

US Biopharmaceuticals

What caught our attention in SF (Day 1):
TEVA, JAZZ, ALKS, EXEL, XENE, ROIV

Price Objective Change

At a competitor healthcare conference we flag company updates that caught our attention (below). The note continues on page 2.

TEVA: foundations for growth pillars

Teva's (TEVA) presentation offered no '24E guidance but the company did reiterate its 2027 long-term financial targets. In our view, the most interesting points in the CEO's fireside related to spending and margins, notably OpEx is expected to grow in '24E thus OM's [-26% in 2023] might not grow "as quickly" in the near-term on the path to ~30% OM's by 2027. The CEO indicated OpEx will definitively grow (BofA forecast +1% Y/Y) but also caveated that the company will be disciplined on OpEx as a percentage of revenue [BofA: 27.7% in 2024 vs. 28.1% prior year]. In our view, Teva showing both top and bottom-line growth is key to investor sentiment. From a gross margin standpoint, the CEO indicated GM's should improve in '24 driven by mix (more Austedo; we model GM's 100 bps above '23 levels). On the pipeline, Teva noted its Ph2 TL1A IBD program will report topline data in 1H25 while in-house interim analysis completes in YE24. Otherwise, management offered consistent /bullish commentary around the trajectory of its two CNS growth brands (Austedo + Uzedly).

JAZZ: zani Ph3 GEA tweaks, no impact on YE24 timing

Today, Jazz pre-announced 2023 company revenue is expected to fall within prior guidance ranges while the company did not offer '24E guide. However, Jazz did guide to top growth brands (c70% of '24 sales) growing low-DD (vs. our/Street +15%/+13%, respectively) and Xyrem AG royalties >\$200m vs. our \$225m. Overall, we view the color on key revenue line items as reassuring on near-term brand performance. Of note, Jazz appears to be highlighting extra efforts to boost Xywav-IH indication growth calling out more focused S&M investments to broaden the prescriber base and increase diagnosis rates (IH requires market build). The bulk of the fireside chat was focused on zani Ph3 GEA, which is Jazz's most high-profile program. While Jazz announced an increase in study size to boost study powering for the OS analysis, mgmt noted a) the decision involved consultation with the FDA and was not prompted by blinded assessment of event rates, and b) the PFS registrational endpoint readout won't be impacted by the sample size increase and is expected to readout by YE24. In our view, the GEA trial modifications make sense to us as they optimize time-to-market while increasing the odds of securing favorable OS data [overall survival; key to commercial adoption]. We see 1L mGEA as an \$800-900m indication, depending on strength of data. Otherwise, Jazz commentary around M&A was broadly in-line with past calls.

ALKS: higher margin outlook (Invega) & orexin AEs

Alkermes (ALKS) issued an 8-K which most notably included an outlook to achieve ~30% EBITDA margins (in 2024) and some pipeline updates on Ph1 orexin (sleep) program. On margins, the ~30% target is above the Street's 22%. Previously, management had guided to 20% margins excluding US Invega royalties, thus upside to its own guide is a mix of re-inclusion of Invega and lower OpEx. On orexin, ALKS completed Ph1b in NT1 noting new AEs observed (elevated heart rate, nausea, lower appetite); **Cont'd on pg 2.**

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 5 to 8. Analyst Certification on page 4. Price Objective Basis/Risk on page 3.

12643151

Timestamp: 08 January 2024 08:43PM EST

08 January 2024

Equity
United States
Biopharmaceuticals

Jason M. Gerberry
Research Analyst
BofAS
+1 646 743 0180
jason.gerberry@bofa.com

Chi M. Fong
Research Analyst
BofAS
+1 646 855 5264
chi.fong@bofa.com

Pavan R. Patel
Research Analyst
BofAS
+1 646 855 5825
pavan.r.patel@bofa.com

Dina Ramadan
Research Analyst
BofAS
+1 646 556 0492
dina.ramadan@bofa.com

PO change: ALKS \$29 to \$30, see p. 2 and Exhibit 1 for summary of model changes

