

# Small/Mid Cap Factors: a PM's Guide

## Buy positive revisions, sell leverage

Small Cap

### 4Q results season so far: earnings matter

In a year where we expect profits growth to be a bigger driver of returns than multiple expansion, positive revisions and surprises have been rewarded so far this earnings season. Earnings Surprise, EPS Estimate Revision and Estimate Diffusion were all among the top long-short small cap factors we track in January, with Q1-Q5 spreads of 3.6ppt, 4.0ppt and 4.7ppt, respectively. We also saw positive spreads in mid caps. Margins continued to matter, where stocks with high or expanding margins outperformed bottom-quintile peers within the Russell 2000 by 5.7ppt and 3.1ppt last month (with the former among the top 5 long-short factors overall; Exhibit 1). This earnings season, small caps that have reported have beaten expectations by 10% (the largest beat of the three size segments) and have seen less negative guidance. Small cap profits growth continues to recover off 2Q23 lows; -10% YoY (vs. -14% in 3Q and -21% in 2Q).

### Momentum also worked in Jan.; leverage was penalized

Amid poor performance of the index in Jan. (eq. wtd. Russell 2000 -5.0%), 75% of the top quintile (long) factors we track outperformed. Momentum factors were the top long and long-short factors, led by our 30wk/75wk moving average factor. Quality factors also outperformed, while Risk attributes lagged most. And with uncertainty around the timing of Fed cuts, leverage (Net Debt/Market Cap) was the single worst-performing long-short factor last month (-5.9ppt) in a size segment where refinancing remains one of the key risks (~40% of Russell 2000 debt is short-term or floating rate).

### Regime Indicator says: possible shift back to Recovery...

With six of eight inputs improving, our team's US Regime Indicator (based on a 3m moving avg. of eight macro inputs) moved higher in Jan. (see [Quantitative Profiles](#)), potentially putting us back in the "Recovery" phase after a short-lived "Downturn" since late last year. We wait for a second month of improvement to confirm the new regime.

### ...supportive of SMID cap Value (but with a Quality tilt)

In Recoveries, Value factors tend to lead (Exhibit 6), where CFO/Price was the most consistent long- and long-short factor within the Russell 2000. Quality tends to outperform most in Downturns but has seen mixed results in Recoveries (50% hit rate both long vs. index and long-short) – however, given the elevated proportion of non-earners in the Russell 2000 today, we would stick with high quality stocks and SMEARNERS (SMID cap earners). See our [SMID cap theme screens](#) for ideas on Value stocks, SMEARNERS and stocks to hedge regime risk – where Cash Return strategies have outperformed within small caps in both Downturns and Recoveries historically. We also include a screen for stocks with refinancing risk.

### Screen of the month: Fundamental momentum

Given the alpha generated by fundamental earnings-based factors, we screen for small and mid cap stocks with the most positive ranks on our Earnings Surprise, Estimate Diffusion and Estimate Revision factors that are Buy-rated by our fundamental analysts.

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 21 to 23.**

12661522

Timestamp: 20 February 2024 09:10AM EST

20 February 2024

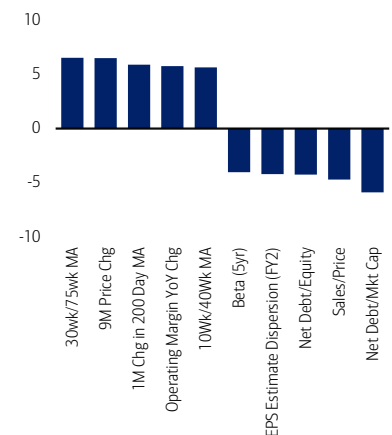
Small Cap Research  
United States

**Jill Carey Hall, CFA**  
Equity & Quant Strategist  
BofA  
+1 646 855 3327  
[jill.carey@bofa.com](mailto:jill.carey@bofa.com)

**Nicolas Woods**  
Equity & Quant Strategist  
BofA  
+1 646 556 4179  
[nicolas.woods\\_barron@bofa.com](mailto:nicolas.woods_barron@bofa.com)

#### Exhibit 1: Russell 2000 top 5/bottom 5 factors by Q1-Q5 spreads in Jan. (ppt)

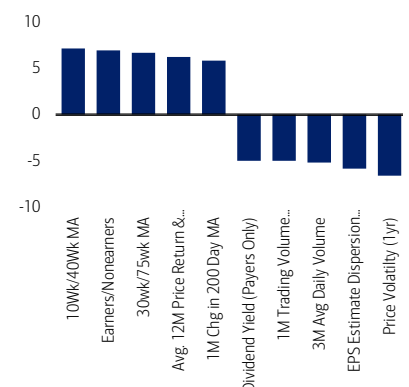
30wk/75wk MA best; Net Debt/Mkt Cap worst



Source: FactSet, BofA US Equity & Quant Strategy  
BofA GLOBAL RESEARCH

#### Exhibit 2: Russell Midcap top 5/bottom 5 factors by Q1-Q5 spreads in Jan. (ppt)

10Wk/40Wk MA best; Price Volatility (1yr) worst



Source: FactSet, BofA US Equity & Quant Strategy  
BofA GLOBAL RESEARCH

## Screens of the month: fundamental momentum

Below we screen for small and mid cap stocks (Russell 2000 and Russell MidCap) with the most positive ranks (top quintile) on our Earnings Surprise, Estimate Diffusion and Estimate Revision factors that are Buy-rated by our fundamental analysts. Liquidity metrics provided for reference. For complete definitions of our factors, see Appendix.

### Exhibit 3: Small & mid cap fundamental momentum screen (positive revisions and positive surprise)

Buy-rated small/mid-cap stocks ranking the top quintile on our Earnings Surprise, Estimate Revision and Estimate Diffusion factors

Ticker	Company	Sector	Industry	BofA Rating	Last Price	3m avg daily dollar volume (\$mn)	EPS Estimate Revision	Earnings Surprise	Estimate Diffusion	Mkt Cap (\$mn)
WING	Wingstop, Inc.	Consumer Discretionary	Hotels, Restaurants & Leisure	BUY	319.26	95	9%	6.6	25.4	9,391
DECK	Deckers Outdoor Corporation	Consumer Discretionary	Textiles, Apparel & Luxury Goods	BUY	862.98	243	6%	5.7	53.9	22,135
PRG	PROG Holdings, Inc.	Financials	Consumer Finance	BUY	31.11	13	13%	20.9	16.7	1,391
ACGL	Arch Capital Group Ltd.	Financials	Insurance	BUY	86.11	142	13%	4.0	52.9	32,145
RNR	RenaissanceRe Holdings Ltd.	Financials	Insurance	BUY	226.76	94	6%	10.3	44.9	11,949
EXAS	Exact Sciences Corporation	Health Care	Biotechnology	BUY	60.97	111	26%	6.4	21.6	11,024
DY	Dycom Industries, Inc.	Industrials	Construction & Engineering	BUY	115.26	28	19%	12.6	28.9	3,381
NXT	Nextracker Inc. Class A	Industrials	Electrical Equipment	BUY	60.31	165	29%	9.4	48.6	3,746
VRT	Vertiv Holdings Co. Class A	Industrials	Electrical Equipment	BUY	62.97	289	8%	9.9	23.6	24,014
MDB	MongoDB, Inc. Class A	Information Technology	It Services	BUY	465.06	655	24%	6.3	22.0	33,465
IDCC	InterDigital, Inc.	Information Technology	Software	BUY	117.19	37	24%	21.7	40.0	2,998
NTNX	Nutanix, Inc. Class A	Information Technology	Software	BUY	58.34	108	10%	4.6	27.3	14,180
PD	PagerDuty, Inc.	Information Technology	Software	BUY	23.86	40	13%	4.3	22.5	2,192
S	SentinelOne, Inc. Class A	Information Technology	Software	BUY	29.52	149	24%	10.4	19.3	8,794
ZS	Zscaler, Inc.	Information Technology	Software	BUY	252.75	435	10%	20.1	25.2	37,486
WDC	Western Digital Corporation	Information Technology	Technology Hardware, Storage & Peripherals	BUY	54.00	317	18%	6.2	56.3	17,604

**Source:** FactSet, BofA US Equity & US Quant Strategy Note: This screen is not a recommended list either individually or as a group of stocks. Investors should consider the fundamentals of the companies and their own individual circumstances/objectives before making any investment decisions. Prices as of close 2/16/24

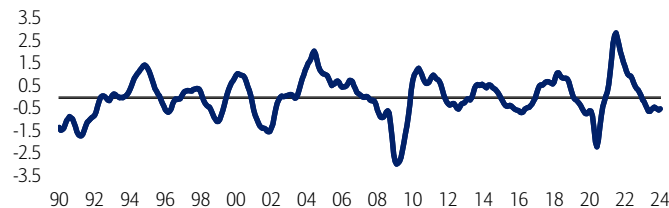
BofA GLOBAL RESEARCH

# Style performance in US regimes

Our team's US Regime Indicator (see [Quantitative Profiles](#) report and the Appendix of this report for details) aggregates top-down variables that capture earnings and economic growth expectations, inflation, credit conditions, and other variables to yield four phases (charts below). The indicator (which is based on smoothed 3mo. data) shifted higher last month, potentially into its first month of a Recovery (we wait for two consecutive months to call a new phase). To complement our work within large caps, we analyzed small-cap style performance during each phase of the cycle, below. Value has typically led in Recovery phases while Quality outperforms in Downturns; Cash Return strategies typically outperform in both phases.

## Exhibit 4: US Regime Indicator advanced in January

US Regime Indicator, 1/970-1/2024

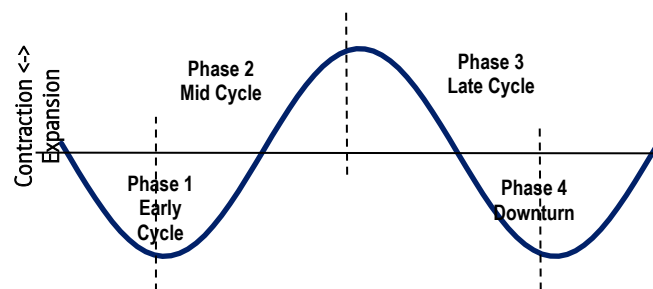


**Source:** BofA US Equity & US Quant Strategy, Refinitiv, ICE Data Indices, LLC, ISM Federal Reserve, Bureau of Labor Statistics. See Appendix for Methodology. Disclaimer: The indicator identified as US Regime Indicator above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise 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

## Exhibit 5: Whipsaw risk: Value/Small/Risk outperforms in Recovery, Quality/Low Risk/Large outperforms in Downturns

US Regimes – a heuristic



**Source:** BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

## Exhibit 6: Value has historically performed best in Early Cycle

Small-cap factor group performance during phases of our US Regime Indicator (January 1990-present; back-tested)

### Quintile 1 vs. Index

		Valuation	Quality	Liquidity	Growth	Risk	Momentum	Leverage	Cash Deployment	Size
Early Cycle	Median	12%	1%	-1%	2%	1%	0%	-3%	2%	-3%
	Hit Rate	88%	50%	50%	63%	63%	50%	38%	75%	25%
Mid Cycle	Median	4%	2%	2%	4%	5%	2%	1%	-4%	-2%
	Hit Rate	63%	75%	63%	75%	75%	75%	88%	25%	50%
Late Cycle	Median	0%	7%	0%	0%	-10%	0%	1%	6%	3%
	Hit Rate	44%	100%	56%	56%	11%	78%	67%	78%	89%
Recession	Median	-1%	3%	1%	0%	-7%	5%	-2%	4%	3%
	Hit Rate	43%	71%	57%	43%	29%	71%	43%	71%	71%

### Quintile 5 vs. Index

		Valuation	Quality	Liquidity	Growth	Risk	Momentum	Leverage	Cash Deployment	Size
Early Cycle	Median	-9%	-7%	-6%	-1%	-3%	4%	-2%	-2%	-2%
	Hit Rate	38%	38%	25%	38%	38%	50%	50%	25%	50%
Mid Cycle	Median	1%	3%	-6%	0%	-6%	-3%	2%	0%	-2%
	Hit Rate	50%	63%	0%	38%	13%	13%	63%	38%	25%
Late Cycle	Median	-9%	-13%	-2%	-7%	8%	-12%	-5%	-1%	-9%
	Hit Rate	11%	0%	22%	11%	67%	0%	33%	22%	0%
Recession	Median	-3%	-7%	-4%	-4%	6%	-10%	-4%	-3%	-5%
	Hit Rate	43%	14%	14%	14%	86%	0%	29%	14%	14%

### Quintile 1-Quintile 5

		Valuation	Quality	Liquidity	Growth	Risk	Momentum	Leverage	Cash Deployment	Size
Early Cycle	Median	20%	4%	5%	4%	4%	-6%	5%	6%	-1%
	Hit Rate	88%	50%	75%	63%	63%	50%	75%	75%	50%
Mid Cycle	Median	4%	-4%	8%	6%	12%	7%	-2%	-6%	3%
	Hit Rate	50%	38%	88%	75%	75%	88%	38%	13%	63%
Late Cycle	Median	13%	19%	2%	7%	-19%	13%	2%	8%	17%
	Hit Rate	89%	100%	56%	100%	11%	100%	89%	78%	100%
Recession	Median	2%	7%	3%	7%	-12%	15%	2%	7%	10%
	Hit Rate	71%	86%	71%	86%	14%	100%	57%	86%	71%

Note: Hit rate = % of periods in which style outperformed the equal-weighted Russell 2000. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000. **Source:** FactSet financial data and analytics, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH



## Early Cycle factor playbook for small-cap investors

We show the best- and worst-performing factors – both long (Q1) and long-short (Q1-Q5) – during Recovery/Early Cycle periods of our US Regime Indicator. Value factors, such as CFO/P (LTM) and Sales/Price, were among the best long-short and long factors; EBITDA/EV was also a top long factor. Leverage and Short Interest factors fared poorly.

