

Japan Watch

BoJ review: Status quo

At its last monetary policy meeting (MPM) of the year, the Bank of Japan (BoJ) left all key policy targets unchanged, in line with our and consensus expectations. While few expected the BoJ to surprise with a policy change today, the focus was on whether the central bank would signal that it was leaning toward further normalization steps—including an exit from negative interest rate policy (NIRP)—in the near future. Our own base case for today's MPM was a "hawkish hold," in which the central bank would drop such hints either through its policy statement or Governor Ueda's press conference (see BoJ preview: Laving the groundwork for an exit from NIRP, 14 December 2023).

However, while Governor Ueda indicated gradual progress towards the 2% price stability target and retained the optionality for a policy change next month, neither the MPM statement nor the governor's press conference remarks suggest that the BoJ is moving significantly closer to declaring 2% inflation goal "in sight" very soon. We discuss the key points below.

MPM statement

The December MPM statement was largely a continuation of October's. There were no changes to the BoJ's assessment of risks to the outlook, nor its forward guidance (see Exhibit 3). And the BoJ's outlook for the economy and prices was largely a carbon copy of the previous meeting's except for the removal of language acknowledging the impact of surging oil on import prices. Other than this, the changes largely reflected mark-to-marketing of recent data in the BoJ's current assessment of growth and inflation.

Governor Ueda press conference

Given increased market speculation of near-term NIRP exit following deputy governor Himino's 6 December speech and Governor Ueda's 7 December Diet remarks (<u>Bol Watch: Moving closer to the end of NIRP</u>, 8 December 2023), questions at the press conference centered on the BoJ's assessment of the "distance" to sustained and stable 2% inflation. We note the following highlights:

- 1) Asked about the intention behind his recent Diet comment that the BoJ's handling of monetary policy will get "even more challenging from the year-end and through next year," Ueda clearly pushed back against the idea that the "year-end" language was a nod to near-term policy moves. Instead, he explained that he was speaking generally about his resolve towards his job as he entered his second year as BoJ governor.
- 2) Asked about the BoJ's assessment of the distance to sustained and stable 2% inflation, Governor Ueda acknowledged that "the probability that underlying inflation would increase gradually towards the 2% price stability target...continued to rise little by little," pointing to the upbeat results of the December Tankan and other data (see BoJ Tankan (Dec): Further tailwinds for normalization, 13 December 2023). However, he was careful to stress lingering uncertainties that made it difficult for the BoJ to judge, at this stage, whether the "virtuous cycle between wages and prices will strengthen."

19 December 2023

Economics Japan

Izumi Devalier Japan and Asia Economist BofAS Japan +81 3 6225 6257 izumi.devalier@bofa.com

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

Tomonobu Yamashita Rates Strategist BofAS Japan +81 3 6225 7950 tomonobu.yamashita@bofa.com

Takayasu Kudo Japan and Asia Economist BofAS Japan +81 3 6225 8592 takayasu.kudo@bofa.com

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

Refer to important disclosures on page 6 to 7.

Specifically, he cited 1) feedback from the BoJ's latest "hearings" with corporates, that there were many companies that had not yet finalized their stance on next year's wage revisions, partly because of high uncertainties around the economic outlook; and 2) feedback, mainly from SMEs, that they are finding it difficult to pass on higher labor and overhead costs to selling prices.

3) Asked whether the BoJ would have sufficient data to make the judgment on sustained and stable 2% inflation by its next monetary policy meeting, on 22-23 January, Governor Ueda began by explaining the judgment would be based on new information that comes in between now and the next MPM. On this point, he flagged the upcoming BoJ branch managers' meeting (scheduled for 11 January) and pointed out that the central bank would be gathering information from various sources. This followed earlier comments that stressed the importance of anecdotal information gleaned from its hearings with corporates in evaluating the outlook for wage hikes and inflation.

Having said this, he also admitted that, "we will have some new data [before the Jan '24 MPM], but not a lot."

4) Finally, in discussing what kind of remaining datapoints and information the BoJ was seeking to be sufficiently confident in the achievement of its 2% price stability target, Governor Ueda repeated his post-Oct MPM press conference remarks in which he stressed not only wage hikes but their pass through to further price hikes (see <u>Japan Macro Watch: BoJ review: No red lines 31 October 2023</u>).

Policy implications

Since September, we have viewed the most likely window for BoJ NIRP exit/YCC removal as January – April 2024, with the 22-23 January MPM our base case (see <u>BoJ Watch: Inching closer to normalization</u>, 21 September 2023).

Governor Ueda chose his words careful at today's press conference and retained the optionality of moving in January. But overall, his stance struck us as cautious, and we think the latest BoJ communications reduces the likelihood of a January policy change while raising the risk that NIRP/YCC exit would be delayed until April.

In the near-term, we will keep an eye out for Governor Ueda's speech to business leaders (Keidanren) next week (25 Dec) as well as the Summary of Opinions for the December MPM (due 27 Dec) as we review our BoJ call (Exhibit 1; Exhibit 4).

