

## Banks

# 3Q: Impact of higher rates on capital and credit quality in focus

Earnings Preview

## Bank spreads continue to underperform

Recent spread widening in regional banks of about 20-30 bps since 9/25 (vs. industrials +7 bp) has brought spreads back to June levels owing to concerns about the implication of higher long end rates on banks' capital and earnings (NIM). Going into 3Q, we expect investors' focus to center on this as well as on updates on credit quality trends, specifically in credit cards and commercial real estate (CRE). Other matters such as the Basel III end game and TLAC/LTD regulatory proposals and progress on cost savings efforts may be less of a focus. We continue to favor strong deposit franchises and diversified businesses, such as USB (Overweight), amid the uncertainty in the sector.

## Higher rates and unrealized losses on securities

Concerns about rising rates and consequent impact on securities portfolios, unrealized losses, capital and net interest margins have resurfaced with the 55 bp increase in 10Y UST yield since Aug 31 and 73 bp increase in 3Q23 (up 8 bp in 4Q to date). However, we look for updates on strategic maneuvers and planning around securities portfolio restructurings to be in greater focus than in past quarters—especially as deposits stabilized in the quarter, defusing liquidity concerns for the sector overall. While long end rates have reached more attractive levels for banks to attempt to lock in higher rates, the cost of restructurings (i.e. the hit to capital) to execute such plans has also increased making it more challenging economically. Banks with non-core assets that can be sold at material gains are better positioned, all else equal, in our view. Separately on the capital front, credit-linked notes could become a more popular tool for banks to reduce RWA and improve capital ratios following updated guidance from the Federal Reserve in September.

## TFC in talks to sell rest of Insurance; restructuring next?

According to media reports, Truist (TFC) is in talks with Stone Point to sell the remaining 80% stake in its insurance brokerage business for \$10B. In September, TFC sized the potential capital uplift from selling the 80% stake at 200 bp (vs. ~30bp from selling the first 20% stake in 2Q), implying a possible \$8.7B after tax gain on \$435B RWA. It's unclear in our view if TFC would use the gain to restructure the AFS securities portfolio. TFC bonds were 4-6 bp tighter, in line with other regionals, whereas the stock outperformed +6.6% vs. KRE ETF +1.6%.

## Credit quality deterioration in cards but well reserved

Increasing signs of a weakening consumer should show up in credit card portfolios via higher credit losses (Exhibit 4) as reported by the card-focused banks through August as well as strong card loan growth as consumers continue to spend. However, we note that banks are very well reserved in general for higher credit card losses at ~100% of annualized DFAST stressed scenario losses (i.e. for 1 year, not 9 quarters) and 2x pre-Covid levels. Commercial real estate reserves are 2% on average, above S&L 1 year loss peak of 1.8% but below GFC and DFAST losses of 2.5% and 3.9%, respectively. Rest of loan portfolios reserved at ~66% of annualized DFAST stress scenario losses and 5x pre-Covid losses between '16-'19. (Exhibits 1-3).

**BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 4 to 7. Analyst Certification on page 3. Valuation & Risk on page 3.**

12610213

Timestamp: 11 October 2023 05:00AM EDT

11 October 2023

High Grade Credit  
United States  
Banks

**Tom Curcuruto, CFA**  
Research Analyst  
BofAS  
+1 646 855 6870  
[tom.curcuruto@bofa.com](mailto:tom.curcuruto@bofa.com)

**Michelle Zhang**  
Research Analyst  
BofAS  
[michelle.zhang2@bofa.com](mailto:michelle.zhang2@bofa.com)

DFAST = Dodd-Frank Act Stress  
Tests

S&L = Savings & Loans

GFC = Global financial crisis

RWA = risk weighted assets

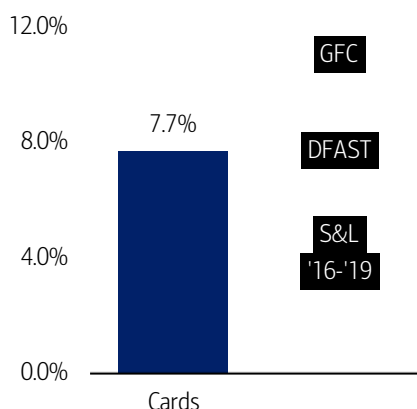
AFS = available for sale

TLAC = Total loss absorbing capacity

## Current Loan Loss Reserves vs. Credit Losses in Past Cycles and DFAST Stressed Scenario

### Exhibit 1: Credit Cards

Card loan loss reserves of 7.7% are similar to DFAST stress scenario losses (annualized)

