

The BofA RENO Barometer

Home improvement backdrop still looks “fair”ly supportive

Industry Overview

January RENO Barometer stayed “Fair”

The BofA RENO Barometer for January '23 ticked down slightly MoM to a score of 1.1 vs. 1.4 in December (revised). After spending ten months in “Cloudy territory”, the RENO Barometer finally flipped to “Fair” in November and has remained in that range since then. This indicates a backdrop that is supportive of stability/modest growth in home improvement retail spending. The RENO Barometer indicates sequential recovery in 4Q23 through 2Q24, continuing the longer-term trend of improvement from the trough in March '23.

Real-time spending metrics (“R”) ticked lower

Looking at the four categories of the RENO Barometer, the MoM move in real-time spending metrics (“R”) was a deterioration to (4.7) in January from (1.8) in December (revised). The biggest driver of the deceleration was an (8.3)% YoY decline in retail sales of Building Material and Garden Supplies per the US Census Bureau. BAC aggregated credit and debit card spending data for home improvement retailers also remained sluggish, falling (7.0)% YoY, although this improved slightly from (7.5)% in December. See the most recent [BofA on USA](#) note for an explanation of the methodology, disclaimers, and limitations of BAC aggregated credit and debit card data.

Economic drivers (“E”) improved

Compared to the December RENO Barometer reading, Economic drivers (“E”) improved sequentially from 0.3 in Dec '23 to 1.2 in Jan '23 (revised) due to a return to positive YoY growth in housing completions.

National household financial health measures (“N”) flattish

There was no material change in National household financial health measures (“N”) in January '24 vs. December '23, and the category's score of 3.9 remained supportive to the overall RENO Barometer reading.

Opinions on housing (“O”) is a tailwind

The biggest MoM change in RENO Barometer factors was in the lowest-weighted—Opinions on housing (“O”)—where the category accelerated from 15.2 in Dec '23 to 23.4 in Jan '24. Both consumer confidence and expectations of home prices were stronger YoY and MoM on a 6-month leading basis.

Lack of turnover has been an underappreciated headwind

We recently highlighted that [low housing turnover](#) (see report) has been and may continue to be a headwind for home improvement retail spending for some time. Housing turnover is a catalyst for renovation activity, particularly larger-scale projects which the retailers have called out as being particularly slow. However, we expect improvement in housing turnover as mortgage rates continue to moderate. It should be noted that historically housing turnover and mortgage rates have not had a particularly strong correlation to HD & LOW's same-store sales (comp) growth, therefore both are excluded from the RENO Barometer inputs.

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 10 to 12.

12660474

Timestamp: 16 February 2024 05:00AM EST

16 February 2024

Equity
United States
Retailing-Hardlines

BofA
Data
Analytics



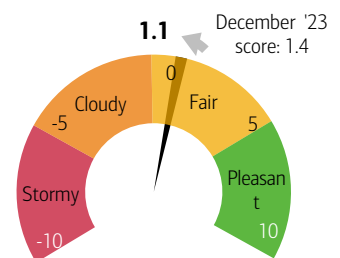
Robert F. Ohmes, CFA
Research Analyst
BofAS
+1 646 855 0078
robert.ohmes@bofa.com

Elizabeth L. Suzuki
Research Analyst
BofAS
+1 646 855 2547
elizabeth.suzuki@bofa.com

Molly Baum
Research Analyst
BofAS
+1 646 855 4904
molly.baum@bofa.com

Exhibit 1: The BofA RENO Barometer for January '24 ticked lower vs December, remaining “Fair”

Most recent BofA RENO Barometer reading



Source: BofA Global Research

The indicator identified above as the BofA RENO Barometer is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This indicator was not created to act as a benchmark.

BofA GLOBAL RESEARCH

BofA RENO Barometer components

The BofA RENO Barometer comprises 14 factors, which in aggregate had a 0.85 historical correlation with Home Depot's (HD) and Lowe's (LOW) same-store sales growth (comps) from February 2009 to September 2018, according to our backtested analysis. Correlations between several economic and sentiment components broke down during the COVID-19 pandemic, resulting in an overall lower correlation between the BofA RENO Barometer and HD & LOW's average comps since the RENO Barometer was launched in Oct '18 to the present. See page 8 for a description of the scoring methodology as well as limitations of the RENO Barometer.

