

EM Alpha

The market implications of the HK FY 24-25 Budget

FY 24-25 budget emphasizes infrastructure spending funded by bond issuances

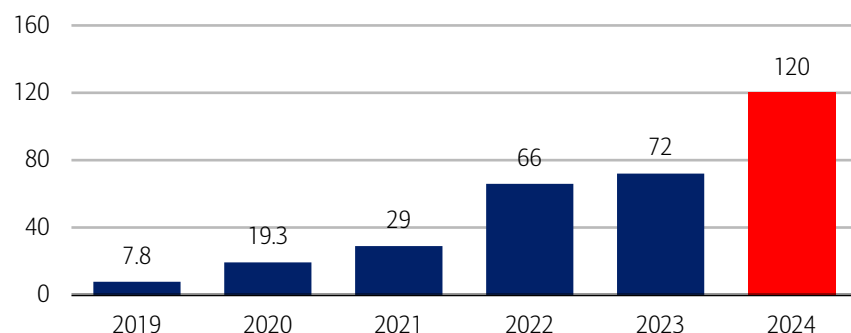
The details to the Hong Kong government budget for FY 2024-2025 shows the HK government remains committed to a strong increase in infrastructure spending despite government revenue is cyclically weak. Total estimated commitments of the Capital Works Reserve Fund (CWRP) rose and are now at HK\$ 650bn (from HK\$ 633bn in the last budget). At a time when land sales are weak, this future commitment will be funded by annual bond issuances. For the coming fiscal year, the HK government will net raise HK\$ 120bn from the bond market to support infrastructure spending. Recurrent expenditures will be supported by using accumulated savings with a net transfer of HK\$ 100bn from the Land Fund to the General Revenue Account. This scenario is quite consistent with the base case we laid out in [FY24-25 Budget Preview: Between a rock and a hard place.\(see note\)](#)

Staying structurally bearish on long end HK-US spreads

The Hong Kong government budget for FY 2024-2025 reveal plans to revive the property market by all removing curbs to buying. This can help spur HKD loan growth should the mortgage market rebound from these supportive government measures. Secondly, FY 24-25 can see the debut of infrastructure bonds which may be issued in HKD. Both these factors can help back-end HK-US IRS spreads normalize and go back closer to its historical average of 30bps. The current spread is -2bps. **We stay paid 10y HK-US IRS** (current: -2bps, entry: -2bps, target 40bps, stop: -22bps, carry: -2.4bps/quarter). Risks to the trade is the continuation of weak HKD loan growth and further asset-swap activities by Hong Kong banks.

Exhibit 1: Proceeds from issuance of Hong Kong government bonds (HK\$ Bn)

Net issuance of HKGBs which impacts fiscal reserves is set to rapidly increase in FY 24-25



Source: HK Treasury

BofA GLOBAL RESEARCH

29 February 2024

GEM FI & FX Strategy
Emerging Markets Global

Chun Him Cheung, CFA
Emerging Asia FI/FX Strategist
Merrill Lynch (Hong Kong)
+852 3508 3644
chunhim.cheung@bofa.com

HK - Hong Kong

FY – Fiscal Year

IRS – interest rate swap

For a full list of our recommended trades, see: “Global Emerging Markets Weekly: What if the Fed doesn’t cut? 23 February 2024”

SAR – Special Administrative Region

HKGB – Hong Kong government bond

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 7 to 9. Analyst Certification on page 6.

12665231

Timestamp: 28 February 2024 07:28PM EST

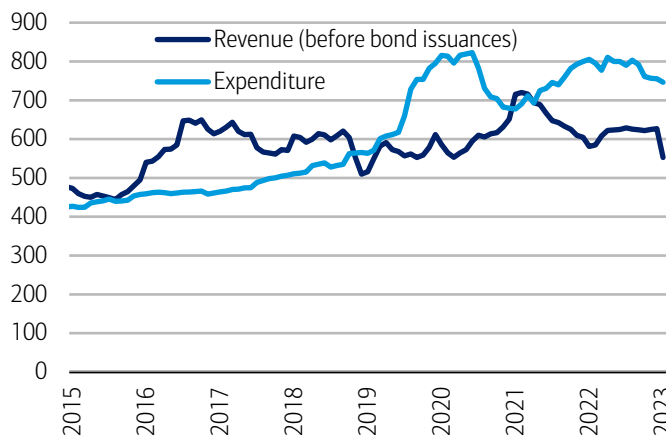
The market implications of the HK FY 24-25 Budget

