

S&P 500 Relative Value Cheat Sheet

Today's quality stocks could surprise you

As the world cools, investors tend to pay up for quality....

Tactical, cyclical and secular reasons for a choppy market benefiting higher quality stocks include: (1) volatility through election day indicated by history ([FAQ](#)); (2) our US Regime Indicator fell again in August and is now in a Downturn (inside); and (3) the yield curve, a leading VIX indicator, suggests higher volatility through 2027 (Exhibit 2).

...but today's quality is not expensive...

High Quality stocks ("B+ or better" by S&P quality ranks) traded at a big discount to Low Quality ("B or worse") since the Tech Bubble but have recently re-rated to a slight premium. Is quality now expensive? No. The last two decades were anomalous, in our view: hyper-accommodative policy and ultra-low rates back-stopped risk taking. Finance 101 says predictability should trade at a premium to risk. Today's quality premium is in line with its average premium pre-2000, marking simply a return to normalcy.

... and today's quality is not 2008's quality...

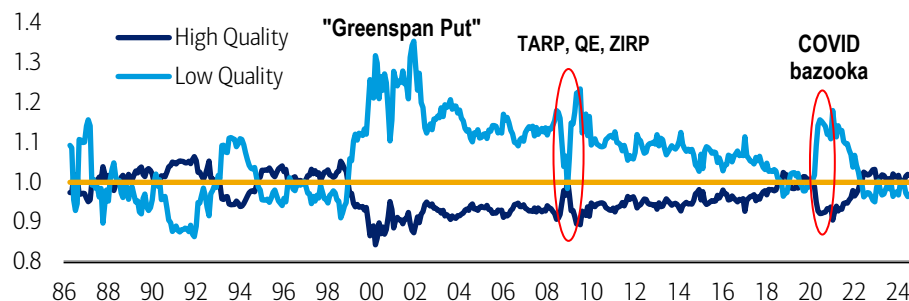
Cyclicals are often cast as low quality; investors tend to flock to defensive secular growth areas for quality. Higher betas of cyclical sectors reflect this perceived risk, but earnings volatility tells a different story (Exhibit 8). Today some larger cyclical sectors have higher quality characteristics than defensives/secular growers.

Financials, Real Estate, high dividend yield, SPW>SPX

Financials now has the highest quality by proportion of "B+/Better" companies (Exhibit 6). Real Estate has shifted to 70% high quality market cap (Exhibit 7) and ranks 2nd in our sector model. The S&P 500's dividend payout ratio is near a record low unlike stretched levels of 2008. This suggests safer dividends that could make up more of the total return, as the S&P's high multiple suggests paltry long-term price returns (Exhibit 11). And the eq wtd SPW has more stable earnings than the cap-wtd SPX.

Exhibit 1: High quality vs. low quality valuations have reverted to pre-2000 normalcy

B+ or Better S&P Quality Ranks (High) vs. B or Worse (Low) Fwd. P/E vs. BofA Universe (1986-8/24)



Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

06 September 2024

Equity and Quant Strategy
United States

Savita Subramanian
Equity & Quant Strategist
BofAS
+1 646 855 3878
savita.subramanian@bofa.com

Jill Carey Hall, CFA
Equity & Quant Strategist
BofAS
+1 646 855 3327
jill.carey@bofa.com

Ohsung Kwon, CFA
Equity & Quant Strategist
BofAS
+1 646 855 1683
ohsung.kwon@bofa.com

Alex Makedon
Equity & Quant Strategist
BofAS
+1 646 855 5982
alex.makedon@bofa.com

Victoria Roloff
Equity & Quant Strategist
BofAS
+1 646 743 6339
victoria.roloff@bofa.com

Tyson Dennis-Sharma
Equity & Quant Strategist
BofAS
+1 646 855 5717
tyson.dennis-sharma@bofa.com

Nicolas Woods
Equity & Quant Strategist
BofAS
+1 646 556 4179
nicolas.woods_barron@bofa.com

SPX = S&P 500

SPW = Equal-weighted S&P 500

RTY = Russell 2000

Trading ideas and investment strategies discussed herein may give rise to significant risk and are not suitable for all investors. Investors should have experience in relevant markets and the financial resources to absorb any losses arising from applying these ideas or strategies.

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.