Acronyms:
HRMY: Harmony
OGN: Organon
OM: operating margin
GM: gross margin
S&M: sales and marketing
TL1A, FcRn: drug targets
IBD: inflammatory bowel disease
FDA: US Food and Drug Administration
CNS: central nervous system
DD: double digit
AG: authorized generics
OS: overall survival
PFS: progression free survival
m: metastatic
GEA: gastroesophageal adenocarcinoma
L: line of therapy
AE(s): adverse event(s)
NT1, NT2: narcolepsy type-1 / type-2
IH: idiopathy hypersomnia
ASCO GU: medical meeting
IP: intellectual property
IND: investigational new drug
TBD: to be determined

ALKS (continued from front page): we suspect increased investor focus on the elevated heart rate given Jazz recently paused its orexin program citing cardiovascular toxicity. ALKS plans to advance '2680 into Ph2 NT1 study (1H24) at doses ranging from 4mg, 6mg, 8mg. ALKS expects to disclose Ph1b data in NT2 and IH in 1H24. We see ALKS' own Ph2 data ('25E) as key de-risking event given Ph1 study in NT1 was limited to single-dose exposure. Reiterate Neutral: balanced risk/reward; PO to \$30 (from \$29) on lower OpEx given ALKS' revised '24 EBITDA guide.

EXEL: soft '24 sales guide offset by cost cut, share repo

Exelixis' (EXEL) FY24 product sales guidance at midpoint came in -8% below cons offset by cost cutting and lower OpEx (-14% R&D, -19% SG&A). The sales guide at midpt (+4% Y/Y) was in-line with Cabo script averaging +1% Q/Q, though list price increase (+2% Y/Y) is less than prior years (+7-8%). We see Cabo providing steady cash flow to EXEL as the company looks to expand cabo label (prostate data at ASCO GU Jan 25th) and advance pipeline (zanza/XB002) to drive long-term sales growth. EXEL has planned up to \$450m additional buyback in '24. Reiterate Buy: upside potential from Cabo IP resolution. Model: 5-6% lower '24-26E topline offset by 6-7% lower OpEx; no impact to valuation (see Exhibit 1).

XENE: pivotal MDD design discussed + Nav1.7 in pain

The focus of the Xenon (XENE) management fireside was around XEN11011 development programs in epilepsy and depression. On epilepsy, we did not feel management disclosed anything new with Ph3 X-TOLE2 study topline data still estimated to come in 1H25 (6-8 months after last pt enrolled in 2H24). On '1101 for depression (MDD), management offered some outline on contours of Ph3 design which should resemble the Ph2 X-NOVA (sites, US-centric sites) while primary endpoint will likely to be HAMD-17 scale (based on Ph2 success) and leaning ("right now") to focusing on a single '1101 dose-level. One variable that continues to be debated internally at Xenon is having two vs. three Ph3 studies to mitigate placebo-risk (decision TBD). On the earlier stage pipeline, XENE mentioned IND-enabling studies will transpire in 2024-25 looking at Nav1.7 for pain, which comes after Vertex reported positive Ph2 for its Nav1.8 inhibitor in pain, with management is confident Nav1.7 is a more genetically validated target.

Acronyms: MDD: major depressive disorder; Nav1.7/8: sodium channel; HAMD-17: Hamilton Depression Rating Scale; pt: patient; XTOLE-2, X-NOVA: clinical trials; MADRS: Montgomery-hamilton depression rating scale.

ROIV: no news on cap deployment; BD strategy unchanged

One key focus from Roivant's (ROIV) fireside chat was on capital deployment, where management reaffirmed prior messaging that they would take their time on business development (BD). Further on BD, management remains focused on opportunities with low upfront cost (vs \$17m average upfront in prior BDs), pursuing similar mix of early- and mid-/late-stage opportunities (roughly 50/50 in prior efforts), and agnostic to therapeutic area focus. We look to fireside tomorrow with subsidiary Immunovant (IMVT) for more in-dept discussions on its autoimmune FcRn franchise. Maintain Neutral on ROIV: balanced risk/reward.

