

Opendoor Technologies

4Q beat but soft outlook; Retracts '24 Adj. net income positive goal; Reit. UP

Reiterate Rating: UNDERPERFORM | PO: 2.75 USD | Price: 3.35 USD

4Q beat driven by higher-than-expected home sales

4Q Rev/EBITDA of \$870mn/\$(69mn) was above Street estimates at \$827mn/ \$(99mn) and guidance. Revenue beat was driven by higher-than-expected homes sales while EBITDA benefited from better gross margin performance on "new cohort" homes (higher spreads), lower ad spend, and shift in timing of some expenses to 1Q. 4Q contribution profit at \$30mn (3.4% margin) was also above Street at \$23mn. In 4Q, Opendoor sold 2,364 homes (vs Street at 2,298), purchased 3,693 homes (vs Street at 3,013) and ended the quarter with \$1.8bn inventory representing 5,326 homes (up 1,319 q/q).

1Q outlook below Street; Retracts adj. net income goal

1Q revenue outlook of \$1.05-\$1.1bn and CP of \$40-50mn was below Street estimates at \$1.2bn and \$52mn respectively, while EBITDA outlook of \$(80mn)-\$(70mn) bracketed Street at \$(81mn). Opendoor highlighted macro conditions still uncertain as mortgage rates remain volatile. The company retracted the goal to be Adj. Net Income positive for a quarter in 2024 given outlook for lower acquisition and resale volumes. However, Opendoor maintained goal of \$10bn steady-state annual revenue, which we see a far stretched given high mortgage rates (locking in sellers) and historic low affordability.

Lowering 2024 revenue by 13% and gross profit by 2%

We are lowering our revenue ests. reflecting lower inventory turnaround but slightly raising S&M reflecting higher advertising cost to rebuild inventory. Our revised ests. reflect slightly higher gross margin given improved spread performance. For 2024E, we lower revenue by 13% to \$5.3bn, GP by 2% to \$446mn and estimate Adj. EBITDA of \$(222mn). For 2025E, we lower revenue by 5% to \$6.6bn, GP by 2% to \$575mn and estimate Adj. EBITDA of \$(137mn). We lower our PO to \$2.75 (from \$3.0) given lower '25E GP but slightly higher 1.75x multiple (vs 1.5x) given slightly higher gross margin.

Cautious on business model & profitability prospects

Opendoor continues to show strong expense management and leveraging new avenues to promote its services (home acquisitions through partnership channels up 140% since 1Q'23). However, given high mortgage rates (historic low affordability), and low inventories, we believe inventory turnover will remain constrained over the next several quarters, driving Opex deleverage and company will likely face difficulties in scaling to the \$10bn annual revenue rate. We also see significant risks with Opendoor's business model and ability to generate sustainable profits. Reiterate UP and \$3.0 PO.

Estimates (Dec) (US\$)	2022A	2023A	2024E	2025E	2026E
EPS	(0.91)	(1.17)	(0.60)	(0.50)	(0.47)
GAAP EPS	(2.14)	(0.42)	(0.80)	(0.70)	(0.67)
EPS Change (YoY)	-355.0%	-28.6%	48.7%	16.7%	6.0%
Consensus EPS (Bloomberg)			(0.55)	(0.47)	(0.28)
DPS	0	0	0	0	0
Valuation (Dec)					
Free Cash Flow Yield*	30.9%	103.0%	-49.0%	-14.5%	-11.9%
* For full definitions of <i>IO</i> method SM measures, see page 8.					

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 9 to 11. Analyst Certification on page 7. Price
Objective Basis/Risk on page 7.