- Izumi Devalier & Takayasu Kudo, Japan Economists

Rates: would not price out NIRP removal in 2024

The BoJ kept all key policy settings unchanged. There was no clear hawkish message from the BoJ. We see the today's MPM as "Dovish hold". The yen rates market also interpreted the December MPM as dovish. The JGB yields across the curve decreased, and the JGB futures rose after the BoJ's announcement.

On the other hand, we think the yen rates market will not easily price out the NIRP removal in 2024. The yen rates market is expected to maintain its cautious stance on BoJ's further moves ie, the demand for JGBs is unlikely to increase in 2024.

In addition, the BoJ maintained its policy for expanding monetary base at the December MPM. Thus, we think a hurdle for the further reduction in BoJ's bond buying operations is high in the near term (for details, see <u>Japan Rates Watch: A reduction in Rinban operations is likely to focus on 5-10yr residual maturities 12 December 2023</u>), though weak demand for JGBs is likely to raise the JGB yields in a gradual manner. We expect the 10yr JGB yield to rise to 1.30% at end-2024, and we maintain our above-consensus forecast.

- Tomonobu Yamashita, Rates Strategist



FX: BoJ risk to be priced out for now

The BoJ did not make any signal for NIRP removal at today's MPM. The market had positioned for a hawkish outcome and it was disappointed by no pivot, leading to USD/JPY's rally. As we have argued, even if the BoJ had removed NIRP at today's meeting, the impact on USD/JPY should be secondary to the Fed's move considering the limited scope for additional hikes. From this perspective, the dovish FOMC outcome last week was more significant and keeps us cautious on USD/JPY near-term. The market may want to sell USD/JPY's rally into 145, capping its upside for now. Longer-term, we believe structural capital outflow from Japan and the BoJ's still accommodative policy would keep JPY undervalued.

- Shusuke Yamada, FX/Rates Strategist

Appendix

Exhibit 1: Schedule of BoJ monetary policy meetings and key releases in 2023-2024 2023-2024

Date o	f MPM	Outlook Report	Summary of opinions	MPM Minutes		
30 Oct (Mon)	31 Oct (Tue)	31 Oct (Tue)	9 Nov (Thu)	22 Dec (Fri)		
18 Dec (Mon)	19 Dec (Tue)	-	27 Dec (Wed)	26 Jan '24 (Fri)		
22 Jan (Mon)	23 Jan (Tue)	23 Jan (Tue)	31 Jan (Wed)	25 Mar (Mon)		
18 Mar (Mon)	19 Mar (Tue)	-	28 Mar (Wed)	2 May (Thu)		
25 Apr (Thu)	26 Apr (Fri)	26 Apr (Fri)	9 May (Thu)	19 Jun (Wed)		
13 Jun (Thu)	14 Jun (Fri)	-	24 Jun (Mon)	5 Aug (Mon)		
30 Jul (Tue)	31 Jul (Wed)	31 Jul (Wed)	8 Aug (Thu)	26 Sep (Thu)		
19 Sep (Thu)	20 Sep (Fri)	-	1 Oct (Tue)	6 Nov (Wed)		
30 Oct (Wed)	31 Oct (Thu)	31 Oct (Thu)	11 Nov (Mon)	24 Dec (Tue)		
18 Dec (Wed)	19 Dec (Thu)	-	27 Dec (Fri)	TBD		

Source: BofA Global Research, Bank of Japan

BofA GLOBAL RESEARCH

Exhibit 2: G3 central bank decision calendar

2024

						20	24					
	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
BoJ	23		19	26		14	31		20	31		19
DUJ	(Tue)		(Tue)	(Fri)		(Fri)	(Wed)		(Fri)	(Thu)		(Thu)
		01	21		02	13		01	19		08	19
Fed		(Thu)	(Thu)		(Thu)	(Thu)		(Thu)	(Thu)		(Fri)	(Thu)
		[T+1]	[T+1]									
ECD.	25		07	11		06	18		12	17		12
ECB	(Thu)		(Thu)									

Source: BofA Global Research, Bloomberg Note: Blue shaded dates represent decisions associated with Summary of Economic Projections (SEP) for the FOMC, Staff projections for the ECB, and Outlook Report for the BoJ.

BofA GLOBAL RESEARCH



Exhibit 3: Summary of BoJ monetary policy statement (December 2023)

Key changes from October '23 MPM in red

10	Dα	cem	ıbα	w A	ЛÞ.	1.₹.

Overall assessment of Japan's economy

Has recovered moderately

Have been affected by the developments in overseas and more or less flat, supported by a **Exports**

waning of the effects of supply-side constraints

Business investment Has been on a moderate increasing trend in

ce, despite being Has continued to increase moderately in Private consumption

affected by price rises Housing investment Has been relatively weak

Public investment Has been more or less flat increase

Have been affected by the developments in overseas and more or less flat, supported by a Industrial production

waning of the effects of supply-side constraints

Labor market Has improved moderately Financial conditions Have been accommodative

Year-on-year rate of increase in the CPI (all items less fresh food) is slower than a while ago,

mainly due to the effects of pushing down energy prices from the government's economic Consumer prices measures, but it has been at around 3 in the range of 2.5-3.0 percent recently owing to the

effects of a pass-through to consumer prices of cost increases led by a rise in import prices.