We have several key takeaways from the Hong Kong government budget for FY 2024-2025, unveiled on February 28, 2024 (see detailed full note on the budget here: [Hong Kong Watch: 2024-25 Budget: Property policy relaxation beats expectation 28 February 2024](#)):

- 1) The Hong Kong SAR government is struggling to increase revenue.** The budget revealed one of the major measures to increase revenue is an increase in the salary tax rate (from 15% to 16%) for very high-income earners on the marginal income above HK\$ 5mn. Given the small number of workers this will impact, the expected revenue raised is limited, estimated to be less than HK\$ 1bn. On land sales for FY 24-25, the HK government expects to collect HK\$ 35bn, a fraction of the HK\$ 143bn raised back in FY 22-23. All said, the Hong Kong government is unable to meaningfully increase revenue to fund its rising expenditures (**Exhibit 2**).
- 2) Expenditures will continue to rise, led by infrastructure spending.** As our HK economist reported, the growth in infrastructure spending will accelerate in the next four fiscal year, with the expected future commitments in infrastructure spending to be HK\$ 650bn, up from HK\$ 633bn in the last fiscal year (**Exhibit 3**). Historically, Hong Kong's infrastructure was financed by the strong land premium raised from land sales. Should the Hong Kong government achieve its land sale target of HK\$ 35bn in the coming fiscal year, this is still well short of HK\$ 130bn the Capital Works Reserve Fund is expecting to spend.

Exhibit 2: Hong Kong government's revenue versus expenditure (HK\$ Bn, 12-month sum)

We expect the expenditures of the Hong Kong government to continue to exceed revenue for the coming fiscal year

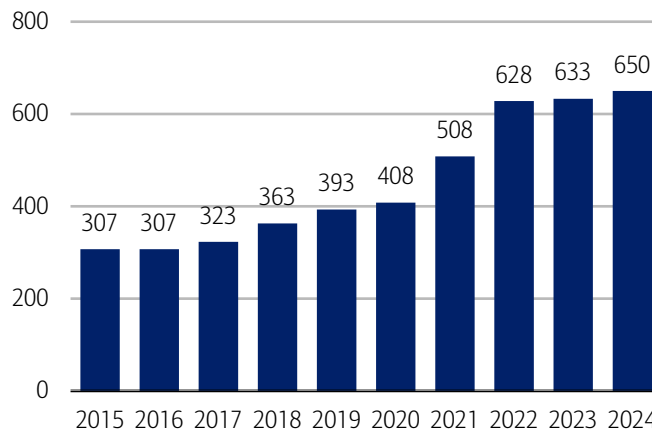


Source: Bloomberg, CEIC

BofA GLOBAL RESEARCH

Exhibit 3: Estimated outstanding commitment of the CWRF (HK\$ Bn)

The Hong Kong government commits to spending HK\$ 650bn in infrastructure in the coming years



Source: HK Treasury

BofA GLOBAL RESEARCH

- 3) The recurrent needs of the General Revenue Account are being filled by the Land Fund.** The FY 24-25 estimates show that the General Revenue Account (GRA) will have expenditures exceed revenue by HK\$ 110bn. Without transfer from other funds, this would push the GRA down to HK\$30bn by the end of the next fiscal year, or less than one month of expenditures (In 2023, monthly expenditures of the Hong Kong government were HK\$ 62bn). To avoid running the cash levels to a very low level, Hong Kong's recurrent expenditures will be covered by a net transfer of HK\$ 100bn from the Land Fund, Hong Kong's long-term savings. (**Exhibit 4**) The net transfer from the Land Fund to cover for the shortfall in the GRA is a new development and shows: 1) the lack land sales which to fund the Capital Works Reserve Fund; and 2) the existing

commitments of the CWRP and its inability to support the GRA.