Timestamp: 15 February 2024 09:08PM EST

15 February 2024

Equity

Key Changes		
(US\$)	Previous	Current
Price Obj.	3.00	2.75
2024E Rev (m)	6,061.2	5,295.7
2025E Rev (m)	6,992.2	6,618.2
2026E Rev (m)	NA	7,604.5
2025E EPS	-0.53	-0.50
2026E EPS	NA	-0.47

Curtis Nagle, CFA Research Analyst

BofAS +1 646 855 2939 c.nagle@bofa.com

Nitin Bansal, CFA Research Analyst

+1 415 676 3551 nbansal7@bofa.com

Stock Data

3.35 USD
2.75 USD
15-Feb-2024
C-3-9
1.10 USD - 5.41 USD
2,240 USD / 668.6
91.2%
66.23 USD
OPEN / NAS
OPEN US / OPEN.OQ
-38.4%
117.4%
Medium

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".

CP: Contribution Profit

S&M: Sales and Marketing

GP: Gross profit

iQprofile[™] Opendoor Technologies

iQmethod SM − Bus Performance*					
(US\$ Millions)	2022A	2023A	2024E	2025E	2026
Return on Capital Employed	-10.6%	-6.9%	-8.5%	-6.2%	-5.9%
Return on Equity	-34.4%	-75.8%	-38.4%	-32.9%	-38.8%
Operating Margin	-6.0%	-5.5%	-6.8%	-4.4%	-3.5%
Free Cash Flow	693	2,307	(1,098)	(324)	(267)
<i>iQ</i> method [™] – Quality of Earnings*					
(US\$ Millions)	2022A	2023A	2024E	2025E	2026
Cash Realization Ratio	NM	NM	NM	NM	NM
Asset Replacement Ratio	0.4x	0.6x	0.5x	0.4x	0.4
Tax Rate	NM	NM	NM	NM	NM
Net Debt-to-Equity Ratio	300.1%	117.4%	141.4%	205.6%	288.9%
Interest Cover	-2.4x	-1.8x	-1.9x	-1.4x	-1.2
Income Statement Data (Dec)					
(US\$ Millions)	2022A	2023A	2024E	2025E	2026
Sales	15,567	6,946	5,296	6,618	7,604
% Change	94.1%	-55.4%	-23.8%	25.0%	14.9%
Gross Profit	667	487	446	575	657
% Change	-8.7%	-27.0%	-8.3%	28.8%	14.2%
EBITDA	(168)	(627)	(222)	(137)	(103
% Change	NM	-273.2%	64.5%	38.4%	24.9%
Net Interest & Other Income	(420)	4	(193)	(210)	(217
Net Income (Adjusted) % Change	(574) -396.3%	(778) -35.5%	(416) 46.6%	(359) 13.7%	(344 4.2%
Free Cash Flow Data (Dec) (US\$ Millions)	2022A	2023A	2024E	2025E	2026
Net Income from Cont Operations (GAAP)	(1,353)	(275)	(556)	(499)	(484
Depreciation & Amortization	83	65	60	70	80
Change in Working Capital	956	2,557	(804)	(108)	(76
Deferred Taxation Charge	NA	NA	NA	NA	N/
Other Adjustments, Net	1,044	(3)	232	242	242
Capital Expenditure					
· · · · · · · · · · · · · · · · · · ·	(37)	(37)	(30)	(30)	(30
Free Cash Flow	693	2,307	-1,098	-324	-267
Free Cash Flow % Change	693 NM	2,307 232.9%	-1,098 NM	-324 70.5%	-26 17.6%
Free Cash Flow % Change Share / Issue Repurchase	693 NM 6	2,307 232.9% 5	-1,098 NM	- 324 70.5% 0	-267 17.6%
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid	693 NM 6 0	2,307 232.9% 5	-1,098 NM 0	-324 70.5% 0	-267 17.6%
Free Cash Flow % Change Share / Issue Repurchase	693 NM 6	2,307 232.9% 5	-1,098 NM	- 324 70.5% 0	-267 17.6%
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec)	693 NM 6 0 (1,747)	2,307 232.9% 5 0 (2,277)	-1,098 NM 0 0 477	-324 70.5% 0 0 130	-267 17.6% ((30
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions)	693 NM 6 0 (1,747)	2,307 232.9% 5 0 (2,277)	-1,098 NM 0 0 477	-324 70.5% 0 0 130	-267 17.6% ((30
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents	693 NM 6 0 (1,747) 2022A 1,137	2,307 232.9% 5 0 (2,277) 2023A 999	-1,098 NM 0 0 477 2024E 919	-324 70.5% 0 0 130	-267 17.6% ((30 2026
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables	693 NM 6 0 (1,747) 2022A 1,137 NA	2,307 232.9% 5 0 (2,277) 2023A 999 NA	-1,098 NM 0 0 477 2024E 919 NA	-324 70.5% 0 0 130 2025E 725 NA	-267 17.6% ((30 2026 488 NA
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446	-1,098 NM 0 0 477 2024E 919 NA 3,279	-324 70.5% 0 0 130 2025E 725 NA 3,422	-267 17.6% ((30 2026 488 NA 3,469
