

## Liquid Insight

## Respect the dots but don't dwell on it

## Key takeaways

- Before 2022, Fed dot plot tended to overestimate year-end FF rate while futures market tended to underestimate.
- Our forecast is in-line with the Fed's view for 2023, but leans more towards market pricing for 2024.
- We see a short-term USD bounce and medium-term weaker USD; short USD calls on rallies to position for medium-term downtrend.

## By Vadim Iaralov/Howard Du

## Chart of the Day: DXY vs 2023 year-end forecasts of federal funds rate

Rates market pricing for year-end 2023 federal funds rate is converging to the Fed's dot plot forecast, supporting our view of a short-term USD bounce back



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

## Implications of year-end FF rate forecasts for the USD

Before 2022, the Fed's median dot tended to overestimate current year-end federal funds target rate while the futures market had more often underestimated. We believe this is due to market's inclination to price-in more risk premium of a growth downturn over the past decade. However, both the Fed and market had overestimated year-end rate level in 2019 and underestimated in 2022. Our current economic forecast is in-line with the Fed's dot plot forecast for rest of 2023 as we see federal funds target rate upper bound reaching 5.75% by year-end. For 2024, our projection is closer to current market pricing. In the FX space, we expect a short-term USD bounce in the summer and more material USD sell-off to take place in 2024. We prefer shorting long-dated out-of-money USD calls on spot rallies to participate in the choppy USD downtrend for the medium to long-term. The risk is a sustained rise in FX vol amid persistent USD rally.

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. 12576733

Timestamp: 10 July 2023 12:30AM EDT

10 July 2023

Rates and Currencies Research  
Global

Global Rates & Currencies Research  
MLI (UK)

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

**Howard Du, CFA**  
G10 FX Strategist  
BofAS  
+1 646 855 6586  
yuhao.du@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

- 6-Jul-23 [Liquidity drain isn't as bad as it looks](#)
- 5-Jul-23 [Six landing scenarios](#)
- 4-Jul-23 [Three stories, same price action](#)
- 3-Jul-23 [Bank bill issuance is surging – why is bills-OIS not shifting?](#)
- 29-Jun-23 [RBA preview: an uncomfortable pause](#)
- 28-Jun-23 [Phase 3 of JPY's structural decline in 2024?](#)
- 27-Jun-23 [Vol vacuum favors summer carry](#)
- 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](#)

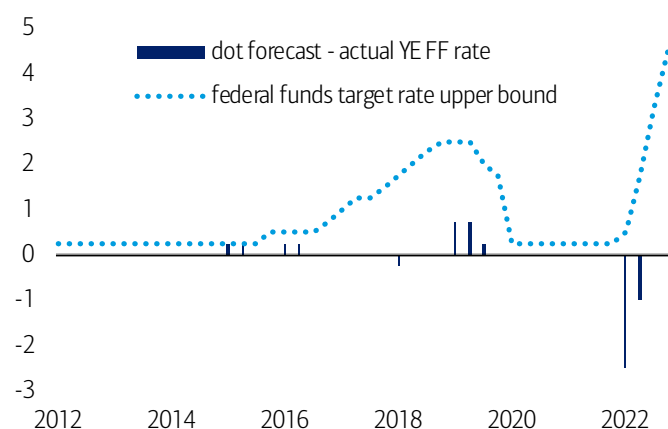
BofA GLOBAL RESEARCH

## The usefulness of Fed's dot plot

Since its emergence in 2012, the Fed dot plot has been a useful tool for the Federal Reserve to communicate forward guidance with market participants. In the latest June 2023 SEP (Summary of Economic Projections), the dot plot median shows the Fed expect two more rate hikes for rest of the year, piquing investor attention. At the same time, the federal funds futures market sees year-end federal funds rate staying around a 5.25-5.50% range, slightly lower than Fed's guidance. In this note, we examine how Fed dot plots and market pricing have fared vs actual year-end federal funds rate and discuss any implications for the FX market in 2023.

### Exhibit 1: Before 2022, Fed has had more of a tendency to overestimate year-end rate level

Current year-end median dot plot forecast for FOMC meetings since 2012 vs actual year-end federal funds target rate

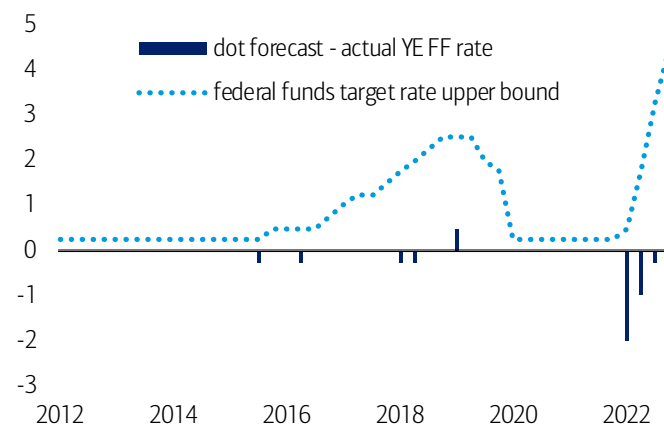


**Source:** BofA Global Research, Bloomberg, The Federal Reserve. A value above 0 means the Fed overestimated year-end federal funds target rate and a value below 0 means the Fed underestimated year-end federal funds target rate.

