

C.H. Robinson

Net Revs (AGP) near COVID lows, Worst margins in our 25-year model; PO to \$70

Reiterate Rating: UNDERPERFORM | PO: 70.00 USD | Price: 84.09 USD

Big miss sees worst margin in our 25-year model

C.H. Robinson (CHRW) posted adj EPS of \$0.50, down 51% year-year, below our \$0.83 target and Street's \$0.81. Core operations missed given adj operating income was \$103 million, down 49% year-year, \$35 million below our target (\$0.22/sh below). Given the elongated freight recession, Adj. Gross Profit (or Net Revenues) of \$615 million matched the COVID lows of mid-2020. Additionally, with internal cost creep, CHRW posted its worst net operating margin in our 25-year model (22 years of research coverage) at 16.7%, down 950 bps year-year, below our 21.9% target. The company did make progress on productivity goals in 4Q23, with a 17% improvement in North American Surface Transportation (NAST) shipments/person/day, and a 20% productivity improvement in Global Forwarding. CEO Dave Bozeman noted his initial diagnosis of the company is complete since taking the role in June, and targets a continued focus on the customer value proposition, revenue management, and structural cost takeout with LEAN principles. This debate seemed to miss investor hopes for a discussion on and pending inflection in NAST performance. Mr. Bozeman targeted a 2024 productivity improvement of 15% in NAST and 10% in Global Forwarding, and expects a refined structural cost base to provide operating leverage out of the elongated freight cycle.

More cycle squeeze to come; LEAN-ing into cost focus

Gross revenues were \$4.2 billion, down 17% year-year, \$64 million below our target. NAST Revenues were \$3.0 billion, down 16% year-year. NAST Adj. Op Income was \$96 million, down 41% year-year, \$21 million below our target, as the combination of negative contract renewals, truckload volume declines, and stabilizing costs led to continued margin pressure. Truckload adj gross profit/shipment declined 30% year-year as both contract (65% of loads) and spot rates fell. Global Forwarding Adj. Operating Income was \$19 million, down 34% year-year and \$7 million below our target. CHRW sees near-term ocean forwarding upside from Red Sea diversions (80% spot exposed).

PO to \$70 on cycle, execution, & strategy; Lower '24e 33%

We reiterate Underperform on CHRW's shares and lower our PO to \$70 (from \$81) based on a 25x target on our revised 2024e EPS (from 19.5x). Our target is near the top of its 18x-26x 20-year range given a potential trough in 2024. We lower our 2024/2025E EPS estimates 33%/24%, to \$2.80/\$3.75, from \$4.15/\$4.95, respectively.

Estimates (Dec) (US\$)	2022A	2023A	2024E	2025E	2026E
EPS	7.50	3.22	2.80	3.75	4.45
GAAP EPS	7.37	2.71	2.80	3.75	4.45
EPS Change (YoY)	19.2%	-57.1%	-13.0%	33.9%	18.7%
Consensus EPS (Bloomberg)			3.85	4.54	5.45
DPS	2.26	2.44	2.45	2.50	2.58
Valuation (Dec)					
P/E	11.2x	26.1x	30.0x	22.4x	18.9x
GAAP P/E	11.4x	31.0x	30.0x	22.4x	18.9x
Dividend Yield	2.7%	2.9%	2.9%	3.0%	3.1%
EV / EBITDA*	8.6x	18.2x	20.1x	16.1x	14.2x
Free Cash Flow Yield*	15.8%	7.0%	3.7%	4.8%	5.6%

* For full definitions of *iQmethod*SM measures, see page 6.

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 7 to 9. Analyst Certification on page 5. Price Objective Basis/Risk on page 5.