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets Property, Plant & Equipment	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329 58	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446 66	-1,098 NM 0 0 477 2024E 919 NA 3,279 66	-324 70.5% 0 0 130 2025E 725 NA 3,422 66	-267 17.6% ((30 2026 488 N/ 3,469
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets Property, Plant & Equipment Other Non-Current Assets	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329 58 84	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446 66 56	-1,098 NM 0 0 477 2024E 919 NA 3,279 66 38	-324 70.5% 0 0 130 2025E 725 NA 3,422 66 39	-267 17.6% (((30 2026 488 NA 3,469 66 4
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets Property, Plant & Equipment Other Non-Current Assets Total Assets	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329 58 84 6,608	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446 66 56 3,567	-1,098 NM 0 0 477 2024E 919 NA 3,279 66 38 4,303	-324 70.5% 0 0 130 2025E 725 NA 3,422 66 39 4,252	-267 17.6% ((() 30 2026 488 NA 3,469 60 41
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets Property, Plant & Equipment Other Non-Current Assets Total Assets Short-Term Debt	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329 58 84 6,608 1,376	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446 66 56 3,567 0	-1,098 NM 0 0 477 2024E 919 NA 3,279 66 38 4,303 0	-324 70.5% 0 0 130 2025E 725 NA 3,422 66 39 4,252	-267 17.6% ((() 30 2026 488 NA 3,469 60 41 4,064
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets Property, Plant & Equipment Other Non-Current Assets Total Assets Short-Term Debt Other Current Liabilities	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329 58 84 6,608 1,376 129	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446 66 56 3,567 0 70	-1,098 NM 0 0 477 2024E 919 NA 3,279 66 38 4,303 0 99	-324 70.5% 0 0 130 2025E 725 NA 3,422 66 39 4,252 0 134	-267 17.6% (((30 2026 488 N/ 3,469 4 4,064 (109
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets Property, Plant & Equipment Other Non-Current Assets Total Assets Short-Term Debt	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329 58 84 6,608 1,376	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446 66 56 3,567 0 70 2,134	-1,098 NM 0 0 477 2024E 919 NA 3,279 66 38 4,303 0	-324 70.5% 0 0 130 2025E 725 NA 3,422 66 39 4,252 0 134 2,742	-267 17.6% ((() () () () () () () () ()
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets Property, Plant & Equipment Other Non-Current Assets Total Assets Short-Term Debt Other Current Liabilities Long-Term Debt	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329 58 84 6,608 1,376 129 3,020 997	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446 66 56 3,567 0 70 2,134 396	-1,098 NM 0 0 477 2024E 919 NA 3,279 66 38 4,303 0 99 2,611 396	-324 70.5% 0 0 130 2025E 725 NA 3,422 66 39 4,252 0 134 2,742 396	-267 17.6% (((((((((((((((((((
Free Cash Flow % Change Share / Issue Repurchase Cost of Dividends Paid Change in Debt Balance Sheet Data (Dec) (US\$ Millions) Cash & Equivalents Trade Receivables Other Current Assets Property, Plant & Equipment Other Non-Current Assets Total Assets Short-Term Debt Other Current Liabilities Long-Term Debt Other Non-Current Liabilities	693 NM 6 0 (1,747) 2022A 1,137 NA 5,329 58 84 6,608 1,376 129 3,020	2,307 232.9% 5 0 (2,277) 2023A 999 NA 2,446 66 56 3,567 0 70 2,134	-1,098 NM 0 0 477 2024E 919 NA 3,279 66 38 4,303 0 99 2,611	-324 70.5% 0 0 130 2025E 725 NA 3,422 66 39 4,252 0 134 2,742	(30 -267 17.6% (() 30 2026l 488 NA 3,469 66 41 4,064 () 109 2,772 396 3,273 791