### Exhibit 7: Top small-cap long factors (Q1 versus index) in Early Cycle (Back-tested)

Annualized performance (Q1-Russell 2000 equal-wtd index) and hit rates of top 15 Russell 2000 factors during Early Cycle regimes since 1990

#### Q1 vs. Index

Factor	Category	Avg	Median	Hit Rate
CFO/P (LTM)	Valuation	29%	19%	88%
EBITDA/EV	Valuation	17%	11%	88%
Sales/EV	Valuation	17%	12%	88%
Book/Price	Valuation	16%	6%	88%
FCF Yield	Valuation	16%	11%	88%
Forward E/P	Valuation	16%	10%	88%
Trailing E/P	Valuation	11%	9%	88%
FCF/EV	Valuation	10%	9%	88%
FY1/FY0 Growth	Growth	5%	3%	88%
Sales/Price	Valuation	28%	15%	75%
Net Debt/Mkt Cap	Leverage	20%	13%	75%
Cumulative trading volume (-1m)	Liquidity	7%	5%	75%
3M Avg Daily Volume	Liquidity	6%	2%	75%
Dividends: Nonpayer-Payer	Cash Deployment	1%	2%	75%
1M Change 200 Day MA	Momentum	-4%	4%	75%

Source: FactSet, BofA US Equity & US Quant Strategy. Avg = average.

Note: Hit rate = % of periods in which Q1 outperformed Q5. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000.

BofA GLOBAL RESEARCH

### Exhibit 8: Top small-cap long-short factors (Q1-Q5) in Early Cycle (Back-tested)

Annualized performance (Q1-Q5 spreads and hit rates) of top 15 Russell 2000 factors during Early Cycle regimes since 1990

#### Q1-Q5

Factor	Category	Avg	Median	Hit Rate
CFO/P (LTM)	Valuation	34%	43%	88%
Sales/Price	Valuation	33%	30%	88%
Book/Price	Valuation	20%	21%	88%
EBITDA/EV	Valuation	18%	24%	88%
FCF Yield	Valuation	11%	24%	88%
Sales/EV	Valuation	21%	25%	75%
Cumulative trading volume (-1m)	Liquidity	20%	14%	75%
Net Debt/Mkt Cap	Leverage	19%	27%	75%
3M Avg Daily Volume	Liquidity	16%	11%	75%
Trailing EG/P	GARP	16%	13%	75%
5Yr Beta	Risk	15%	1%	75%
FCF/EV	Valuation	9%	11%	75%
Net Debt/Equity	Leverage	7%	13%	75%
Forward E/P	Valuation	6%	17%	75%
Share Repurchase	Cash Deployment	6%	16%	75%

Source: FactSet, BofA US Equity & US Quant Strategy

Note: Hit rate = % of periods in which Q1 outperformed Q5. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000.

BofA GLOBAL RESEARCH

### Exhibit 9: Bottom small cap long factors (Q1 versus index) in Early Cycle (Back-tested)

Annualized performance (Q1-Russell 2000 equal-wtd index) and hit rates of bottom 15 Russell 2000 factors during Early Cycle regimes since 1990

Factor	Category	Avg	Median	Hit Rate
SI Ratio	Miscellaneous	-12%	-10%	0%
Net Debt/EBITDA Adj.	Leverage	-12%	-12%	0%
Net Debt/EBITDA	Leverage	-9%	-9%	0%
Forward PEG	GARP	-8%	-5%	13%
3M Avg Daily \$ Volume	Liquidity	-8%	-8%	13%
Short interest 12m z-score	Miscellaneous	-8%	-8%	14%
Market Cap	Liquidity	-7%	-2%	25%
IBES Mean LT Growth	Growth	-3%	-7%	25%
Closing Price	Miscellaneous	-7%	-5%	38%
12M Price Change	Momentum	-7%	0%	38%
YoY Change in Trailing EPS	Growth	-5%	-3%	38%
Operating Margin Expansion	Growth	-4%	-5%	38%
Return on Avg Assets LTM	Quality	-4%	-2%	38%
3M Price Chg	Momentum	-3%	-2%	38%
ROE	Quality	-1%	-4%	38%

Source: FactSet, BofA US Equity & US Quant Strategy

Note: Hit rate = % of periods in which Q1 outperformed Q5. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000.

BofA GLOBAL RESEARCH

### Exhibit 10: Bottom small cap long-short factors (Q1-Q5) in Early Cycle (Back-tested)

Annualized performance (Q1-Q5 spreads and hit rates) of bottom 15 Russell 2000 factors during Early Cycle regimes since 1990

Factor	Category	Avg	Median	Hit Rate
SI Ratio	Miscellaneous	-22%	-17%	0%
Forward PEG	GARP	-22%	-10%	13%
Net Debt/EBITDA	Leverage	-20%	-14%	13%
Net Debt/EBITDA Adj.	Leverage	-14%	-12%	13%
Short interest 12m z-score	Miscellaneous	-14%	-13%	14%
IBES Mean LT Growth	Growth	-8%	-9%	25%
Trailing 5 Year Sales Growth	Growth	-5%	-10%	25%
Trailing 5 Year EPS Growth	Growth	0%	-4%	25%
ROE	Quality	-10%	-3%	38%
3M Avg Daily \$ Volume	Liquidity	-10%	-11%	38%
1Yr Daily Price Volatility	Risk	14%	-3%	38%
Earnings Surprise	Growth	-4%	-3%	43%
12M Price Change	Momentum	-26%	-4%	50%
9M price change	Momentum	-24%	-7%	50%
Avg 1m & 12m price return rank	Momentum	-23%	-10%	50%

Source: FactSet, BofA US Equity & US Quant Strategy

Note: Hit rate = % of periods in which Q1 outperformed Q5. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000.

BofA GLOBAL RESEARCH

## Downturn factor playbook for small-cap investors

Below we also provide the best- and worst-performing factors – both long (Q1) and long-short (Q1-Q5) – during Downturn/Recession regimes of our US Regime Indicator. FCF/EV and quality factors, such as FCF ROA and Return on Capital, were among the best long-short as well as long factors, and Share Repurchase was additionally a top long factor. Risk factors fared poorly overall.

### Exhibit 11: Top small-cap long factors (Q1 versus index) in Downturns (Back-tested)

Annualized performance (Q1-Russell 2000 equal-weighted index) and hit rates of top 15 Russell 2000 factors during Downturn regimes since 1990

Q1	Category	Avg	Median	Hit Rate
Avg 1m price reversal & 12m price return rank	Momentum	7%	4%	100%
Return on Capital	Quality	6%	8%	100%
Share Repurchase	Cash Deployment	6%	3%	100%
10Wk/40Wk MA	Momentum	5%	4%	100%
FCF/EV	Valuation	9%	4%	83%
FCF ROA	Quality	7%	8%	83%
Cash Flow ROIC	Quality	6%	5%	83%
Dividend Yield (Payers Only)	Cash Deployment	6%	2%	83%
Estimate Diffusion	Growth	5%	6%	83%
Dividends: Nonpayer-Payer	Cash Deployment	5%	3%	83%
Dividend Growth	Cash Deployment	5%	3%	83%
1M Change 200 Day MA	Momentum	4%	2%	83%
Cumulative trading volume (-1m)	Liquidity	4%	3%	83%
Earners/Nonearners	Quality	3%	2%	83%
30wk/75wk MA	Momentum	3%	2%	83%

Source: FactSet, BofA US Equity & US Quant Strategy. Avg = average.

Note: Hit rate = % of periods in which Q1 outperformed Q5. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000.

BofA GLOBAL RESEARCH

### Exhibit 12: Top small-cap long-short factors (Q1-Q5) in Downturns (Back-tested)

Annualized performance (Q1-Q5 spreads and hit rates) of top 15 Russell 2000 factors during Downturn regimes since 1990

Q1-Q5	Category	Avg	Median	Hit Rate
FCF/EV	Valuation	23%	18%	100%
FCF ROA	Quality	22%	21%	100%
Return on Capital	Quality	21%	16%	100%
Avg 1m price reversal & 12m price return rank	Momentum	19%	11%	100%
10Wk/40Wk MA	Momentum	18%	19%	100%
Cash Flow ROIC	Quality	18%	13%	100%
1M Change 200 Day MA	Momentum	18%	17%	100%
Return on Avg Assets LTM	Quality	16%	10%	100%
30wk/75wk MA	Momentum	16%	16%	100%
Share Repurchase	Cash Deployment	15%	7%	100%
9M price change	Momentum	15%	17%	100%
12M Price Change	Momentum	14%	15%	100%
5Wk/30Wk MA	Momentum	13%	16%	100%
FCF Yield	Valuation	21%	16%	83%
Forward E/P	Valuation	19%	7%	83%

Source: FactSet, BofA US Equity & US Quant Strategy

Note: Hit rate = % of periods in which Q1 outperformed Q5. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000.

BofA GLOBAL RESEARCH

### Exhibit 13: Bottom small cap long factors (Q1 versus index) in Downturns (Back-tested)

Annualized performance (Q1-Russell 2000 equal-weighted index) and hit rates of bottom 15 Russell 2000 factors during Downturn regimes since 1990

Q1	Category	Avg	Median	Hit Rate
EPS estimate dispersion (FY2)	Risk	-10%	-8%	0%
FY1 EPS Dispersion	Risk	-9%	-8%	0%
FY2/FY1 Growth	Growth	-8%	-7%	0%
YoY Change in SI Ratio	Miscellaneous	-6%	-6%	0%
Foreign Sales (%) - avail, 0=Q5	Miscellaneous	-6%	-5%	0%
SI Ratio	Miscellaneous	-6%	-5%	0%
Short interest 12m z-score	Miscellaneous	-4%	-3%	0%
1Yr Daily Price Volatility	Risk	-16%	-12%	17%
YoY Change in Trailing Sales	Growth	-10%	-7%	17%
IBES Mean LT Growth	Growth	-7%	-2%	17%
YoY Change in Trailing FCF	Growth	-5%	-5%	17%
Operating Margin Expansion	Growth	-5%	-4%	17%
FY2/FY0 Growth	Growth	-4%	-3%	17%
Cash/Mkt Cap	Quality	-3%	-2%	17%
Earning Variability (5yr)	Risk	-3%	-3%	17%

Source: FactSet, BofA US Equity & US Quant Strategy

Note: Hit rate = % of periods in which Q1 outperformed Q5. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000.

BofA GLOBAL RESEARCH

### Exhibit 14: Bottom small cap long-short factors (Q1-Q5) in Downturns (Back-tested)

Annualized performance (Q1-Q5 spreads and hit rates) of bottom 15 Russell 2000 factors during Downturn regimes since 1990

Q1-Q5	Category	Avg	Median	Hit Rate
EPS estimate dispersion (FY2)	Risk	-17%	-15%	0%
FY1 EPS Dispersion	Risk	-15%	-14%	0%
YoY Change in SI Ratio	Miscellaneous	-13%	-13%	0%
SI Ratio	Miscellaneous	-13%	-13%	0%
5Yr EPS Stability	Risk	-10%	-11%	0%
Short interest 12m z-score	Miscellaneous	-10%	-6%	0%
FY2/FY1 Growth	Growth	-10%	-10%	0%
Earning Variability (5yr)	Risk	-9%	-9%	0%
Foreign Sales (%) - avail, 0=Q5	Miscellaneous	-8%	-6%	0%
1Yr Daily Price Volatility	Risk	-26%	-24%	17%
5Yr Beta	Risk	-12%	-9%	17%
YoY Change in Trailing FCF	Growth	-6%	-4%	17%
Trailing EG/P	GARP	0%	-5%	17%
1M Price Chg	Momentum	-11%	-2%	33%
IBES Mean LT Growth	Growth	-10%	-4%	33%

Source: FactSet, BofA US Equity & US Quant Strategy

Note: Hit rate = % of periods in which Q1 outperformed Q5. For complete definitions of our factors, please see the Appendix. Back-tested performance is hypothetical in nature and reflects application of the screen and is not intended to be indicative of future performance. Back-tested performance here is the annualized performance during each regime of the US Regime Indicator from January 1990 through the present, based on our top quintile factors of the Russell 2000.