12653820

Timestamp: 31 January 2024 11:44PM EST

31 January 2024

Equity

Key Changes

(US\$)	Previous	Current
Price Obj.	81.00	70.00
2024E Rev (m)	18,387.6	17,098.3
2025E Rev (m)	19,216.4	17,849.9
2026E Rev (m)	NA	18,513.5
2024E EPS	4.15	2.80
2025E EPS	4.95	3.75
2026E EPS	NA	4.45
2024E DPS	2.50	2.45

Ken Hoexter

Research Analyst
BofAS
+1 646 855 1498
ken.hoexter@bofa.com

Adam Roszkowski, CFA

Research Analyst
BofAS
+1 646 855 5498
adam.roszkowski@bofa.com

Nathan Ho, CFA

Research Analyst
BofAS
+1 646 855 3599
nathan.m.ho@bofa.com

Stock Data

Price	84.09 USD
Price Objective	70.00 USD
Date Established	31-Jan-2024
Investment Opinion	B-3-7
52-Week Range	78.69 USD - 108.05 USD
Mrkt Val (mn) / Shares Out (mn)	10,083 USD / 119.9
Free Float	97.2%
Average Daily Value (mn)	95.81 USD
BofA Ticker / Exchange	CHRW / NAS
Bloomberg / Reuters	CHRW US / CHRW.OQ
ROE (2024E)	22.9%
Net Dbt to Eqty (Dec-2023A)	99.3%
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".

LEAN = program focusing on costs

iQprofileSM C.H. Robinson

iQmethodSM – Bus Performance*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Return on Capital Employed	26.2%	13.4%	12.0%	14.9%	16.7%
Return on Equity	56.7%	27.6%	22.9%	29.2%	32.5%
Operating Margin	5.2%	3.1%	2.9%	3.6%	3.9%
Free Cash Flow	1,588	702	377	489	566

iQmethodSM – Quality of Earnings*

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash Realization Ratio	1.7x	1.9x	1.3x	1.2x	1.2x
Asset Replacement Ratio	0.7x	0.3x	0.5x	0.5x	0.5x
Tax Rate	19.4%	14.8%	18.6%	20.2%	20.2%
Net Debt-to-Equity Ratio	129.8%	99.3%	99.7%	97.1%	93.1%
Interest Cover	NA	NA	NA	NA	NA

Income Statement Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Sales	24,697	17,596	17,098	17,850	18,514
% Change	6.9%	-28.7%	-2.8%	4.4%	3.7%
Gross Profit	3,593	2,605	2,548	2,740	2,890
% Change	14.0%	-27.5%	-2.2%	7.6%	5.5%
EBITDA	1,380	652	592	739	835
% Change	17.6%	-52.8%	-9.2%	24.9%	13.0%
Net Interest & Other Income	(100)	(100)	(87)	(87)	(87)
Net Income (Adjusted)	957	385	334	441	514
% Change	13.3%	-59.7%	-13.5%	32.2%	16.5%

Free Cash Flow Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Net Income from Cont Operations (GAAP)	957	385	334	441	514
Depreciation & Amortization	93	99	95	99	104
Change in Working Capital	718	285	(31)	(31)	(31)
Deferred Taxation Charge	(59)	(38)	0	0	0
Other Adjustments, Net	(59)	1	28	28	28
Capital Expenditure	(62)	(30)	(49)	(49)	(49)
Free Cash Flow	1,588	702	377	489	566
% Change	NM	-55.8%	-46.3%	29.6%	15.8%
Share / Issue Repurchase	(1,388)	(7)	(100)	(200)	(260)
Cost of Dividends Paid	(285)	(292)	(290)	(291)	(295)
Change in Debt	54	(394)	0	0	0

Balance Sheet Data (Dec)

(US\$ Millions)	2022A	2023A	2024E	2025E	2026E
Cash & Equivalents	217	150	110	84	72
Trade Receivables	2,992	2,394	2,430	2,478	2,526
Other Current Assets	380	353	353	353	353
Property, Plant & Equipment	159	162	230	316	401
Other Non-Current Assets	2,206	2,196	2,190	2,180	2,170
Total Assets	5,955	5,255	5,313	5,411	5,522
Short-Term Debt	1,054	160	160	160	160
Other Current Liabilities	2,269	1,900	1,924	1,956	1,988
Long-Term Debt	920	1,420	1,420	1,420	1,420
Other Non-Current Liabilities	358	334	334	334	334
Total Liabilities	4,601	3,815	3,839	3,871	3,903
Total Equity	1,353	1,441	1,474	1,540	1,620
Total Equity & Liabilities	5,955	5,255	5,313	5,411	5,522

* For full definitions of iQmethodSM measures, see page 6.

