

Novo Nordisk

Two charts: Capex advantage and oral obesity strategy

Reiterate Rating: BUY | PO: 975.00 DKK | Price: 850.90 DKK

Capex/Supply, oral obesity and Venn diagram key at CMD

Novo is hosting its bi-annual CMD on March 7th, and we believe 4 topics will be key for investors: 1) Capex and supply expansion. We continue to believe the magnitude of Novo's capex (alongside LLY) is an under-appreciated barrier to mid-term branded competition, and potential biosimilars. Exhibit 2 below shows the magnitude of Novo/LLY capex as multiples of key generic/biosimilar companies as a potential barrier to meaningful semaglutide generic competition; 2) We believe PI amycratin data will be forthcoming at the CMD, and Exhibit 1 (detailed version overleaf) provides key metrics for comparison vs competition. Novo continues to suggest efficacy data for oral amycratin is best in class. Novo potentially sees a two-tier oral market: Amycretin as a high efficacy oral, but tougher scalability, with its Inversargo asset (CB1 antagonist) as a true small molecule, that is much more scaleable, but with lower efficacy; 3) We believe Novo may provide some view of obesity market segmentation similar to our approach of Venn diagram of overlapping co-morbidities increasing impetus for payor coverage and GLP1 penetration. Much LCM data is still pending (detailed FLOW, PAD, NASH and Alzheimer's); 4) Pipeline beyond GLP1, with under-appreciated PIII assets including MIM8, ziltivekimab and ocedurenone. We raise PO to DKK975 from DKK875, on higher target PE (33x vs 30x previously), on higher confidence in growth.

Exhibit 1: Key orals in development

Key metrics for oral comparison vs competition

Drug Company	Estimate* pbo-adjusted weight loss %				
	4wks	8wks	12wks	20wks	52wks
Rybelsus Novo	1	2	4	7	14
Orforglipron LLY	3	5	7	9	13**
GSBR-1290 120mg Structure	3	5			
LB54640 Rhythm	3				
Inversargo Novo	4				

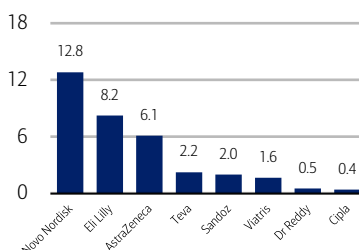
Source: Company info, BofA Global Research

*Est of effects using timeseries charts where numerical data not available. **Results at 36wks

BofA GLOBAL RESEARCH

Exhibit 2: 2021-2024 total Capex \$mn

Novo/LLY capex multiples of generic/biosims



Source: Company reports, BofA Global Research estimates

BofA GLOBAL RESEARCH

Estimates (Dec) (DKK)	2022A	2023A	2024E	2025E	2026E
EPS (Reported Diluted)	12.2	18.6	24.7	29.9	35.1
EPS Change (YoY)	17.8%	52.4%	32.5%	21.2%	17.3%
Dividend / Share	6.06	9.40	12.5	15.1	17.7
ADR EPS (Reported Diluted - US\$)	1.73	2.70	3.56	4.32	5.06
ADR Dividend / Share (US\$)	0.86	1.36	1.80	2.18	2.56
Valuation (Dec)					
P/E	69.6x	45.7x	34.5x	28.5x	24.3x
Dividend Yield	0.71%	1.10%	1.46%	1.77%	2.08%
EV / EBITDA*	46.4x	34.0x	25.6x	21.0x	18.1x
Free Cash Flow Yield*	1.73%	2.18%	0.49%	3.32%	3.79%

* For full definitions of *IQmethod*SM measures, see page 7.

>> Employed by a non-US affiliate of BofAS and is not registered/qualified as a research analyst under the FINRA rules.

Refer to "Other Important Disclosures" for information on certain BofA Securities entities that take responsibility for the information herein in particular jurisdictions.

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 8 to 11. Analyst Certification on page 6. Price Objective Basis/Risk on page 6.