BofA GLOBAL RESEARCH

### Exhibit 2: Market had often underestimated year-end rate level

Federal funds futures pricing for year-end vs actual year-end federal funds target rate



**Source:** BofA Global Research, Bloomberg. A value above 0 means the market overestimated year-end federal funds target rate and a value below 0 means the market underestimated year-end federal funds target rate.

BofA GLOBAL RESEARCH

## Market tends to underestimate year-end rate level vs Fed dot plot

Exhibit 1 shows the spread between median dot plot forecast (rounded up to nearest 0.25% increment) for current year-end and actual year-end federal funds rate upper bound. Before 2022, the Fed had a slight bias to overestimate year-end federal funds rate but had significantly underestimated how fast rates would rise in 2022.

Exhibit 2 computes the same spread between federal funds futures pricing for current year end (rounded up to nearest 0.25% increment) and actual year-end federal funds rate upper bound. Compared to the median Fed dot plot forecast, the market historically has tended to underestimate year-end rate level. In our view, this is largely due to the market pricing-in a risk premium for the tail risk of downside growth shock.

Each dot represents each Fed official's base case for the federal funds rate. The median dot is effectively the median base case for the committee. By contrast, markets are paid to take risks and have to consider tail risks and market expectation averages across a variety of outcomes. If a severe downturn is possible but unlikely, it would skew market's estimate lower, but figure less into the Fed's median dot.

After the Fed had embarked on its first post-GFC hiking cycle in Dec 2015, the Fed had expected to hike rates twice in 2016. But the market expectation was more muted, sensing downside risks around the corner. As it turned out, the Fed only hiked once in 2016 (Dec) after a series of unexpected shocks had materialized: leading indicators troughed in Q1 2016 amid fears of China slowdown, Brexit surprised in Q2, and a slower-than-expected labor market recovery did not support a hike in Q3. In 2018, market's worry of growth downside started to emerge amid ongoing US-China trade war

tension. The risk had partly materialized by end of 2018 with the US stock market experiencing a 19% decline in Q4 of that year.

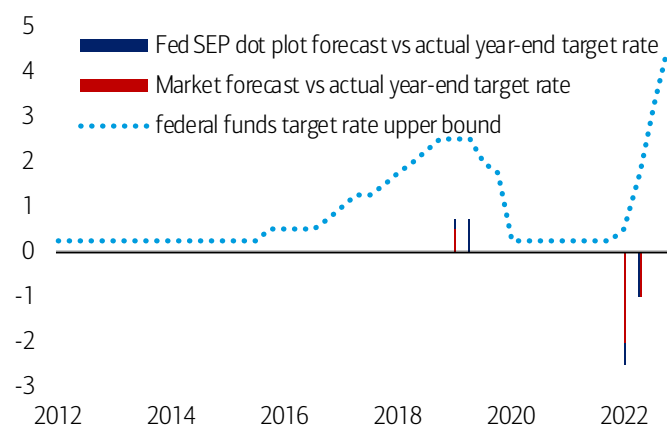
### Both market and the Fed have been wrong in 2019 and 2022

If one treats 25 bp discrepancy between projections and actual year-end rate levels as an acceptable range for error, Exhibit 3 combines the result from Exhibit 1 and Exhibit 2 side-by-side, but removes any spreads that were 25 bp or less. Both the Fed and market had overestimated year-end rate level in 2019 and underestimated year-end rate level in 2022. Based on the historical findings, we believe it is reasonable that market sees slightly lower year-end rate level than the Fed. The risk is for the economy to evolve into either a more stagflationary regime or a fully-fledged global recession where both the Fed and market projections turn out to be wrong.

For now, our economists' view ([US Economic Viewpoint: 14 June 2023](#)) is in-line with the Fed's projection for 2023 but lean closer to market pricing for 2024. In our baseline view, we see 2 more Fed rate hikes in 2023, bringing year-end federal funds target upper bound to 5.75%. But for 2024, we expect the Fed to cut rate to 4.25%, vs 4.75% in the latest Fed dot plot forecast and market pricing of around 4.25%.

#### Exhibit 3: Both Fed and the market overestimated year-end rate in 2019 and underestimated year-end rate in 2022

Fed dot plot forecasts and market-traded futures forecasts that differed by more than 25 bp vs actual year-end federal funds target rates



Source: BofA Global Research, Bloomberg. The Federal Reserve. A value above 0 means overestimation vs actual year-end federal funds target rate and a value below 0 means underestimation vs year-end federal funds target rate.

