

## Transportation - Trucking

## Survey Says: Contrast to news, Demand (44.4) view dips to 3rd lowest since Covid

Industry Overview

Truck Shipper Survey #296, week of November 16<sup>th</sup>, 2023

This week, our proprietary bi-weekly BofA Truckload Demand Indicator for shippers' 0- to 3-month freight demand outlook **decreased to 44.4** from 47.7 last survey, the third lowest level since 2020. The Demand Indicator remains at/below 50 for the 21<sup>st</sup> time over the past 26 issues and is well below the 54.2 average level of the '12, '15, '19 Freight Recession periods. The Demand Indicator was down 7% sequentially and 12% year-year, ending five consecutive issues of positive year-year growth. Rail carloads rose 1% year-year this week, ending a streak of four weeks of year-year declines. Dry van spot rates ex-fuel was \$1.28/mile, down 22% YTD, from \$1.25/mi last week, moving above the \$1.21-\$1.26 band it has been in for 12 weeks. Of the respondents, 13% had a positive short-term demand outlook, from 19% last survey; Neutral outlooks were 54%, from 56%, and Negative outlooks were 33%, from 26% last survey. In the week of Nov 16<sup>th</sup>, we surveyed 54 shippers for views on demand, supply, pricing, inventory.

## Inventory view moves higher into holiday season

**The Rate Indicator**, or shippers' view on truck rates, **increased to 42.6** from 41.9, up 2% sequentially, as expectations of rate increases rose. **The Inventory Indicator increased to 58.3** from 52.3 last issue, up 12% sequentially, as shippers see higher inventories into holiday season. **The Truck Capacity Indicator**, which measures shippers' views of available truckload capacity, **ticked up to 63.0** from 62.8 last survey, as shippers see slightly higher carrier capacity. With respect to rates, 26% of shippers expect rates to fall, from 28% last issue, 63% expect flat pricing, from 60% last issue, and 11% expect rates to rise, from 12% last issue. On capacity, 37% expect capacity to rise, from 33% last issue, 52% expect capacity to remain flat, from 60% last issue, 11% expect capacity to be lower, from 7% last issue. **SHIPPER COMMENTS:** A Retail Shipper noted it is not shipping as much and carriers are seeking more opportunities due to a lack of freight. A Logistics Shipper sees drastic increases in trucking costs (labor, equipment, and insurance), causing carriers to pass along via higher rates. It believes higher costs are driving some companies into bankruptcy and believes there are more companies exiting the market than new ones entering. (*Shipper comments cont'd p. 5*).

## Surprising downtick in midst of surrounding news flow

The downshift in the Demand outlook is somewhat surprising given recent news flow, where activity seemed to be picking up into peak season. Rail carloads inflected positive (4<sup>th</sup> year-year uptick in past 40 weeks), Spot truckload rates climbed to \$1.28, from a \$1.21-\$1.26 band stuck since August, and Ports of LA/LB posted positive year-year growth in Sept. (the first month both achieved growth this year). While Macy's noted consumer spending remains under pressure, and our BofA Retail Analyst Robbie Ohmes noted Target sees the consumer environment as challenged (it posted stronger than expected earnings and inventories continued to fall), Mr. Ohmes expects Walmart to post +2% growth on US comps in 4Q and sees BAC aggregated credit and debit card spending trends as having improved modestly in November. As the soft truck cycle extends longer than expected, we see rising pressures on small carriers. In the past 2 weeks, Pittsburgh-based Elite Transit Solutions (65 employees) and Montana-based Meadow Lark (120 emps) ceased ops. This follows the Oct closure of broker Convoy. We prefer Less-than-Truckload carriers (SAIA, XPO, ODFL) as well as Truckload-related carriers KNX, JBHT.

**BofA Securities does and seeks to do business with issuers covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. Refer to important disclosures on page 6 to 8.**

12629311

Timestamp: 17 November 2023 05:00AM EST

17 November 2023

Equity  
Americas  
Road Transport/Trucking

BofA  
Data  
Analytics



**Ken Hoexter**  
Research Analyst  
BofAS  
+1 646 855 1498  
[ken.hoexter@bofa.com](mailto:ken.hoexter@bofa.com)

**Adam Roszkowski, CFA**  
Research Analyst  
BofAS  
+1 646 855 5498  
[adam.roszkowski@bofa.com](mailto:adam.roszkowski@bofa.com)

**Nathan Ho, CFA**  
Research Analyst  
BofAS  
+1 646 855 3599  
[nathan.m.ho@bofa.com](mailto:nathan.m.ho@bofa.com)

## Chart 1: DEMAND INDICATOR

Shipper's view of demand next 0-3 months; Demand Indicator at 44.4

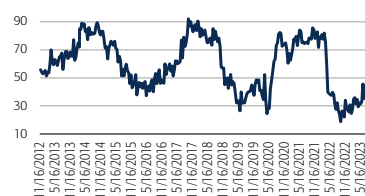


Source: BofA Global Research.