12660706

Timestamp: 19 February 2024 12:30AM EST

19 February 2024

Equity

Key Changes

(DKr)	Previous	Current
Price Obj.	875.00	975.00
2024E EPS	25.17	24.66
2025E EPS	30.52	29.90
2026E EPS	35.71	35.07
2024E DPS	12.71	12.45

Sachin Jain, CFA >>

Research Analyst

MLI (UK)

s.jain@bofa.com

Graham Parry >>

Research Analyst

MLI (UK)

graham.parry@bofa.com

Joe Bowden >>

Research Analyst

MLI (UK)

jbowden@bofa.com

Charlie Haywood >>

Research Analyst

MLI (UK)

charlie.haywood@bofa.com

Stock Data

Price (Common / ADR)	850.90 DKK / 124.01 USD
Price Objective	975.00 DKK / 140.00 USD
Date Established	19-Feb-2024 / 19-Feb-2024
Investment Opinion	B-1-7 / B-1-7
52-Week Range	476.05 DKK-852.20 DKK
Market Value (mn)	3,771,843 DKK
Shares Outstanding (mn)	4,432.8 / 4,432.8
Average Daily Value (mn)	327.29 USD
Free Float	73.3%
BofA Ticker / Exchange	NONOF / CPH
BofA Ticker / Exchange	NVO / NYS
Bloomberg / Reuters	NOVOB DC / NOVOB.CO
ROE (2024E)	83.8%
Net Dbt to Eqty (Dec-2023A)	-5.2%
ESGMeter™	High

ESGMeter is not indicative of a company's future stock price performance and is not an investment recommendation or rating. ESGMeter is independent of BofA Global Research's equity investment rating, volatility risk rating, income rating, and price objective for that company. For full details, refer to "BofA ESGMeter Methodology".

iQprofileSM Novo Nordisk

Key Income Statement Data (Dec)

(DKr Millions)

	2022A	2023A	2024E	2025E	2026E
Sales	176,954	232,261	303,445	368,290	428,799
EBITDA Adjusted	82,171	111,987	148,805	181,693	210,964
Depreciation & Amortization	(7,362)	(9,413)	(10,619)	(14,003)	(15,742)
EBIT Adjusted	74,809	102,574	138,187	167,691	195,222
Net Interest & Other Income	(5,747)	2,100	(1,541)	(3,192)	(3,819)
Tax Expense / Benefit	(13,537)	(20,991)	(27,329)	(32,900)	(38,281)
Net Income (Adjusted)	55,525	83,683	109,317	131,599	153,123
Average Fully Diluted Shares Outstanding	4,545	4,496	4,432	4,401	4,366

Key Cash Flow Statement Data

Net Income (Reported)	55,525	83,683	109,317	131,599	153,123
Depreciation & Amortization	7,362	9,413	10,619	14,003	15,742
Change in Working Capital	(5,336)	(12,245)	(21,753)	(19,815)	(18,491)
Deferred Taxation Charge	0	0	0	0	0
Other CFO	21,336	28,057	38,558	35,124	32,776
Cash Flow from Operations	78,887	108,908	136,741	160,910	183,150
Capital Expenditure	(12,146)	(25,806)	(118,253)	(36,829)	(42,880)
(Acquisition) / Disposal of Investments	(7,075)	0	0	0	0
Other CFI	(5,697)	(18,086)	0	0	0
Cash Flow from Investing	(24,918)	(43,892)	(118,253)	(36,829)	(42,880)
Share Issue / (Repurchase)	(24,086)	(29,924)	(20,000)	(30,000)	(30,000)
Cost of Dividends Paid	(25,303)	(31,767)	(41,668)	(65,987)	(76,799)
Increase (decrease) debt	(861)	1,222	74,250	0	0
Other CFF	(1,785)	(2,808)	0	0	0
Cash Flow from Financing	(52,035)	(63,277)	12,582	(95,987)	(106,799)
Total Cash Flow (CFO + CFI + CFF)	1,934	1,739	31,070	28,095	33,471
FX and other changes to cash	5,192	4,534	0	0	0
Change in Cash	7,126	6,273	31,070	28,095	33,471
Change in Net Debt	(7,987)	(5,051)	43,180	(28,095)	(33,471)
Net Debt	(517)	(5,568)	37,612	9,517	(23,954)

Key Balance Sheet Data

Property, Plant & Equipment	66,671	90,961	200,586	225,403	254,533
Goodwill	0	0	0	0	0
Other Intangibles	51,416	60,406	58,415	56,424	54,433
Other Non-Current Assets	14,976	23,473	23,473	23,473	23,473
Trade Receivables	50,560	64,770	84,621	102,704	119,578
Cash & Equivalents	26,301	32,574	63,644	91,739	125,210
Other Current Assets	31,333	42,302	55,267	67,077	78,098
Total Assets	241,257	314,486	486,006	566,820	655,324
Long-Term Debt	24,318	20,528	94,778	94,778	94,778
Other Non-Current Liabilities	12,513	17,742	17,742	17,742	17,742
Short-Term Debt	1,466	6,478	6,478	6,478	6,478
Other Current Liabilities	119,474	163,177	212,798	258,000	300,180
Total Liabilities	157,771	207,925	331,796	376,998	419,178
Total Equity	83,486	106,561	154,210	189,822	236,146
Total Equity & Liabilities	241,257	314,486	486,006	566,820	655,324