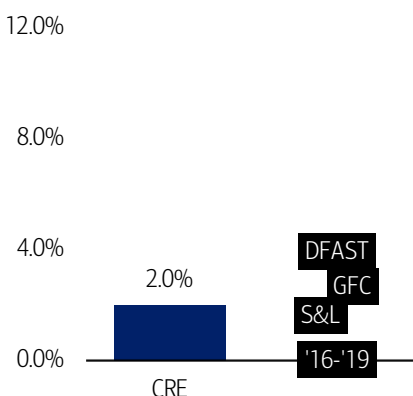


**Source:** Company filings, FDIC and Federal Reserve (2022 DFAST Stress Scenario 18 bank average, annualized from 9 quarter loss rate). GFC = Global Financial Crisis '08-'11. S&L = savings and loans '91-'94. Median Credit Card loan loss reserve / loans among 19 banks

BofA GLOBAL RESEARCH

### Exhibit 2: Commercial Real Estate

CRE loan loss reserves of 2.0% are similar to S&L crisis losses but less than GFC or DFAST

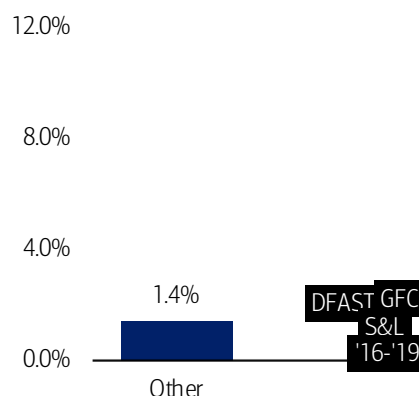


**Source:** Company filings, FDIC and Federal Reserve (2022 DFAST Stress Scenario 18 bank average, annualized from 9 quarter loss rate). GFC = Global Financial Crisis '08-'11. S&L = savings and loans '91-'94. Median Commercial Real Estate loan loss reserve / loans among 19 banks

BofA GLOBAL RESEARCH

### Exhibit 3: All Other Loans

Other loan loss reserves of 1.4% are similar to S&L crisis losses but less than GFC or DFAST

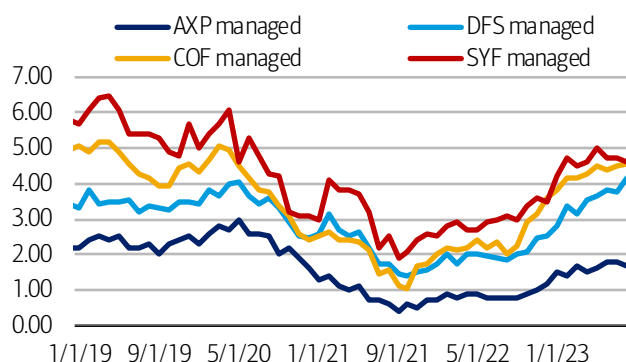


**Source:** Company filings, FDIC and Federal Reserve (2022 DFAST Stress Scenario 18 bank average, annualized from 9 quarter loss rate). GFC = Global Financial Crisis '08-'11. S&L = savings and loans '91-'94. Median Other loan loss reserve / loans among 19 banks

BofA GLOBAL RESEARCH

### Exhibit 4: Monthly Credit Card Net Charge-off Ratios

Credit card losses continue to rise at 190bp YoY on average



**Source:** Company filings. AXP, COF, DFS and SYF account for approximately 40% of industry credit card loan balances and provide monthly updates on credit card trends

BofA GLOBAL RESEARCH

## Valuation & risk

### Truist Financial (TFC)

We rate Truist Financial at Marketweight as we view the risk/reward from current spread levels as fair due to concerns about TFC's cost structure and pro forma regulatory capital levels due to unrealized losses on AFS and HTM securities.

Upside risks to our rating include achieving greater cost savings than targeted, sale of the remaining 80% stake in its insurance business at a premium, favorable moves in interest rates that improve deposit flows, funding costs and valuations on its securities portfolio, and a benign economic environment that reduces the outlook for rising credit losses. Downside risks include poor execution on cost savings plans, decision to not monetize its insurance business to improve capital ratios, further increase in interest rates that hurt valuations of its securities portfolio, a more severe economic downturn that drives higher credit losses, and a downgrade of TFC's credit ratings.

### U.S. Bancorp (USB)

We rate U.S. Bancorp at Overweight as we see the risk/reward potential among the super regionals as the most favorable given spread underperformance since early March. We view the current level of capital as a temporary issue that will accrete back to its target CET1 capital ratio range of 8.5-9% given the strength, quality and diversification of USB's earnings power.