BofA GLOBAL RESEARCH

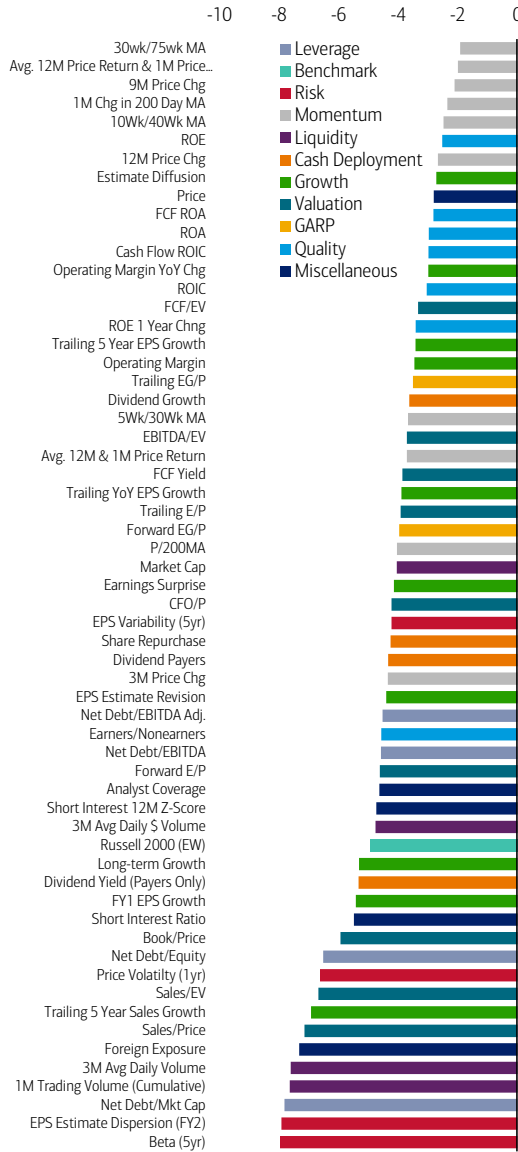


# Small cap factor performance

## Last month

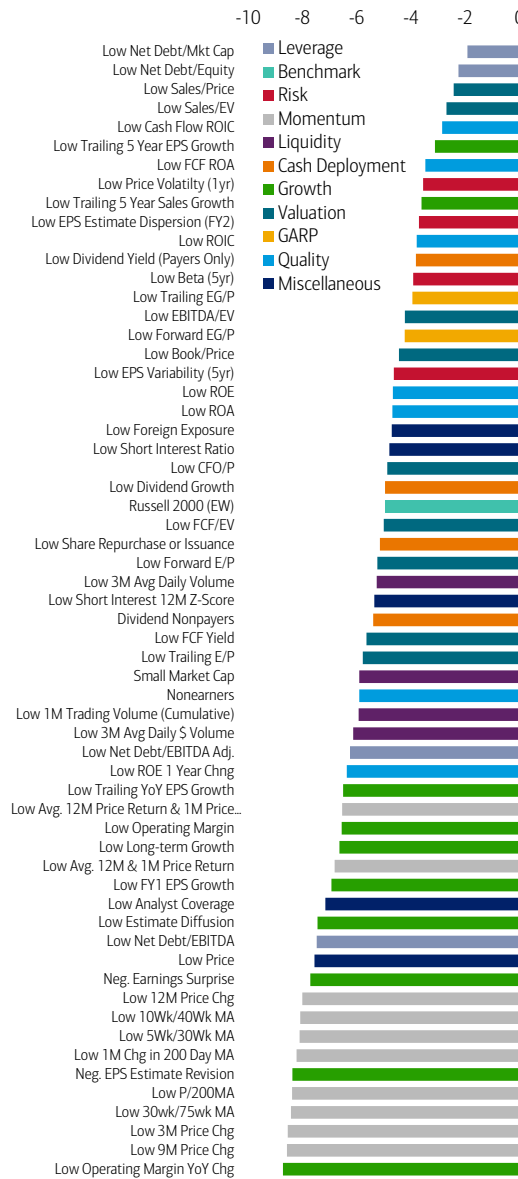
**Exhibit 15: Q1 total returns (%) – 1m (1/31/24)**

**Best:** 30wk/75wk MA **Worst:** Beta (5yr)



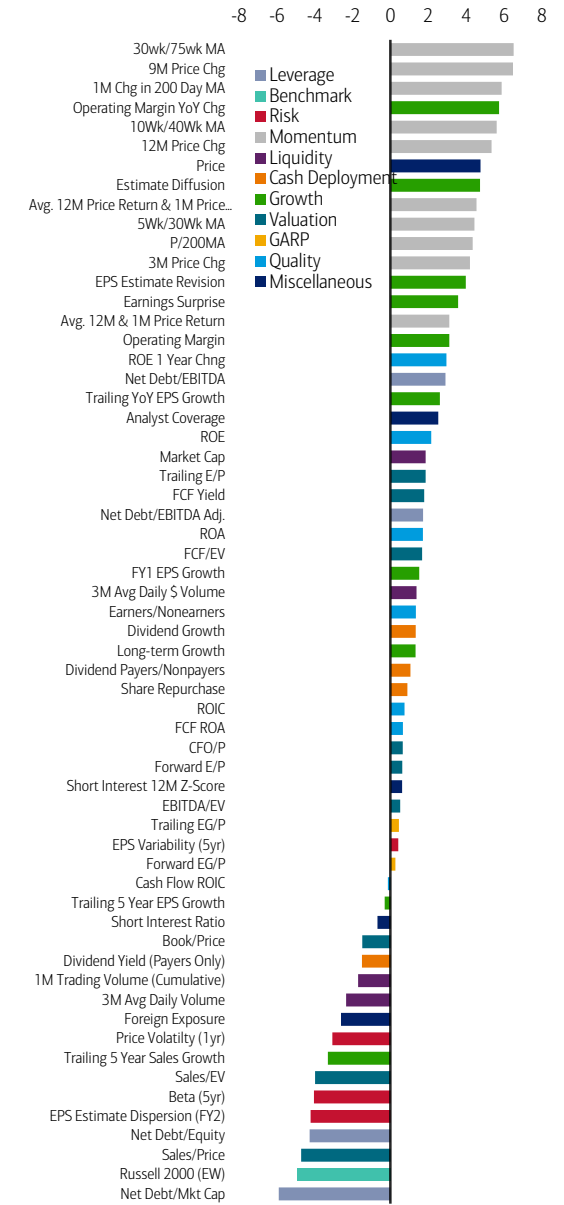
**Exhibit 16: Q5 total returns (%) – 1m (1/31/24)**

**Best:** Low Net Debt/Mkt Cap **Worst:** Low Operating Margin YoY Chg



**Exhibit 17: Q1-Q5 total returns (%) – 1m (1/31/24)**

**Best:** 30wk/75wk MA **Worst:** Net Debt/Mkt Cap



Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

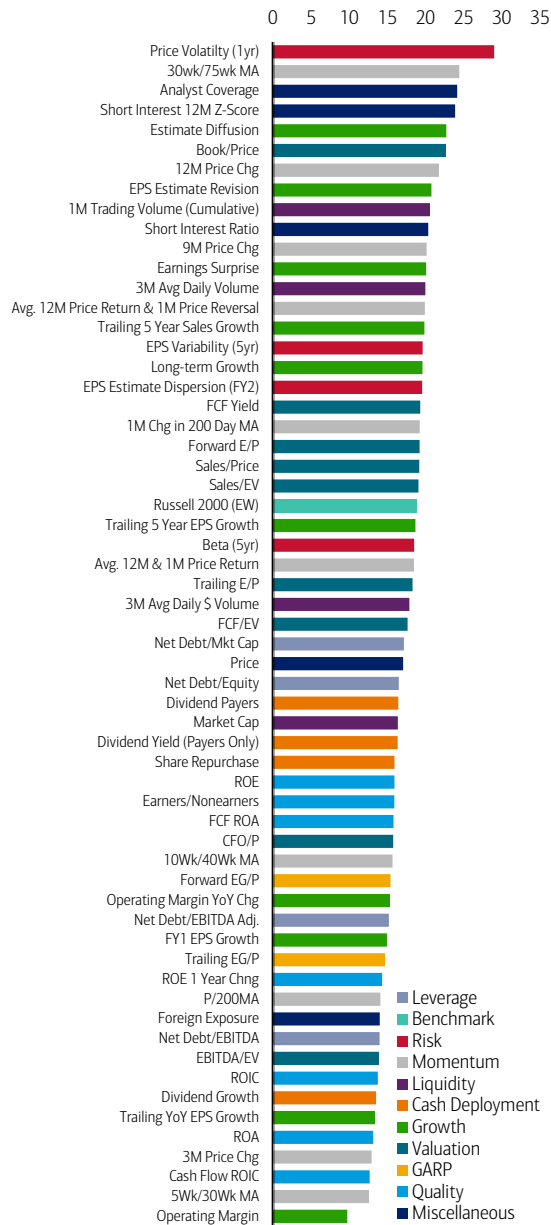




### 3-month (3m) factor performance

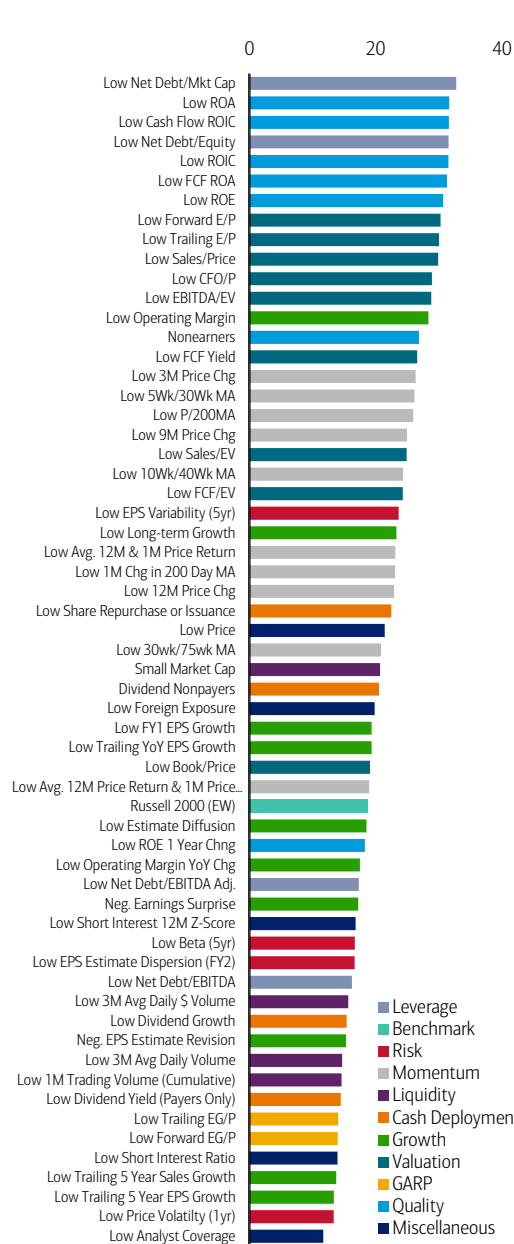
**Exhibit 18: Q1 total returns (%) – 3m (1/31/24)**