Business Performance*

Return On Capital Employed	52.4%	61.8%	52.9%	46.4%	47.1%
Return On Equity	72.0%	88.1%	83.8%	76.5%	71.9%
Operating Margin	42.3%	44.2%	45.5%	45.5%	45.5%
Free Cash Flow (MM)	66,741	83,102	18,488	124,081	140,270

Quality of Earnings*

Cash Realization Ratio	1.42x	1.30x	1.25x	1.22x	1.20x
Asset Replacement Ratio	2.11x	3.40x	13.7x	3.07x	3.12x
Tax Rate	19.6%	20.1%	20.0%	20.0%	20.0%
Net Debt/Equity	-0.62%	-5.23%	24.4%	5.01%	-10.1%
Interest Cover	12.5x	NM	37.0x	39.4x	45.9x

* For full definitions of iQmethodSM measures, see page 7.

Company Sector

Pharmaceuticals

Company Description

Novo Nordisk is a Denmark-based world leader in insulin and diabetes care and also manufactures and markets a variety of other pharmaceutical products. Key products include Wegovy and Semaglutide (GLP-1) and long acting basal insulins.

Investment Rationale

We have a Buy rating on Novo Nordisk given strong c12% 2025-28E sales CAGR driven by Wegovy launch layers on top of a solid diabetes franchise with strong GLP1 (Ozempic and Rybelsus)-driven growth and mid-term pipeline options.

Stock Data

Shares / ADR	1.00
Price to Book Value	24.3x

Quarterly Earnings Estimates

	2023	2024
Q1	4.39A	5.34E
Q2	4.31A	5.79E
Q3	5.01A	6.52E
Q4	4.91A	7.01E

Key Changes

(US\$)	Previous	Current
Price Obj.	125.20	140.00
2024E EPS	3.63	3.56
2025E EPS	4.41	4.32
2026E EPS	5.16	5.06
2024E DPS	1.84	1.80

Exhibit 3: Overview of key orals in development and data to date

Summary of estimated performance of key oral assets in development on weight loss, framing landscape ahead of Novo oral data

Drug	Company	Mechanism	Stage of dev	Admin	Dosing	Data	Estimate* of weight loss %				
							4wks	8wks	12wks	20wks	52wks
Rybelsus	Novo	GLP1	PIII	Oral	Daily	Absolute	2	3	5	9	16
						Placebo-adjusted	1	2	4	7	14
Orforglipron	LLY	GLP1	PIII	Oral	Daily	Absolute	4	6	8	11	15
						Placebo-adjusted	3	5	7	9	13**
GSBR-1290 120mg	Structure	GLP1	PI/II	Oral	Daily	Absolute	3	6			
						Placebo-adjusted	3	5			
LB54640	Rhythm	MC4R agonist	PII	Oral	Daily	Absolute	3				
						Placebo-adjusted	3				
Inversargo	Novo	CB1r blocker	PII	Oral	Daily	Absolute	3				
						Placebo-adjusted	4				
VK2735	Viking	GLP1 + GIP	PI	Oral	Daily	No clinical data					
CT-996	Roche	GLP1	PI	Oral	Weekly	No clinical data					
AZD6234	AZN	GLP1	PI	Oral	Daily	No clinical data					

Source: Company info, BofA Global Research

*Estimation of effects at timepoints using timeseries charts where specific numerical data not available