Exhibit 1: Summary of model changes

We summarize estimate changes made with this report

Ticker	PO (\$)		Revenue (\$m)						EPS (\$)					
			Old			Current			Old			Current		
	Old	New	2023E	2024E	2025E	2023E	2024E	2025E	2023E	2024E	2025E	2023E	2024E	2025E
ALKS	29	30	1,674	1,538	1,550	1,674	1,538	1,550	1.59	2.28	2.28	1.59	2.57	2.43
EXEL	27	27	1,843	2,029	2,179	1,831	1,897	2,036	0.71	1.25	1.65	0.68	1.28	1.59

Source: BofA Global Research estimates

Exhibit 1: Summary of model changes

We summarize estimate changes made with this report

Ticker	PO (\$)	Revenue (\$m)	EPS (\$)
--------	---------	---------------	----------

BofA GLOBAL RESEARCH

Exhibit 2: Stocks mentioned in this report

Ratings and stock prices of stock tickers mentioned in this report

Ticker	Company name	Rating	Stock price
ALKS	Alkermes PLC	B-2-9	29.60
EXEL	Exelixis Inc	B-1-9	22.54
JAZZ	Jazz Pharmaceuticals PLC	B-1-9	125.51
ROIV	Roivant Sciences Ltd	C-2-9	11.44
TEVA	Teva Pharmaceutical Industries	C-1-9	11.47
XENE	Xenon Pharmaceuticals Inc	C-1-9	47.88

Source: BofA Global research, Bloomberg

BofA GLOBAL RESEARCH

Price objective basis & risk**Alkermes (ALKS)**

Our \$30 PO is based on a blended mix of DCF and 2025E P/E. We believe our DCF is based on reasonable assumptions, including: (1) discount rate of 9%, and (2) risk-adjusted pipeline value for ALKS2680 in lieu of terminal value. Our assumption of 13x '25E EPS is within range of biopharma peers (7-17x) and comparable to 13x where ALKS trades at.

Upside risks: 1) better-than-expected product sales growth, 2) value accretive divestiture or partnership above our expectation.

Downside risks: 1) worse-than-expected product sales growth, 2) assets divested or partnered at values below our expectation.

Exelixis (EXEL)

Our \$27 price objective (PO) is based on DCF analysis. We assume the following: 1) Cabometyx US revenue climbs to \$1.8bn by '25E as the product maintains market leading position among approved TKIs, with modest 1L market share for RCC (we model 2L+ mCRPC at 55% likelihood of success adjustment), 2) exclusivity for Cabo though January 2030E, 3) 9.5% discount rate and no terminal value.

Downside risks to our PO: 1) clinical trial failure, 2) patent loss or settlement allowing generic entry prior to 2030 expiry of polymorph patent, 3) widening gross-to-net discount for Cabo with increase in Medicare Part D coverage gap.

Jazz Pharmaceuticals (JAZZ)

Our \$184 price objective (PO) is based on equally blended valuation based on 8x EV/EBITDA of our 2024E EBITDA. Our valuation multiple reflects our confidence in Jazz's ability to navigate patent cliff concerns, and company growth profile. Our EV/EBITDA multiple of 8x compares to the peer group that trades at 6-7x, which we think is appropriate based on JAZZ's growth outlook vs peers. We assume WACC of 9% and terminal growth rate of -3% in our DCF.

Downside risks to our PO are 1) slower-than-expected sales growth from Xywav or Zepzelca launch, 2) slower-than-expected sales growth of Epidiolex, and 3) competitive headwinds to sodium oxybate brand franchise.



Upside risks to our PO are 1) greater-than-expected sales growth from Xywav or Zepzelca launch, 2) less-than-expected generic erosion of Xyrem (eg. due to difficulty setting up a generic REMS), and 3) future business development transactions, which is a core element of the company's strategy.

Roivant (ROIV)

Our PO of \$12 assumes 1) a discount rate of 11% for hybrid biotech with mid-to-late stage pipeline and a commercial product, 2) POS of 95% for VTAMA atopic dermatitis, 3) risk-adjusted forecast for FcRn franchise, 4) loss of exclusivity of lead programs in 2038E+.