Risk to our rating include further substantial increase in interest rates across the curve that could drive further deposit outflows into higher yielding alternatives, which could hurt net interest margin and earnings, and greater unrealized losses on the AFS securities portfolio, which could impact tangible book value and pro forma regulatory capital ratios that currently do not include AOCI. Other risks include sensitivity to the economic backdrop, particularly with regard to asset quality of its loan book, integration risk of its recent acquisition of Union Bank, and potential downgrade of USB's credit ratings by the ratings agencies due to the aforementioned factors.

## Analyst Certification

I, Tom Curcuruto, 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.



## Security/Loan pricing

## Truist Financial / TFC

|                                  | Amt   |               | Ratings           |       |             | Yield | Spread |
|----------------------------------|-------|---------------|-------------------|-------|-------------|-------|--------|
| Security                         |       | Maturity date | Moody's/S&P/Fitch | Price | Price date  | (%)   | (bps)  |
| 5.9, Senior, USD, 2026:B         | 750   | 28-OCT-2026   | A3-/A-/A          | 99.05 | 10-Oct-2023 | 6.40  | 141    |
| 6.047, Senior, USD, 2027:B       | 1,500 | 08-JUN-2027   | A3/A-/A           | 98.74 | 10-Oct-2023 | 6.57  | 170    |
| 4.26, Senior, USD, 2026:B        | 1,500 | 28-JUL-2026   | A3/A-/A           | 96.38 | 10-Oct-2023 | 6.42  | 137    |
| 4.873, Senior, USD, 2029:B       | 1,500 | 26-JAN-2029   | A3/A-/A           | 93.24 | 10-Oct-2023 | 6.71  | 201    |
| 6.123, Senior, USD, 2033:B       | 750   | 28-OCT-2033   | A3-/A-/A          | 94.91 | 10-Oct-2023 | 6.89  | 221    |
| 5.122, Senior, USD, 2034:B       | 1,500 | 26-JAN-2034   | A3-/A-/A          | 88.15 | 10-Oct-2023 | 6.87  | 219    |
| 5.867, Senior, USD, 2034:B       | 1,750 | 08-JUN-2034   | A3-/A-/A-         | 93.49 | 10-Oct-2023 | 6.80  | 210    |
| 4.916, Subordinated, USD, 2033:B | 1,000 | 28-JUL-2033   | A3-/A-/A-         | 83.73 | 10-Oct-2023 | 7.47  | 280    |
| 1.5, Senior, USD, 2025:B         | 1,250 | 10-MAR-2025   | A2-/A/A+          | 93.53 | 10-Oct-2023 | 6.36  | 119    |
| 2.25, Subordinated, USD, 2030:B  | 1,250 | 11-MAR-2030   | A2/A/A            | 75.63 | 10-Oct-2023 | 7.03  | 240    |

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

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

## U.S. Bancorp / USB

|                           | Amt   |               | Ratings           |       |             | Yield | Spread |
|---------------------------|-------|---------------|-------------------|-------|-------------|-------|--------|
| Security                  |       | Maturity date | Moody's/S&P/Fitch | Price | Price date  | (%)   | (bps)  |
| 2.05, Senior, USD, 2025:B | 1,000 | 21-Jan-2025   | A2/A+/A+          | 95.05 | 10-Oct-2023 | 6.14  | 90     |
| 3, , USD, 2029:B          | 1,000 | 30-Jul-2029   | A3/A-/A-          | 83.30 | 10-Oct-2023 | 6.50  | 186    |
| 4.967, , USD, 2033:B      | 1,300 | 22-Jul-2033   | A3/A-/A-          | 85.66 | 10-Oct-2023 | 7.20  | 253    |
| 4.653, , USD, 2029:B      | 1,650 | 01-Feb-2029   | A3/A/A            | 93.17 | 10-Oct-2023 | 6.49  | 180    |
| 4.839, , USD, 2034:B      | 2,000 | 01-Feb-2034   | A3/A/A            | 87.38 | 10-Oct-2023 | 6.68  | 200    |
| 5.775, , USD, 2029:B      | 1,750 | 12-Jun-2029   | A3/A/A            | 97.01 | 10-Oct-2023 | 6.53  | 185    |
| 5.836, , USD, 2034:B      | 1,750 | 12-Jun-2034   | A3/A/A            | 93.93 | 10-Oct-2023 | 6.70  | 200    |
| 2.8, Senior, USD, 2025:B  | 1,000 | 27-Jan-2025   | A2/A+/A+          | 95.96 | 10-Oct-2023 | 6.09  | 86     |