**Best:** Price Volatility (1yr) **Worst:** Operating Margin



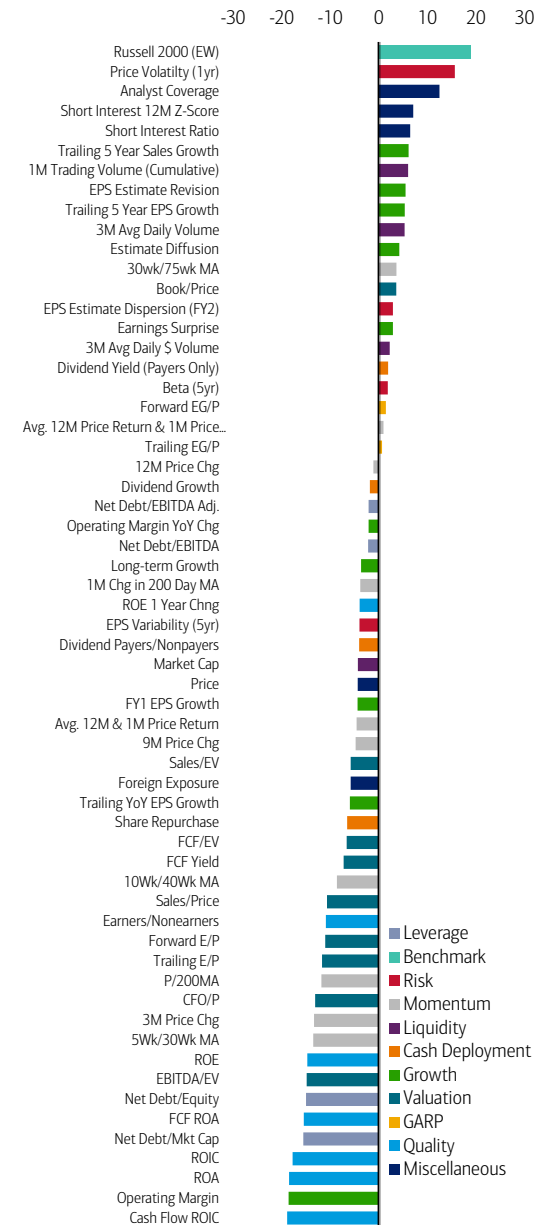
**Exhibit 19: Q5 total returns (%) – 3m (1/31/24)**

**Best:** Low Net Debt/Mkt Cap **Worst:** Low Analyst Coverage



**Exhibit 20: Q1-Q5 total returns (%) – 3m (1/31/24)**

**Best:** Russell 2000 (EW) **Worst:** Cash Flow ROIC



Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

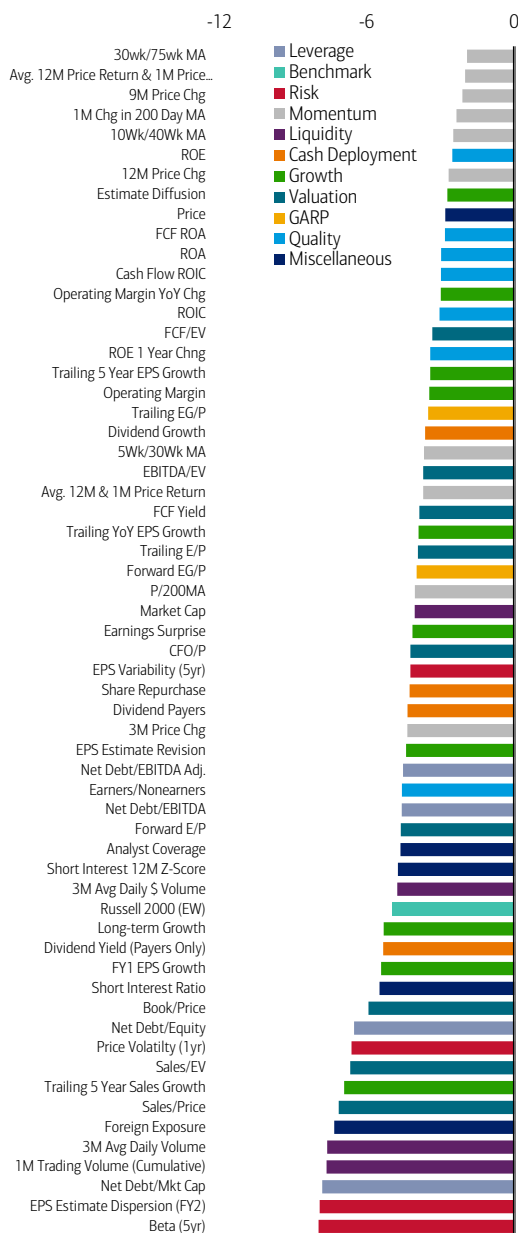
Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