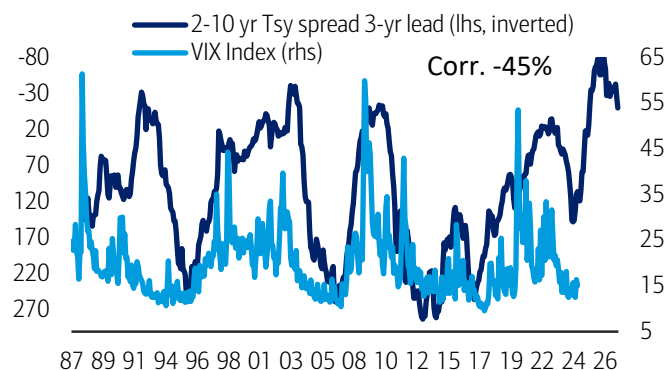
Refer to important disclosures on page 10 to 12.

12736830

Timestamp: 06 September 2024 02:32AM EDT

Exhibit 2: The yield curve suggests higher VIX for years

Yield curve 2-10 year spread (2 year lead) vs. CBOE VIX (as of 8/24)

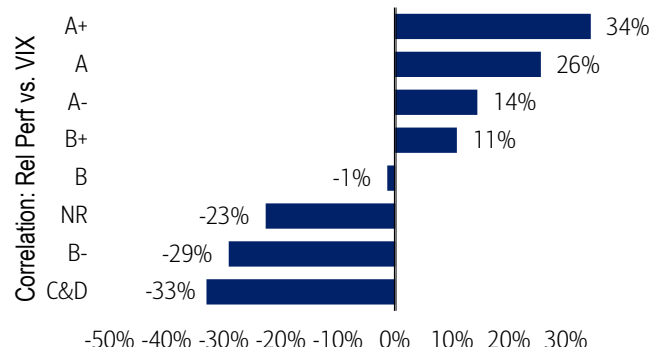


Source: CBOE, BEA, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 3: High Quality has protected against rising volatility

BofA Quality Indices 12m Performance Correlation to 12m Changes in CBOE VIX (1986-present)



Source: BofA US Equity and Quant Strategy, Standard & Poor's

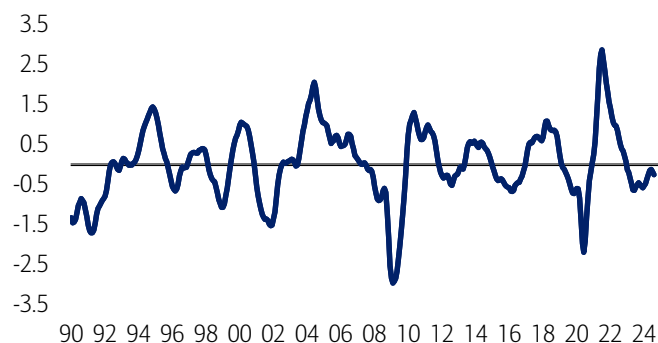
BofA GLOBAL RESEARCH

US Regime Indicator officially in a Downturn

After the second month of deterioration, the US Regime Indicator has officially entered its Downturn phase.

Exhibit 4: US Regime Indicator in Downturn

The US Regime indicator (Jan. 1990-August 2024)



Source: BofA US Equity & Quant Strategy, Refinitiv, ICE Data Indices, LLC, Institute for Supply Management, Bureau of Labor Statistics, Federal Reserve

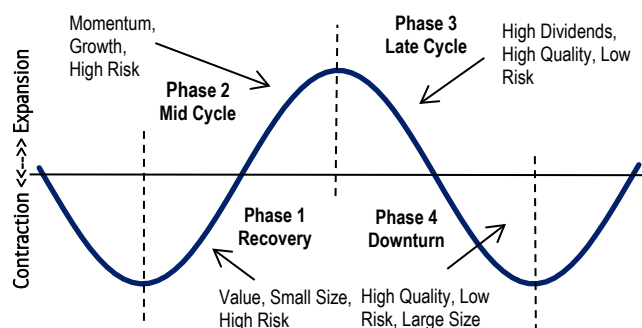
Note: Phase 1 – Early Cycle; Phase 2 – Mid Cycle; Phase 3 – Late Cycle; Phase 4 – Recession

Disclaimer: The indicator identified as the US Regime Indicator above 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 be relied upon by third parties for any other purpose, without the written consent of BofA Global Research. This indicator was not created to act as a benchmark.

BofA GLOBAL RESEARCH

Exhibit 5: US Regimes – a heuristic

Value, Small Size, High Risk tend to fare well in Recovery



Source: BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

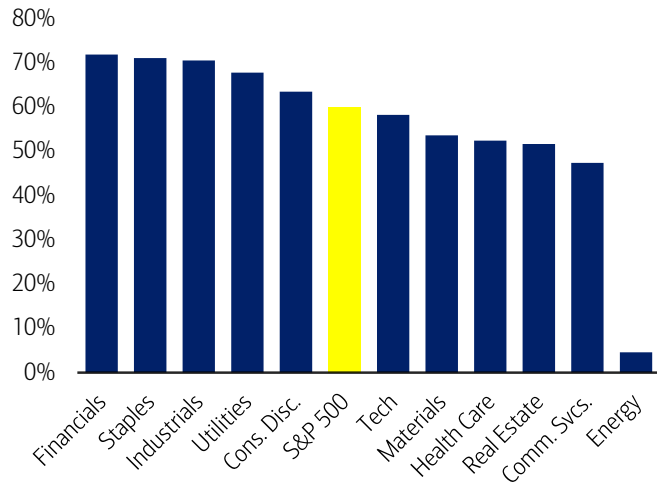
What works in a downturn?