BofA GLOBAL RESEARCH

## Chart 2: RATE INDICATOR

Shipper's rates view; Rate Indicator at 42.6



Source: BofA Global Research.

BofA GLOBAL RESEARCH

# SHIPPERS VIEW OF DEMAND

**Table 1: BofA Truckload Demand Diffusion Indicator**

Demand Indicator: at 44.4, down 7% sequentially

	2019	2020	2021	2022	2023
Jan	1/4 67.3	1/3 55.1	1/14 63.8	1/13 75.0	1/12 47.5
	1/18 76.7	1/17 58.1	1/28 63.8	1/27 70.0	1/26 51.3
Feb	2/1 69.8	1/31 56.7	2/11 67.5	2/10 69.5	2/9 45.1
	2/14 53.7	2/13 53.1	2/25 68.8	2/24 71.9	2/23 47.6
Mar	2/28 59.2	2/27 51.3	3/11 72.9	3/10 70.3	3/9 46.9
	3/14 60.1	3/12 46.1	3/25 68.8	3/24 69.2	3/23 48.3
Apr	3/28 59.2	3/26 43.5	4/8 73.0	4/7 64.1	4/6 49.5
	4/11 61.2	4/9 37.2	4/22 75.7	4/21 58.0	4/20 44.4
	4/25 58.3	4/23 33.3	5/6 77.6	5/5 57.5	5/4 49.5
May	5/9 56.6	5/7 37.8	5/20 78.3	5/19 55.0	5/18 44.3
	5/23 52.5	5/21 46.2	6/3 78.3	6/2 58.5	6/1 42.6
Jun	6/6 61.1	6/4 54.6	6/17 78.1	6/16 54.0	6/15 47.9
	6/20 52.5	6/18 56.4	7/1 75.7	6/30 55.5	6/29 49.4
Jul	7/4 52.3	7/2 59.3	7/15 70.9	7/14 50.9	7/13 47.1
	7/18 50.6	7/16 62.5	7/29 74.3	7/28 53.9	7/27 50.0
Aug	8/1 52.6	7/30 59.1	8/12 73.0	8/11 50.0	8/10 55.2
	8/15 51.9	8/13 63.5	8/26 73.0	8/25 54.5	8/24 51.0
Sep	8/29 55.0	8/27 71.1	9/9 73.6	9/8 51.6	9/7 52.4
	9/12 51.9	9/10 75.8	9/23 75.0	9/22 50.0	9/21 50.0
Oct	9/26 55.6	9/24 78.1	10/8 69.4	10/6 47.6	10/5 48.9
	10/10 48.7	10/8 73.3	10/21 68.3	10/20 45.6	10/19 52.5
	10/24 53.8	10/22 70.0	11/4 76.6	11/3 42.4	11/2 47.7
Nov	11/7 55.7	11/5 72.5	11/18 67.7	11/17 50.4	11/16 44.4
	11/21 51.3	11/19 69.9	12/2 69.7	12/1 47.8	11/30
Dec	12/5 52.3	12/3 63.8	12/16 68.6	12/15 47.2	12/14
	12/19 51.9	12/17 66.3	12/30 66.7	12/29 49.4	12/28
		12/31 67.7			

Source: BofA Global Research

BofA GLOBAL RESEARCH

Disclaimer: The indicator identified as BofA Truckload Diffusion Indicator in this report is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark

## SHIPPERS' VIEW OF RATES

**Chart 5: Shippers' view of rates over next three months**

Rate Indicator at 42.6, +1pt sequentially



Source: BofA Global Research.

