EU Medtech & Healthcare Services

Red Sea disruptions – limited damages so far, but risk stands for some names

Industry Overview

31 January 2024

Equity
Europe
Medical Technology

Julien Ouaddour >>
Research Analyst
MLI (UK)
+44 20 7995 5049
julien.ouaddour@bofa.com

Marianne Bulot >>
Research Analyst
MLI (UK)
+44 20 7996 1033
marianne.bulot@bofa.com

Monica Zhuang >>
Research Analyst
MLI (UK)
monica.zhuang@bofa.com

MedTech companies don't see Red Sea impact yet

Freight costs account for only c.2% of EU MedTech's overall revenue on average. While most of our companies are yet to report FY23 and provide FY24 guidance, we have gathered their feedback on the Red Sea freight cost impact (see next page). While the sea freight disruption could delay product availability or add cost pressure, most of our companies haven't experienced a material impact so far, mainly helped by good inventory level, locked prices for sea freight contracts or use of air freight.

More risks at capital equipment names, FME and GN

Naturally, we see a higher risk for our companies with the highest freight cost percentage in CY24. Capital equipment companies, such as Elekta, Philips or SHL have all roughly c5% of their group sales in freight cost. Among them, we see more risk at Elekta given big production footprint in China, with 25% of its sales volume affected by the Red Sea route. FME also screens bad given the 9% EBIT margin (lowest within our coverage), implying a higher sensitivity to any fluctuation in costs than other names. In addition, we see GN Store Nord at risk, and particularly GN Audio as the business produces and assemble most of its audio products in China and South-East Asia, then distributes them to Europe/US.

Our scenario analyses yield c.1-4% EBIT cut in CY24

While it's difficult to forecast the potential impact for each company, we run sensitivity analyses based on Red Sea freight cost increase for CY24: base case = 20% increase; bull case = 10%; bear case = 50%. The previously mentioned names are the more at risk, but we stress the limited overall downside risk for our EU MedTech sector on EBIT consensus derived from this analysis with only 1-4% potential cut overall, equaling to 0-40bps margin impact. It seems manageable for most our companies across the space.

However, consensus hasn't priced Red Sea impact in yet

We don't believe consensus already reflects any potential impact from the Red Sea situation and the potential cost pressure. Indeed, EU MedTech FY24 EBIT margin consensus hasn't moved since the situation has worsened in December 2023. More interestingly, it seems that higher gross margin improvements come at Philips and GN, where both are among the most at risk companies in our coverage in our view.

FME = Fresenius Medical Care

GN = GN Store Nord

SHL = Siemens Healthineers

Refer to important disclosures on page 6 to 7.
12652981

Timestamp: 30 January 2024 11:30PM EST

What our companies have told us about the Red Sea situation

Exhibit 1: Vast majority of our coverage has seen limited impact from Red Sea so far

Given ongoing conflict in the Red Sea, over the past week, we reached out to some of our companies under coverage. Companies have flagged some increase in transport costs but remain immaterial at this stage. Most at risk companies (Elekta, GN Audio) have locked prices and avoid paying spot rate today, but prices could materially increase when contracts are renegotiated.

Company	Comment
Alcon	So far de minimis impact.
Amplifon	Mostly through air freight so impact minimal. Freight less than 1% of revenue.
Carl Zeiss	Approx. EUR 40-50m annual costs normally. Single digit million hit to P&L likely. More important if supplier network affected (e.g. electronic components) - not heard of any shortages so far, but too early to say.
Coloplast	Do not expect significant impact.
ConvaTec	Some cost increases due to diversion of routes but immaterial. Have resilient inventory so currently do not expect customer deliveries to be affected.
Demant	Only 0.5pp impact on GM back in 2021 when supply chain was significantly more challenged. This time likely to be less.
Elekta	2 wks of extra time due to re-routing, increased freight costs. However already built in extra days for unexpected delays. Would forward purchase some shipping capacity so not all at spot rates. 25% of sales volume is affected. No significant use of air freight at the minute. Logistics cost is 5%.
Fresenius SE	Doesn't see specific financial impact on numbers for now, but highlights this could be a reason to be cautious on FY24.
Fresenius Medical Care	No material impact. Main production sites are in EU/US. China produces for local consumption. Products not time critical.
GN Store Nord	Difficult to quantify. Try to lock in prices using short to long term contracts on a rolling basis.
Philips	Not seen material impact.
SCHOTT Pharma	China facilities produce core portfolio to be consumed locally. Main HVS production in Europe (Germany/Hungary) and some shipped to the US so not materially affected by Red Sea route.
Siemens Healthineers	Air freight significantly more important than sea freight. So unlikely to be material.