Exhibit 2: The BofA RENO Barometer comprises 14 factors

Components of the BofA RENO Barometer

| Component | Source | Correlation with HD & LOW avg comps from Feb '09-Sep '18 | Correlation with HD & LOW avg comps from Oct '18-current | Weight in RENO barometer |
|---|--|--|--|--------------------------|
| Real-time spending | | 0.90 | 0.92 | 35.0% |
| BAC aggregated credit/debit card spend - home improvement stores | BAC internal data | 0.80 | 0.97 | 10.5% |
| Retail sales of Building Material and Garden Supplies | US Census Bureau | 0.84 | 0.84 | 10.5% |
| Building Material & Garden Equip & Supply Dealers* | SpendTrend by First Data Corporation | 0.88 | 0.65 | 10.5% |
| AHAM T-6 (washers, dryers, fridges, dishwashers, ranges, freezers) | Association for Home Appliance Manufacturers | 0.48 | 0.38 | 3.5% |
| Economic drivers | | 0.81 | 0.46 | 30.0% |
| Private Fixed Residential Investment (PFRI) | Bureau of Economic Analysis | 0.80 | 0.47 | 7.5% |
| Residential construction payrolls | Bureau of Labor Statistics | 0.76 | (0.22) | 7.5% |
| Personal Consumption Expenditures (PCE) furnishings & durable household equipment | Bureau of Economic Analysis | 0.83 | 0.58 | 10.5% |
| Single-Family Housing completions (3 months prior)** | US Census Bureau | 0.67 | 0.03 | 4.5% |
| National household financial health | | 0.74 | (0.03) | 30.0% |
| Employed population 25-54 | Organisation for Economic Co-operation & Development | 0.76 | (0.67) | 9.0% |
| Home prices (Case-Shiller index) | S&P/Case-Shiller | 0.71 | 0.09 | 9.0% |
| Homeowner's equity | Federal Reserve | 0.72 | 0.17 | 9.0% |
| Real wage growth | Bureau of Labor Statistics | 0.40 | 0.65 | 3.0% |
| Opinions on housing | | 0.45 | 0.00 | 5.0% |
| Consumer confidence (6 months prior) | University of Michigan | 0.36 | (0.09) | 2.5% |
| Expectation of home prices (6 months prior) | University of Michigan | 0.48 | 0.12 | 2.5% |
| BofA RENO barometer | | 0.85 | 0.65 | 100.0% |

Source: BofA Global Research

*SpendTrend data available starting in June 2012, so BAC aggregated credit/debit card data used as a proxy from Feb-09 to May-12 for the purpose of the correlation

** In the first publication of the BofA RENO Barometer (24 October 2018), total housing completions was used as an Economic driver. This was replaced by single-family housing completions as of the monthly note dated 16 November 2018, in order to improve the correlation

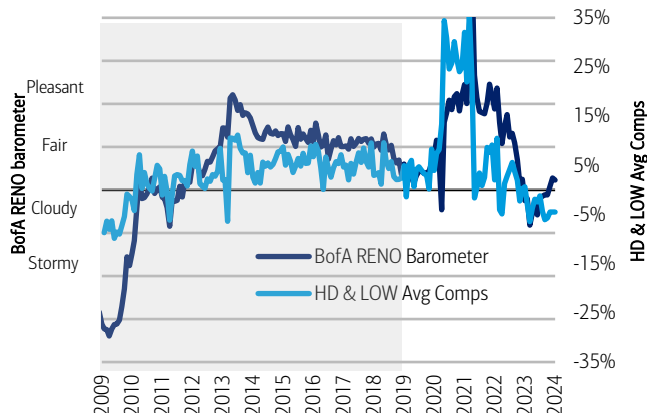
BofA GLOBAL RESEARCH

A note on backtesting

The analysis of the BofA RENO Barometer in this report is backtested and does not represent the actual performance of any account or fund. Backtested performance depicts the hypothetical backtested performance of a particular strategy over the time period indicated. In future periods, market and economic conditions will differ and the same strategy will not necessarily produce the same results. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. In fact, there are frequently sharp differences between backtested returns and the actual results realized in the actual management of a portfolio. Backtested performance results are created by applying an investment strategy or methodology to historical data and attempts to give an indication as to how a strategy might have performed during a certain period in the past if the product had been in existence during such time. Backtested results have inherent limitations including the fact that they are calculated with the full benefit of hindsight, which allows the security selection methodology to be adjusted to maximize the returns. Further, the results shown do not reflect actual trading or the impact that material economic and market factors might have had on a portfolio manager's decision-making under actual circumstances. Backtested returns do not reflect advisory fees, trading costs, or other fees or expenses.