BofA GLOBAL RESEARCH

**Chart 3: BofA Truckload Demand Diffusion Indicator**

0-3 months demand time series; Demand Indicator at 44.4

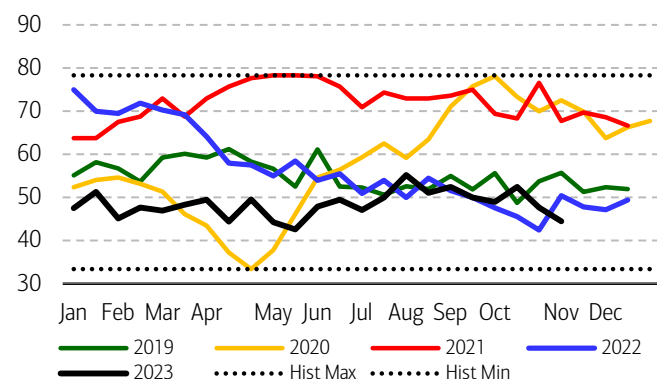


Source: BofA Global Research

BofA GLOBAL RESEARCH

**Chart 4: BofA Truckload Demand Diffusion Indicator**

0-3 months demand outlook – stack basis y-y; Demand Indicator at 44.4



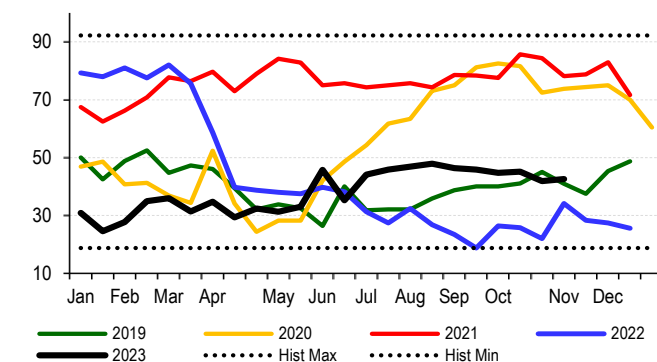
Source: BofA Global Research

Historical Max 04/03/14 (and 5/20-6/3/21). Historical Min 4/23/20. Survey began in mid-2012

BofA GLOBAL RESEARCH

**Chart 6: Shippers' view of rates**

Stack basis year-over-year; Rate Indicator at 42.6



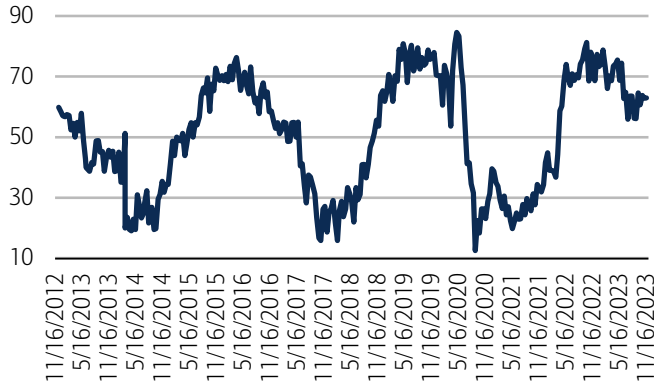
Source: BofA Global Research.

BofA GLOBAL RESEARCH

# CAPACITY AVAILABILITY

**Chart 7: Shippers' view of available capacity**

Capacity Indicator slightly higher at 63.0, above its historic 50 avg

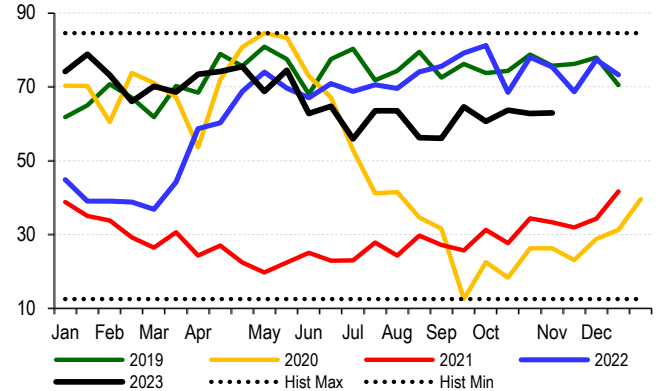


Source: BofA Global Research.

BofA GLOBAL RESEARCH

**Chart 8: Shippers' view of available capacity**

Stack basis year-year; Capacity Indicator at 63.0



Source: BofA Global Research.

BofA GLOBAL RESEARCH

# 6-12-MONTH FREIGHT DEMAND

**Chart 9: Shippers' 6-12 month outlook for freight demand**

L-T Demand Indicator at 53.2, up 3% sequentially

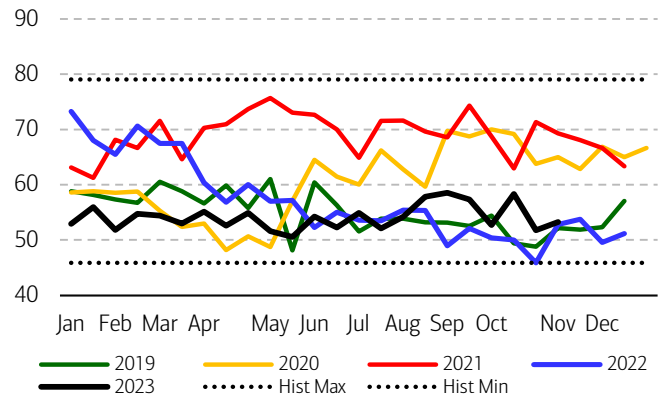


Source: BofA Global Research.