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

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

## Disclosures

## Important Disclosures

## Credit opinion history

## Truist Financial / TFC

| Company                          | Date <sup>R1</sup> | Action  | Recommendation |       |
|----------------------------------|--------------------|---------|----------------|-------|
| Truist Financial / TFC           | 23-Aug-2023        | Initial | Marketweight   |       |
| Security                         | Date <sup>R1</sup> | Action  | Recommendation | Price |
| 5.9, Senior, USD, 2026:B         | 23-Aug-2023        | Initial | Marketweight   | 99.50 |
| 6.047, Senior , USD, 2027:B      | 23-Aug-2023        | Initial | Marketweight   | 99.38 |
| 4.26, Senior , USD, 2026:B       | 23-Aug-2023        | Initial | Marketweight   | 96.36 |
| 4.873, Senior, USD, 2029:B       | 23-Aug-2023        | Initial | Marketweight   | 95.07 |
| 6.123, Senior, USD, 2033:B       | 23-Aug-2023        | Initial | Marketweight   | 98.68 |
| 5.122, Senior, USD, 2034:B       | 23-Aug-2023        | Initial | Marketweight   | 91.63 |
| 5.867, Senior, USD, 2034:B       | 23-Aug-2023        | Initial | Marketweight   | 96.82 |
| 4.916, Subordinated, USD, 2033:B | 23-Aug-2023        | Initial | Marketweight   | 87.50 |
| 1.5, Senior, USD, 2025:B         | 23-Aug-2023        | Initial | Marketweight   | 92.95 |
| 2.25, Subordinated, USD, 2030:B  | 23-Aug-2023        | Initial | Marketweight   | 77.91 |

Table reflects credit opinion history as of previous business day's close.<sup>R1</sup>First date of recommendation within the last 36 months, if for an issuer or within the last 12 months, if for a security or loan. The investment opinion system is contained at the end of the report under the heading "BofA Global Research Credit Opinion Key."

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

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

## U.S. Bancorp / USB

| Company                   | Date <sup>R2</sup> | Action  | Recommendation |       |
|---------------------------|--------------------|---------|----------------|-------|
| U.S. Bancorp / USB        | 23-Aug-2023        | Initial | Overweight     |       |
| Security                  | Date <sup>R2</sup> | Action  | Recommendation | Price |
| 2.05, Senior, USD, 2025:B | 23-Aug-2023        | Initial | Overweight     | 94.80 |
| 3. . USD, 2029:B          | 23-Aug-2023        | Initial | Overweight     | 84.34 |

**U.S. Bancorp / USB**

| Company                  | Date <sup>R2</sup> | Action  | Recommendation |       |
|--------------------------|--------------------|---------|----------------|-------|
| 4.967, , USD, 2033:B     | 23-Aug-2023        | Initial | Overweight     | 89.29 |
| 4.653, , USD, 2029:B     | 23-Aug-2023        | Initial | Overweight     | 94.59 |
| 4.839, , USD, 2034:B     | 23-Aug-2023        | Initial | Overweight     | 90.79 |
| 5.775, , USD, 2029:B     | 23-Aug-2023        | Initial | Overweight     | 98.81 |
| 5.836, , USD, 2034:B     | 23-Aug-2023        | Initial | Overweight     | 97.78 |
| 2.8, Senior, USD, 2025:B | 23-Aug-2023        | Initial | Overweight     | 95.74 |

Table reflects credit opinion history as of previous business day's close.<sup>R2</sup>First date of recommendation within the last 36 months, if for an issuer or within the last 12 months, if for a security or loan. The investment opinion system is contained at the end of the report under the heading "BofA Global Research Credit Opinion Key."

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

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

**BofA Global Research Credit Opinion Key**

BofA Global Research provides recommendations on an issuer's bonds (including corporate and sovereign external debt securities), loans, capital securities, equity preferreds and CDS as described below. Convertible securities are not rated. An issuer level recommendation may also be provided for an issuer as explained below. BofA Global Research credit recommendations are assigned using a three-month time horizon.

**Issuer Recommendations:** If an issuer credit recommendation is provided, it is applicable to bonds and capital securities of the issuer except bonds and capital securities specifically referenced in the report with a different credit recommendation. Where there is no issuer credit recommendation, only individual bonds and capital securities with specific recommendations are covered. Loans, CDS and equity preferreds are rated separately and issuer recommendations do not apply to them.

BofA Global Research credit recommendations are assigned using a three-month time horizon:

**Overweight:** Spreads and /or excess returns are likely to outperform the relevant and comparable market over the next three months.