Exhibit 3: The 1Q trough in the BofA RENO Barometer and gradual improvement thereafter was echoed by HD & LOW's results

The BofA RENO Barometer vs Home Depot and Lowe's average monthly same-store sales growth (comps)



Source: BofA Global Research, company filings. The shaded area represents backtested results from Feb 2009-Sep 2018. The unshaded area represents actual performance since Oct 2018. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. HD & LOW avg comps for Nov-Jan '23 represent BofA estimates

BofA GLOBAL RESEARCH

Exhibit 4: The BofA RENO Barometer is moving past the 1H23 trough

BofA RENO Barometer recent readings and forecasts



Source: BofA Global Research. The shaded area represents backtested results from Feb 2009-Sep 2018. The unshaded area represents actual performance since Oct 2018. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein.

BofA GLOBAL RESEARCH

Real-time spending metrics

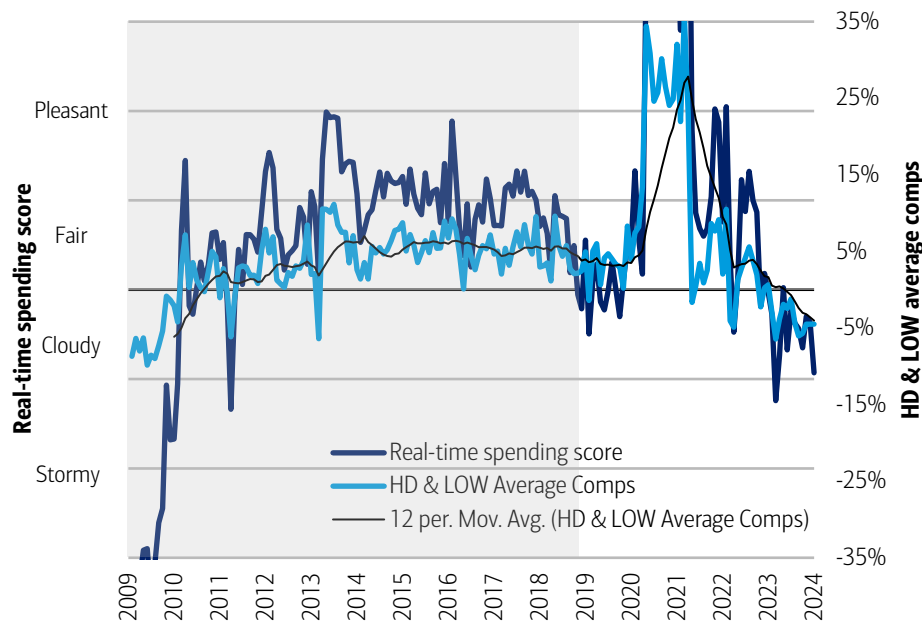
Spending ticks lower in January

The Real-time spending score in January '24 was (4.7), which deteriorated from (1.8) in December '23 (revised) but continued to improve from the trough of (6.2) in March '23. We expect trends to improve into the +LSD range by 2H24, maintaining a gradually improving trajectory. Home improvement has maintained elevated levels of spending vs 2019. The overall Real-time spending score had a 0.90 correlation with the average monthly comps of HD and LOW from February 2009 to September 2018, according to our backtested analysis. This correlation remained high since the launch of the BofA RENO Barometer in Oct '18 to the present at 0.92.

- **BAC aggregated credit and debit card spend** at home improvement stores was (7.0)% YoY in January vs (7.5)% YoY in December. See our most recent [Monthly hardline retail spending snapshot](#), and the latest [BofA on USA](#) note for an explanation of the methodology, disclaimers and limitations of BAC card data.
- **The Census Bureau's** adjusted retail sales in home improvement categories fell (8.3)% YoY in January vs (2.9)% YoY in December (revised).
- **SpendTrend** data for building materials and garden equipment declined (2)% YoY in January vs 2.5% YoY in December.
- **T-6 category appliance sales** (washers, dryers, refrigerators, dishwashers, ranges and freezers) as measured by Association for Home Appliance Manufacturers grew 2.5% YoY in 4Q23 (latest available) with a monthly cadence of (0.6)% YoY in October, +2.6% YoY in November, and +5.4% YoY in December. See our most recent [Chore Charts note published 12 February 2024](#) for more detail on the US appliance market.