Company Sector

Internet/e-Commerce

Company Description

Opendoor is a digital real estate platform allows consumers to conveniently and quickly buy and sell homes as well as adjacent services such as title & escrow and financing. OPEN was founded in 2014 by CEO Eric Wu and is headquartered in Tempe Arizona. The company primarily competes with traditional real estate brokerages as well as other online-based "iBuyers". OPEN is currently in 53 markets and we expect the company to generate over \$7bn in revenue in 2023.

Investment Rationale

Opendoor (OPEN) is a high growth digital real estate platform that buys and sells home (an "iBuyer"). We see the potential for share gains as high given a large underlying market and industry fragmentation. However we believe this is outweighed by the underlying risk, low margins and high capital use of the iBuyer model. In our view this is magnified by a significant increase in OPEN's inventory through 2022 just as the US real estate market is expected to slow

Stock Data

Average Daily Volume

19,771,594

Quarterly Earnings Estimates

	2023	2024
Q1	-0.64A	-0.17E
Q2	-0.30A	-0.16E
Q3	-0.11A	-0.13E
04	-0.14A	-0.14F

4Q Positives:

- 4Q Rev/EBITDA above Street: 4Q Rev/EBITDA of \$870mn/\$(69mn) was above Street estimates at \$827mn/\$(99mn) and Opendoor's guidance. Revenue beat was driven by higher-than-expected homes sales while EBITDA benefited from better gross margin performance on "new cohort" homes (higher spreads), lower ad spend, and shift in timing of some expenses to 1Q. 4Q contribution profit at \$30mn (3.4% margin) was also above Street estimates at \$23mn.
- **4Q gross margin above Street:** 4Q gross margin of 8.3% was above Street estimates at 6.3% driven by higher mix of new book of homes. In 4Q, new book of homes generated gross margins of 8.6% and contribution margin of 5.1%.
- Focus on lowering costs: In 4Q'23, Opendoor made improvements to its tooling technology and processes to make its platform more efficient, which resulted in 30% y/y decline in adjusted operating expenses (excluding the impact from reduced advertising spend). In 4Q'23, the company also exited 3 markets, which represented less than 1% of Opendoor's volume to lower cost footprint.
- Effectively leveraging partnership channels: In 4Q, acquisition from partnership channels, which includes online real estate platforms, home builders and agents increased 35% q/q and up over 140% since 1Q'23. In 4Q23, Opendoor also extended its national exclusive partnership with Redfin for cash offers. The company expects volumes from the partnership channel to continue grow on an absolute basis in 2024.
- Homes acquisition above Street: In 4Q, Opendoor purchased 3,683 homes (up 17% q/q) and above Street expectations at 2,997. Higher than expected growth in homes acquisitions was driven by spread reductions due to improvement in cost structure and pricing accuracy. Management expressed confidence that spreads improvements combined with growing partnership channels and increase ad spend in 1H′24 should allow Opendoor to accelerate home acquisitions through 2024.
- Improving portfolio management: Opendoor highlighted as of Dec'23, 18% of the company's homes had been listed on the market for more than 120 days (versus 21% for the broader market as adjusted for buy box). Opendoor has seen a significant improvement in this metric compared to Dec'22, when 55% of OPEN homes had been listed on the market for more than 120 days.