Source: Company commentary

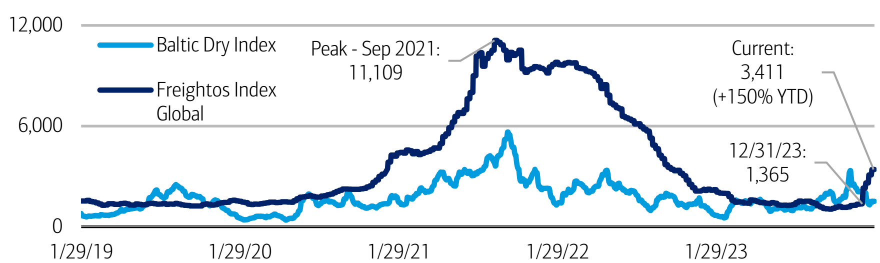
BofA GLOBAL RESEARCH

During the supply chain crisis in 2021/22, one thing that hit MedTech hardest was component shortages. These included resins, circuit boards and electrical coil, without which semi-finished products were stuck in inventory and not sold on to customers. Companies commented that so far this has not taken place, but the situation is being closely monitored. We think any significant hit to margin will likely come from component availability, with companies having to resort to air freight, or paying expensive third party to source them.

For context, on average global ocean freight rates have increased by 150% year-to-date. However, this is still dwarfed by the peak experienced at the height of COVID, as shown below. Despite increase in sea freight, air freight seems to remain under controlled so far.

Exhibit 2: Freightos Index Global and Baltic Dry Index – last 5 years

The uptick in global freight costs is nowhere near the magnitude of that witnessed in 2021.



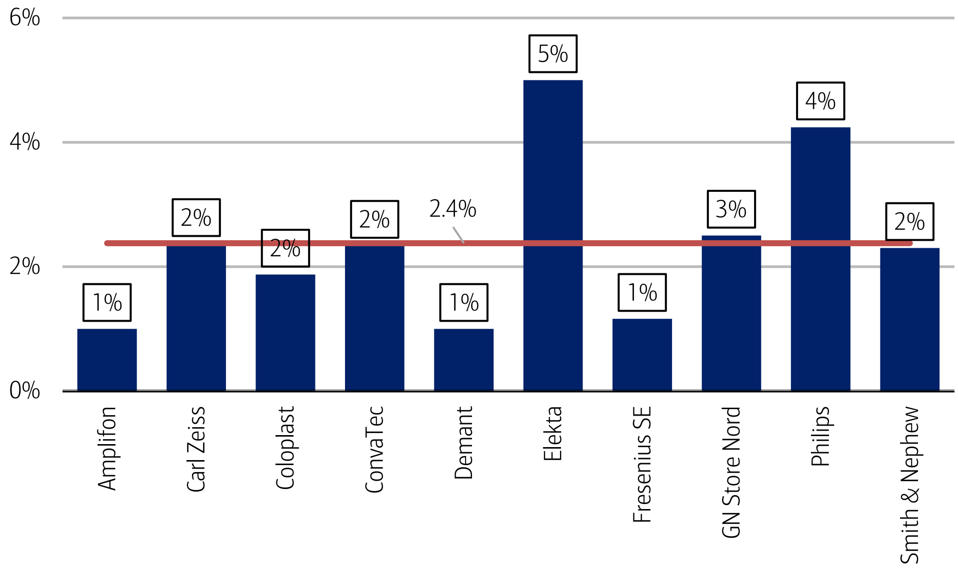
Source: Bloomberg.