Exhibit 5: Real-time spending metrics ticked lower in January '24 vs December '23

Real-time spending score vs HD and LOW average monthly comps



Source: BAC internal data, US Census Bureau, SpendTrend, Association for Home Appliance Manufacturers, BofA Global Research, company filings. The shaded area represents backtested results from Feb 2009-Sep 2018. The unshaded area represents actual performance since Oct 2018. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. HD & LOW avg comps for Nov-Jan '23 represent BofA estimates

BofA GLOBAL RESEARCH

Economic drivers

Economic indicators strengthened MoM

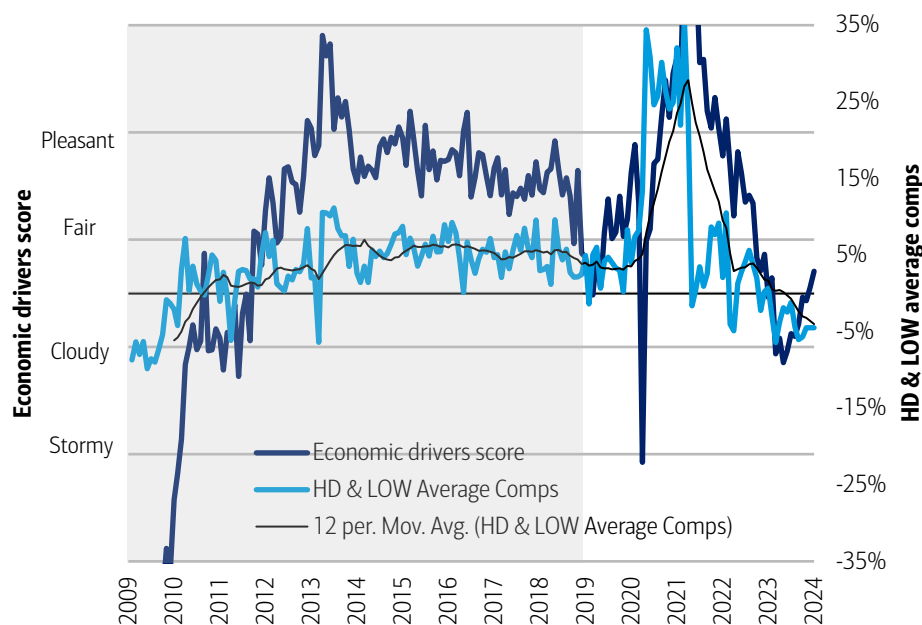
The Economic drivers score of 1.2 in January improved from 0.3 in December (revised), but remained in “Cloudy” territory (scoring between 0 and -5). The overall Economic drivers score had a 0.81 correlation with the average monthly comps of HD and LOW from February 2009 to September 2018, according to our backtested analysis. However, during the COVID-19 pandemic this correlation broke down due to the disconnect between weak economic growth and high consumer spending on home improvement. Therefore from the launch of the BofA RENO Barometer in Oct '18 to the present, the Economic drivers score had only a 0.46 correlation with the average monthly comps of HD & LOW.

- **Private Fixed Residential Investment** on a seasonally adjusted annualized basis (SAAR) was up 1.6% YoY in 4Q23 (latest available), improving from (5.8)% YoY in 3Q23. PFRI as reported by the Bureau of Economic Analysis includes permanent improvements to existing structures (homes) as well as new home construction.
- **Residential construction payrolls** were up 0.9% YoY in January vs 0.8% YoY in December (revised), as reported by the Bureau of Labor Statistics.
- **Personal Consumption Expenditure (PCE)** on furnishings & durable household equipment improved 1.5% YoY in December '23 (latest reported) vs 0.8% YoY in November '23 (revised).
- **Single-family housing completions**, as reported by the US Census Bureau increased 0.6% YoY in October '23 vs (5.3)% YoY in September '23. We lag this

indicator by 3 months resulting in a higher historical correlation with HD and LOW's monthly comps.