Factor performance has been relatively consistent during different phases of the US Regime Indicator. High Quality tends to outperform during the “Downturn” phase of the cycle and Low Quality tends to lag. See [Quantitative Primer](#) for more details on this framework and see August’s [Quantitative Profiles](#) for the change last month.



Exhibit 6: Financials has the highest proportion of High Quality stocks

% of stocks that are High Quality (B+ or better) – as of 8/24

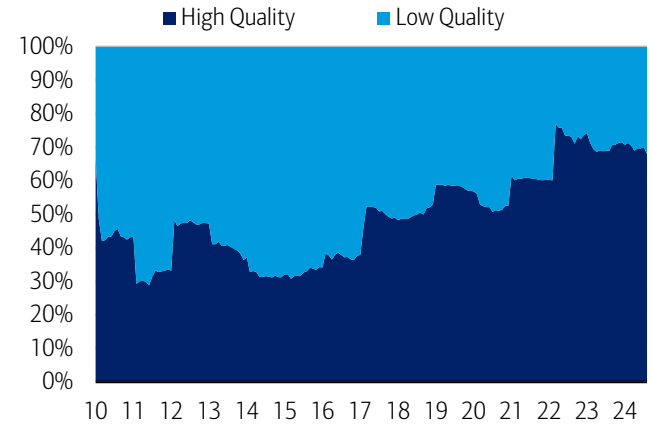


Source: FactSet, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 7: S&P 500 Real Estate market cap has shifted from 30% to 70% high quality

% of S&P 500 Real Estate (by market cap) with B+ or higher S&P quality rating vs. % with B or worse

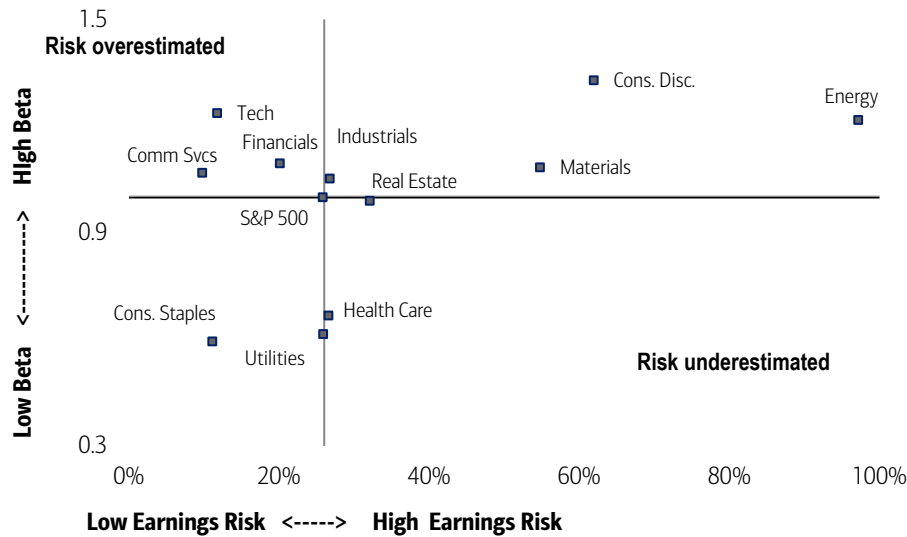


Source: BofA US Equity & Quant Strategy, FactSet, Standard & Poor's

BofA GLOBAL RESEARCH

Exhibit 8: Misunderstood risk: some sectors with high earnings quality still trade at high price betas

S&P Quality rankings (cap-wtd. % of Low Quality B or Worse stocks) vs. 5-yr price beta (as of 8/24)

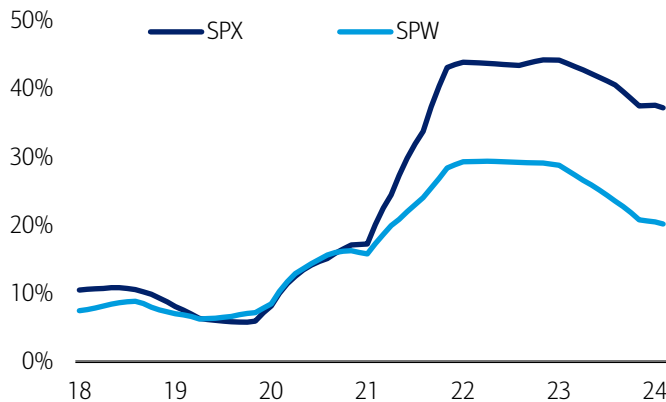


Source: S&P, FactSet, BofA US Equity & Quant Strategy. Note: Financials excludes BRK/B.