**results at 36wks

BofA GLOBAL RESEARCH

Glossary

CMD = Capital Markets Day

PI/II/III = Phase 1/2/3

CB = cannabinoid

GLP = Glucagon like peptide

LCM = Lifecycle management

PAD = Peripheral arterial disease

NASH = Non-alcoholic steatohepatitis

MIM8 = Name of asset

MC4R = Melanocortin 4 receptor

Exhibit 4: Novo Nordisk Sales Model

BofA product forecasts

December Year-End (DKKmn)	2022A	2023A	1Q 24E	2Q 24E	3Q 24E	4Q 24E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	% Chg			CAGR
															2022A	2023A	2024E	25-28E
Human Insulin (Diabetes)	8,186	7,594	1,905	1,904	1,610	1,922	7,341	7,281	7,234	7,198	7,172	7,156	7,149	7,149	-10	-7	-3	-0.5
Tresiba (Diabetes)	9,353	7,752	1,912	1,610	1,783	1,788	7,093	7,209	7,353	7,500	6,296	5,667	4,976	4,380	-4	-17	-9	-4.4
Levemir (Diabetes)	4,579	3,934	1,001	689	846	950	3,486	3,422	3,364	3,314	3,285	3,260	3,238	3,218	-19	-14	-11	-1.3
Xultophy (IDegLira) (Diabetes)	2,809	3,219	823	920	874	861	3,478	3,331	3,192	3,061	2,938	2,772	2,582	2,412	6	15	8	-4.1
Ryzodeg	2,889	3,730	1,123	1,164	1,041	1,467	4,795	5,274	5,011	4,760	4,522	4,296	4,081	3,877	69	29	29	-5.0
Novo Rapid (Diabetes)	15,460	13,776	3,783	2,998	3,196	3,447	13,425	13,514	13,604	13,694	13,786	13,879	13,972	14,066	-3	-11	-3	0.7
Faster acting insulin aspart (Diabetes)	2,003	2,173	543	477	622	685	2,327	2,443	2,565	2,694	2,774	2,858	2,671	2,325	15	8	7	4.3
Novo Mix (Diabetes)	7,673	5,844	1,734	1,440	1,360	1,220	5,754	5,744	5,734	5,725	5,716	5,708	5,700	5,692	-19	-24	-2	-0.2
Victoza (Diabetes)	12,322	8,664	2,033	1,454	1,643	1,293	6,424	5,254	4,570	4,134	3,824	3,581	3,377	3,195	-18	-30	-26	-10.0
Ozempic (Diabetes)	59,750	95,718	25,685	29,503	32,005	36,026	123,220	155,093	182,954	207,231	230,988	255,395	273,035	281,226	77	60	29	14.2
Rybelsus (Diabetes)	11,299	18,750	5,782	5,472	6,194	8,657	26,105	31,597	36,693	38,686	39,847	40,644	41,457	42,286	134	66	39	8.0
Icodec (LA basal insulin) Diabetes	0	0	200	350	500	660	1,710	2,850	3,800	4,560	5,035	5,320	5,510	5,700	nm	nm	nm	20.9