4Q Negatives:

- Retracted Adj. Net Income positive goal: Opendoor highlighted that macro conditions still uncertain as mortgage rates remain volatile. The company retracted the goal to be Adj. Net Income positive for a quarter in 2024 given outlook for lower acquisition and resale volumes. However, Opendoor maintained goal of \$10bn steady-state annual revenue, which we see a far stretched given high mortgage rates and historic low affordability.
- Outlook for higher expenses: For 1Q'24, Opendoor expects adjusted operating expenses of \$120mn (vs \$99mn in 4Q'23) as the company revamps marketing and rebuilds inventory levels. In 2024, Opendoor plans to ramp up its marketing spend (advertising spend expected to increase 50% q/q in 1Q'23, approx. \$10.5mn q/q increase) to widen the top of the funnel and reach more sellers.
- Growing inventory Risk: Opendoor highlighted that home price stability, combined with cost savings and pricing accuracy improvements, enabled the company to reduce spreads, which resulted in higher home acquisitions each



quarter as 2023 progressed. In 4Q, Opendoor acquired 3,683 homes (up 17% y/y). Opendoor expects monthly home acquisitions to accelerate through 1Q'23, with home acquisitions expected to be up over 100% y/y. The company also expect to see an increase in contract volume late in 1Q'24, which would translate into q/q increase in home acquisitions in 2Q'24. We see potential inventory risk given very weak housing demand, persistently high rates and potentially lower prices into 2024. While market conditions are very different, Opendoor over bought inventory in 2021 and 2022 resulting in write-downs, margin pressure and inefficient (and expensive) capital use.

■ 1Q'24 Outlook below Street: For 1Q'24, Opendoor guided revenue of \$1.05-\$1.1bn and CP of \$40-50mn was below Street estimates at \$1.2bn and \$52mn respectively, while EBITDA outlook of \$(80mn)-\$(70mn) bracketed Street estimates at \$(81mn).

Actual vs Estimates

Exhibit 1: 4Q'23 Actual vs Estimates

Opendoor reported revenue of 870mn, above our estimate of \$841mn.

4Q'23 Actual vs BofA Estimates

Opendoor (\$000's)	Actual	BofA Ests.	Difference
Homes Sold	2,364	2,329	35
Average Revenue per Home Sold	\$368	\$361	\$7
Revenue	\$870,000	\$841,387	\$28,614
y/y %	(70%)	(71%)	1%
q/q %	(11%)	(14%)	3%
Cost of revenue	\$798,000	\$772,770	\$25,230
As a % of revenue	92%	92%	(0%)
Gross profit	\$72,000	\$68,617	<i>\$3,383</i>
Margin (%)	8%	8%	0%
Operating Expenses			
Sales, marketing and advertising	\$84,871	\$103,070	(\$18,199)
% of revenue	10%	12%	(2%)
General and Administrative	\$32,516	\$33,655	(\$1,139)
% of revenue	4%	4%	(0%)
Technology and Development	\$33,613	\$29,869	\$3,744
% of revenue	4%	4%	0%
SBC	\$32,000	\$30,000	\$2,000
Operating expenses (GAAP)	\$151,000	\$166,595	(\$15,595)
% of revenue	17%	20%	(2%)
Operating income (GAAP)	(\$111,000)	(\$127,978)	\$16,978
Margin (%)	(13%)	(15%)	2%
GAAP Basic EPS	(\$0.14)	(\$0.25)	\$0.12
GAAP Diluted EPS	(\$0.14)	(\$0.25)	\$0.11
Adjusted EBITDA	(69,000)	(100,553)	31,553
Margin (%)	(8%)	(100,333)	4%
y/y %	(80%)	(71%)	(9%)
5. W. Daf A Clahal Dagasah astisastas Caranaud	1 /	(7 1 70)	(370)