BofA GLOBAL RESEARCH

Exhibit 9: SPW has lower earnings volatility than SPX

Rolling 3-yr std. dev. of earnings growth YoY (2018-8/24)



Source: BofA US Equity & Quant Strategy, FactSet

BofA GLOBAL RESEARCH

Exhibit 10: SPW has a similar leverage ratio as SPX

Net debt / market cap for SPX vs. SPW (2018-8/24)



Source: BofA US Equity & Quant Strategy, FactSet

BofA GLOBAL RESEARCH

S&P 500 statistically expensive on 19 of 20 metrics**Exhibit 11: S&P 500 Valuations – shading indicates that metric is statistically expensive relative to history (as of 8/24)**

S&P 500 valuation metrics

Metric	Current	Average	Avg. ex. Tech Bubble	Min	Max	% Above (below) avg	Z-Score	History
Trailing PE	24.9	14.9	14.5	5.2	30.5	67.6%	2.1	1900-present
Trailing GAAP PE	28.7	15.2	14.8	4.2	122.4	89.4%	1.6	1832-present
Forward Consensus PE	21.6	15.9	15.1	9.8	25.1	36.1%	1.6	1986-present
Trailing Normalized PE	26.5	19.1	17.9	9.2	34.5	39.0%	1.5	9/1987-present
Median Forward P/E	18.4	15.5	15.3	10.0	21.9	18.6%	1.3	1986-present
Shiller PE	35.1	17.5	16.9	4.8	44.2	100.5%	2.4	1881-present
P/BV	5.09	2.70	2.53	0.98	5.34	88.5%	2.3	1978-present
EV/EBITDA	15.5	10.6	10.3	6.0	17.1	46.0%	2.0	1986-present
Trailing PEG	1.83	1.68	1.65	1.05	3.24	9.3%	0.4	1986-present
Forward PEG	1.59	1.44	1.42	0.93	3.50	10.0%	0.4	1986-present
P/OCF	19.1	11.4	10.9	5.4	19.3	67.3%	2.2	1986-present
P/FCF	32.6	27.9	25.1	12.9	65.7	16.8%	0.5	1986-present
EV/Sales	3.27	2.00	1.94	0.86	3.40	63.4%	2.1	1986-present
ERP (Market-Based)	546	506	522	136	880	7.9%	-0.2	11/1980-present
Normalized ERP	227	382	428	-120	929	-40.6%	0.7	1987-present
S&P 500 Div. Yld. vs. 10yr Tsy. Yld.	0.32	1.23	1.25	0.17	4.20	-74.4%	1.5	1792-present
S&P 500 in WTI terms	74.2	27.3	25.1	2.7	175.3	171.9%	2.4	1960-present
S&P 500 in Gold terms	2.25	1.65	1.44	0.17	5.48	36.0%	0.5	1968-present
S&P 500 vs. R2000 Fwd. P/E	1.38	1.04	1.00	0.76	1.70	32.0%	1.6	1986-present
S&P 500 Market Cap/GDP	1.66	0.67	0.64	0.22	1.66	147.0%	2.8	1964-present

Source: FactSet/Compustat, Bloomberg, FactSet/First Call, BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH



S&P 500 sector and industry valuations

Relative sector/industry valuations

Exhibit 12: Relative valuation (vs. S&P 500) by sector (based on data from 1986-8/24)

Relative valuation metrics and implied upside based on current vs. historical average by sector

	Price to Book (relative)			Price to Operating Cash Flow (relative)			Forward P/E (relative)		
	Current	Avg.	Implied upside	Current	Avg.	Implied upside	Current	Avg.	Implied upside
S&P 500 (absolute metrics)	5.1	3.0	-41%	19.1	11.4	-40%	21.3	15.9	-25%
Communication Services	0.93	0.93	0%	0.70	0.81	15%	0.87	1.15	32%
Consumer Discretionary	1.77	1.13	-36%	0.89	0.80	-10%	1.16	0.97	-17%
Consumer Staples	1.30	1.65	27%	0.91	1.23	35%	1.03	1.12	9%
Energy	0.41	0.71	73%	0.40	0.68	70%	0.58	0.94	61%
Financials	0.46	0.57	24%	N/A	N/A	N/A	0.77	0.76	-1%
Health Care	1.12	1.56	39%	1.37	1.45	5%	0.94	1.05	12%
Industrials	1.30	1.14	-12%	1.00	1.00	0%	1.03	1.01	-2%
Information Technology	2.46	1.41	-43%	1.59	1.23	-23%	1.34	1.11	-17%
Materials	0.64	0.84	31%	0.79	0.85	8%	0.97	1.01	4%
Real Estate	0.63	0.77	22%	1.06	0.94	-11%	0.89	1.36	53%
Utilities	0.44	0.58	29%	0.54	0.62	14%	0.84	0.86	2%