Exhibit 6: The Economic drivers score stayed in "Cloudy" territory in January

Economic drivers score vs HD and LOW average monthly comps



Source: BEA, BLS, US Census Bureau, BofA Global Research, company filings. The shaded area represents backtested results from Feb 2009-Sep 2018. The unshaded area represents actual performance since Oct 2018. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. HD & LOW avg comps for Nov-Jan '23 represent BofA estimates

BofA GLOBAL RESEARCH

National household financial health

Households remain financially comfortable

The National household financial health measures score of 3.9 in January '24 was fairly consistent with 3.9 in December '23 (revised). In 2024 we expect the National household financial health score to remain in +LSD to MSD ("Fair" territory).

- **The employed population of 25–54-year-olds** per the OECD improved 1.1% YoY in January, decelerating from 1.2% YoY in December. Growth in this population of consumers is a key tenet of our thesis that Millennials entering the housing market will support the renovation cycle. See our annual [Millennial housing survey 05 May 2023](#).
- **National home prices** per the S&P CoreLogic Case-Shiller index increased 5.5% YoY in December (latest reported), improving from 5.2% YoY in November and remaining surprisingly resilient.
- **Homeowners' equity** grew 5.3% YoY in 3Q23 (latest reported) vs (0.9)% YoY in 2Q23.
- **US real average weekly earnings growth** as reported by the Bureau of Labor Statistics was up 3% YoY in January vs 4% YoY in December.

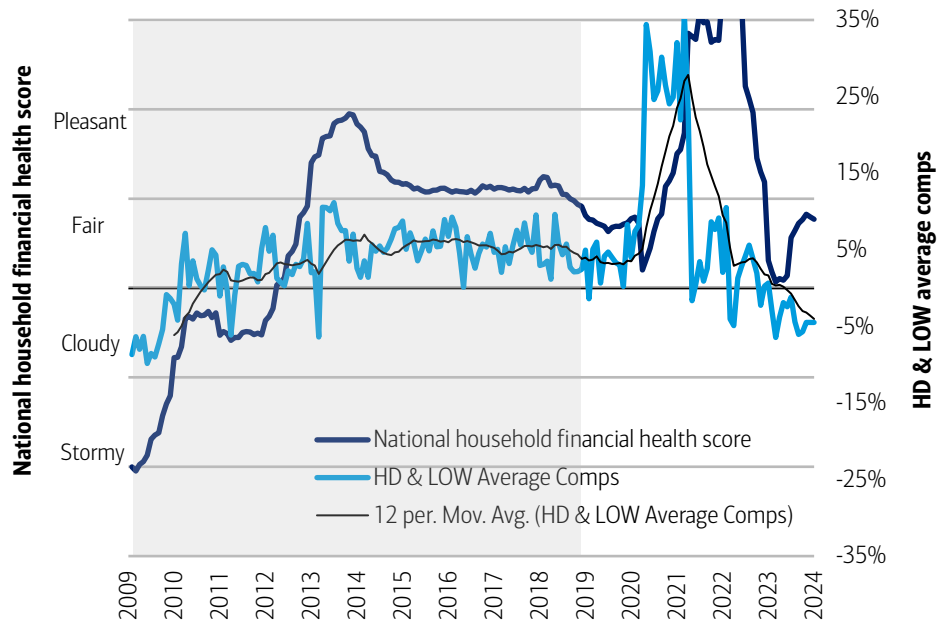


Looking ahead: a slight tailwind

The BofA US Mortgage and Structured Finance Research team projects US home price appreciation (HPA) to be +4% in 2024. Strength in home values should lend longer-term stability for home improvement demand.

Exhibit 7: The National household financial health score held steady MoM in Jan '24

National household financial health score vs HD and LOW average monthly comps



Source: OECD, S&P/Case-Shiller, Federal Reserve, BLS, BofA Global Research, company filings. The shaded area represents backtested results from Feb 2009-Sep 2018. The unshaded area represents actual performance since Oct 2018. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. HD & LOW avg comps for Nov-Jan '23 represent BofA estimates

BofA GLOBAL RESEARCH

Opinions on housing

Leading sentiment score moved higher in January

Although not as highly correlated to home improvement comps, we believe that indications of sentiment are important factors for consideration of the renovation cycle. These factors are leading indicators, and therefore we use the six-month prior reading for our scoring to improve the correlation with HD and LOW's average comps. Opinions on housing remained supportive of the RENO Barometer's overall score in January '24 vs. December '23.