Exhibit 4: Net transfer between the government funds of HK (HK\$ Mn)

In FY 24-25, recurrent spending will be funded by the Land Fund

Net transfer between funds (HK\$ Mn)	2017	2018	2019	2020	2021	2022	2023	2024
General Revenue Account	(23,864)	(23,863)	57,400	47,926	58,523	23,636	95,229	99,815
Capital Works Reserve Fund			(80,000)	(55,000)	(84,000)	(35,000)	(100,000)	
Capital Investment Fund	9,000			6,000	20,135			
Civil Service Pension Reserve Fund	3,800	2,300	1,530		1,840	3,021		
Disaster Relief Fund	64	50	70	74	59	68	21	185
Innovation and Technology Fund	9,000		20,000		2,000	5,175	4,750	
Land Fund								(100,000)
Loan Fund	2,000	2,000	1,000	1,000	1,443	2,000		
Lotteries Fund						1,100		

Source: HK Treasury

BofA GLOBAL RESEARCH

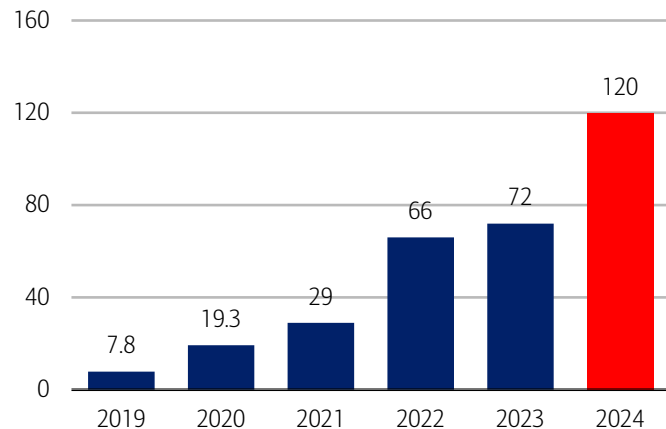
- 4) **Upcoming infrastructure is being financed by bond issuances.** Historically, Hong Kong's infrastructure is financed by land sales. However, as this is no longer a viable strategy in the near term, the HK government is turning to the bond market to fill the financing gap. In the FY 24-25 Budget, the HK government revealed it will issue a historic amount of Green and Infrastructure Bonds, at HK\$ 120bn (**Exhibit 5**). This is a rapid acceleration of bond issuances which impacts the fiscal reserves (as issuance under the retail and institutional program does not impact the level of fiscal reserves).

In the budget, the Finance Secretary mentioned that the HK government “**plan to issue bonds of about \$95 billion to \$135 billion per annum** in the next five years to drive the development of the Northern Metropolis and other infrastructure projects” and “**the ratio of Government debt to GDP will be in the range of about 9 to 13 per cent** from 2024-25 to 2028-29”.

- 5) **The announcement of the removal of all property market curb is positive for mortgage growth.** At first glance, this measure suggests the HK government is trying to support property prices, not unlike the policies currently enacted in mainland China. All else equals, these policies should increase demand for HK properties at a time when demand is depressed by weak growth and high interest rate payment while supply of unsold housing is at its highest level since 2005.

Exhibit 5: Proceeds from issuance of Hong Kong government bonds (HK\$ Bn)

Net issuance of HKGBs which impacts fiscal reserves is set to rapidly increase in FY 24-25



Source: HK Treasury

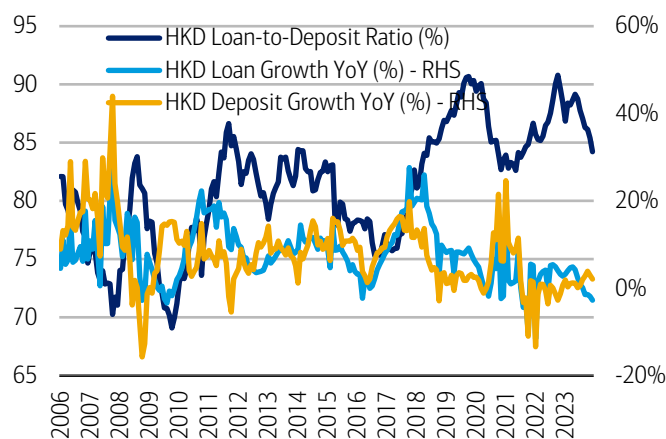
BofA GLOBAL RESEARCH

The key market impacts from the FY 24-25 HK Budget are listed below:

- 1) The removal of the property market curbs should boost HKD loan growth.** Current loan growth in HKD remains weak relative to HKD deposit growth resulting in the HKD loan-to-deposit ratio to decline (**Exhibit 6**). The loan-to-deposit ratio is a proxy for what is happening in the overall asset-and-liability mix of Hong Kong banks between HKD and in foreign currencies (FX). A declining HKD loan-to-deposit ratio means that there is too much HKD funding chasing too few HKD assets. At the trough, in October 2023, the annual growth of HKD deposits exceeded annual growth of HKD assets by HK\$ 317bn, implying extra HKD funding that seeking a home (**Exhibit 7**). That excess HKD funding typically went to being invested in FX bond, especially when US Treasuries at the 10-year pushed to 5% around that period.

Exhibit 6: HKD Loan and Deposit growth (%)

The weakness in HKD loan growth is resulting the loan-to-deposit rate to decline

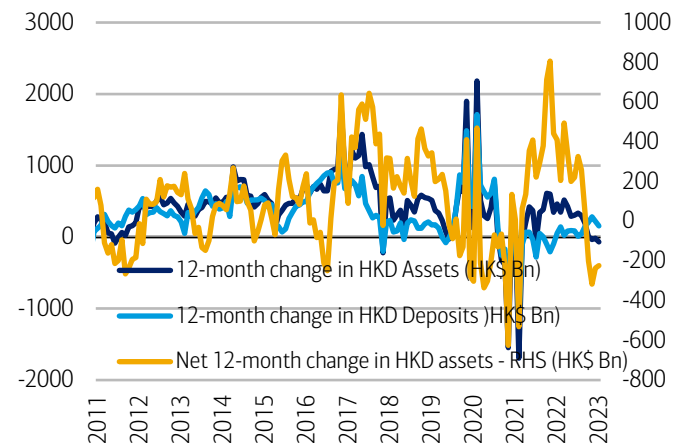


Source: Bloomberg

BofA GLOBAL RESEARCH

Exhibit 7: 12-month change in HKD asset versus deposit growth (%)

In the recent past, net funding in HKD exceed asset growth by HK\$ 317bn



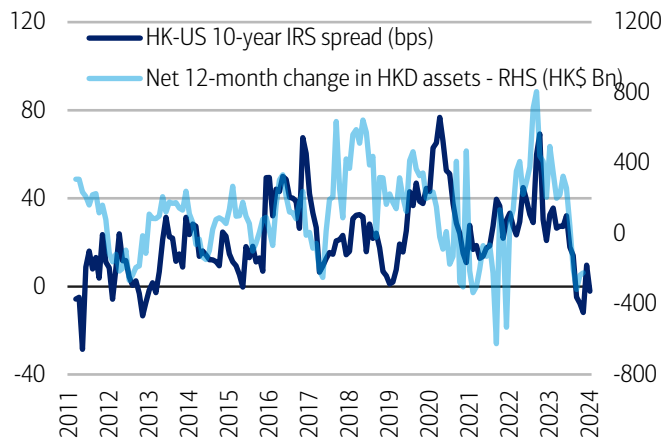
Source: CEIC

BofA GLOBAL RESEARCH

- 2) **Excess HKD funding depressed long-end HIBOR-SOFR spreads.** The excess HKD funding is invested in foreign currency bonds which are then swapped back to create a synthetic HKD fixed-duration asset. On net, this results in Hong Kong banks receiving HIBOR, especially on the long-end. This net receiving activity on HIBOR swap pushed 10y HK-US IRS spreads to a low level, especially compared to the average of the past decade. **Exhibit 8** shows, since 2021, 10-year HK-US IRS spreads have been strongly motivated by the growth in net HKD assets on the balance sheet of Hong Kong banks (where negative growth would result in asset-swap and lower HK-US spreads).

Exhibit 8: HK-US 10-year spreads and net changes in HKD assets

Since 2021, 10-year US-HK spreads have been motivated by the change in the net HKD position of HK banks



Source: CEIC

BofA GLOBAL RESEARCH

- 3) **Rising HKD bond issuances can help normalize back-end HK-US spreads.**

In addition to rising HKD loan growth, the increase in other HKD assets, such as Hong Kong government bonds, can also help normalize back-end HK-US spreads. Historically, the Hong Kong government runs the retail and institutional bond program which are issued in HKD (**Exhibit 9**). The issuance of institutional and retail bonds is not considered “true” debt as the funds raised are reinvested with the HKMA into FX assets. Despite not being true debt, this will still impact total HKD assets held by HK banks as it does represent an increase in local duration supply.