	Dividend Yield (relative)			Div. + Buybacks (relative)			Trailing P/E (relative)		
	Current	Avg.	Implied upside	Current	Avg.	Implied upside	Current	Avg.	Implied upside
S&P 500 (absolute metrics)	1.2%	2.1%	-41%	1.8%	1.5%	24%	24.5	18.8	-23%
Communication Services	0.56	0.95	-41%	1.34	1.05	28%	0.91	1.12	23%
Consumer Discretionary	0.56	0.82	-32%	0.72	0.71	0%	1.14	0.98	-14%
Consumer Staples	1.83	1.16	57%	1.69	1.57	8%	0.95	1.06	13%
Energy	2.64	1.55	70%	0.77	1.09	-30%	0.53	0.89	70%
Financials	1.16	1.06	10%	1.57	0.74	111%	0.74	0.87	18%
Health Care	1.19	0.86	38%	1.41	-0.36	N/A	1.01	1.01	0%
Industrials	1.12	1.01	10%	1.41	0.94	50%	1.01	1.02	1%
Information Technology	0.50	0.54	-8%	0.40	1.81	-78%	1.42	1.15	-19%
Materials	1.44	1.24	17%	1.03	1.14	-10%	0.97	1.05	9%
Real Estate	2.58	1.40	84%	-0.26	1.13	N/A	0.82	0.97	18%
Utilities	2.37	2.24	6%	1.28	0.81	57%	0.79	0.76	-4%

	EV to Sales (relative)			EV to EBITDA (relative)			EV to Free Cash Flow (relative)		
	Current	Avg.	Implied upside	Current	Avg.	Implied upside	Current	Avg.	Implied upside
S&P 500 (absolute metrics)	3.3	2.0	-39%	17.6	10.6	-40%	36.1	33.4	-7%
Communication Services	1.30	1.32	2%	0.77	0.81	5%	0.71	0.92	29%
Consumer Discretionary	0.85	0.60	-28%	0.98	0.97	-1%	1.02	1.30	28%
Consumer Staples	0.52	0.66	29%	0.96	1.11	15%	0.88	0.90	3%
Energy	0.47	0.62	32%	0.39	0.70	79%	0.47	1.02	119%
Financials	0.86	1.48	72%	NA	NA	NA	NA	NA	NA
Health Care	0.63	1.04	64%	1.22	1.32	8%	1.08	0.76	-29%
Industrials	0.87	0.91	4%	0.95	1.04	10%	1.00	1.08	9%
Information Technology	2.78	1.17	-58%	1.56	1.25	-20%	1.10	0.75	-32%
Materials	0.87	0.79	-9%	0.73	0.82	13%	1.19	1.04	-13%
Real Estate	2.96	2.93	-1%	0.92	1.06	15%	NA	NA	NA
Utilities	1.49	1.24	-17%	0.66	0.83	26%	NA	NA	NA

Source: BofA US Equity & Quant Strategy, FactSet

BofA GLOBAL RESEARCH



Tactical sector & industry framework

S&P 500 quantitative sector ranks

We use this framework to rank sectors based on price momentum, earnings momentum, and valuation. Sectors are sorted from highest (most attractive) to lowest (least attractive) as of the latest month. We use this framework to highlight attractive short-term (one- to three-month) sector opportunities for more tactical investors, and also use it as one component in our S&P 500 sector preferences along with a host of factors.

Exhibit 13: S&P 500 Momentum & Value Framework Sector Ranks as of 8/24

Sector ranks based on relative price momentum, EPS revision and valuation

Sector	Combined Rank	Price Momentum Rank	EPS Revision Rank	Valuation Rank
Health Care	26	9	10	7
Real Estate	22	11	2	9
Financials	22	10	8	4
Communication Services	21	2	9	10
Information Technology	20	8	11	1
Utilities	19	4	7	8
Consumer Staples	16	7	3	6
Industrials	15	6	6	3
Energy	13	1	1	11
Consumer Discretionary	12	5	5	2
Materials	12	3	4	5

Source: BofA US Equity & Quant Strategy

BofA GLOBAL RESEARCH

Opportunities, Value Traps and Momentum Breakdowns

We classify industries based on their framework ranks as follows:

- **Opportunities** are industries with above average (6 or higher) ranks in all three ranks.
- **Value Traps** are industries that have above average ranks in valuation (6 or higher) but are in the bottom tertile in price momentum and earnings momentum (ranks 1-3).
- **Momentum Breakdowns** are industries with below average ranks in valuation (4 or lower), lower price momentum ranks than in the previous month, and below average earnings momentum ranks (4 or lower).