## YTD factor performance

**Exhibit 21: Q1 total returns (%) – YTD (1/31/24)**

**Best:** 30wk/75wk MA **Worst:** Beta (5yr)

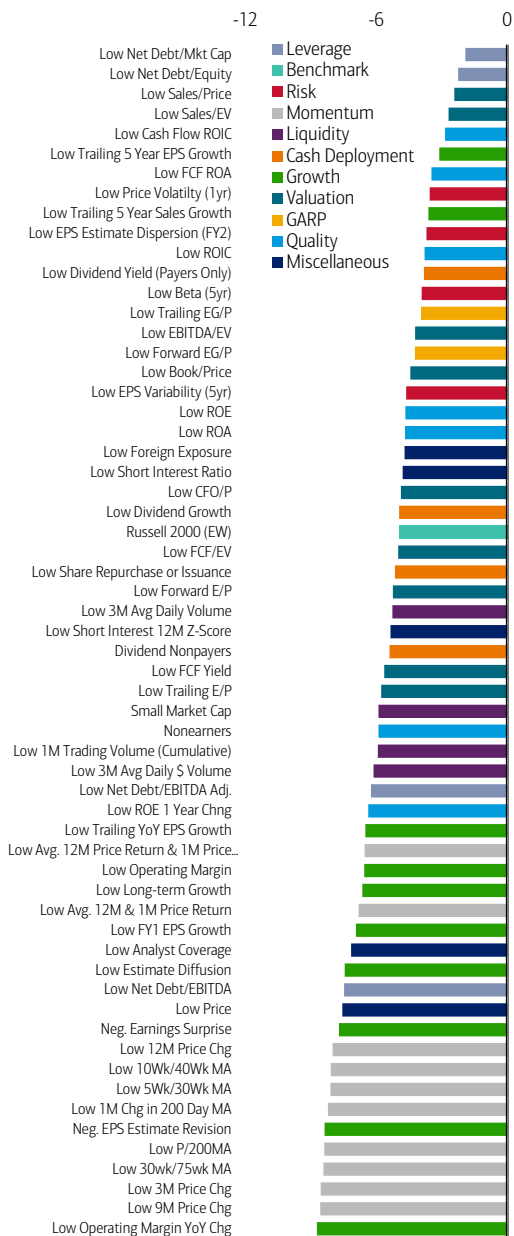


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

**Exhibit 22: Q5 total returns (%) – YTD (1/31/24)**

**Best:** Low Net Debt/Mkt Cap **Worst:** Low Operating Margin YoY Chg

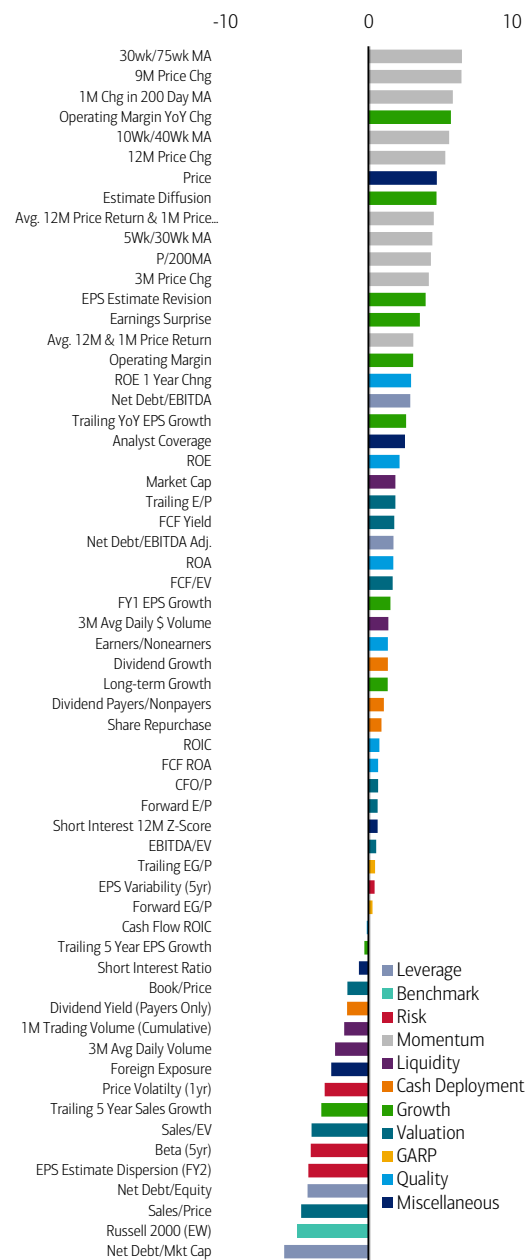


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

**Exhibit 23: Q1-Q5 total returns (%) – YTD (1/31/24)**

**Best:** 30wk/75wk MA **Worst:** Net Debt/Mkt Cap



Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH



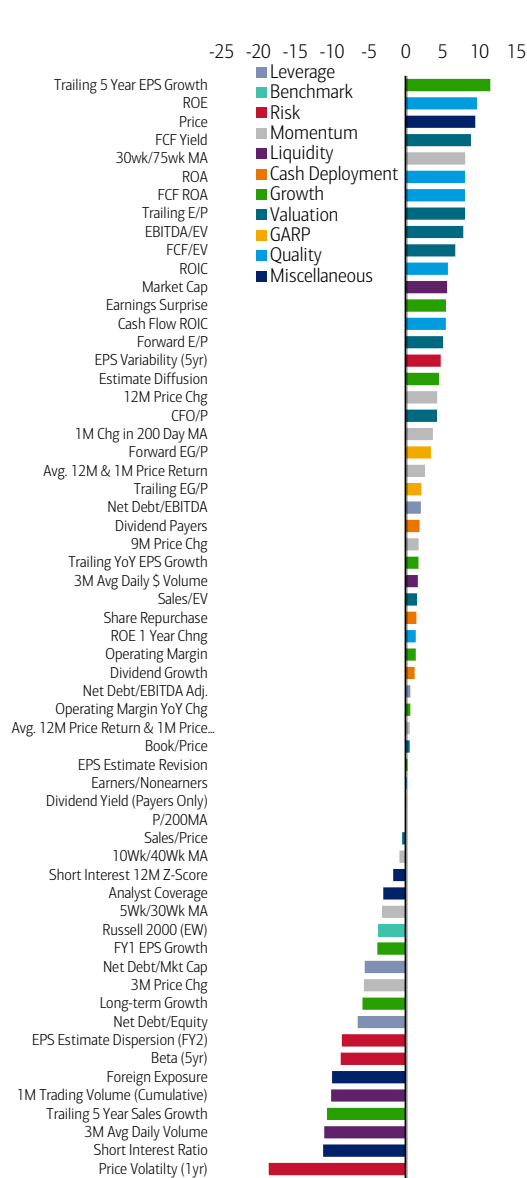




## 12-month (12m) factor performance

### Exhibit 24: Q1 total returns (%) – 12m (1/31/24)

**Best:** Trailing 5 Year EPS Growth **Worst:** Price Volatility (1yr)

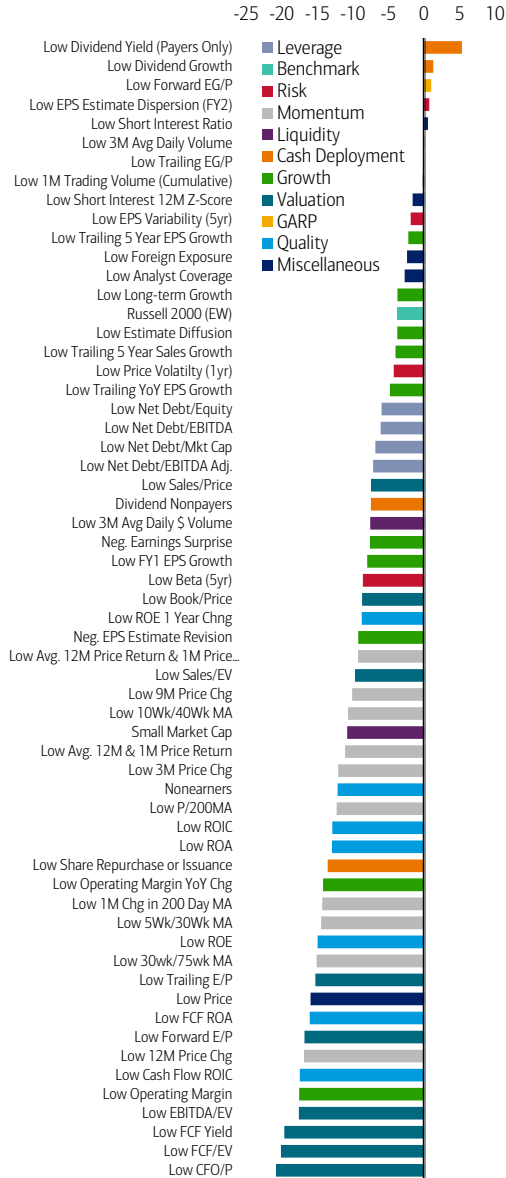


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

### Exhibit 25: Q5 total returns (%) – 12m (1/31/24)

**Best:** Low Dividend Yield (Payers Only) **Worst:** Low CFO/P

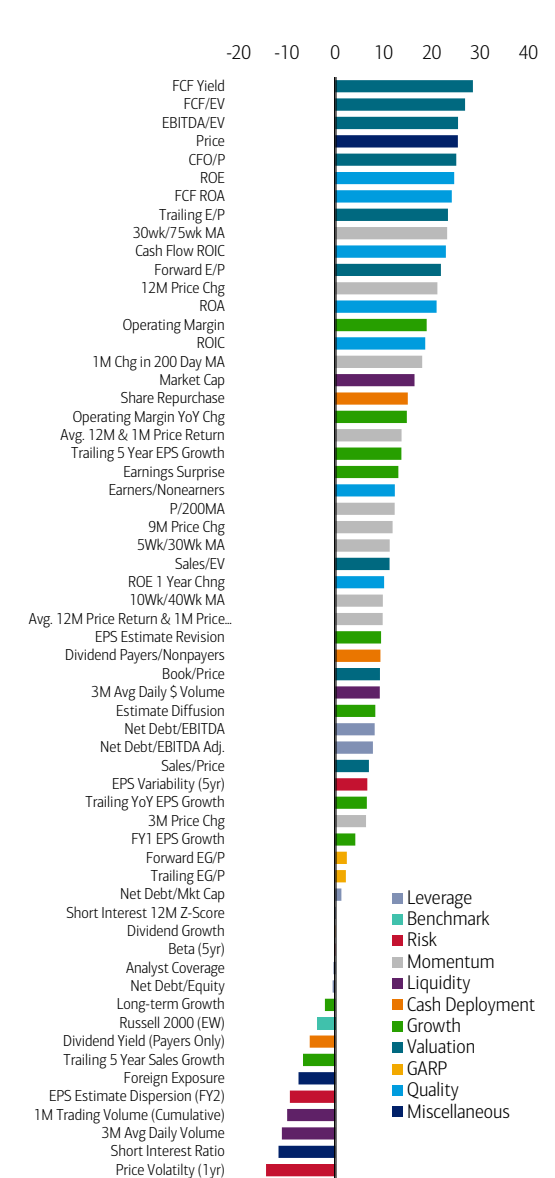


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

### Exhibit 26: Q1-Q5 total returns (%) – 12m (1/31/24)

**Best:** FCF Yield **Worst:** Price Volatility



Source: FactSet, BofA US Equity & US Quant Strategy

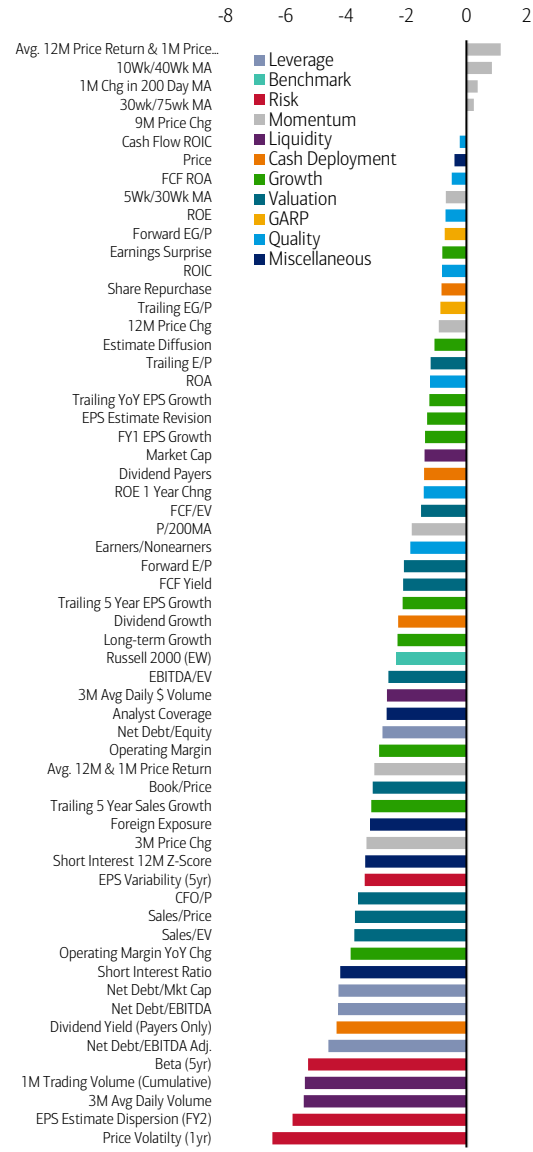
BofA GLOBAL RESEARCH

# Mid-cap factor performance

## Last month

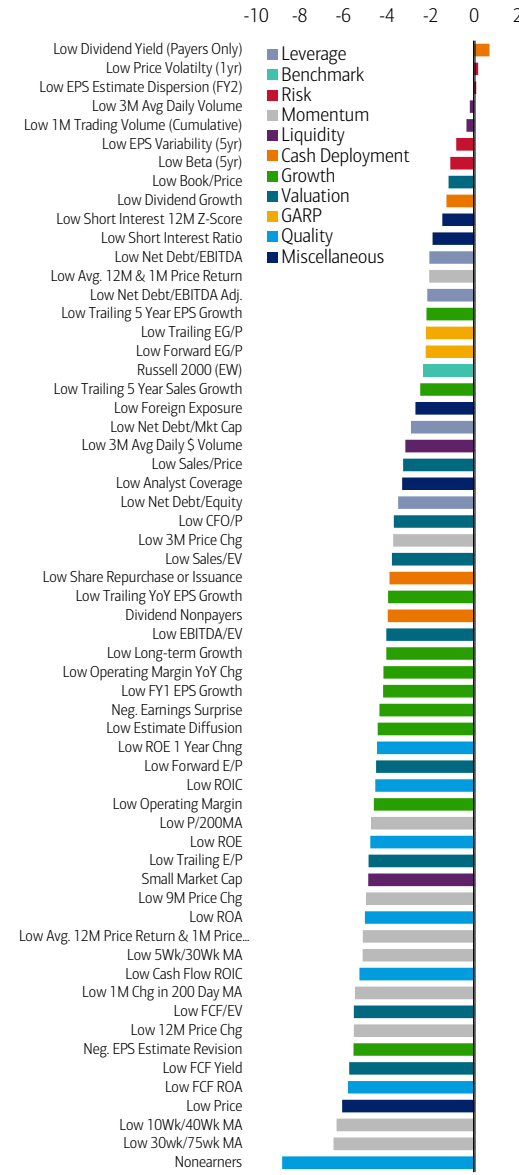
### Exhibit 27: Q1 total returns (%) – 1m (1/31/24)

**Best:** Avg. 12M Price Returns & 1M Price Reversal **Worst:** Price Volatility (1yr)



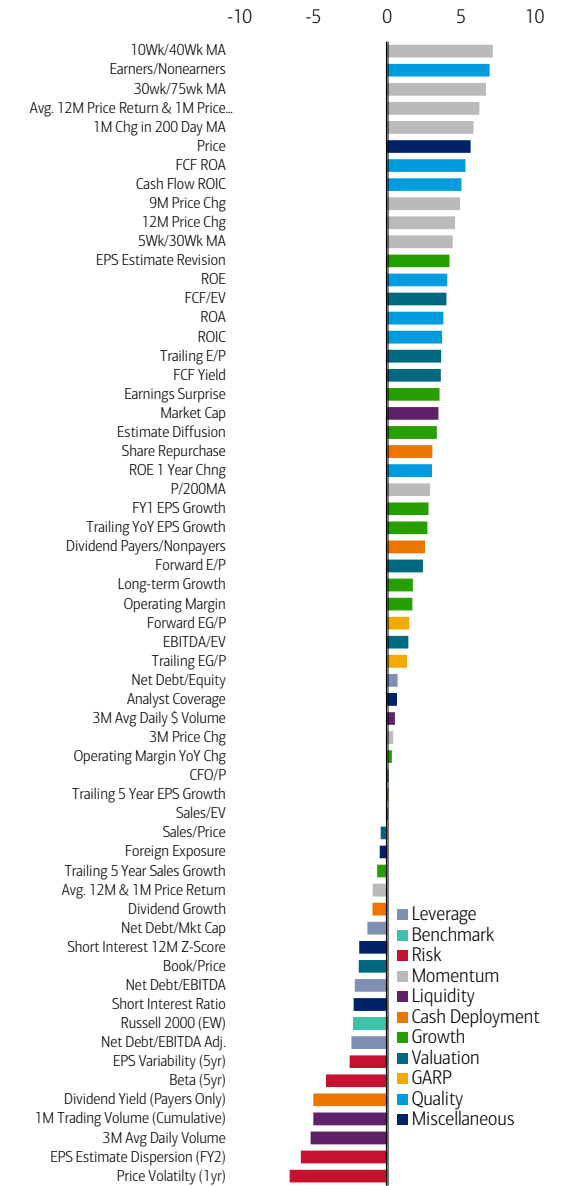
### Exhibit 28: Q5 total returns (%) – 1m (1/31/24)

**Best:** Low Dividend Yield (Payers only) **Worst:** Nonearners



### Exhibit 29: Q1-Q5 total returns (%) – 1m (1/31/24)

**Best:** 10Wk/40Wk MA Worst: Price Volatility (1yr)



Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Source: FactSet, BofA US Equity & US Quant Strategy

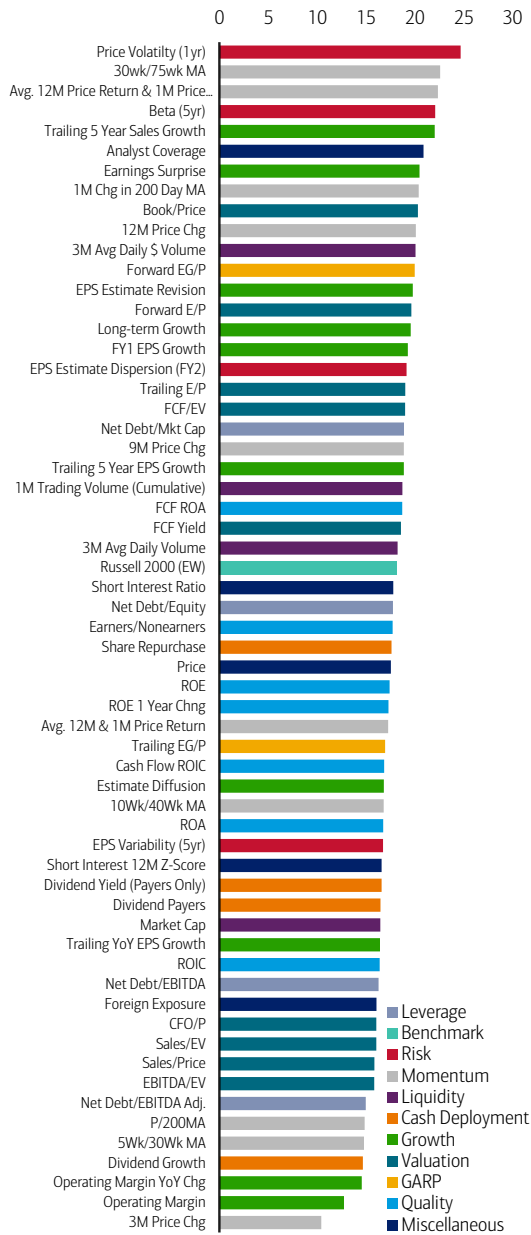
BofA GLOBAL RESEARCH



## 3m factor performance

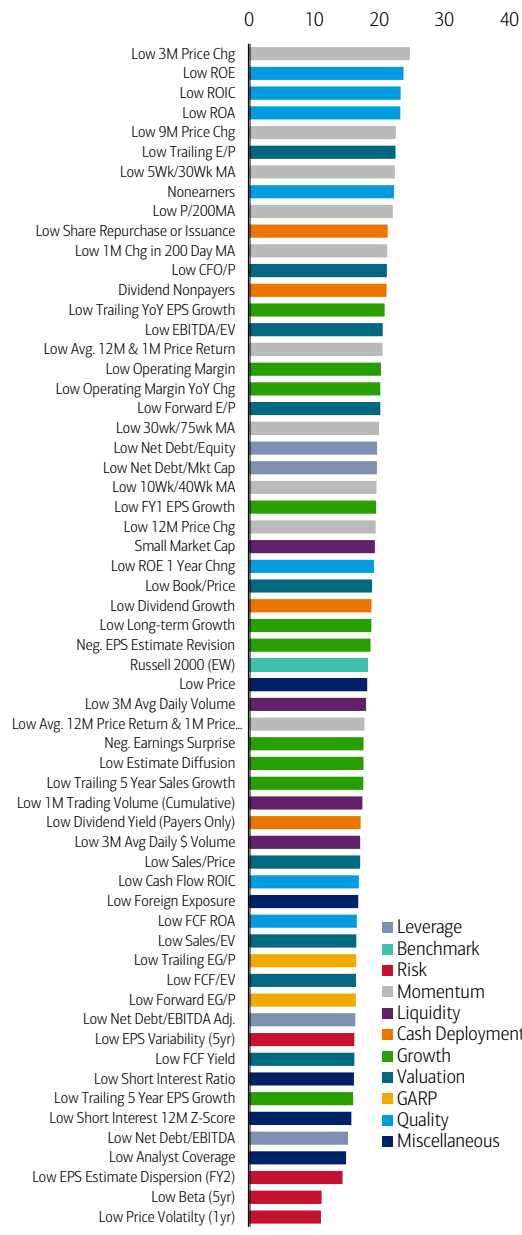
**Exhibit 30: Q1 total returns (%) – 3m (1/31/24)**