BofA GLOBAL RESEARCH

**Chart 10: Shippers' 6-12 mo. outlook for freight demand**

Stack basis year-year; Long-Term Demand Indicator at 53.2



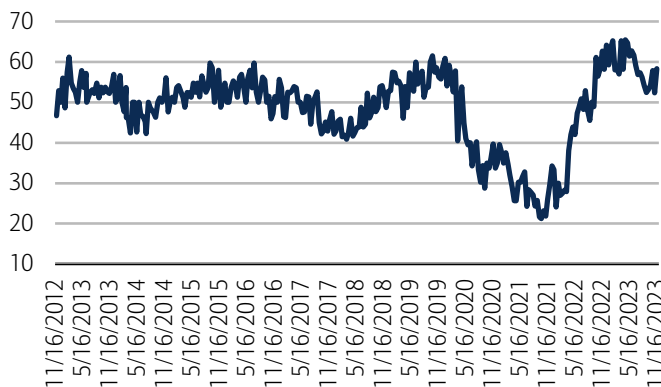
Source: BofA Global Research.

BofA GLOBAL RESEARCH

# INVENTORY

**Chart 11: Shippers' view of inventory levels**

Inventory Indicator at 58.3, up 12% sequentially from last issue.

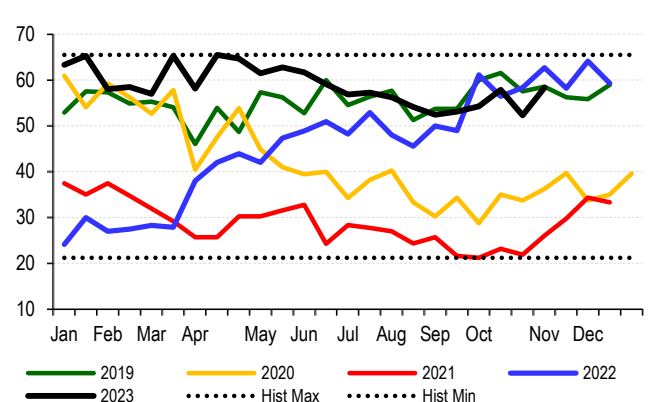


Source: BofA Global Research.

BofA GLOBAL RESEARCH

**Chart 12: Shippers' view of inventory levels**

Stack basis year-year; Inventory Indicator at 58.3



Source: BofA Global Research.

BofA GLOBAL RESEARCH

The survey, which is distributed to approximately 1,300 shipping managers, received responses from a varied mix of all major end markets (retail, consumer goods, industrial, manufacturing, basic materials, healthcare, tech).

**Figure 1: Shippers' core end-market**

Retail and Manufacturing oriented end-markets



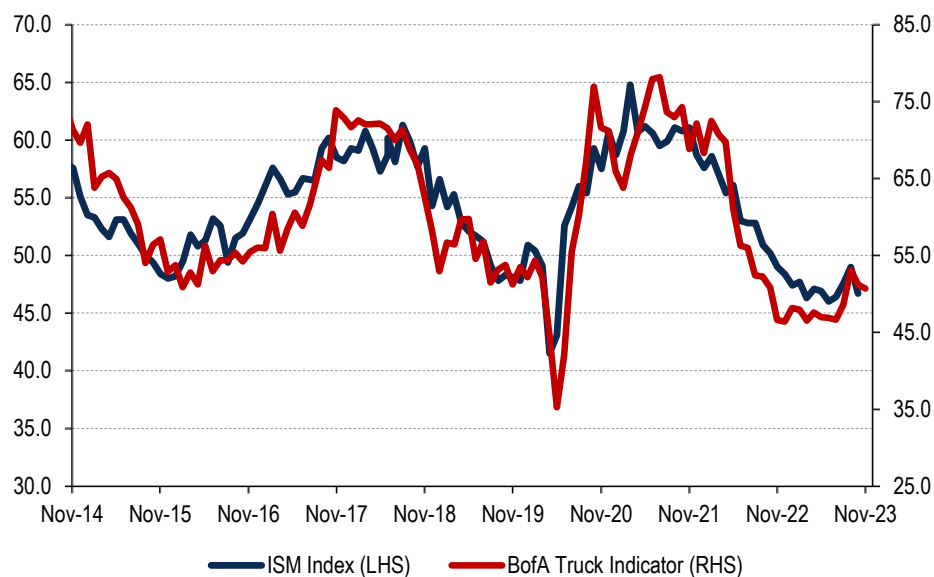
Source: BofA Global Research estimates.