**Marketweight:** Spreads and/or excess returns are likely to perform in-line with the relevant and comparable market over the next three months.

**Underweight:** Spreads and/or excess returns are likely to underperform the relevant and comparable market over the next three months.

BofA Global Research uses the following rating system with respect to **Credit Default Swaps (CDS):**

**Buy Protection:** Buy CDS, therefore going short credit risk.

**Neutral:** No purchase or sale of CDS is recommended.

**Sell Protection:** Sell CDS, therefore going long credit risk.

**Corporate Credit Issuer Investment Rating Distribution: Global Group (as of 30 Sep 2023)**

| Coverage Universe | Count | Percent | Inv. Banking Relationships <sup>R3</sup> | Count | Percent |
|-------------------|-------|---------|--|-------|---------|
| Buy               | 152   | 41.19%  | Buy                                      | 125   | 82.24%  |
| Hold              | 177   | 47.97%  | Hold                                     | 150   | 84.75%  |
| Sell              | 40    | 10.84%  | Sell                                     | 29    | 72.50%  |

<sup>R3</sup> Issuers that were investment banking clients of BofA Securities or one of its affiliates within the past 12 months. For purposes of this Investment Rating Distribution, the coverage universe includes only corporate credit issuer recommendations. A corporate credit issuer rated Overweight is included as a Buy, a corporate credit issuer rated Marketweight is included as a Hold, and a corporate credit issuer rated Underweight is included as a Sell.

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

BofAS or an affiliate was a manager of a public offering of securities of this issuer within the last 12 months: Truist Financial.

The issuer is or was, within the last 12 months, an investment banking client of BofAS and/or one or more of its affiliates: Truist Financial, U.S. Bancorp.

BofAS or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: Truist Financial, U.S. Bancorp.

The issuer is or was, within the last 12 months, a non-securities business client of BofAS and/or one or more of its affiliates: Truist Financial, U.S. Bancorp.

BofAS or an affiliate has received compensation for investment banking services from this issuer within the past 12 months: Truist Financial, U.S. Bancorp.

BofAS or an affiliate expects to receive or intends to seek compensation for investment banking services from this issuer or an affiliate of the issuer within the next three months: Truist Financial, U.S. Bancorp.

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

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

BofAS or one of its affiliates trades or may trade as principal in the debt securities (or in related derivatives) that are the subject of this research report: Truist Financial, U.S. Bancorp.

The issuer is or was, within the last 12 months, a securities business client (non-investment banking) of BofAS and/or one or more of its affiliates: Truist Financial, U.S. Bancorp.

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**

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

Prices are indicative and for information purposes only. Except as otherwise stated in the report, for any recommendation in relation to an equity security, the price referenced is the publicly traded price of the security as of close of business on the day prior to the date of the report or, if the report is published during intraday trading, the price referenced is indicative of the traded price as of the date and time of the report and in relation to a debt security (including equity preferred and CDS), prices are indicative as of the date and time of the report and are from various



sources including BofA Securities trading desks.

The date and time of completion of the production of any recommendation in this report shall be the date and time of dissemination of this report as recorded in the report timestamp.

This report may refer to fixed income securities or other financial instruments that may not be offered or sold in one or more states or jurisdictions, or to certain categories of investors, including retail investors. Readers of this report are advised that any discussion, recommendation or other mention of such instruments is not a solicitation or offer to transact in such instruments. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor for information relating to such instruments.

Rule 144A securities may be offered or sold only to persons in the U.S. who are Qualified Institutional Buyers within the meaning of Rule 144A under the Securities Act of 1933, as amended. SECURITIES OR OTHER FINANCIAL INSTRUMENTS DISCUSSED HEREIN MAY BE RATED BELOW INVESTMENT GRADE AND SHOULD THEREFORE ONLY BE CONSIDERED FOR INCLUSION IN ACCOUNTS QUALIFIED FOR SPECULATIVE INVESTMENT.

Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

The securities or other financial instruments discussed in this report may be traded over-the-counter. Retail sales and/or distribution of this report may be made only in states where these instruments are exempt from registration or have been qualified for sale.

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments.

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

#### Information relating to Affiliates of BofAS, MLPF&S and Distribution of Affiliate Research Reports:

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

**"BofA Securities" includes BofA Securities, Inc. ("BofAS") and its affiliates. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor if they have questions concerning this report or concerning the appropriateness of any investment idea described herein for such investor. "BofA Securities" is a global brand for BofA Global Research.**

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle 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; 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.

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.

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

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

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

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