Downside risks to our PO: 1) clinical trial failure or clinical data come in below expectation, 2) product sales underperform our forecast, 3) dilutive capital raise

Upside risks to our PO: 1) clinical data come in above expectation, 2) product sales outperform our forecast, 3) acquisition at a premium

Teva Pharmaceuticals (TEVA)

Our \$13 price objective (PO) is based on a '24E EV/EBITDA multiple of 8x, which is slightly above the peer group avg of 6.7x reflecting key new product launches following resolution of opioid litigation. Our valuation factors in \$4.7bn in contingent legal liabilities related to opioid litigation resolution (\$3.2bn) and generic price fixing (\$1.5bn). The \$3.2bn estimate for present value of opioid resolution cost is based on \$4.35bn gross liability, with a 13-year payout.

Upside risks: 1) Ability to execute BD (business development) activity to drive mid-SD revenue growth in '23-27 timeframe, 2) surprise high value new generic product launch.

Downside risks: 1) annual opioid costs may limit BD activity thus hindering TEVA's aspiration of achieving mid-SD revenue growth in '23-27 timeframe, 2) increased price erosion to key spec pharma brands

Xenon Pharmaceuticals (XENE)

Our \$56 price objective (PO) is based on a risk-adjusted sum-of-the-parts analysis. 1) XEN1101 launches in 2025 and risk-adjusted FOS sales reach est. \$1.5bn by 2039, 2) 80% POS for lead FOS indication, 80% POS for PGTCs, and 65% POS for MDD, 4) No terminal value beyond 2040 LOE, 5) 10% discount rate.

Downside risks to our PO: 1) emerging retinal AE in ongoing FOS studies, 2) failure or disappointing results on confirmatory Ph3 FOS study, 3) failure or disappointing results on PGTCs and/or MDD studies.

Upside risks to our PO: 1) better-than-expected results from Ph3 PGTCs study, 2) better-than-expected results from MDD POC studies, 3) clinical success in FOS leading to better adoption and/or steeper market ramp.

Analyst Certification

We, Jason M. Gerberry and Chi M. Fong, hereby certify that the views each of us has expressed in this research report accurately reflect each of our respective personal views about the subject securities and issuers. We also certify that no part of our respective compensation was, is, or will be, directly or indirectly, related to the specific recommendations or view expressed in this research report.

US - Specialty Pharma & Biotechnology Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Arcellx, Inc.	ACLX	ACLX US	Jason M. Gerberry
	Arrowhead Pharmaceuticals	ARWR	ARWR US	Jason M. Gerberry
	bluebird bio	BLUE	BLUE US	Jason M. Gerberry
	Exelixis	EXEL	EXEL US	Jason M. Gerberry
	Immunovant, Inc.	IMVT	IMVT US	Jason M. Gerberry
	Intra-Cellular Therapies	ITCI	ITCI US	Jason M. Gerberry
	Ionis	IONS	IONS US	Jason M. Gerberry
	Jazz Pharmaceuticals	JAZZ	JAZZ US	Jason M. Gerberry
	Lyra Therapeutics	LYRA	LYRA US	Jason M. Gerberry
	Oculus Holding AG	OCS	OCS US	Jason M. Gerberry
	Relay Therapeutics	RLAY	RLAY US	Jason M. Gerberry
	Tarsus Pharmaceuticals	TARS	TARS US	Jason M. Gerberry
	Teva Pharmaceuticals	TEVA	TEVA US	Jason M. Gerberry
	Vaxcyte Inc	PCVX	PCVX US	Jason M. Gerberry
	Xenon Pharmaceuticals	XENE	XENE US	Jason M. Gerberry
NEUTRAL				
	Alkermes	ALKS	ALKS US	Jason M. Gerberry
	Amphastar Pharmaceuticals	AMPH	AMPH US	Jason M. Gerberry
	Axsome Therapeutics	AXSM	AXSM US	Jason M. Gerberry
	Galapagos	GLPG	GLPG US	Jason M. Gerberry
	ProKidney Corp	PROK	PROK US	Jason M. Gerberry
	Roivant	ROIV	ROIV US	Chi M. Fong
UNDERPERFORM				
	Bausch Health Cos Inc	BHC	BHC US	Jason M. Gerberry
	FibroGen Inc.	FGEN	FGEN US	Jason M. Gerberry
	Harmony Biosciences	HRMY	HRMY US	Jason M. Gerberry
	Organon	OGN	OGN US	Jason M. Gerberry
	Viartis Inc.	VTRS	VTRS US	Jason M. Gerberry