**Best:** Price Volatility (1yr) **Worst:** 3M Price Change



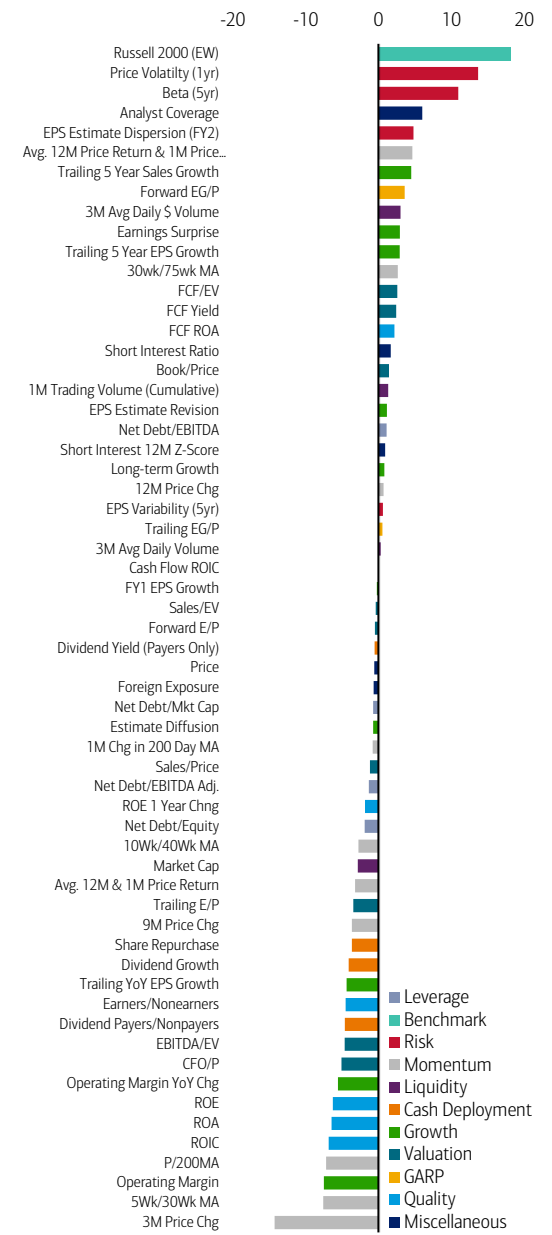
**Exhibit 31: Q5 total returns (%) – 3m (1/31/24)**

**Best:** Low 3M Price Chg **Worst:** Low Price Volatility (1yr)



**Exhibit 32: Q1-Q5 total returns (%) – 3m (1/31/24)**

**Best:** Russell 2000 (EW) **Worst:** 3M Price Chg



Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

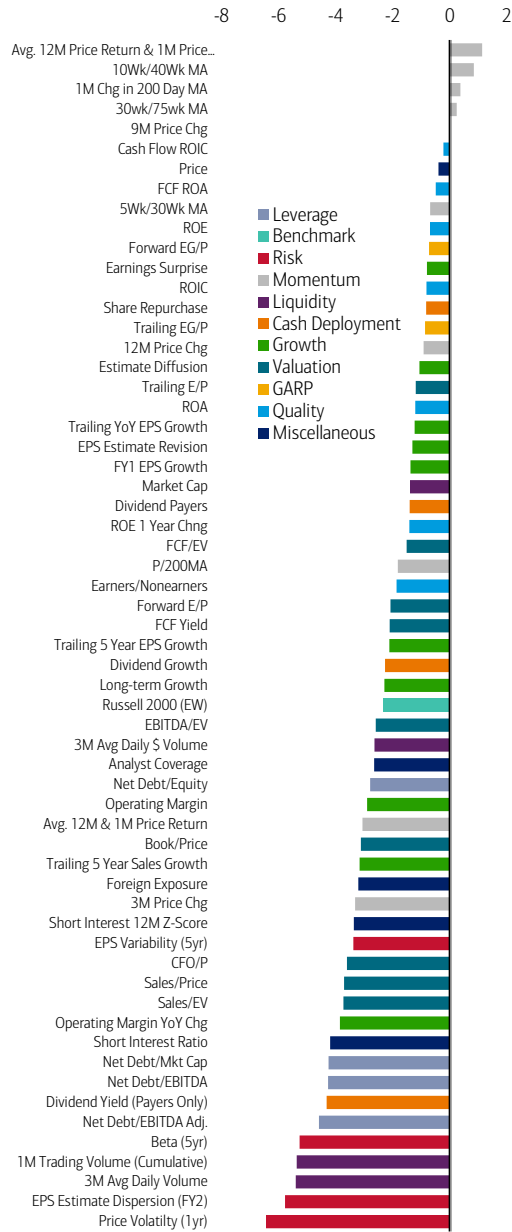
Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