Source: BofA Global Research estimates, Company Filings

BofA GLOBAL RESEARCH



Estimate Changes

We are lowering our revenue ests. reflecting lower inventory turnaround but slightly raising S&M reflecting higher advertising cost to rebuild inventory. Our revised ests. reflect slightly higher gross margin given improved spread performance. We estimate 1Q'24E revenue of \$1.1bn, GP of \$90mn, and Adj. EBITDA of \$(72mn). For 2024E, we lower revenue by 13% to \$5.3bn, GP by 2% to \$446mn and estimate Adj. EBITDA of \$(222mn). For 2025E, we lower revenue by 5% to \$6.6bn, GP by 2% to \$575mn and estimate Adj. EBITDA of \$(137mn). We lower our PO to \$2.75 (from \$3.0) given lower '25E GP but slightly higher 1.75x multiple (vs 1.5x) given slightly higher gross margin.

Exhibit 2: Estimate Changes

We are lowering 2025 gross profit estimate, key for valuation, by 2% to \$575mn.

Homes Sold 2,979 3,723 (745) 14,022 16,171 (2,149) 17,150 18,112 Average Revenue per Home Sold \$373 \$373 \$0 \$378 \$375 \$3 \$386 \$386	0962 (\$0) \$374,087 10%
Average Revenue per Home Sold \$373 \$373 \$0 \$378 \$375 \$3 \$386 \$386	(\$0) \$374,087 10%
	374,087 10%
Revenue \$1,111,968 \$1,389,960 (\$277,992) \$5,295,740 \$6,061,235 (\$765,495) \$6,618,154 \$6,992,241 (\$37	10%
y/y % (64%) (55%) (9%) (24%) (12%) (11%) 25% 15%	0%
q/q % 28% 65% (37%) 0% 0% 0% 0% 0%	
	\$360,257
As a % of revenue 92% 92% 0% 92% 92% (1%) 91% 92%	(0%)
	(\$13,830)
Margin (%) 8% 8% 0% 8% 1% 9% 8%	0%
Operating Expenses	
	\$5,625
% of revenue 9% 8% 1% 8% 7% 1% 7% 7%	0%
	(\$38,213)
% of revenue 3% 3% 1% 3% 2% 0% 2% 2%	(0%)
	(\$20,240)
% of revenue 3% 2% 1% 3% 2% 0% 2% 2%	(0%)
SBC \$35,000 \$30,000 \$5,000 \$140,000 \$120,000 \$20,000 \$140,000 \$120,000 \$1	\$20,000
Operating expenses (GAAP) \$161,235 \$172,355 (\$11,120) \$668,822 \$711,591 (\$42,769) \$723,398 \$776,226 (\$5	(\$52,828)
% of revenue 15% 12% 2% 13% 12% 1% 11% 11%	(0%)
Operating income (GAAP) (\$106,524) (\$90,216) (\$16,308) (\$362,386) (\$376,204) \$13,819 (\$288,475) (\$307,472) \$1	\$18,998
Operating margin (GAAP) (10%) (6%) (3%) (7%) (6%) (1%) (4%) (4%)	0%
GAAP Basic EPS (\$0.22) (\$0.19) (\$0.03) (\$0.80) (\$0.78) (\$0.02) (\$0.70) (\$0.70)	\$0.01
GAAP Diluted EPS (\$0.22) (\$0.19) (\$0.03) (\$0.80) (\$0.77) (\$0.03) (\$0.70)	\$0.00
Adjusted EBITDA (72,181) (62,286) (9,895) (222,480) (260,242) 37,762 (137,141) (182,110)	44,969
Margin (%) (6%) (4%) (2%) (4%) (4%) 0% (2%) (3%)	1%
y/y % (79%) (82%) 3% (65%) (60%) (4%) (38%) (30%)	(8%)

Source: BofA Global Research estimates

BofA GLOBAL RESEARCH



Price objective basis & risk

Opendoor Technologies (OPEN)

Our \$2.75 price objective is based on 1.75x 2025E EV/gross profit. This is below other low margin online companies including real estate fintech peers. We believe a discount is warranted given much lower gross margins which limits long-term profit potential and the high cyclicality of OPEN's underlying industry.

