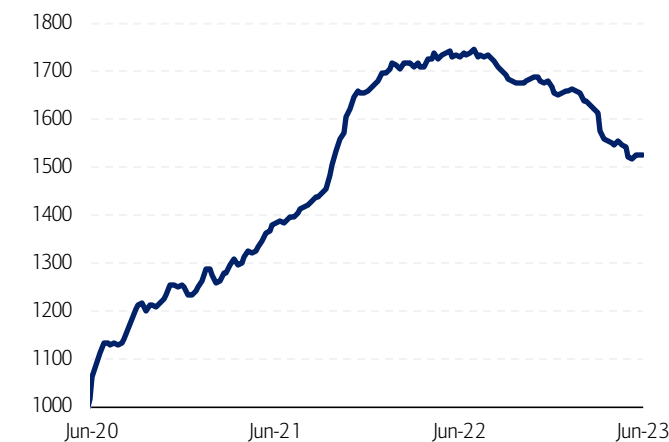


Source: BofA Global Research; Bloomberg

BofA GLOBAL RESEARCH

Exhibit 4: US commercial bank Treasury & agency debt holdings (\$bn)

US commercial bank Treasury holdings decline has recently stabilized



Source: Bloomberg

BofA GLOBAL RESEARCH

We consider 0bp to be an equilibrium fair value of spreads based on an approximate arbitrage between SOFR swaps and cash Treasuries. Without mark-to-market risks, balance sheet costs, or risk of access to repo funding, we would expect the spread curve to trade near 0 because any non-0 spread would offer free carry. Investors could buy a 2Y UST & expect it will eventually roll down towards the same level as SOFR.

This approximate arbitrage is more binding in the front end, where spread duration is lower. We view 2y spread fair value a little below 0bp, say to -3bp to -5bp range to provide some realistic incentive to buy the spread and offset the actual costs. At -12bp we think 2y spread longs offer an attractive ROE and like that position as a carry trade.

Other carry expressions: short 2Y UST, lend USD, credit. Brief description below.

- **Outright 2y short.** This expresses a view that the Fed's overnight SOFR rate (which one receives in a short) is not going to decline at the pace the market prices into the forwards. While market cuts for 2023 have been reduced, we still view the more than 150bp of cuts from end 2023 to end 2024 as unlikely to be delivered.
- **Lend dollars in the currency forward market.** This produces an attractive carry opportunity. While much has been said about prohibitive costs for Japanese investors to buy Treasuries, with 3m forward JPY trading about 2 big figures below spot, this creates opportunity for USD holders to take advantage of the other side of that trade.
- **Higher risk fixed income.** Our IG team is also bullish on spreads, with a resilient economy, very low delinquency rates, strong consumer balance sheets, and potential shocks such as debt ceiling and banking liquidity crisis either behind us or much less acute, the IG market is likely to attract a strong bid for the near term.

More hikes unlikely without persistent inflation

Long 1y inflation swap is a way to hedge risk that the Fed delivers more hikes given: (1) recent divergence between 1y OIS & 1y inflation swap (2) typical market underpricing of realized inflation. We discuss each below.

Divergence between 1y OIS and 1y inflation swap: We continue to think that there is a discrepancy between the market conviction in the lack of inflation persistence and the ability to price more hikes (Exhibit 5). With inflation expected to step down in coming months, we think this narrative will need to be challenged to justify additional hikes.

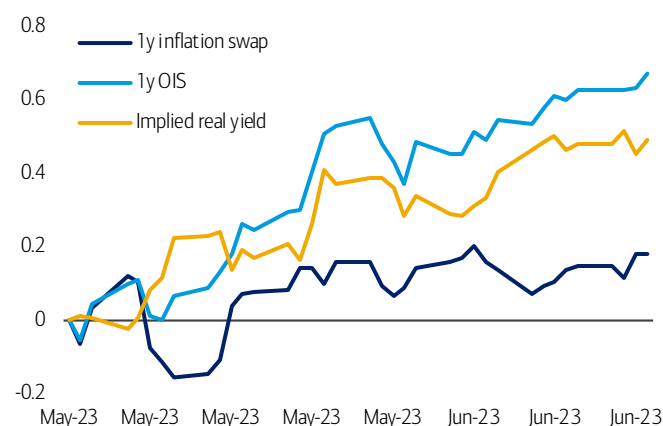
Market pricing traditionally underestimates realized inflation: The market also tends to underestimate inflation 1y out. Inflation swaps adjusted for the lag in the CPI index have underpriced realized inflation about 65% of the time since 2008 (Exhibit 6).

Market expects a rapid convergence of inflation to the Fed's 2% target by early next year. We believe the market is underpricing the risk of persistent US inflation, like that in the UK & potential central bank response.

In the potentially low vol upcoming summer months, we continue to favor hedging any long duration view with inflation upside. Beats to near-term inflation will likely challenge long duration underpinned by the end of the hiking cycle & future cuts.