## YTD factor performance

### Exhibit 33: Q1 total returns (%) – YTD (1/31/24)

**Best:** Avg. 12M Price Return & 1M Price Reversal **Worst:** Price Volatility (1yr)

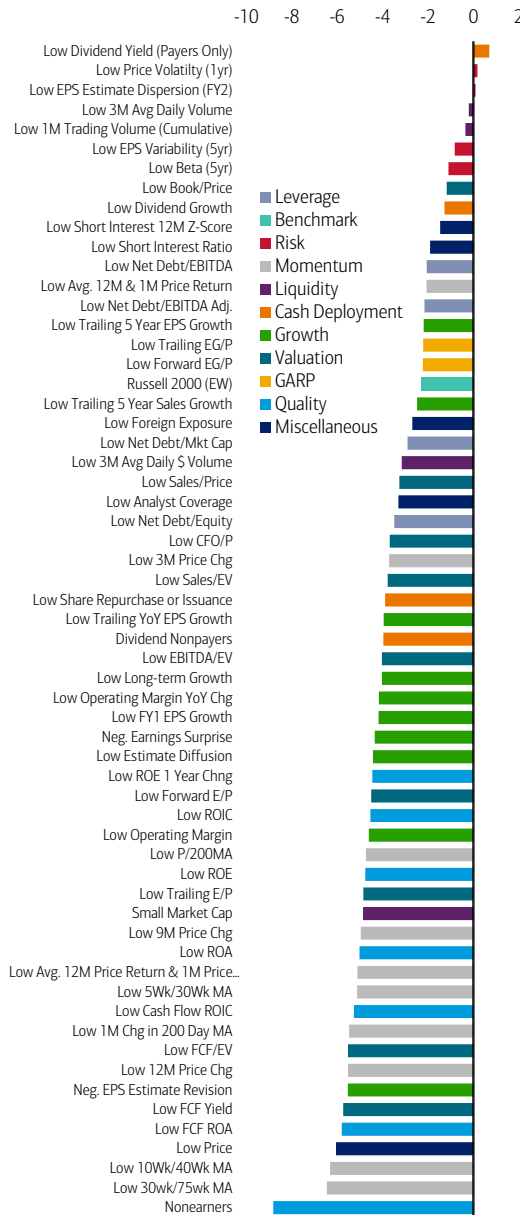


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

### Exhibit 34: Q5 total returns (%) – YTD (1/31/24)

**Best:** Low Dividend Yield (Payers Only) **Worst:** Nonearners

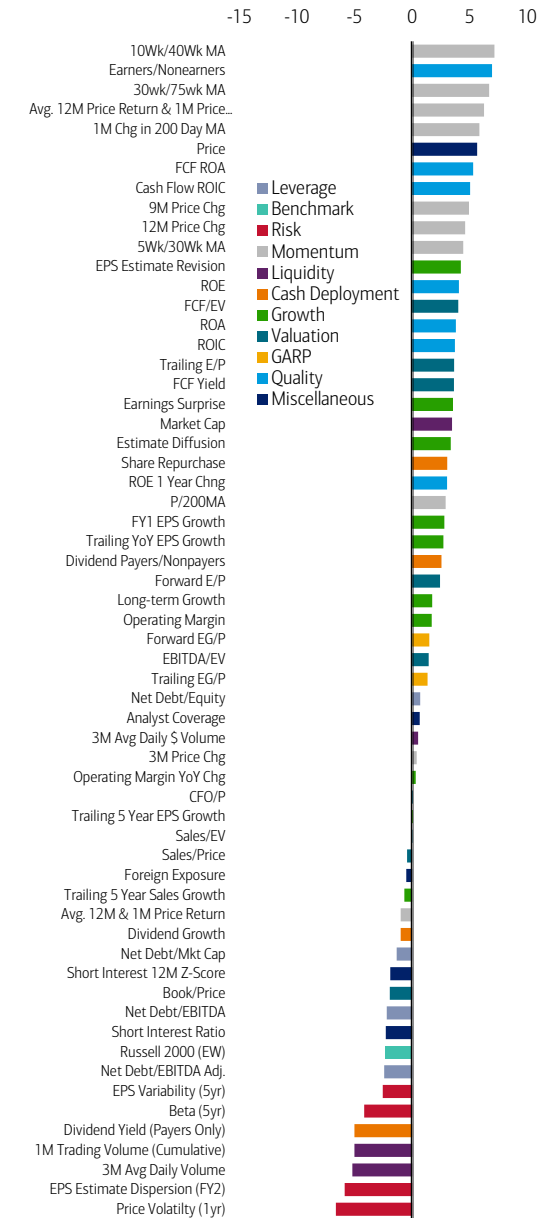


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

### Exhibit 35: Q1-Q5 total returns (%) – YTD (1/31/24)

**Best:** 10 Wk/40Wk **Worst:** Price Volatility (1yr)



Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

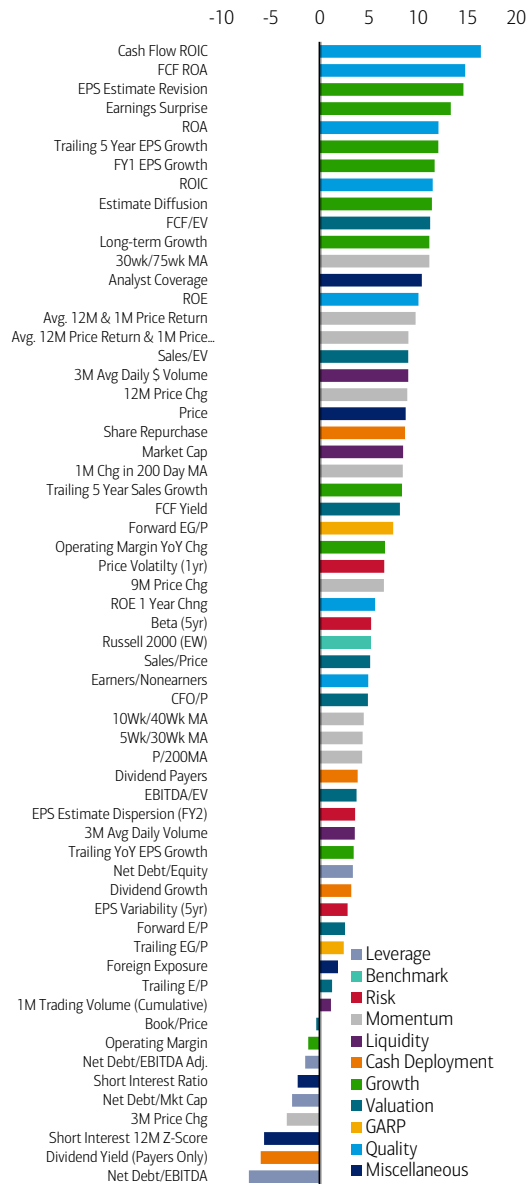




## 12m factor performance

### Exhibit 36: Q1 total returns (%) – 12m (1/31/24)

**Best:** Avg. 12M Price Return & 1M Price Reversal **Worst:** Price Volatility (1yr)

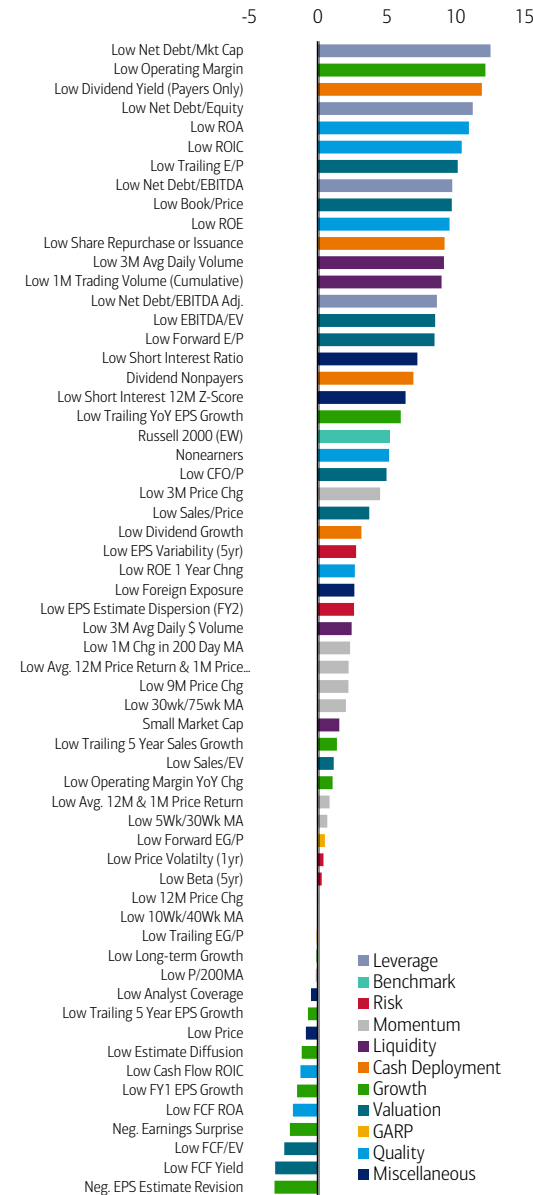


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

### Exhibit 37: Q5 total returns (%) – 12m (1/31/24)

**Best:** Low Dividend Yield (Payers Only) **Worst:** Nonearners

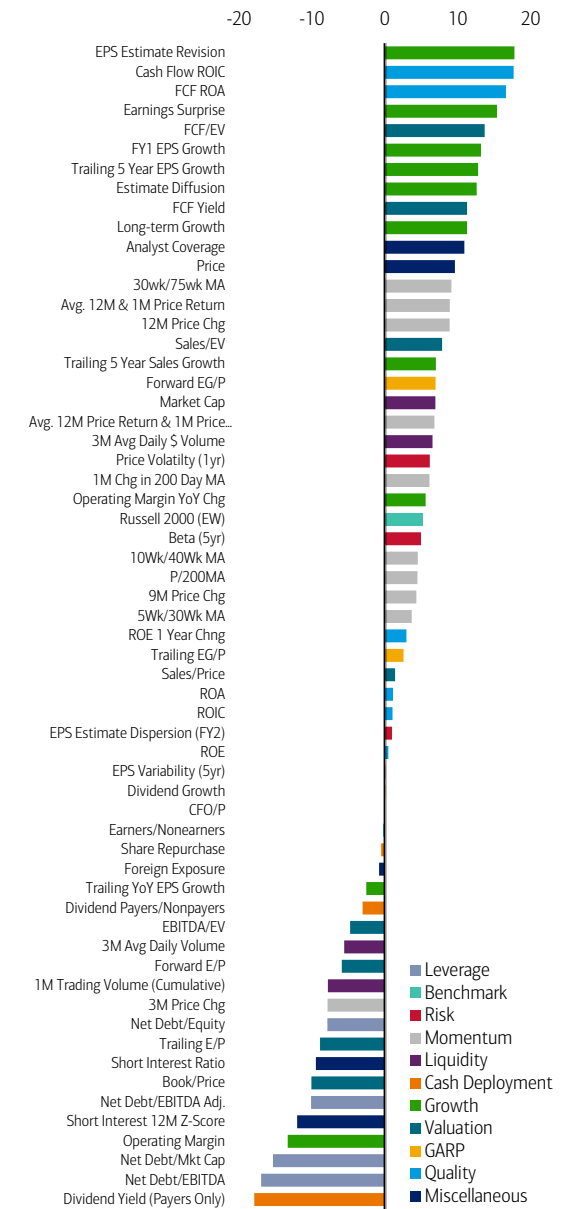


Source: FactSet, BofA US Equity & US Quant Strategy

BofA GLOBAL RESEARCH

### Exhibit 38: Q1-Q5 total returns (%) – 12m (12/31/23)

**Best:** 10Wk/40Wk MA Worst: Price Volatility (1yr)



Source: FactSet, BofA US Equity & US Quant Strategy

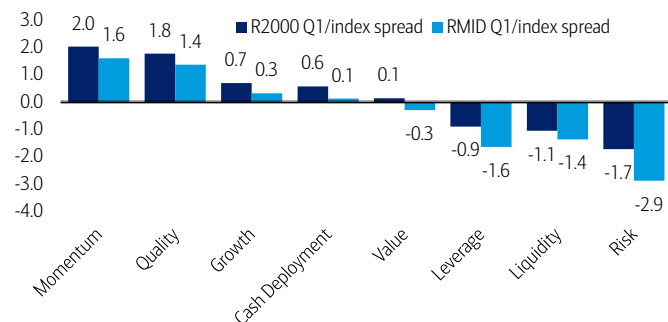
BofA GLOBAL RESEARCH

# Small & mid factor group performance

## 1 Month (1M)

### Exhibit 39: On a 1M basis, Momentum was the top-performing long-factor for small caps while Risk was the worst-performing factor for both SMD caps

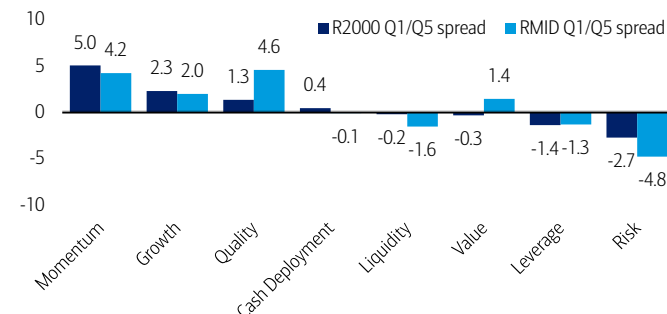
January long- factor total return performance (in ppt) by factor group within the Russell 2000 (dark blue bars) and Russell Midcap (light blue bars), as of 1/31/2024



Source: FactSet financial data and analytics, BofA US Equity & US Quant Strategy  
BofA GLOBAL RESEARCH

### Exhibit 40: Momentum also saw the most positive long-short spreads in small caps (vs Quality in mid caps) on a 1M basis

January top-bottom quintile total return performance (in ppt) by factor group within the Russell 2000 (dark blue bars) and Russell Midcap (light blue bars), as of 1/31/2024

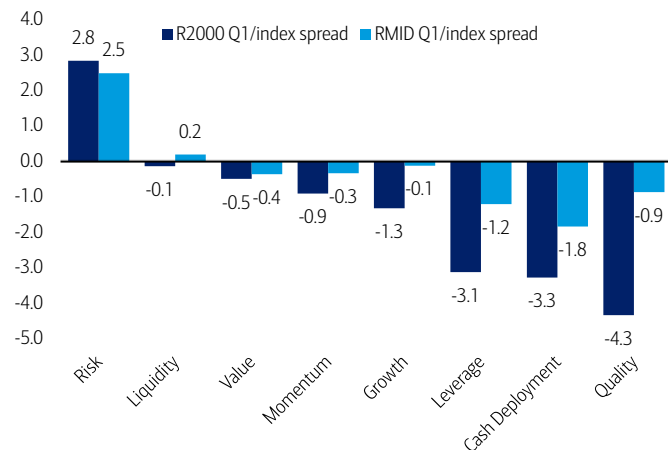


Source: FactSet financial data and analytics, BofA US Equity & US Quant Strategy  
BofA GLOBAL RESEARCH

## 3 Months (3M)

### Exhibit 41: On a 3M basis, Risk was the top-performing long- factor group for SMID caps, while Quality had the most negative spreads for small caps

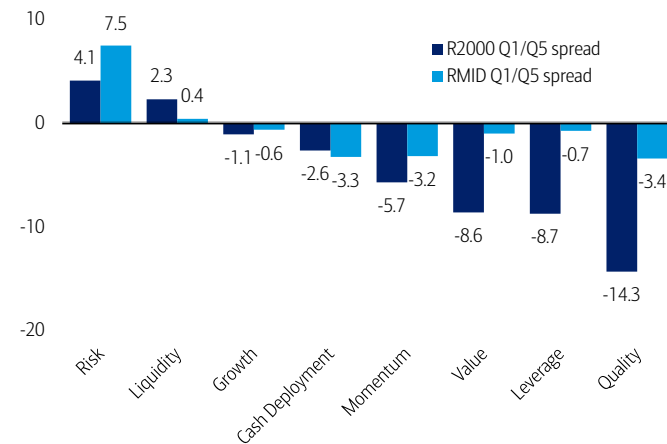
Three-month long- factor total return performance (in ppt) by factor group within the Russell 2000 (dark blue bars) and Russell Midcap (light blue bars), as of 1/31/2024



Source: FactSet financial data and analytics, BofA US Equity & US Quant Strategy  
BofA GLOBAL RESEARCH

### Exhibit 42: On a 3M basis, Risk was the top-performing long-short factor group for SMID caps, while Quality had the most negative spreads for SMID caps

Three-month top-bottom quintile total return performance (in ppt) by factor group within the Russell 2000 (dark blue bars) and Russell Midcap (light blue bars), as of 1/31/2024



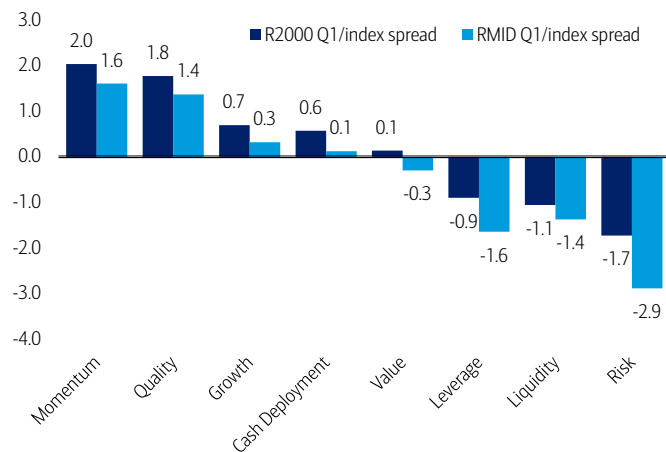
Source: FactSet financial data and analytics, BofA US Equity & US Quant Strategy  
BofA GLOBAL RESEARCH



## Year to Date (YTD)

### Exhibit 43: On a YTD basis, Momentum was the top-performing long- factor group for SMID caps, while Risk had the most negative spreads for SMID caps

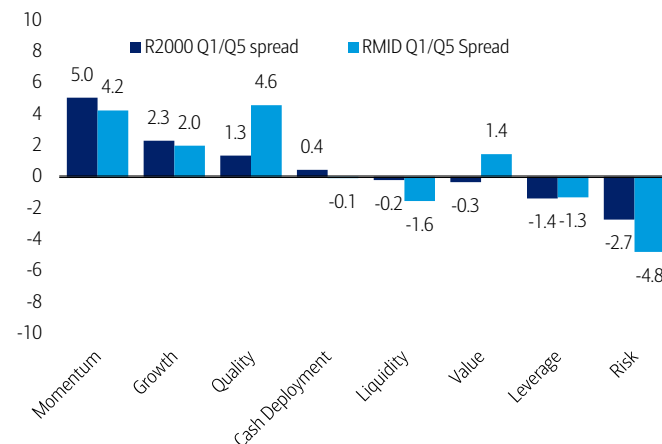
YTD long- factor total return performance (in ppt) by factor group within the Russell 2000 (dark blue bars) and Russell Midcap (light blue bars), as of 1/31/2024



Source: FactSet financial data and analytics, BofA US Equity & US Quant Strategy  
BofA GLOBAL RESEARCH