Downside risks to our PO are: slower than expected conversion of home inventory, weaker gross margins on slowing home price appreciation and limited home service attachment and a softer than expected recovery in the housing market.

Upside risks to our PO are: greater than expected shares gains as OPEN expands into new markets, better than expected pricing spreads as OPEN improves its pricing models and higher than expected leverage from a recovery in existing home sales.

Analyst Certification

I, Curtis Nagle, 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.

US - Internet Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
BUY				
	Alphabet	GOOGL	GOOGL US	Justin Post
	Alphabet	GOOG	GOOG US	Justin Post
	Amazon.com	AMZN	AMZN US	Justin Post
	AppLovin	APP	APP US	Omar Dessouky, CFA
	DoorDash	DASH	DASH US	Michael McGovern
	DoubleVerify Holdings, Inc.	DV	DV US	Omar Dessouky, CFA
	Electronic Arts	EA	EA US	Omar Dessouky, CFA
	Integral Ad Science Holding Corp.	IAS	IAS US	Omar Dessouky, CFA
	LegalZoom	LZ	LZ US	Michael McGovern
	Match Group	MTCH	MTCH US	Curtis Nagle, CFA
	Meta Platforms Inc	META	META US	Justin Post
	Pinterest	PINS	PINS US	Justin Post
	RH	RH	RH US	Curtis Nagle, CFA
	Roblox Corp. Class A	RBLX	RBLX US	Omar Dessouky, CFA
	Squarespace, Inc.	SQSP	SQSP US	Michael McGovern
	Uber	UBER	UBER US	Justin Post
	Udemy Inc	UDMY	UDMY US	Curtis Nagle, CFA
	Vivid Seats	SEAT	SEAT US	Curtis Nagle, CFA
	Wayfair	W	W US	Curtis Nagle, CFA
	Wix.com	WIX	WIX US	Michael McGovern
NEUTRAL				
	ACV Auctions	ACVA	ACVA US	Curtis Nagle, CFA
	Airbnb	ABNB	ABNB US	Justin Post
	Beyond Inc	BYON	BYON US	Curtis Nagle, CFA
	Booking Holdings Inc	BKNG	BKNG US	Justin Post
	Bumble	BMBL	BMBL US	Curtis Nagle, CFA
	Digital Turbine, Inc	APPS	APPS US	Omar Dessouky, CFA
	Duolingo	DUOL	DUOL US	Curtis Nagle, CFA
	eBay	EBAY	EBAY US	Justin Post
	Etsy, Inc.	ETSY	ETSY US	Curtis Nagle, CFA
	Expedia	EXPE	EXPE US	Justin Post
	Instacart	CART	CART US	Justin Post
	Magnite, Inc.	MGNI	MGNI US	Omar Dessouky, CFA
	Snap	SNAP	SNAP US	Justin Post
	Take-Two Interactive	TTWO	TTWO US	Omar Dessouky, CFA



US - Internet Coverage Cluster

Investment rating	Company	BofA Ticker	Bloomberg symbol	Analyst
	Zillow	ZG	ZG US	Curtis Nagle, CFA
	Zillow	Z	Z US	Curtis Nagle, CFA
UNDERPERFORM				
	Chewy Inc	CHWY	CHWY US	Curtis Nagle, CFA
	Lyft, Inc.	LYFT	LYFT US	Michael McGovern
	Opendoor Technologies	OPEN	OPEN US	Curtis Nagle, CFA
	Peloton	PTON	PTON US	Curtis Nagle, CFA
	Playtika	PLTK	PLTK US	Omar Dessouky, CFA
	Redfin Corp	RDFN	RDFN US	Curtis Nagle, CFA
	Shutterstock	SSTK	SSTK US	Curtis Nagle, CFA