Company Sector

Air Freight

Company Description

C.H. Robinson Worldwide is one of the largest third-party logistics companies in the U.S. providing global multimodal transport and logistics solutions. It handled shipments for over 42,000 customers through a network of offices in North America, Europe, Asia, South America, and the Middle East. CHRW maintains the largest network of transport companies via contracts with 56,000 motor carriers, railroads (intermodal service providers), air freight, and ocean carriers.

Investment Rationale

CHRW benefits from a large brokerage operation with its scale benefits, and its automation adoption, while new digital brokerage entrants work to erode its leadership position. The company should continue to re-focus on adjusting its cost base to compete with digital entrants. The company aims to return to growth in its brokerage market share, which itself is an expanding market.

Stock Data

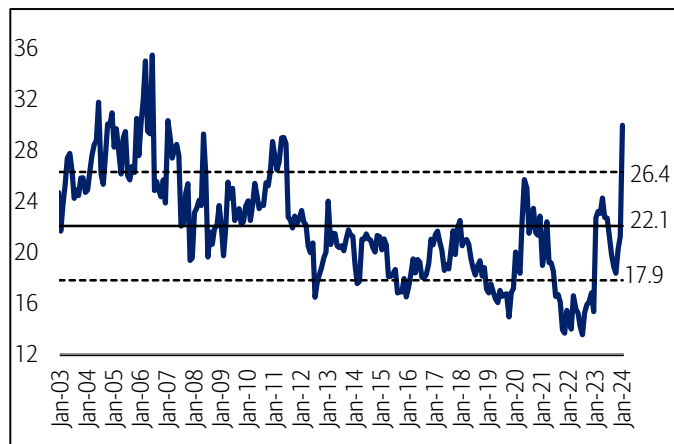
Average Daily Volume 1,139,346

Quarterly Earnings Estimates

	2023	2024
Q1	0.98A	0.55E
Q2	0.90A	0.65E
Q3	0.84A	0.75E
Q4	0.50A	0.85E

Exhibit 1: CHRW Forward P/E

Trading at 30x our 2024e EPS, above its 18x-26x range.



Source: BofA Global Research estimates and Bloomberg.

BofA GLOBAL RESEARCH

Targets flat Personnel Expense, more productivity in 2024

CHRW targets \$1.4-\$1.5 billion in 2024 Personnel Expense (we target \$1.45 billion), flat year-year at the midpoint. It also targets \$575-\$625 million in 2024 SG&A (down 1% at the midpoint) which includes SG&A ex-D&A of \$475-\$525 million (we're \$504 million) and Depreciation & Amortization of \$90-\$100 million (we target \$95 mil). Its forward expectations assume a turnaround in the truck freight market in the 2H of 2024. It also targets \$85-\$95 million in 2024 CapEx (we target \$86 million) and expects 17%-19% in 2024 tax rate (we target 18.6%).

CHRW continues to focus on driving efficiency gains and aims to increase shipments/person/day by 15% in NAST and 10% in Global Forwarding in 2024, after improving productivity 17% and in NAST and 20% in Global Forwarding in 4Q23. It sees improved operating leverage in earnings as it reduces manual touches in the order booking and appoint making workflows.

NAST pressured by continued soft truckload demand

NAST Revenues were \$3.0 billion, down 16% year-year, \$9 million below our target. Truckload demand remains soft with 4Q23 volumes down 1.5% year-year. Dry-van load-to-truck ratios were at the worst levels in 6 years in 4Q23 outside of holiday weeks. Less-than-Truckload (LTL) volumes were down 0.5% year-year, yet costs per load increased in 4Q23 due to industry capacity tightness after Yellow's shutdown.

NAST Adj. Gross Profit was \$380 million, down 24% year-year and \$2 million below our target, for an Adj. Gross Profit Margin of 12.7%, down 140 bps year-year yet flat from 3Q23 and in-line with our target. Truck Pricing declined 13.5% year-year in 4Q23 while cost of truck capacity decreased 10.5% year-year, leading to a 300 bps negative spread, consistent with 3Q23, leading the stable sequential margin. CHRW noted that Truckload profit/load increased sequentially in October and November yet saw a squeeze in December as profit/load declined while cost of capacity increased. It increased its spot load mix to 35% from 30% in 3Q to support muted load volumes. NAST Adj. Operating Income was \$96 million, down 41% year-year and \$21 million below our target.