Disclosures

Important Disclosures

Equity Investment Rating Distribution: Health Care Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	234	60.94%	Buy	115	49.15%
Hold	80	20.83%	Hold	36	45.00%
Sell	70	18.23%	Sell	29	41.43%

Equity Investment Rating Distribution: Global Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	1895	53.62%	Buy	1083	57.15%
Hold	832	23.54%	Hold	454	54.57%
Sell	807	22.84%	Sell	383	47.46%

^{R1} 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 stocks. A stock rated Neutral is included as a Hold, and a stock rated Underperform is included as a Sell.



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 ^{R2}
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

^{R2} 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.

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

BofAS or one of its affiliates acts as a market maker for the equity securities recommended in the report: Alkermes, Exelixis, Jazz Pharmaceuticals, Roivant, Teva Pharmaceuticals, Xenon Pharma. BofAS or an affiliate was a manager of a public offering of securities of this issuer within the last 12 months: Xenon Pharma.

The issuer is or was, within the last 12 months, an investment banking client of BofAS and/or one or more of its affiliates: Alkermes, Exelixis, Jazz Pharmaceuticals, Teva Pharmaceuticals, Xenon Pharma.

BofAS or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: Alkermes, Exelixis, Jazz Pharmaceuticals, Teva Pharmaceuticals.

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: Alkermes, Jazz Pharmaceuticals, Teva Pharmaceuticals.

BofAS or an affiliate has received compensation for investment banking services from this issuer within the past 12 months: Alkermes, Jazz Pharmaceuticals, Teva Pharmaceuticals, Xenon Pharma.

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: Exelixis, Jazz Pharmaceuticals, Teva Pharmaceuticals.

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: Alkermes, Jazz Pharmaceuticals.

BofAS or one of its affiliates is willing to sell to, or buy from, clients the common equity of the issuer on a principal basis: Alkermes, Exelixis, Jazz Pharmaceuticals, Roivant, Teva Pharmaceuticals, Xenon Pharma.

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: Alkermes, Exelixis, Jazz Pharmaceuticals, Teva Pharmaceuticals.

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.bofam.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities

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

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

BofA ESGMeter Methodology:

ESGMeter is a proprietary metric based on quantitative analysis and fundamental analyst inputs that reflects our assessment of a company's Environmental, Social and Governance-related attributes. The ESGMeter is intended to indicate a company's likelihood of experiencing stronger financial stability (higher return on equity and lower earnings and price volatility) over the next three years relative to peer group. There are three ESGMeter levels - Low, Medium, and High - which indicate whether a company has attributes most likely to translate into superior financial stability (in the case of a High level) or weaker financial stability (in the case of a Low level) over the next three years relative to its peer group. A Medium level suggests that a company exhibits ESG characteristics that are likely associated with financial stability results in line with its peer group over the next three years. Full details of our methodology, financial stability definition and disclaimers are available at [BofA ESGMeter methodology](#). ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of the BofA Global Research fundamental equity analyst's investment rating, volatility risk rating, income rating or price objective for that company.

Copyright and General Information:

Copyright 2024 Bank of America Corporation. All rights reserved. iQDatabase® is a registered service mark of Bank of America Corporation. This information is prepared for the use of BofA Securities clients and may not be redistributed, retransmitted or disclosed, in whole or in part, or in any form or manner, without the express written consent of BofA Securities. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure

is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities. Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

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

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

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

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

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.