Industry framework performance

Each month, we track the performance of industries categorized as Opportunities, Value Traps, and Momentum Breakdowns as defined above.

Exhibit 14: Relative performance of Opportunities, Value Traps and Momentum Breakdowns (as of 8/24)

Relative performance vs. equal-weighted S&P industries

	1m	3m	6m	12m	YTD	2yr	Ann'zed	3yr	Ann'zed	5yr	Ann'zed
Opportunities	0.6%	1.7%	6.3%	9.4%	9.0%	8.7%	4.0%	1.1%	0.4%	20.2%	2.7%
Value Traps	-2.2%	1.6%	5.1%	9.5%	7.7%	8.8%	4.0%	12.5%	3.9%	-28.2%	-4.2%
Momentum Breakdown	-0.2%	0.4%	-1.6%	-7.2%	-6.5%	-2.3%	-1.1%	-12.1%	-4.0%	-35.6%	-5.5%

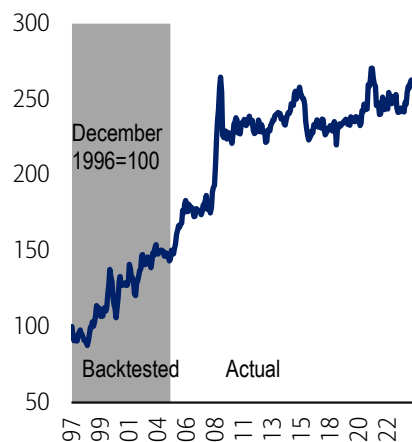
Source: BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH



Exhibit 15: “Opportunities” Cumulative Relative Performance, 12/96-8/24 (backtested)

Cumulative relative performance of “Opportunities” vs. the equal-weighted S&P industries



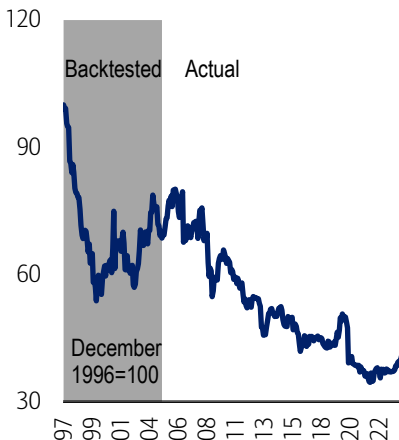
Note: the shaded area shows backtested results during the period from month-end December 1996 to month-end December 2004. The unshaded portion represents actual performance since January 2005. Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is not actual performance and is not intended to be indicative of future performance. The backtested performance results are based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance, and cannot account for all financial risks that may affect the performance of the screen going forward. See Appendix for performance data and calculation methodology.

Source: BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 16: “Value Traps” Cumulative Relative Performance, 12/96-8/24 (backtested)

Cumulative relative performance of “Value Traps” vs. the equal-weighted S&P industries



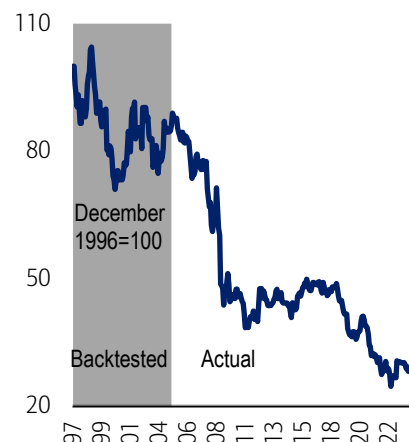
Note: the shaded area shows backtested results during the period from month-end December 1996 to month-end December 2004. The unshaded portion represents actual performance since January 2005. Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is not actual performance and is not intended to be indicative of future performance. The backtested performance results are based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance, and cannot account for all financial risks that may affect the performance of the screen going forward. See Appendix for performance data and calculation methodology.

Source: BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 17: “Momentum Breakdowns” Cumulative Relative Performance, 12/96-8/24 (backtested)

Cumulative relative performance of “Momentum Breakdowns” vs. the equal-weighted S&P industries



Note: the shaded area shows backtested results during the period from month-end December 1996 to month-end December 2004.