*IQ*method[™] Measures Definitions

Business Performance	Numerator	Denominator
Return On Capital Employed	NOPAT = (EBIT + Interest Income) × (1 - Tax Rate) + Goodwill Amortization	Total Assets – Current Liabilities + ST Debt + Accumulated Goodwill
		Amortization
Return On Equity	Net Income	Shareholders' Equity
Operating Margin	Operating Profit	Sales
Earnings Growth	Expected 5 Year CAGR From Latest Actual	N/A
Free Cash Flow	Cash Flow From Operations — Total Capex	N/A
Quality of Earnings	Numerator	Denominator
Cash Realization Ratio	Cash Flow From Operations	Net Income
Asset Replacement Ratio	Capex	Depreciation
Tax Rate	Tax Charge	Pre-Tax Income
Net Debt-To-Equity Ratio	Net Debt = Total Debt - Cash & Equivalents	Total Equity
Interest Cover	EBIT	Interest Expense
Valuation Toolkit	Numerator	Denominator
Price / Earnings Ratio	Current Share Price	Diluted Earnings Per Share (Basis As Specified)
Price / Book Value	Current Share Price	Shareholders' Equity / Current Basic Shares
Dividend Yield	Annualised Declared Cash Dividend	Current Share Price
Free Cash Flow Yield	Cash Flow From Operations – Total Capex	Market Cap = Current Share Price × Current Basic Shares
Enterprise Value / Sales	EV = Current Share Price × Current Shares + Minority Equity + Net Debt +	Sales
	Other LT Liabilities	
EV / EBITDA	Enterprise Value	Basic EBIT + Depreciation + Amortization

Methods*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.

Ratatabase 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.

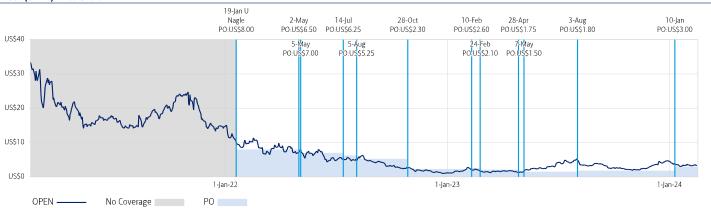
Morofile5M, **Morethod5M** are service marks of Bank of America Corporation. ***Morofile5M**, **Morethod5M** are service marks of Bank of America Corporation.



Disclosures

Important Disclosures

Opendoor (OPEN) 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: Technology Group (as of 31 Dec 2023)

Coverage Universe	Count	Percent	Inv. Banking Relationships R1	Count	Percent
Buy	215	53.09%	Buy	111	51.63%
Hold	97	23.95%	Hold	45	46.39%
Sell	93	22.96%	Sell	24	25.81%

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%	≤ /0%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

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.

 $BofAS\ or\ one\ of\ its\ affiliates\ acts\ as\ a\ market\ maker\ for\ the\ equity\ securities\ recommended\ in\ the\ report:\ Opendoor.$

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: Opendoor.

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

Other Important Disclosures

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



expenses from the issuer for such visits.

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

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

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

Officers of BofAS or one or more of its affiliates (other than research analysts) may have a financial interest in securities of the issuer(s) or in related investments. Refer to BofA Global Research policies relating to conflicts of interest.

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

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

BofAS and/or Merrill Lynch, Pierce, Fenner & Smith Incorporated ("MLPF&S") may in the future distribute, information of the following non-US affiliates in the US (short name: legal name, regulator): Merrill Lynch (South Africa): Merrill Lynch South Africa (Pty) Ltd., regulated by The Financial Service Board; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofaml.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company, Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch (Hong Kong): Merrill (Hong Kong): Merr (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSFC); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch (Canada): Merrill Lynch (Canada): Merrill Lynch (Mexico): Merrill Ly de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; Merrill Lynch (Argentina): Merrill Lynch Argentina SA, regulated by Comisión Nacional de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority.

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

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 inform

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

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

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

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

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 and under Extended Review in accordance with firm any use of this