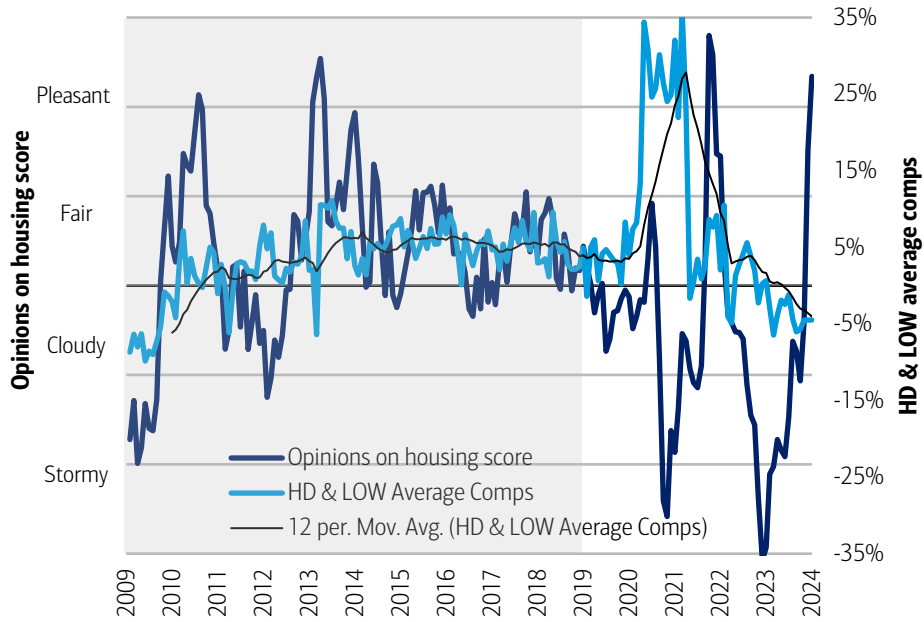
- **Consumer confidence** has led HD and LOW's comps by six months, according to our backtested analysis. The University of Michigan's consumer sentiment index improved sequentially in July '23 to 71.5 vs 64.2 in June '23. Next month's input for the January '24 RENO Barometer scoring will be the consumer confidence reading from August '23, which ticked lower MoM.
- **Expectations of home prices** as reported by the University of Michigan also tend to lead HD and LOW's average comps by about six months, according to our backtested analysis. In July '23 the percentage of survey respondents who expected home prices to rise in the next year was 43%, in-line with 43% in June '23. We estimate that January '23 was the trough in consumer sentiment around home prices, and this input to the overall RENO Barometer will get even more favorable in the coming months.

Looking ahead: sentiment remains a tailwind in 2024

We estimate that the Opinions on housing score will remain favorable into 2024.

Exhibit 8: Sentiment indicators (6 months leading) ticked higher in January '24

Opinions on housing score vs HD and LOW average monthly comps



Source: University of Michigan, Conference Board, BofA Global Research, company filings. The shaded area represents backtested results from Feb 2009-Sep 2018. The unshaded area represents actual performance since Oct 2018. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. HD & LOW avg comps for Nov-Jan '23 represent BofA estimates

BofA GLOBAL RESEARCH

Appendix

Methodology

Each individual component is translated into a score, which is the year-over-year percentage change in the metric for the reported month (e.g. if residential construction payrolls increase by 2% YoY in a given month, this metric would have a score of 2 for that month). The exception is the component scoring for expectation of home prices, which is calculated using the year-over-year percentage point change (since this metric is already a percentage).

The individual component scores are weighted and averaged to generate the scores for each category, as well as the overall BofA RENO Barometer score for each month.

Limitations

Given the volatile nature of same-store sales growth for Home Depot and Lowe's, which can be impacted by microeconomic factors as well as weather and other non-macro factors, there have been periods in our backtesting when the BofA RENO Barometer has not been highly correlated with the average comps of HD and LOW.