The unshaded portion represents actual performance since January 2005. Backtesting is hypothetical in nature and reflects application of the screen prior to its introduction. It is not actual performance and is not intended to be indicative of future performance. The backtested performance results are based on criteria applied retroactively with the benefit of hindsight and knowledge of factors that may have positively affected its performance, and cannot account for all financial risks that may affect the performance of the screen going forward. See Appendix for performance data and calculation methodology.

Source: BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 18: S&P 500 Momentum & Value Framework - industry ranks as of 8/24

Industry ranks based on relative price momentum, EPS revision and valuation

Industry	Sector	Combined Rank	Price Momentum Rank	EPS Revision Rank	Valuation Rank	Style Highlight
Office Reits	Real Estate	30	10	10	10	Opportunity
Specialized Reits	Real Estate	27	10	10	7	Opportunity
Household Durables	Consumer Discretionary	25	10	8	7	Opportunity
Industrial Conglomerates	Industrials	24	8	8	8	Opportunity
Leisure Products	Consumer Discretionary	24	9	9	6	Opportunity
Professional Services	Industrials	23	8	10	5	
Interactive Media & Services	Communication Services	22	3	9	10	
Banks	Financials	22	6	8	8	Opportunity
Tobacco	Consumer Staples	22	10	7	5	
Health Care Providers & Services	Health Care	22	8	7	7	Opportunity
Pharmaceuticals	Health Care	22	7	10	5	
Consumer Finance	Financials	21	6	8	7	Opportunity
Retail Reits	Real Estate	21	9	4	8	
Technology Hardware Storage & Peripherals	Information Technology	21	10	9	2	
Residential Reits	Real Estate	21	9	4	8	
Communications Equipment	Information Technology	21	9	5	7	
Auto Components	Consumer Discretionary	20	1	9	10	
Industrial Reits	Real Estate	20	9	5	6	
Insurance	Financials	20	8	6	6	Opportunity
Independent Power And Renewable Electricity Producers	Utilities	20	1	10	9	
Multi-Utilities	Utilities	18	5	5	8	
Beverages	Consumer Staples	18	5	5	8	
Capital Markets	Financials	18	8	6	4	
Financial Services	Financials	18	7	8	3	
Biotechnology	Health Care	17	8	3	6	
Media	Communication Services	17	4	3	10	
Diversified Telecommunication Services	Communication Services	17	4	3	10	
Energy Equipment & Services	Energy	17	1	6	10	
It Services	Information Technology	17	10	5	2	
Ground Transportation	Industrials	17	7	9	1	
Semiconductors & Semiconductor Equipment	Information Technology	16	4	10	2	
Electronic Equipment Instruments & Components	Information Technology	16	4	7	5	
Life Sciences Tools & Services	Health Care	16	6	7	3	
Aerospace & Defense	Industrials	16	7	8	1	
Health Care Equipment & Supplies	Health Care	16	5	6	5	
Hotels Restaurants & Leisure	Consumer Discretionary	16	4	5	7	
Metals & Mining	Materials	15	2	7	6	
Electric Utilities	Utilities	15	5	6	4	
Broadline Retail	Consumer Discretionary	15	3	10	2	
Health Care Reits	Real Estate	15	9	3	3	
Household Products	Consumer Staples	15	5	6	4	
Automobiles	Consumer Discretionary	15	10	4	1	
Food Products	Consumer Staples	15	4	2	9	
Specialty Retail	Consumer Discretionary	14	7	3	4	Momentum Breakdown
Building Products	Industrials	14	7	4	3	
Chemicals	Materials	14	5	4	5	
Commercial Services & Supplies	Industrials	14	6	7	1	
Personal Care Products	Consumer Staples	13	2	2	9	Value Trap
Hotel & Resort Reits	Real Estate	13	2	2	9	Value Trap
Oil Gas & Consumable Fuels	Energy	13	2	2	9	Value Trap
Construction & Engineering	Industrials	13	3	9	1	
Air Freight & Logistics	Industrials	13	3	2	8	Value Trap
Trading Companies & Distributors	Industrials	13	6	3	4	
Software	Information Technology	13	5	5	3	
Electrical Equipment	Industrials	12	2	8	2	
Passenger Airlines	Industrials	12	1	1	10	Value Trap
Distributors	Consumer Discretionary	12	2	1	9	Value Trap
Machinery	Industrials	11	3	3	5	
Consumer Staples Distribution & Retail	Consumer Staples	10	6	2	2	Momentum Breakdown
Containers & Packaging	Materials	10	3	4	3	
Real Estate Management & Development	Real Estate	10	8	1	1	
Construction Materials	Materials	8	1	1	6	Value Trap
Entertainment	Communication Services	7	3	1	3	
Textiles Apparel & Luxury Goods	Consumer Discretionary	6	1	1	4	

Source: BofA US Equity & US Quant Strategy



Methodology

Definitions of valuation metrics:

- **Price/Book:** month-end market cap divided by latest total common equity.
- **Price/Operating Cash Flow:** Month-end market cap divided by the last twelve months cash flow from operations as of the most recent fiscal quarter.
Note: All industries' multiples are relative to the S&P 500 ex. Fins. for P/OCF.
- **Forward Price/Earnings:** Month-end market cap divided by I/B/E/S consensus next twelve months earnings.