BofA GLOBAL RESEARCH

Freight costs account for c2% of sales for EU MedTech companies

Based on disclosure and companies' commentary during the supply chain crisis, we have managed to quantify freight costs for the majority of our coverage. On average, this represents 2.4% of group revenue, with capital equipment names such as Philips and Elekta towards the higher end.

Exhibit 3: On average, freight costs account for 2.4% of total sales for our coverage
Freight costs as a % of revenue, EU MedTech



Source: company reports, BofA Global Research estimates

BofA GLOBAL RESEARCH

Higher Red Sea freight costs scenarios could cut FY24 EBIT cons. by c.1-4%

Our three scenario analyses range c1-4% avg EBIT cut from Red Sea in FY24

To get some numbers, we have performed scenario analysis on the likely impact on consensus EBIT across our coverage, based on Visible Alpha estimates. This analysis is purely illustrative, and many parameters are unknown at this stage (i.e. % freight costs using Red Sea channel, split air/sea freight, how long the situation will last, etc.).

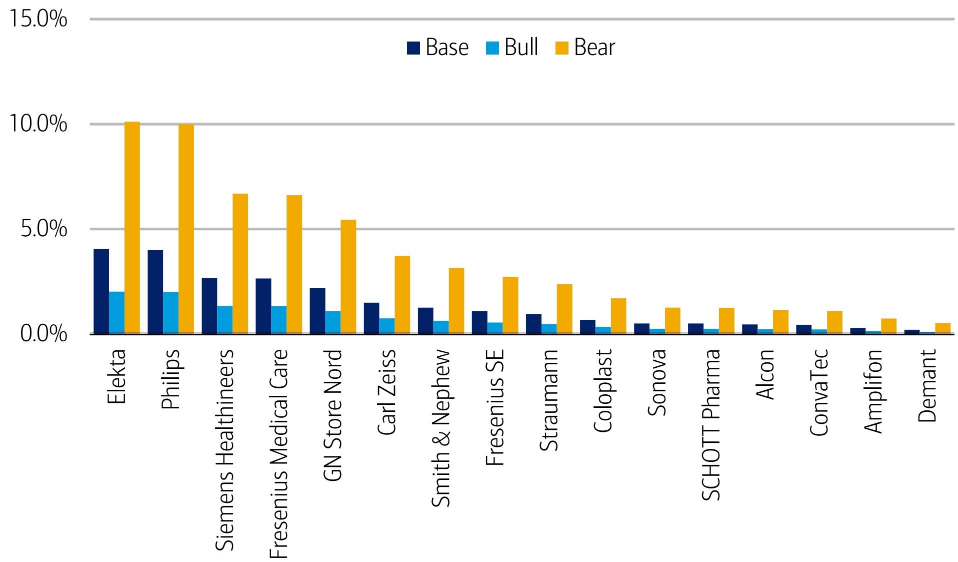
For our coverage, we try to understand how impactful the Red Sea freight cost increase could be, and what could be the magnitude of potential EBIT cut for consensus in FY24. First, we use the total freight cost for each company where we have the data, and for others we either use sector average (i.e. 2.4%) or similar percentage as peers in the sub-sector. Then, we assign a weighting to the Red Sea route, based on whether companies have production facilities in China and exposure to Red Sea area (i.e. 50% for most exposed, 20% for the rest). Last, our three scenarios are: base case = 20% Red Sea freight cost increase; bull case = 10% increase; bear case = 50% increase.

As shown below, under all three cases, the most sensitive names within our coverage are Elekta, Philips and SHL. This seems logical, due to their relatively high freight costs for capital equipment companies. FME also screens towards the top end. With 9% margin (lowest within our coverage), FME's EBIT is proportionately more sensitive to any fluctuation in costs than other names. In addition, we see GN Store Nord at risk, and particularly GN Audio as the business produce and assemble most of its audio products in China and South-East Asia, then distributes them from regional hubs including China and Hong Kong.

On the other hand, ConvaTec, Amplifon and Demant are the least sensitive, primarily due to less exposure to the Red Sea route. None of these companies have production facilities in greater China.