- 4) **The fastest and most relevant category of HKGB is the growth of Green Bonds.**

In the latest budget, the final estimate for Green Bond issuance in FY 23-24 is for HK\$ 72.5bn. As **Exhibit 10** shows, only a small share of Green Bonds of total outstanding is issued in HKD (at 12%). Almost half of Green Bonds are issued in USD, followed by EUR and CNH. Issuances in foreign currency bond won’t directly impact HK-US spreads but can impact cross-currency spreads when the foreign currency bond is swapped to become a synthetic HKD bond.

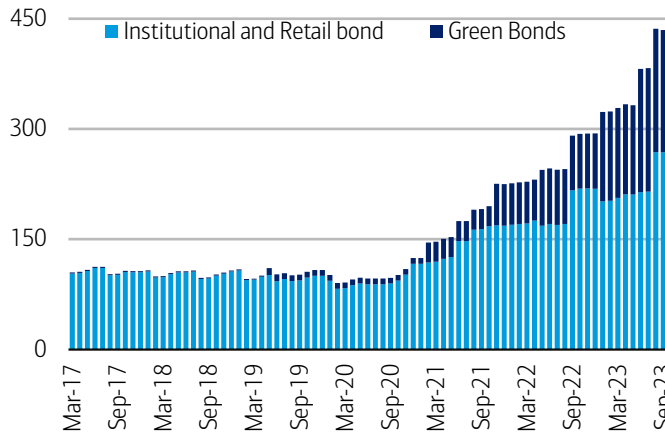
- 5) **Infrastructure bonds may be issued in HKD.** However, the details to the Green Bond issuance schedule for the upcoming FY 24-25 is not yet finalized. In the budget, the Finance Secretary mentioned that HK\$ 120bn in bond proceeds will be raised “to drive green/sustainable and infrastructure projects”.

Infrastructure Bonds have been mentioned in the FY 23-24 budget but have yet to be issued. FY 24-25 may see the first issuances of Hong Kong’s infrastructure bonds. Judging from the language in which Infrastructure Bonds were introduced in the FY 23-24 Budget, we cannot rule out these new bonds

can be issued in HKD, which would then go on to impact HK-US long-end spreads.

Exhibit 9: Outstanding supply of Hong Kong government bond (HK\$ Bn)

In the past three years, various types of HKGB have been rising

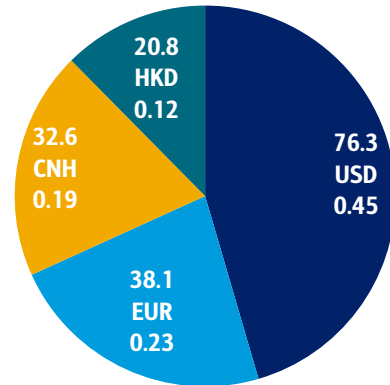


Source: CEIC

BofA GLOBAL RESEARCH

Exhibit 10: Outstanding Green Bonds by currency compositions and HK\$ Bn (As of Aug 2023)

The largest share of Green Bonds are issued in USD



Source: HK Treasury

BofA GLOBAL RESEARCH

Staying paid 10-year HK-US IRS spread: With prospects of HKD loan growth, led by mortgage rebound and the debut of infrastructure bonds, we think that back-end HK-US spreads can normalize from the current depressed levels. We stay paid 10y HK-US IRS (current: -2bps, entry: -2bps, target 40bps, stop: -22bps, carry: -2.4bps/ quarter). Risks to the trade is the continuation of weak HKD loan growth and further asset-swap activities by Hong Kong banks.

Analyst Certification

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

Special Disclosures

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

Disclosures

Important Disclosures

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

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

BofA Securities fixed income analysts regularly interact with sales and trading desk personnel in connection with their research, including to ascertain pricing and liquidity in the fixed income 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 BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

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

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 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 Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

This information: has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; 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 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 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.

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.

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

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

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

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

Copyright and General Information:

Copyright 2024 Bank of America Corporation. All rights reserved. iQDatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities.

Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public 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.