Others Diabetes	3,225	2,312	690	644	582	323	2,237	2,193	2,149	2,106	2,064	2,022	1,982	1,942	-10	-28	-3	-2.0
Diabetes total Including pipeline	139,548	173,466	47,213	48,626	52,258	59,297	207,394	245,204	278,224	304,662	328,247	352,557	369,729	377,470	23	24	20	10.2
Wegovy Obesity	6,188	31,343	11,556	16,170	21,732	20,071	69,529	93,792	116,523	133,141	140,630	146,017	149,999	154,114	342	407	122	14.5
Saxenda Obesity	10,676	10,289	2,364	2,142	2,014	1,397	7,917	5,161	4,387	3,729	3,170	2,694	2,290	1,947	53	-4	-23	-15.0
Cagrilintide Obesity & Diabetes	0	0	0	0	0	0	0	2,800	5,600	7,700	8,750	9,275	9,625	9,800	nm	nm	nm	46.2
Sema NASH NASH	0	0	0	0	0	0	0	1,750	3,000	4,000	4,500	4,750	4,900	5,000	nm	nm	nm	37.0
Total Obesity	16,864	41,632	13,919	18,311	23,746	21,469	77,446	103,503	129,510	148,570	157,050	162,736	166,814	170,861	101	147	86	24.3
NovoSeven (Haemophilia)	8,308	7,958	2,033	1,767	2,066	1,963	7,829	7,829	7,829	7,829	7,829	7,829	7,829	7,829	15	-4	-2	0.0
Haemophilia A	2,338	2,422	684	727	588	568	2,567	2,758	2,963	3,183	3,369	3,565	3,714	3,838	11	4	6	6.9
Rare endocrine (Growth Hormone)	7,138	3,836	1,486	1,217	737	1,672	5,111	5,145	5,180	5,217	5,255	5,294	5,335	5,377	-2	-46	33	0.7
Etavopivat Sickle cell disease	0	0	0	0	0	0	0	375	1,250	2,250	3,200	3,600	3,900	4,100	nm	nm	nm	104.3
Other Rare disease	1,698	1,551	393	378	410	374	1,554	1,581	1,608	1,635	1,663	1,692	1,721	1,750	1	-9	0	1.7
Rare disease total	20,542	17,163	4,873	4,434	4,128	4,991	18,426	18,667	18,925	19,201	19,443	19,698	19,909	20,097	7	-16	7	1.4
Ziltivekimab IL6, CV disease	0	0	0	0	0	0	0	0	0	900	1,800	1,950	2,040	2,100	nm	nm	nm	nm
Concizumab (TFP inhibitor)	0	0	0	0	0	180	180	300	390	450	510	555	585	600	nm	nm	nm	19.3
Haemophilia	0	0	0	0	0	180	180	300	390	450	510	555	585	600	nm	nm	nm	19.3
Sema Alzheimers Alzheimers	0	0	0	0	0	0	0	240	500	760	1,000	1,100	1,160	1,200	nm	nm	nm	60.9
Total Sales	176,954	232,261	66,005	71,372	80,132	85,937	303,445	368,290	428,799	476,793	511,250	542,197	564,138	576,428	26	31	31	11.6