Inflation expectations have risen moderately

Outlook for the Japanese economy

Consumer prices

Japan's economy is likely to continue recovering moderately, supported by factors such as the materialization of pent-up demand, although it is expected to be under downward pressure stemming from a slowdown in the pace of recovery in overseas economies. Thereafter, as a virtuous cycle from income to spending gradually intensifies, Japan's economy is projected to

continue growing at a pace above its potential growth rate.

The year-on-year rate of increase in the CPI (all items less fresh food) is likely to be above 2% through fiscal 2024, due to factors such as the remaining effects of the pass-through to consumer prices of cost increases led by the past rise in import priceses. Thereafter, the rate of increase in the CPI is projected to decelerate owing to dissipation of these effects. Meanwhile, underlying CPI inflation is likely

to increase gradually toward achieving the price stability target, as the output gap turns positive and as medium- to long-term inflation expectations and wage growth rise.

Risks to the outlook

Conduct of monetary

policy

Concerning risks to the outlook, there remain extremely high uncertainties for Japan's economy, including developments in overseas economic activity and prices; developments in commodity prices, and domestic firms' wage- and price-setting behavior. In this situation, it is necessary to pay due attention to developments in financial and foreign exchange markets

and their impact on Japan's economic activity and prices.

With extremely high uncertainties surrounding economies and financial markets at home and abroad, the Bank will patiently continue with monetary easing while nimbly responding to developments in economic activity and prices as well as financial conditions. By doing so, it will aim to achieve the price stability target of 2 percent in a sustainable and stable manner, accompanied by wage increases. The Bank will continue with QQE with Yield Curve Control, aiming to achieve the price stability target of 2 percent, as long as it is necessary for

maintaining that target in a stable manner.

It will continue expanding the monetary base until the year-on-year rate of increase in the Overshoot commitment observed CPI (all items less fresh food) exceeds 2 percent and stays above the target in a

stable manner

Future conduct of monetary policy and forward guidance for rates

For the time being, the Bank will not hesitate to take additional easing measures if necessary,

Source: Bank of Japan, BofA Global Research

BofA GLOBAL RESEARCH



Exhibit 4: Calendar of key BoJ-related events
25 Dec Ueda speech and 27 Dec release of 19 Dec MPM Summary of Opinions to be closely watched in the very near term

Date	Key events				
Dec 4	1st Workshop re: BoJ Broad-Perspective Review				
Dec 6	Speech by Deputy Governor Ryozo Himino (Oita)				
Dec 7	Governor Ueda Semiannual Report on Currency & Monetary (Upper House)				
Dec 13	Boj Tankan (4Q)				
Dec 14	Start of blackout period for 18-19 Dec MPM				
Dec 18-19	Boj MPM				
Dec 25	Governor Ueda speech at the meeting of Councillors of Keidanren (Tokyo)				
Dec 27	Summary of Opinions of the 18-19 Dec MPM				
2024 January	Start of Regular Diet Session				
Jan 11	Regional Economic Report & Quarterly meeting of BoJ Branch Managers				
Late January	Keidan to release "Report of the Special Committee on Management and Labor Policy", reflecting big business' recommended negotiating stance				
Jan 22-23	BoJ MPM (outlook report)				
End Jan / Early Feb	Release of Survey on wage increases by Institute for Labour Administration				
Feb 15	4Q CY23 GDP (1st estimate)				
Mar 11	4Q CY23 GDP (revised)				
Mar 18-19	Boj MPM				
Mid-Mar	Rengo announces results of FY24 Shunto preliminary respond				
Mar - Jul	Spring wage negotiation results to be announced by industry organizations				
Apr 1	BoJ Tankan (1Q)				
Early Apr	Regional Economic Report & Quarterly meeting of BoJ Branch Managers				
Apr 25-26	BoJ MPM (outlook report)				
Around May	2nd Workshop re: BoJ Broad-Perspective Review				
Mid-May	1Q CY24 GDP (1st estimate)				
Late May / early Jun					
Early Jun	1Q CY24 GDP (revised)				
Jun 13-14	BoJ MPM				
Jul 30-31	BoJ MPM (outlook report)				
Aug	Results of spring wage increases in major private companies (MHLW)				
Sep	LDP presidential election				
2025Summer	Upper House election				
Fall	Lower House term ends				

Source: BofA Global Research, Reuters, Bank of Japan

BofA GLOBAL RESEARCH



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.

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.

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.

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. Individuals identified as economists do not function as research analysts under U.S. law and reports prepared by them are not research reports under applicable U.S. rules and regulations. Macroeconomic analysis is considered investment research for purposes of distribution in the U.K. under the rules of the Financial Conduct Authority. 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.

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

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 Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSFC); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch (Canada): Merrill Lynch (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 (Brazil): 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 Merrill Lynch (DIFC) is done so in accor

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.

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

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

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

Copyright and General Information:

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

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

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

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

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

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

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.