- **2009:** BofA RENO Barometer “broke the scale” and was worse than the implied YoY comp declines for HD and LOW. Over the course of 2009, the Economic drivers score and National household financial health score were particularly draconian, with metrics like homeowner equity and housing completions falling over 30% YoY in some months.
- **November 2010:** The average comps of HD and LOW showed meaningful sequential improvement while the BofA RENO Barometer declined MoM. The sequential improvement was driven primarily by HD, which ran a Black Friday appliance promotion that contributed approximately 120bp to comps in the month.
- **March 2013:** BofA RENO Barometer only dipped slightly, while the comps of HD and LOW were negative due to unseasonably cold weather than delayed spring selling season. The timing of Easter also impacted the March 2013 comps.
- **May 2016:** The average home improvement comp was dragged down by LOW in May 2016, which experienced a 2.8% negative comp for the month due to “project pull-forward” (LOW had stronger 1Q comps driven by promotional initiatives that faded in 2Q). In this month the BofA RENO Barometer declined sequentially, but significantly less severely.
- **December 2017:** The average comps of HD and LOW rebounded while the BofA RENO Barometer softened sequentially. The December reported comps for HD and LOW were boosted by unusual Christmas timing, which fell in fiscal January in 2017 versus December in 2016.
- **April 2020:** The average comps of HD and LOW grew at a double-digit pace throughout much of 2020 and 2021 while the BofA RENO Barometer dipped due to broader weak US economic conditions and unemployment.

Disclaimer for BAC card data

Selected Bank of America (“BAC”) transaction data are used to inform the macroeconomic views expressed in this report and should be considered in the context of other economic indicators and publicly available information. In certain instances, the data may provide directional and/or predictive value. The data used are not comprehensive; they are based on aggregated and anonymized selections of BAC data and may reflect a degree of selection bias and limitations on the data available.

Methodology explained

Readers should be aware that although the BAC datasets utilized in our analysis represent a significant number of data points, they nevertheless present a degree of selection bias, including but not limited to income levels and geographies. In addition, the data are limited to debit and credit cards and does not include other payment methods such as cash or checks.

Data regarding merchants who receive payments are identified and classified by the Merchant Categorization Code (MCC) defined by financial services companies. The data are mapped using proprietary methods from the MCCs to the North American Industry Classification System (NAICS), which is also used by the Census Bureau, in order to classify spending data by subsector. Spending data may also be classified by other proprietary methods not using MCCs. The subsector data are adjusted to control for seasonality and other factors.

Additional information about the methodology used to aggregate the data is available upon request.



Disclosures

Important Disclosures

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 ^{R1} |
|-------------------|---|--|
| Buy | ≥ 10% | ≤ 70% |
| Neutral | ≥ 0% | ≤ 30% |
| Underperform | N/A | ≥ 20% |

^{R1} 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.

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

Other Important Disclosures

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

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

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

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

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

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

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

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

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

This information has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; 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 CBL. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

This information has been prepared and issued by BofAS and/or one or more of its non-US affiliates. The author(s) of this information may not be licensed to carry on regulated activities in your jurisdiction and, if not licensed, do not hold themselves out as being able to do so. BofAS and/or MLPF&S is the distributor of this information in the US and accepts full responsibility for information distributed to BofAS and/or MLPF&S clients in the US by its non-US affiliates. Any US person receiving this information and wishing to effect any transaction in any security discussed herein should do so through BofAS and/or MLPF&S and not such foreign affiliates. Hong Kong recipients of this information should contact Merrill Lynch (Asia Pacific) Limited in respect of any matters relating to dealing in securities or provision of specific advice on securities or any other matters arising from, or in connection with, this information. Singapore recipients of this information should contact Merrill Lynch (Singapore) Pte Ltd in respect of any matters arising from, or in connection with, this information. For clients that are not accredited investors, expert investors or institutional investors Merrill Lynch (Singapore) Pte Ltd accepts full responsibility for the contents of this information distributed to such clients in Singapore.