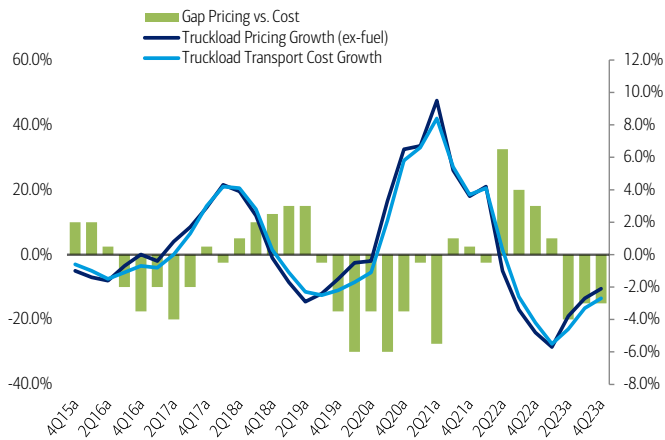
Global Forwarding challenged by excess capacity

Global Forwarding Revenues were \$709 million, down 30% year-year and \$41 million below our target. Global Forwarding Adj. Gross Profit was \$162 million, down 14% year-year and \$14 million below our target, for an Adj. Gross Profit Margin was 22.9%, a 430 bps improvement year-year yet 60 bps worse than our target. Ocean shipments increased 4% year-year offset by a 20.5% decrease in Ocean AGP/shipment. Air shipments declined 3% and Air AGP/metric ton declined 9%.



Exhibit 2: CHRW Truckload Pricing and Trucking Cost Growth

Truck pricing declined 13.5% in 4Q23, while cost of capacity declined 10.5%.

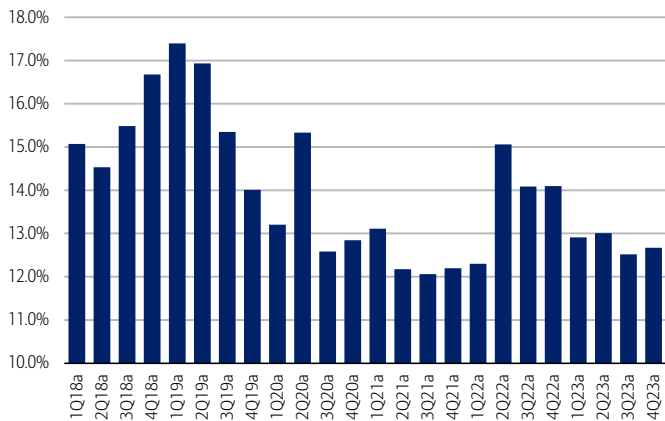


Source: BofA Global Research and company reports.

BofA GLOBAL RESEARCH

Exhibit 4: NAST Adj. Gross Profit Margins

NAST AGP Margin was 12.7%, down 140 bps year-year, in line with our target

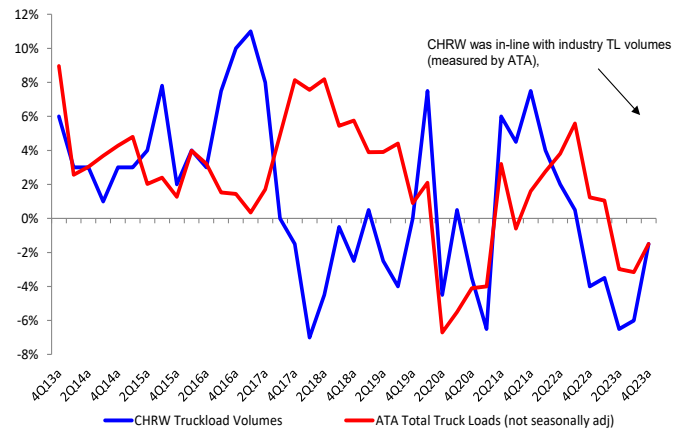


Source: BofA Global Research and company reports.