All of this translated into a 0-40bps EBIT margin headwind on average for EU MedTech in FY24, which seems to be manageable for most of our companies.

Exhibit 4: Under all three cases, Elekta, Philips and SHL are the most sensitive to increase in freight costs
% change to FY24 consensus EBIT, under our base, bull and bear case assumptions on freight costs



Source: BofA Global Research Estimates, Visible Alpha

BofA GLOBAL RESEARCH

Consensus hasn't priced in Red Sea impact yet

Interestingly, when we compare the current consensus FY24 EBIT margin, to what it was at the start of December 2023, there does not seem to be much movement. This suggests to us that sell-side is yet to factor this into their numbers, indicating potential downside risk to margin estimates.

Exhibit 5: There is not much difference in consensus EBIT margin since the Red Sea situation worsened in December 2023
VA consensus EBIT margin across EU MedTech, now vs Dec 2023

	Current	As at 01/12/2023	Diff
Alcon	20.9%	21.0%	-0.1%
Amplifon	13.6%	13.3%	0.3%
Carl Zeiss	15.9%	16.5%	-0.6%
Coloplast	27.6%	27.7%	-0.1%
ConvaTec	21.4%	21.4%	0.0%
Demant	19.5%	19.4%	0.1%
Elekta	12.4%	12.4%	-0.1%
Fresenius Medical Care	9.0%	9.1%	-0.1%
Fresenius SE	10.7%	10.8%	-0.4%
GN Store Nord	11.5%	11.2%	0.3%
Philips	10.6%	10.4%	0.2%
SCHOTT Pharma	20.0%	19.9%	0.0%
Siemens Healthineers	15.9%	15.8%	0.1%
Smith & Nephew	18.3%	18.4%	-0.1%
Sonova	19.9%	20.0%	-0.1%
Straumann	25.1%	25.3%	-0.2%

Source: Visible Alpha

BofA GLOBAL RESEARCH

In the table below, we compare the gross margin of our coverage between FY19, FY23 and FY24. For those that haven't yet reported full-year FY23 numbers, we have used existing VA consensus.

Compared to pre-COVID, Fresenius SE and GN Store Nord has seen the most drastic reduction in gross margin, although this has decreased by -350bps for the sector on average. Looking ahead for FY24, consensus forecasts an average improvement in gross margin of 80bps in FY24, with GN Store Nord and Philips expected to improve the most despite higher exposure than many other companies to the Red Sea situation.

Exhibit 6: Consensus expects Philips and GN Store Nord to improve their gross margin by +270bps despite high exposure to the Red Sea situation

Gross margin across EU MedTech, FY19, FY23 and FY24 (VA cons)

	FY19 margin	FY23 margin	Difference	FY 24 margin	Difference
Alcon	62%	63%	0.7%	63%	0.3%
Carl Zeiss	57%	58%	0.7%	56%	-1.6%
Coloplast	68%	67%	-1.1%	68%	1.2%
ConvaTec	59%	61%	2.3%	62%	0.8%
Demant	76%	74%	-1.6%	75%	1.1%
Elekta	42%	38%	-4.3%	38%	0.5%
Fresenius Medical Care	31%	26%	-5.1%	27%	1.0%
Fresenius SE	42%	23%	-18.8%	25%	1.5%
GN Store Nord	60%	50%	-10.3%	53%	2.7%
Philips	46%	41%	-4.6%	44%	2.7%
SCHOTT Pharma	-	35%	N/A	35%	-0.1%
Siemens Healthineers	41%	38%	-2.4%	39%	1.4%
Smith & Nephew	74%	70%	-3.8%	71%	0.6%
Sonova	71%	71%	-0.7%	71%	0.7%
Straumann	76%	75%	-0.3%	75%	-0.8%
Average			**-3.5%**		**0.8%**

Source: Visible Alpha

BofA GLOBAL RESEARCH

Disclosures

Important Disclosures

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

Other Important Disclosures

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 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.

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.bofaml.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSFC); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada 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 HKSFC; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information 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.

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.

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:

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 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.