Source: BofA Global Research, company reports

BofA GLOBAL RESEARCH

Exhibit 5: Novo Nordisk Profit and Loss Model

BofA P/L forecasts

December Year-End (DKKmn)	2022A	2023A	1Q 24E	2Q 24E	3Q 24E	4Q 24E	2024E	2025E	2026E	2027E	2028E	2029E	2030E	2031E	% Chg			CAGR
															2022A	2023A	2024E	25-28E
Sales	176,954	232,261	66,005	71,372	80,132	85,937	303,445	368,290	428,799	476,793	511,250	542,197	564,138	576,428	26	31	31	11.6
COGS	-28,448	-35,765	-10,231	-11,063	-12,420	-13,320	-47,034	-56,717	-66,035	-73,426	-78,732	-83,498	-86,877	-88,770	20	26	32	11.6
% of sales	16.1	15.4	15.5	15.5	15.5	15.5	15.5	15.4	15.4	15.4	15.4	15.4	15.4	15.4				
Gross profit	148,506	196,496	55,774	60,309	67,711	72,616	256,411	311,573	362,764	403,367	432,517	458,699	477,260	487,658	27	32	30	16.3
Margin %	83.9	84.6	84.5	84.5	84.5	84.5	84.5	84.6	84.6	84.6	84.6	84.6	84.6	84.6				
SG&A	-50,684	-61,598	-16,501	-17,843	-20,033	-21,484	-75,861	-91,336	-105,484	-116,814	-125,256	-130,127	-135,393	-138,343	23	22	23	11.1
% of sales	28.6	26.5	25.0	25.0	25.0	25.0	25.0	24.8	24.6	24.5	24.5	24.0	24.0	24.0				
Sales & Distribution	-46,217	-56,743	-15,181	-16,415	-18,430	-19,765	-69,792	-83,970	-96,909	-107,278	-115,031	-119,283	-124,110	-126,814	25	23	23	11.1
% of sales	26.1	24.4	23.0	23.0	23.0	23.0	23.0	22.8	22.6	22.5	22.5	22.0	22.0	22.0				
Administration	-4,467	-4,855	-1,320	-1,427	-1,603	-1,719	-6,069	-7,366	-8,576	-9,536	-10,225	-10,844	-11,283	-11,529	10	9	25	11.6
% of sales	2.5	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0				
R&D	-24,047	-32,443	-9,241	-9,992	-11,218	-12,031	-42,482	-52,665	-62,176	-69,135	-74,131	-78,619	-81,800	-83,582	35	35	31	12.1
% of sales	13.6	14.0	14.0	14.0	14.0	14.0	14.0	14.3	14.5	14.5	14.5	14.5	14.5	14.5				
Operating profit, pre-license	73,775	102,455	30,032	32,474	36,460	39,101	138,068	167,572	195,103	217,418	233,130	249,953	260,067	265,733	27	39	35	11.6
Margin %	41.7	44.1	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.6	45.6	46.1	46.1	46.1				
License and other income	1,034	119	30	30	30	30	119	119	119	119	119	119	119	119	211	-88	0	0.0
Operating profit	74,809	102,574	30,062	32,504	36,490	39,131	138,187	167,691	195,222	217,537	233,249	250,072	260,186	265,852	28	37	35	11.6
Margin %	42.3	44.2	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.6	45.6	46.1	46.1	46.1				
Net financials	-5,747	2,100	-385	-385	-385	-385	-1,541	-3,192	-3,819	-3,678	-3,528	-3,364	-3,185	-2,999	nm	nm	nm	3.4
Pretax income	69,062	104,674	29,677	32,119	36,105	38,746	136,646	164,499	191,404	213,858	229,721	246,708	257,002	262,854	17	52	31	11.8
Tax charge	-13,537	-20,991	-5,935	-6,424	-7,221	-7,749	-27,329	-32,900	-38,281	-42,772	-45,944	-49,342	-51,400	-52,571	20	55	30	11.8
Tax rate %	19.6	20.1	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	2	2	-0	
Net profit	55,525	83,683	23,742	25,695	28,884	30,997	109,317	131,599	153,123	171,087	183,777	197,367	205,601	210,283	16	51	31	11.8
Margin %	31.4	36.0	36.0	36.0	36.0	36.1	36.0	35.7	35.7	35.9	35.9	36.4	36.4	36.5				
D&A	7,362	9,413	2,655	2,655	2,655	2,655	10,619	14,003	15,742	17,718	19,873	22,172	24,586	27,075	22	28	13	12.4
EBIT	74,809	102,574	30,062	32,504	36,490	39,131	138,187	167,691	195,222	217,537	233,249	250,072	260,186	265,852	28	37	35	11.6
Margin %	42.3	44.2	45.5	45.5	45.5	45.5	45.5	45.5	45.5	45.6	45.6	46.1	46.1	46.1				
EBITDA	82,171	111,987	32,717	35,159	39,144	41,786	148,805	181,693	210,964	235,254	253,122	272,244	284,772	292,927	27	36	33	11.7
Margin %	46.4	48.2	49.6	49.3	48.9	48.6	49.0	49.3	49.2	49.3	49.5	50.2	50.5	50.8				
Per share data																		
GAAP EPS (diluted)	12.22	18.61	5.34	5.79	6.52	7.01	24.66	29.91	35.10	39.54	42.82	46.35	48.66	50.14	18	52	32	12.7
DPS	6.06	9.40	0.00	0.00	0.00	0.00	12.45	15.10	17.72	19.97	21.62	23.41	24.57	25.32	18	55	32	12.7
Shares average	4,531	4,483	4,429	4,423	4,416	4,410	4,420	4,387	4,350	4,314	4,279	4,245	4,213	4,181	-1	-1	-1	-0.8
Shares diluted, average	4,545	4,496	4,442	4,436	4,429	4,422	4,432	4,400	4,363	4,327	4,292	4,258	4,226	4,194	-1	-1	-1	-0.8