BofA GLOBAL RESEARCH

Exhibit 3: CHRW Truckload Volumes vs ATA

CHRW Truckload volumes -1.5% in 4Q23, in-line with ATA tonnage decline.

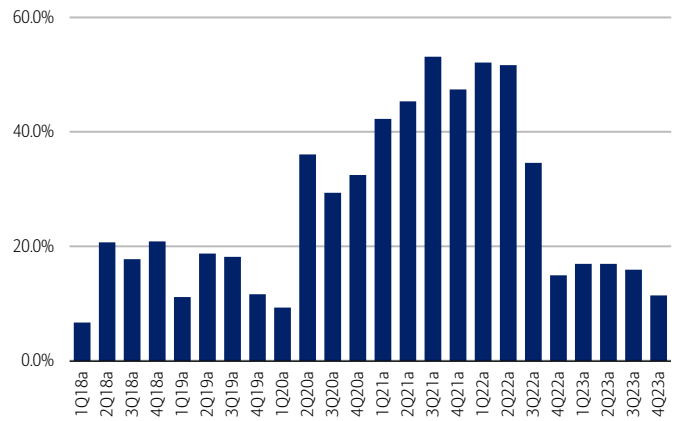


Source: BofA Global Research, American Trucking Association, and company reports.

BofA GLOBAL RESEARCH

Exhibit 5: Global Forwarding Adj. Gross Profit Margin

Global Forwarding AGP Margin was 22.9%, 60 bps worse than our target.



Source: BofA Global Research and company reports.

BofA GLOBAL RESEARCH

Price objective basis & risk

C.H. Robinson (CHRW)

Our \$70 price objective is based on a 25x target multiple of our 2024E EPS estimate, the high end of its 20-year 18x-26x historical range, as we expect results to fall to trough levels post-COVID ramps, with forwarding results pulling back to nearly 2020 levels, truckload margins dropping to cyclical trough levels as spot pricing rolled over in 2022 and contract rates should be constrained in 2024 (thus negatively impacting margins). We believe CHRW will see the peak impact of the decelerating freight environment in 2024 and it is launching an executive management overhaul.

Upside risks to our price objective are faster-than-expected advancement in its technology and digital integration as well as larger-than-expected cost reductions. Downside risks to our price objective are the continued inability to pass along rate increases faster than capacity cost increases (or decreases for both), which would negatively impact margins. Also, a prolonged economic downturn, increased fuel headwinds, increased pricing pressure within the third party logistics industry, changes in the company's customer base due to consolidation, and changes in relationships with its truck, ocean, and air carriers could also impact returns, as well as its ability (or inability) to blend recent acquisitions.

Analyst Certification

I, Ken Hoexter, 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.

US - Transportation Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Canadian Pacific Kansas City Ltd	CP	CP US	Ken Hoexter
	CSX Corporation	CSX	CSX US	Ken Hoexter
	FedEx Corp.	FDX	FDX US	Ken Hoexter
	J.B. Hunt Transport Services	JBHT	JBHT US	Ken Hoexter
	Kirby Corp	KEX	KEX US	Ken Hoexter
	Knight-Swift Transportation Holdings Inc	KNX	KNX US	Ken Hoexter
	Norfolk Southern	NSC	NSC US	Ken Hoexter
	Old Dominion Freight Line	ODFL	ODFL US	Ken Hoexter
	RXO, Inc.	RXO	RXO US	Ken Hoexter
	Saia Inc.	SAIA	SAIA US	Ken Hoexter
	Teekay Tankers Limited	TNK	TNK US	Ken Hoexter
	Union Pacific	UNP	UNP US	Ken Hoexter
	Wabtec Corp.	WAB	WAB US	Ken Hoexter
	XPO, Inc.	XPO	XPO US	Ken Hoexter
NEUTRAL				
	Canadian National	CNI	CNI US	Ken Hoexter
	Schneider National	SNDR	SNDR US	Ken Hoexter
	Scorpio Tankers Inc.	STNG	STNG US	Ken Hoexter
	TFI International	TFII	TFII US	Ken Hoexter
	TFI International	YTFII	TFII CN	Ken Hoexter
	UPS	UPS	UPS US	Ken Hoexter
UNDERPERFORM				
	ArcBest Corporation	ARCB	ARCB US	Ken Hoexter
	C.H. Robinson	CHRW	CHRW US	Ken Hoexter
	The Greenbrier Companies	GBX	GBX US	Ken Hoexter
	Werner Enterprises	WERN	WERN US	Ken Hoexter
	World Kinect	WKC	WKC US	Ken Hoexter