Implied upside is based on comparing the current relative multiple vs. the historical average relative multiple. Industries with <10 yrs of data history are excluded. Boxes highlight sectors/industries with the highest greatest upside and implied downside.

Momentum & Value Model

Our tactical “momentum and value” framework was backtested from January 1997-December 2004, and has been running live since January 2005. We calculate price momentum, earnings momentum and valuation for the S&P 500 GICS sectors and industries relative to the index beginning in January 1997. We exclude industries that have only one company or have less than five years of historical price data. For our backtest, we have used as a market benchmark the portfolio of equal-weighted S&P 500 industries that were eligible for the framework at a given point in time.

Price momentum

The price momentum of an industry is the change in the industry's relative price in the current month vs. three months ago, with relative price defined as the month-end industry price divided by the month-end index level of the S&P 500. Industries are assigned a price momentum rank from 1 to 10, with 10 being the strongest price momentum and 1 being the weakest. Sectors are assigned a price momentum rank from 1 to 11, with 11 being the strongest price momentum and 1 being the weakest.

Earnings momentum

The earnings momentum of an industry is the change in relative forecast EPS between the current month and three months ago. Relative EPS is the ratio of the 12-month rolling forward I/B/E/S consensus earnings forecast of a given industry divided by that of the S&P 500. Industries are assigned an earnings revision rank of 1 to 10, with 10 being the strongest earnings momentum and 1 being the weakest. Sectors are assigned an earnings revision rank of 1 to 11, with 11 being the strongest earnings momentum and 1 being the weakest.

Valuation

We calculate the earnings yield (E/P) of an industry as the ratio of current relative forward (consensus) EPS divided by current relative price. We then calculate the earnings yield relative to its historical average by dividing the current E/P by the average E/P for the industry since the framework's inception in January 1997. For industries introduced after the inception date, at least one year of data is required before an industry is eligible for a rank. Industries are assigned a valuation rank from 1 to 10, with 10 being the highest relative earnings yield (most inexpensive) and 1 being the lowest relative earnings yield (most expensive). Sectors are assigned a valuation rank from 1 to 11, with 11 being the highest relative earnings yield (most inexpensive) and 1 being the lowest relative earnings yield (most expensive). Current data is compared to this average using the following formula: $(\text{Current E/P} - \text{Historical Avg. E/P}) / \text{Abs}(\text{Historical Avg. E/P})$. We calculate both the current and historical average relative to the market because of P/E multiple expansion in the market, and use earnings yield (inverse of P/E) to accommodate industries which have negative aggregate earnings.



Combined rank

The combined rank of an industry is the sum of the three ranks from the price momentum, earnings momentum, and valuation factors above, with 30 ranking the best and 3 ranking the worst. For sectors, 33 ranks the best and 3 ranks the worst.

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.

Due to the nature of strategic analysis, the issuers or securities recommended or discussed in this report are not continuously followed. Accordingly, investors must regard this report as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or securities.

Due to the nature of quantitative analysis, the issuers or securities recommended or discussed in this report are not continuously followed. Accordingly, investors must regard this report as providing stand-alone analysis and should not expect continuing analysis or additional reports relating to such issuers and/or securities.

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

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.

This report may refer to fixed income securities or other financial instruments that may not be offered or sold in one or more states or jurisdictions, or to certain categories of investors, including retail investors. Readers of this report are advised that any discussion, recommendation or other mention of such instruments is not a solicitation or offer to transact in such instruments. Investors should contact their BofA Securities representative or Merrill Global Wealth Management financial advisor for information relating to such instruments. Recipients who are not institutional investors or market professionals should seek the advice of their independent financial advisor before considering information in this report in connection with any investment decision, or for a necessary explanation of its contents.

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

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

"BofA Securities" includes BofA Securities, Inc. ("BofA") 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:

BofA 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; 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 CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

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

General Investment Related Disclosures:

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

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

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

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

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

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

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

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

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 sustainability in this material is limited as discussed herein and is not intended to provide a comprehensive view on any sustainability claim with respect to any issuer or security.

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.