Exhibit 5: Cumulative change in 1y rates (PPTS)

Move higher in front-end real rates driven by real yields

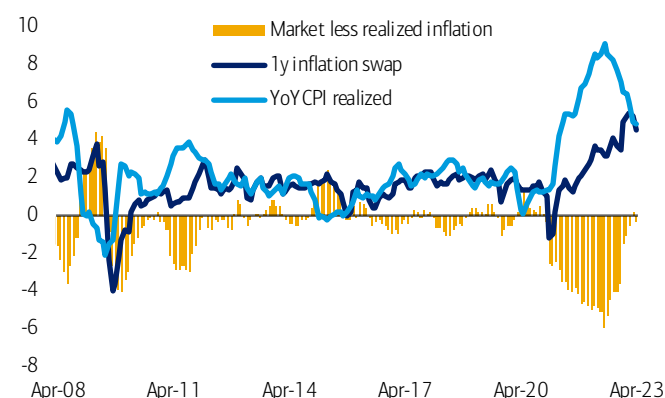


Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Exhibit 6: Market pricing of 1y CPI swap vs realized

Market tends to underprice inflation except for episodes of unforeseen growth shocks



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

Bottom line: US rates vol and cross market vol has recently fallen. Vol has likely declined with resilient US macro economy, slower Fed policy tightening, and narrower range of near-term potential outcomes. In a period of lower vol we recommend focusing on (1) summer seasonals (2) carry expressions (3) inflation protection to hedge any core duration long. Our preferred carry expressions are: vol surface normalization, long 2Y swap spreads, short 2Y outright, and yield enhancement across assets.

Notable Rates and FX Research

- **Global Rates, FX & EM Year Ahead 2023** – [Year Ahead 2023: Pivot ≠ Peak](#), 20 Nov 2022
- [The curious case of r**](#) **Global FX Weekly**, 23 June 2023
- [High hurdles](#) **Global Rates Weekly**, 23 June 2023
- [USD under pressure again](#), **Liquid Cross Border Flows**, 19 June 2023

Rates, FX & EM trades for 2023

For a complete list of our open trade recommendations, as well as our trade recommendations closed over the past 12 months, see the reports below:

[Global FX weekly: The curious case of r** 23 June 2023](#)

[Global Rates Weekly: High hurdles 23 June 2023](#)

Analyst Certification

I, Mark Cabana, 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.



Disclosures

Important Disclosures

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 markets.

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. 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 BoFA 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.

Refer to [BoFA Global Research policies relating to conflicts of interest](#).

"BoFA Securities" includes BoFA Securities, Inc. ("BoFA") 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.

Information relating to Non-US affiliates of BoFA Securities and Distribution of Affiliate Research Reports:

BoFA 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.bofam.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 (HKSF); 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 Investment Industry Regulatory Organization of Canada; 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; BoFA 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; BoFA 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 BoFA 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 HKSF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BoFA 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 prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BoFA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BoFA Securities entities, including BoFA Europe and BoFASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BoFA Securities group. You may be contacted by a different BoFA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BoFA 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. BoFA and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BoFA 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.

Futures and options are not appropriate for all investors. Such financial instruments may expire worthless. Before investing in futures or options, clients must receive the appropriate risk disclosure documents. Investment strategies explained in this report may not be appropriate at all times. Costs of such strategies do not include commission or margin expenses.

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.

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 information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

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 or 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.

Research Analysts

US

Ralph Axel
Rates Strategist
BofAS
+1 646 855 6226
ralph.axel@bofa.com

Paul Ciana, CMT
Technical Strategist
BofAS
+1 646 855 6007
paul.ciana@bofa.com

John Shin
FX Strategist
BofAS
+1 646 855 9342
joong.s.shin@bofa.com

Vadim Iaralov
FX Strategist
BofAS
+1 646 855 8732
vadim.iaralov@bofa.com

Mark Cabana, CFA
Rates Strategist
BofAS
+1 646 855 9591
mark.cabana@bofa.com

Bruno Braizinha, CFA
Rates Strategist
BofAS
+1 646 855 8949
bruno.braizinha@bofa.com

Meghan Swiber, CFA
Rates Strategist
BofAS
+1 646 855 9877
meghan.swiber@bofa.com

Europe

Ralf Preusser, CFA
Rates Strategist
MLI (UK)
+44 20 7995 7331
ralf.preusser@bofa.com

Ruben Segura-Cayuela
Europe Economist
BoFA Europe (Madrid)
+34 91 514 3053
ruben.segura-cayuela@bofa.com

Mark Capleton
Rates Strategist
MLI (UK)
+44 20 7995 6118
mark.capleton@bofa.com

Athanasios Vamvakidis
FX Strategist
MLI (UK)
+44 020 7995 0279
athanasios.vamvakidis@bofa.com

Sphia Salim
Rates Strategist
MLI (UK)
+44 20 7996 2227
sphia.salim@bofa.com

Kamal Sharma
FX Strategist
MLI (UK)
+44 20 7996 4855
ksharma32@bofa.com

Ronald Man
Rates Strategist
MLI (UK)
+44 20 7995 1143
ronald.man@bofa.com

Michalis Rousakis
FX Strategist
MLI (UK)
+44 20 7995 0336
michalis.rousakis@bofa.com

Pac Rim

Adarsh Sinha
FX Strategist
Merrill Lynch (Hong Kong)
+852 3508 7155
adarsh.sinha@bofa.com

Janice Xue
Rates Strategist
Merrill Lynch (Hong Kong)
+852 3508 8587
janice.xue@bofa.com

Shusuke Yamada, CFA
FX/Rates Strategist
BofAS Japan
+81 3 6225 8515
shusuke.yamada@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.