BofA GLOBAL RESEARCH

## Correlation between BofA Truck indicator and ISM Index

**Chart 13: BofA Truck Indicator and ISM Index**

Two data sets have shown correlation since survey inception (0.81 on a one-month leading basis)



Source: BofA Global Research estimates, ISM Index

BofA GLOBAL RESEARCH

## Shipper Comments (continued)

- A Logistics Shipper (continued from above) noted there is a net negative change in the number of active trucking company authorities.
- A Consumer Shipper noted Intermodal shippers are experiencing low demand and are sitting on new containers. It sees no impact from retail peak and views the spot market as very weak for carriers. It also observed Asset-Based carriers chasing business.
- A Consumer Shipper believes things are looking better for shippers moving their products with fuel prices going down. It noted consumers are also not getting killed at the pump, which may aid demand. It believes if food prices were to moderate, it would be entirely out of the woods.
- A Manufacturing Shipper believes that the truck recovery is pushed out into 2024. It continues to see rates hit a bottom as companies work to keep driver in seats. If rates were to fall any further, it sees layoffs could be the next step.
- A Financial Services Shipper noted its carrier agreement rate cap has decreased 2% year-year. It expects a 2% rate increase in 2024.
- An Industrial Shipper sees the market as balanced.

### Exhibit 1: Stocks mentioned

Prices and ratings for stocks mentioned in this report

BofA Ticker	Bloomberg ticker	Company name	Price	Rating
JBHT	JBHT US	J.B. Hunt Trans	US\$ 178.67	B-1-7
KNX	KNX US	Knight-Swift	US\$ 51.63	B-1-7
XPO	XPO US	XPO, Inc.	US\$ 86.51	C-1-9
ODFL	ODFL US	Old Dominion	US\$ 397.79	B-1-7
SAIA	SAIA US	Saia Inc.	US\$ 411.7	B-1-9

Source: BofA Global Research

BofA GLOBAL RESEARCH



# Disclosures

## Important Disclosures

**FUNDAMENTAL EQUITY OPINION KEY:** Opinions include a Volatility Risk Rating, an Investment Rating and an Income Rating. **VOLATILITY RISK RATINGS**, indicators of potential price fluctuation, are: A - Low, B - Medium and C - High. **INVESTMENT RATINGS** reflect the analyst's assessment of both a stock's absolute total return potential as well as its attractiveness for investment relative to other stocks within its Coverage Cluster (defined below). Our investment ratings are: 1 - Buy stocks are expected to have a total return of at least 10% and are the most attractive stocks in the coverage cluster; 2 - Neutral stocks are expected to remain flat or increase in value and are less attractive than Buy rated stocks and 3 - Underperform stocks are the least attractive stocks in a coverage cluster. An investment rating of 6 (No Rating) indicates that a stock is no longer trading on the basis of fundamentals. Analysts assign investment ratings considering, among other things, the 0-12 month total return expectation for a stock and the firm's guidelines for ratings dispersions (shown in the table below). The current price objective for a stock should be referenced to better understand the total return expectation at any given time. The price objective reflects the analyst's view of the potential price appreciation (depreciation).

Investment rating	Total return expectation (within 12-month period of date of initial rating)	Ratings dispersion guidelines for coverage cluster <sup>R1</sup>
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

<sup>R1</sup> Ratings dispersions may vary from time to time where BofA Global Research believes it better reflects the investment prospects of stocks in a Coverage Cluster.

**INCOME RATINGS**, indicators of potential cash dividends, are: 7 - same/higher (dividend considered to be secure), 8 - same/lower (dividend not considered to be secure) and 9 - pays no cash dividend. *Coverage Cluster* is comprised of stocks covered by a single analyst or two or more analysts sharing a common industry, sector, region or other classification(s). A stock's coverage cluster is included in the most recent BofA Global Research report referencing the stock.

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

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.

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

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](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 (HKSCF); 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 HKSCF; 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 BofA SE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofA and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofA and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofA and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofA 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.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

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 herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BofA or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofA 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 BofA for the provision of research services for a separate fee, and in connection therewith BofA may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofA has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofA). If such recipient uses the services of BofA in connection with the sale or purchase of a security referred to herein, BofA may act as principal for its own account or as agent for another person. BofA 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 BofA or 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.