Source: BofA Global Research, company reports

BofA GLOBAL RESEARCH

Price objective basis & risk

Novo Nordisk (NONOF / NVO)

Our PO of DKK975/US\$140 assumes shares trade at c33x 2025E PE, above its prior absolute trading range given solid sales 25-28E CAGR (c12% versus sector c6%), increased confidence in growth from very positive outcomes data, and potential mid-term upside from strong obesity and continued strong GLP1 trends in diabetes.

Our target sector multiple of c16x 25E PE is based on: 1) A 40% premium to the market average multiple which implies c15x 25E PE, a premium which is in line with the long-term historical trend for periods of growth for the sector during times of broader market uncertainty, 2) Regression analysis of historical sector forward PEs and three-year-forward EPS CAGR implies a target PE of c16x 25E PE based on sector growth of c7%, 3) Our DCF valuations imply c17x 25E PE

Upside risks to our PO are pipeline success, better-than-expected pipeline data/approvals, and better-than-expected launches of key products.

Downside risks to our PO are Wegovy & Rybelsus trajectory, China VBP insulin, risk of litigation, adverse currency moves, tirzepatide (Mounjaro) competition, and product concentration.

Analyst Certification

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

EMEA - Pharma & Biotech Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	AstraZeneca	AZN	AZN US	Sachin Jain, CFA
	AstraZeneca	AZNCF	AZN LN	Sachin Jain, CFA
	Genmab	GNMSF	GMAB DC	Sachin Jain, CFA
	Genmab	GMAB	GMAB US	Sachin Jain, CFA
	Grifols S.A.	GIFLF	GRF SM	Graham Parry
	Grifols S.A. - B	GRFS	GRFS US	Graham Parry
	Grifols S.A. - B	GIFO	GRF/P SM	Graham Parry
	Lonza AG	LZAGF	LONN SW	Charlie Haywood
	Lonza AG	LZAGY	LZAGY US	Charlie Haywood
	Merck KGaA	MKGAF	MRK GY	Sachin Jain, CFA
	Merck KGaA	MKKGY	MKKGY US	Sachin Jain, CFA
	Novartis	NVSEF	NOVN SW	Graham Parry
	Novartis	NVS	NVS US	Graham Parry
	Novo Nordisk	NONOF	NOVOB DC	Sachin Jain, CFA
	Novo Nordisk	NVO	NVO US	Sachin Jain, CFA
	Sandoz Group AG	SDZXF	SDZ SW	Graham Parry
	Sandoz Group AG	SDZNY	SDZNY US	Graham Parry
	Sanofi	SNYNF	SAN FP	Graham Parry
	Sanofi	SNY	SNY US	Graham Parry
	Sartorius AG	SUVPF	SRT3 GY	Charlie Haywood
NEUTRAL				
	H. Lundbeck A/S	HLUKF	HLUNB DC	Sachin Jain, CFA
	Ipser	IPSEF	IPN FP	Sachin Jain, CFA
	Roche Holdings	RHHBF	ROG SW	Sachin Jain, CFA
	Roche Holdings	RHHBY	RHHBY US	Sachin Jain, CFA
UNDERPERFORM				
	Bayer	BAYZF	BAYN GY	Sachin Jain, CFA
	Bayer	BAYRY	BAYRY US	Sachin Jain, CFA

EMEA - Pharma & Biotech Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	GSK Plc	GSK	GSK US	Graham Parry
	GSK Plc	GLAXF	GSK LN	Graham Parry
	Orion	ORINF	ORNBV FH	Graham Parry
	UCB	UCBJF	UCB BB	Graham Parry
	UCB	UCBJY	UCBJY US	Graham Parry
RVW				
	Idorsia	IDRSF	IDIA SW	Sachin Jain, CFA

iQmethodSM Measures Definitions**Business Performance**

Return On Capital Employed

Return On Equity

Operating Margin

Earnings Growth

Free Cash Flow

Quality of Earnings

Cash Realization Ratio

Asset Replacement Ratio

Tax Rate

Net Debt-To-Equity Ratio

Interest Cover

Valuation Toolkit

Price / Earnings Ratio

Price / Book Value

Dividend Yield

Free Cash Flow Yield

Enterprise Value / Sales

EV / EBITDA

Numerator

NOPAT = (EBIT + Interest Income) × (1 – Tax Rate) + Goodwill Amortization

Net Income

Operating Profit

Expected 5 Year CAGR From Latest Actual

Cash Flow From Operations – Total Capex

Numerator

Cash Flow From Operations

Capex

Tax Charge

Net Debt = Total Debt – Cash & Equivalents

EBIT

Numerator

Current Share Price

Current Share Price

Annualised Declared Cash Dividend

Cash Flow From Operations – Total Capex

EV = Current Share Price × Current Shares + Minority Equity + Net Debt +

Other LT Liabilities

Enterprise Value

Denominator

Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill

Amortization

Shareholders' Equity

Sales

N/A

N/A

Denominator

Net Income

Depreciation

Pre-Tax Income

Total Equity

Interest Expense

Denominator

Diluted Earnings Per Share (Basis As Specified)

Shareholders' Equity / Current Basic Shares

Current Share Price

Market Cap = Current Share Price × Current Basic Shares

Sales

Basic EBIT + Depreciation + Amortization

iQmethodSM is the set of BofA Global Research standard measures that serve to maintain global consistency under three broad headings: Business Performance, Quality of Earnings, and validations. The key features of iQmethod are: A consistently structured, detailed, and transparent methodology. Guidelines to maximize the effectiveness of the comparative valuation process, and to identify some common pitfalls.