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

$\text{NOPAT} = (\text{EBIT} + \text{Interest Income}) \times (1 - \text{Tax Rate}) + \text{Goodwill Amortization}$

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

$\text{EV} = \text{Current Share Price} \times \text{Current Shares} + \text{Minority Equity} + \text{Net Debt} +$

Other LT Liabilities

Enterprise Value

Denominator

$\text{Total Assets} - \text{Current Liabilities} + \text{ST Debt} + \text{Accumulated Goodwill}$

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

$\text{Market Cap} = \text{Current Share Price} \times \text{Current Basic Shares}$

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.

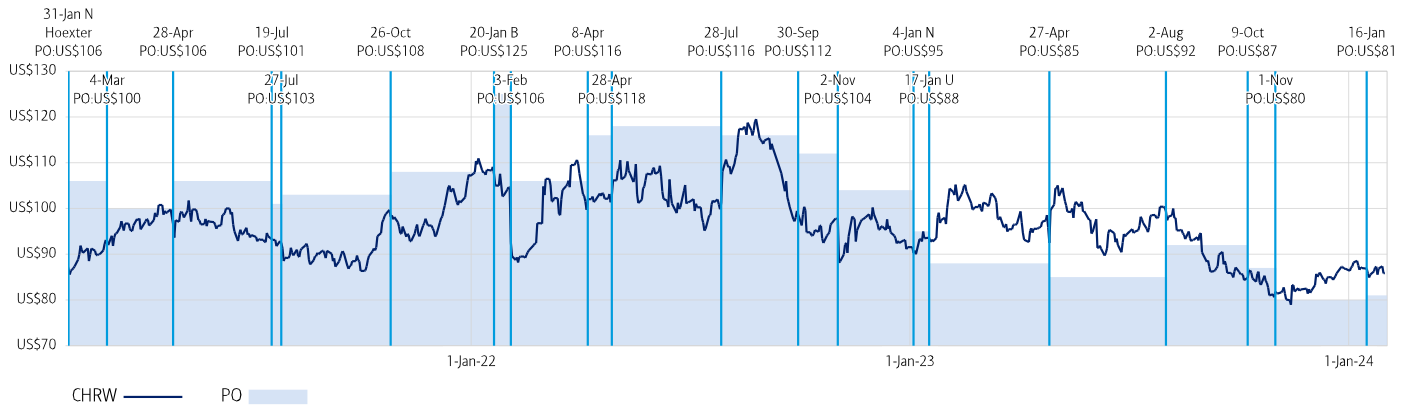
iQdatabase[®] is our real-time global research database that is sourced directly from our equity analysts' earnings models and includes forecasted as well as historical data for income statements, balance sheets, and cash flow statements for companies covered by BofA Global Research.

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

Disclosures

Important Disclosures

C.H. Robinson (CHRW) Price Chart



B: Buy, N: Neutral, U: Underperform, PO: Price Objective, NA: No longer valid, NR: No Rating

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: Transport/Infrastructure Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships ^{R1}	Count	Percent
Buy	67	50.38%	Buy	44	65.67%
Hold	31	23.31%	Hold	13	41.94%
Sell	35	26.32%	Sell	17	48.57%

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: C.H. Robinson.

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

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

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: C.H. Robinson.

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: C.H. Robinson.

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: C.H. Robinson.

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: C.H. Robinson.

BofA Global Research personnel (including the analyst(s) responsible for this report) receive compensation based upon, among other factors, the overall profitability of Bank of America



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

Other Important Disclosures

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

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

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

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

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

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

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

Information relating to Non-US affiliates of BofA Securities and Distribution of Affiliate Research Reports:

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofam.com/BofASEdisclaimer; 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.