BofA GLOBAL RESEARCH

#### Exhibit 4: Current market pricing for year-end federal funds rate is only slightly below Fed projection, supporting short-term USD bounce

Latest market pricing of year-end 2023 federal funds rate vs latest median Fed dot forecast, plotted against the DXY index



Source: BofA Global Research, Bloomberg

BofA GLOBAL RESEARCH

### Short-term USD rally and more material USD weakness in 2024

Shortly after the March regional bank stress in the US, market pricing for year-end rate level sharply declined from 5.6% to 3.9% (Exhibit 4). As rates market pricing reverberated closer to the Fed's projection, the USD also rallied back in May.

Into June, rates market had continued to move toward Fed's projection, but the USD's path diverged (Exhibit 4). In our view, improvement in broad risk sentiment and bearish June seasonal factors were the drivers for weaker USD over the past few weeks, but this short-term bearish USD momentum is fading ([FX quant signals to end H1, 26 June 2023](#)). The DXY had been above a 104-handle when rates market last priced year-end rate level above 5.25, so we would argue the current "higher for longer" forward guidance still supports a short-term USD bounce back.

For now, our official EUR/USD forecast is 1.05 for rest of the year. We expect more material USD downtrend to take place in H1 2024 when indications of a growth landing become more apparent. However, the exact timing is highly uncertain and data dependent. As a result, we like shorting long-dated out-of-the-money USD calls on spot rallies as a way to participate in the choppy USD downtrend for the medium to long-

term. The risk is a sharper than expected growth shock in the US, turning into a global recession and the USD broadly appreciates on rising demand for haven currencies.

## Notable Rates and FX Research

- **Global Rates, FX & EM Year Ahead 2023** – [Year Ahead 2023: Pivot ≠ Peak](#), 20 Nov 2022
- [Data points to more divergence ahead](#) **Global FX Weekly**, 7 July 2023
- [Break out the shorts](#) **Global Rates Weekly**, 7 July 2023
- [Ahead of H2](#), **Liquid Cross Border Flows**, 3 July 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: Data points to more divergence ahead 07 July 2023](#)

[Global Rates Weekly: Break out the shorts 07 July 2023](#)

## Analyst Certification

We, Howard Du, CFA and Vadim Iaralov, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective 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](http://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](mailto:ralph.axel@bofa.com)

**Paul Ciana, CMT**  
Technical Strategist  
BofAS  
+1 646 855 6007  
[paul.ciana@bofa.com](mailto:paul.ciana@bofa.com)

**John Shin**  
FX Strategist  
BofAS  
+1 646 855 9342  
[joong.s.shin@bofa.com](mailto:joong.s.shin@bofa.com)

**Vadim Iaralov**  
FX Strategist  
BofAS  
+1 646 855 8732  
[vadim.iaralov@bofa.com](mailto:vadim.iaralov@bofa.com)

**Mark Cabana, CFA**  
Rates Strategist  
BofAS  
+1 646 855 9591  
[mark.cabana@bofa.com](mailto:mark.cabana@bofa.com)

**Bruno Braizinha, CFA**  
Rates Strategist  
BofAS  
+1 646 855 8949  
[bruno.braizinha@bofa.com](mailto:bruno.braizinha@bofa.com)

**Meghan Swiber, CFA**  
Rates Strategist  
BofAS  
+1 646 855 9877  
[meghan.swiber@bofa.com](mailto:meghan.swiber@bofa.com)

## Europe

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

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

**Mark Capleton**  
Rates Strategist  
MLI (UK)  
+44 20 7995 6118  
[mark.capleton@bofa.com](mailto:mark.capleton@bofa.com)

**Athanasios Vamvakidis**  
FX Strategist  
MLI (UK)  
+44 20 7995 0279  
[athanasios.vamvakidis@bofa.com](mailto:athanasios.vamvakidis@bofa.com)

**Sphia Salim**  
Rates Strategist  
MLI (UK)  
+44 20 7996 2227  
[sphia.salim@bofa.com](mailto:sphia.salim@bofa.com)

**Kamal Sharma**  
FX Strategist  
MLI (UK)  
+44 20 7996 4855  
[ksharma32@bofa.com](mailto:ksharma32@bofa.com)

**Ronald Man**  
Rates Strategist  
MLI (UK)  
+44 20 7995 1143  
[ronald.man@bofa.com](mailto:ronald.man@bofa.com)

**Michalis Rousakis**  
FX Strategist  
MLI (UK)  
+44 20 7995 0336  
[michalis.rousakis@bofa.com](mailto:michalis.rousakis@bofa.com)

## Pac Rim

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

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

**Shusuke Yamada, CFA**  
FX/Rates Strategist  
BofAS Japan  
+81 3 6225 8515  
[shusuke.yamada@bofa.com](mailto: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.