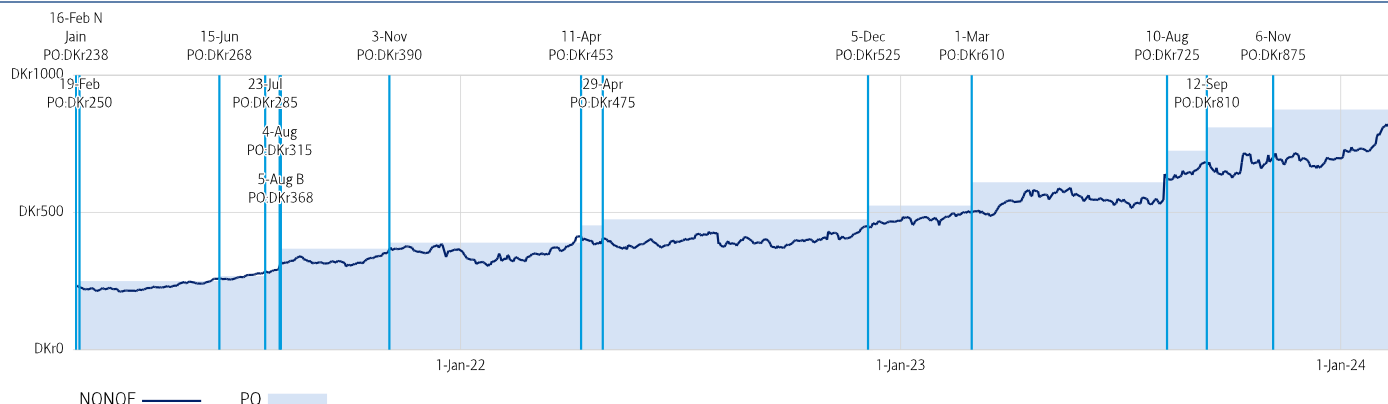
iQdatabase[®] is our real-time global research database that is sourced directly from our equity analysts' earnings models and includes forecasted as well as historical data for income statements, balance sheets, and cash flow statements for companies covered by BofA Global Research.

iQprofileSM, iQmethodSM are service marks of Bank of America Corporation. iQdatabase[®] is a registered service mark of Bank of America Corporation.

Disclosures

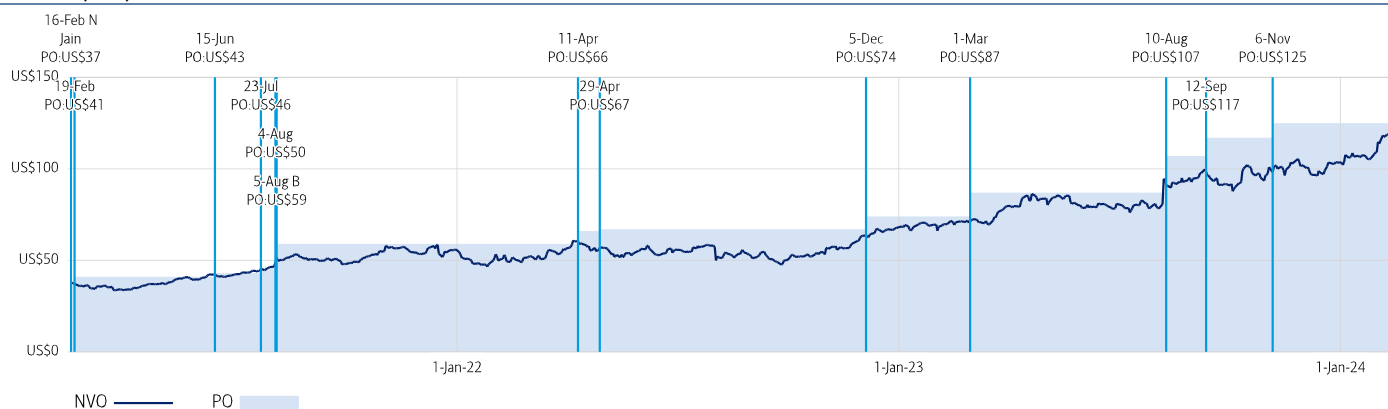
Important Disclosures

Novo Nordisk (NONOF) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

Novo Nordisk (NVO) Price Chart



The Investment Opinion System is contained at the end of the report under the heading "Fundamental Equity Opinion Key". Dark grey shading indicates the security is restricted with the opinion suspended. Medium grey shading indicates the security is under review with the opinion withdrawn. Light grey shading indicates the security is not covered. Chart is current as of a date no more than one trading day prior to the date of the report.

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: Novo Nordisk.

The issuer is or was, within the last 12 months, an investment banking client of BofAS and/or one of more of its affiliates: Novo Nordisk.

BofAS or an affiliate has received compensation from the issuer for non-investment banking services or products within the past 12 months: Novo Nordisk.

The issuer is or was, within the last 12 months, a non-securities business client of BofAS and/or one of more of its affiliates: Novo Nordisk.

BofAS or an affiliate has received compensation for investment banking services from this issuer within the past 12 months: Novo Nordisk.

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: Novo Nordisk.

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

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 of 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 (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 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.