General Investment Related Disclosures:

Taiwan Readers: Neither the information nor any opinion expressed herein constitutes an offer or a solicitation of an offer to transact in any securities or other financial instrument. No part of this report may be used or reproduced or quoted in any manner whatsoever in Taiwan by the press or any other person without the express written consent of BofA Securities. This document provides general information only, and has been prepared for, and is intended for general distribution to, BofA Securities clients. Neither the information nor any opinion expressed constitutes an offer or an invitation to make an offer, to buy or sell any securities or other financial instrument or any derivative related to such securities or instruments (e.g., options, futures, warrants, and contracts for differences). This document is not intended to provide personal investment advice and it does not take into account the specific investment objectives, financial situation and the particular needs of, and is not directed to, any specific person(s). This document and its content do not constitute, and should not be considered to constitute, investment advice for purposes of ERISA, the US tax code, the Investment Advisers Act or otherwise. Investors should seek financial advice regarding the appropriateness of investing in financial instruments and implementing investment strategies discussed or recommended in this document and should understand that statements regarding future prospects may not be realized. Any decision to purchase or subscribe for securities in any offering must be based solely on existing public information on such security or the information in the prospectus or other offering document issued in connection with such offering, and not on this document.

Securities and other financial instruments referred to herein, or recommended, offered or sold by BofA Securities, are not insured by the Federal Deposit Insurance Corporation and are not deposits or other obligations of any insured depository institution (including, Bank of America, N.A.). Investments in general and, derivatives, in particular, involve numerous risks, including, among others, market risk, counterparty default risk and liquidity risk. No security, financial instrument or derivative is suitable for all investors. Digital assets are extremely speculative, volatile and are largely unregulated. In some cases, securities and other financial instruments may be difficult to value or sell and reliable information about the value or risks related to the security or financial instrument may be difficult to obtain. Investors should note that income from such securities and other financial instruments, if any, may fluctuate and that price or value of such securities and instruments may rise or fall and, in some cases, investors may lose their entire principal investment. Past performance is not necessarily a guide to future performance. Levels and basis for taxation may change.

This report may contain a short-term trading idea or recommendation, which highlights a specific near-term catalyst or event impacting the issuer or the market that is anticipated to have a short-term price impact on the equity securities of the issuer. Short-term trading ideas and recommendations are different from and do not affect a stock's fundamental equity rating, which reflects both a longer term total return expectation and attractiveness for investment relative to other stocks within its Coverage Cluster. Short-term trading ideas and recommendations may be more or less positive than a stock's fundamental equity rating.

BofA Securities is aware that the implementation of the ideas expressed in this report may depend upon an investor's ability to "short" securities or other financial instruments and that such action may be limited by regulations prohibiting or restricting "shortselling" in many jurisdictions. Investors are urged to seek advice regarding the applicability of such regulations prior to executing any short idea contained in this report.

Foreign currency rates of exchange may adversely affect the value, price or income of any security or financial instrument mentioned herein. Investors in such securities and instruments, including ADRs, effectively assume currency risk.

BofAS or one of its affiliates is a regular issuer of traded financial instruments linked to securities that may have been recommended in this report. BofAS or one of its affiliates may, at any time, hold a trading position (long or short) in the securities and financial instruments discussed in this report.

BofA Securities, through business units other than BofA Global Research, may have issued and may in the future issue trading ideas or recommendations that are inconsistent with, and reach different conclusions from, the information presented herein. Such ideas or recommendations may reflect different time frames, assumptions, views and analytical methods of the persons who prepared them, and BofA Securities is under no obligation to ensure that such other trading ideas or recommendations are brought to the attention of any recipient of this information.

In the event that the recipient received this information pursuant to a contract between the recipient and BofAS for the provision of research services for a separate fee, and in connection therewith BofAS may be deemed to be acting as an investment adviser, such status relates, if at all, solely to the person with whom BofAS has contracted directly and does not extend beyond the delivery of this report (unless otherwise agreed specifically in writing by BofAS). If such recipient uses the services of BofAS in connection with the sale or purchase of a security referred to herein, BofAS may act as principal for its own account or as agent for another person. BofAS is and continues to act solely as a broker-dealer in connection with the execution of any transactions, including transactions in any securities referred to herein.

Copyright and General Information:

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 any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

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

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



All opinions, projections and estimates constitute the judgment of the author as of the date of publication and are subject to change without notice. Prices also are subject to change without notice. BofA Securities is under no obligation to update this information and BofA Securities ability to publish information on the subject issuer(s) in the future is subject to applicable quiet periods. You should therefore assume that BofA Securities will not update any fact, circumstance or opinion contained herein. Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies. Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.