### Exhibit 44: On a YTD basis, Momentum was the top-performing long-short factor group for small caps, while Risk was the worst for SMID caps

YTD top-bottom quintile total return performance (in ppt) by factor group within the Russell 2000 (dark blue bars) and Russell Midcap (light blue bars), as of 1/31/2024

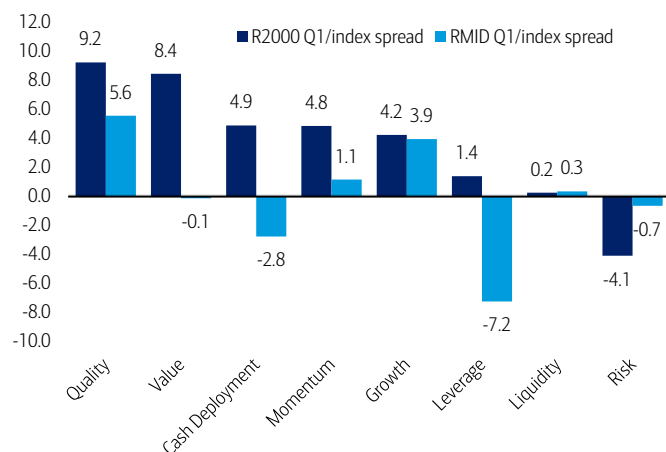


Source: FactSet financial data and analytics, BofA US Equity & US Quant Strategy  
BofA GLOBAL RESEARCH

## 12 Months (12M)

### Exhibit 45: On a 12M basis, Value was the top-performing long- factor group for SMID caps, while Risk had the most negative spreads for small caps

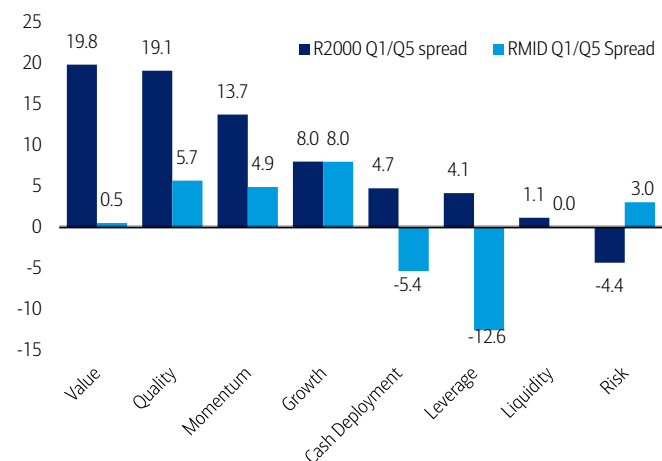
Twelve-month long- factor total return performance (in ppt) by factor group within the Russell 2000 (dark blue bars) and Russell Midcap (light blue bars), as of 1/31/2024



Source: FactSet financial data and analytics, BofA US Equity & US Quant Strategy  
BofA GLOBAL RESEARCH

### Exhibit 46: On a 12M basis, Value was the top-performing long-short factor for small caps, while Risk was the worst

Twelve-month top-bottom quintile total return performance (in ppt) by factor group within the Russell 2000 (dark blue bars) and Russell Midcap (light blue bars), as of 1/31/2024



Source: FactSet financial data and analytics, BofA US Equity & US Quant Strategy  
BofA GLOBAL RESEARCH

## Methodology

The universe for this report is the Russell 2000 and Russell Midcap, excluding stocks priced under \$1. The universe and the factors are rebalanced monthly using month-end data. FactSet is used as the source of all data. A factor's return is calculated as the equal-weighted total return of the top quintile of stocks within the universe by that



factor for Quintile 1 (Q1), the equal-weighted total return of the bottom quintile of stocks within the universe by that factor for Quintile 5 (Q5), and the equal-weighted total return of the top quintile minus the bottom quintile for the Q1-Q5 spread. We also show the total return of the equal-weighted Russell 2000 (for small caps) and Russell Midcap (for mid-caps) as the benchmark return. Performance results do not reflect actual transactions, and no assurances can be given about future performance.

## Factor Definitions

### Valuation Factors

**Book/Price (Q1=highest):** Common equity per share divided by price.

**EBITDA/EV (Q1=highest):** LTM (last 12 months) earnings before interest, taxes, depreciation and amortization divided by Enterprise Value (market cap + preferred stock + short term debt + long term debt + minority interest – cash). Financials are excluded.

**Free Cash Flow Yield (Q1=highest):** (LTM cash flow from operations – LTM capital expenditures) divided by market cap. Financials and Equity REITs are excluded.

**Free Cash Flow/EV (Q1=highest):** (LTM cash flow from operations – LTM capital expenditures) divided by Enterprise Value (market cap + preferred stock + short-term debt + long-term debt + minority interest – cash). Financials and Equity REITs are excluded.

**Cash Flow/Price (CFO/P) (Q1=highest):** LTM cash flow from operations divided by price. Financials and Equity REITs are excluded.

**Forward E/P (Q1=highest):** I/B/E/S FY1 EPS divided by price. FFO is used instead of EPS for Equity REITs.

**Trailing E/P (Q1=highest):** LTM EPS excluding extraordinary items divided by price. FFO is used instead of EPS for Equity REITs.

**Sales/Price (Q1=highest):** LTM sales per share divided by price. Financials are excluded.

**Sales/EV (Q1=highest):** LTM sales divided by enterprise value (market cap + preferred stock + short-term debt + long-term debt + minority interest – cash). Financials are excluded.

### GARP (Growth at a Reasonable Price) Factors

**Trailing EG/P (inverse of PEG) (Q1=highest):** I/B/E/S long-term growth rate estimate divided by Trailing Earnings/Price.

**Forward EG/P (inverse of PEG) (Q1=highest):** I/B/E/S long-term growth rate estimate divided by Forward Earnings/Price.

### Quality Factors

**Return on Equity (ROE) (Q1=highest):** LTM net income before extraordinary items divided by the one-year average of total stockholders' equity. Equity REITs are excluded.

**ROE 1 year change (Q1=highest):** 12 month change in ROE. Equity REITs are excluded.

**Return on Assets (ROA) (Q1=highest):** LTM net income before extraordinary items divided by the one-year average of total assets. Equity REITs are excluded.

**Cash Flow ROIC (Cash flow return on invested capital) (Q1=highest):** LTM cash flow from operations divided by invested capital (average common equity + average preferred equity + average long-term debt + average minority accumulated interest). Financials and Equity REITs are excluded.

**Return on Invested Capital (ROIC) (Q1=highest):** LTM net income before extraordinary items divided by the one-year average of total invested capital. Equity REITs are excluded.

**Free Cash Flow Return on Assets (FCF ROA) (Q1=highest):** (LTM cash flow from operations – LTM capital expenditures) divided by one-year average assets. Financials and Equity REITs are excluded.

**Earners/Non-earners (Q1=earners, Q5=non-earners):** Earners are stocks that have a positive forward (FY1) P/E; Non-earners are stocks with a negative forward (FY1) P/E. FFO is considered instead of EPS for Equity REITs.

#### Momentum Factors

**Price to 200-Day Moving Average (Q1=highest):** Ratio of the month-end closing price to the average closing price over the last 200 days.

**1 Month Change in the 200-Day Moving Average (Q1=highest):** The 1-month change in the 200-day moving average.

**5-week/30-week Moving Average (Q1=highest):** The ratio of the average daily closing price over the last five weeks vs. that over 30 weeks.

**10-week/40-week Moving Average (Q1=highest):** The ratio of the average daily closing price over the last ten weeks vs. that over 40 weeks.

**30-week/75-week Moving Average (Q1=highest):** The ratio of the average daily closing price over the last 30 weeks vs. that over 75 weeks.

**12-Month Price Change (Q1=highest):** The change in the current price from 12 months ago.

**9-Month Price Change (Q1=highest):** The change in the current price from 9 months ago.

**3-Month Price Change (Q1=highest):** The change in the current price from 3 months ago.

**Average 12-month Price Return & 1-month Price Return: (Q1=highest):** Equal-weighted rank of stocks by (1) highest the price return over the last 12 months; and (2) the highest price return over the last one month.

**Average 12-month Price Return & 1-month Price Reversal (Q1=highest):** Equal-weighted rank of stocks by (1) the highest price return over the last 12 months; and (2) the lowest price return over the last one month.

#### Growth Factors

**IBES Mean LT Growth (Q1=highest):** The mean estimate of I/B/E/S forecasted long-term growth rates.

**EPS Estimate Revision (Q1=highest):** The difference between the I/B/E/S FY1 EPS estimate that that of three months ago divided by the absolute value of the I/B/E/S FY1 EPS estimate as of three months ago. FFO is used instead of EPS for Equity REITs.

**Estimate Diffusion (Q1=highest):** Calculated using a three-month weighted-average of the change in the number of up estimates minus the down estimates divided by the total numbers of estimates for FY1. The most recent change in estimates received a weighting of 50%, the change from two months earlier was weighted at 30%, and the change from three months ago was allocated 20%. A company had to have at least two analysts covering it. FFO is used instead of EPS for Equity REITs.

**Earnings Surprise (Q1=highest):** The standardized unexpected earnings (SUE) score as determined by I/B/E/S, which is calculated by subtracting the mean earnings estimate by the actual reported earnings and then dividing that figure by the standard deviation



of estimates. A company must have at least two analysts covering it to be included. FFO is used instead of EPS for Equity REITs.

**Sales Growth Trailing 5 Year (Q1=highest):** 5-year growth rate of trailing annual sales.

**EPS Growth Trailing 5 Year (Q1=highest):** 5-year growth rate of trailing annual diluted EPS. FFO is used instead of EPS for Equity REITs.

**YoY Change in Trailing EPS (Q1=highest):** Change in LTM EPS before extraordinary items from 4 quarters earlier LTM EPS before extraordinary items. FFO is used instead of EPS for Equity REITs.

**FY1 EPS Growth (Q1=highest):** Change in the FY1 EPS estimate versus the prior year actual (FY0) EPS. FFO is used instead of EPS for Equity REITs.

**Operating Margin (Q1=highest):** LTM operating income divided by LTM sales. Financials and Equity REITs are excluded.

**Operating Margin Expansion (Q1=highest):** 12-month change in operating margin. Financials and Equity REITs are excluded.

### Risk Factors

**EPS Variability (5-year) (Q1=highest):** The degree of variability in quarterly EPS over the past five years. FFO is used instead of EPS for Equity REITs.

**EPS Estimate Dispersion (FY2) (Q1=highest):** The coefficient of variation among I/B/E/S FY2 EPS estimates (standard deviation of estimates divided by mean estimate). A stock must have at least two estimates available to be considered. FFO is used instead of EPS for Equity REITs.

**Price Volatility (1yr) (Q1=highest):** The standard deviation of the daily price change measured during the last year.

**Beta (5yr) (Q1=highest):** The regression coefficient from regressing monthly price returns against the returns of the S&P 500 over 60 months. Beta is a measure of non-diversifiable risk.

### Liquidity Factors

**3-Month Average Daily Volume (Q1=highest):** The average daily trading volume over the prior three months.

**3-Month Average Daily Dollar Volume (Q1=highest):** The average daily trading dollar volume (volume times price) over the prior three months.

**1-Month Trading Volume (Cumulative) (Q1=highest):** The cumulative trading volume over the past month.

**Market Cap (Q1=highest):** The month-end market capitalization.

### Leverage Factors

**Net Debt/Equity (Q1=highest):** The total debt minus cash & short-term investments divided by total common equity. Financials are excluded.

**Net Debt/Market Cap (Q1=highest):** The total debt minus cash & short-term investments divided by total market capitalization. Financials are excluded.

**Net Debt/EBITDA (Q1=highest):** The total debt minus cash & short-term investments divided by operating EBITDA. Financials and companies with negative EBITDA are excluded.

**Net Debt/EBITDA Adjusted (Q1=highest):** The total debt minus cash & short-term investments divided by adjusted EBITDA (operating EBITDA + Unusual Expenses). Financials and companies with negative adjusted EBITDA are excluded.

## Cash Deployment Factors

**Dividend Growth (Q1=highest):** The year-over-year growth between trailing four-quarter total common dividends as of the latest month-end and trailing four-quarter total common dividends as of 12 months ago.

**Dividend Payers/Non-payer (Q1=Payers, Q5=Non-payers):** Stocks that pay a dividend (based on the trailing 12-month dividend yield) are considered payers; stocks that don't pay a dividend are considered non-payers.

**Dividend Yield (Payers only) (Q1=highest):** Indicated dividend rate dividend by price. Companies that do not pay a dividend are excluded.

**Share Repurchase (Q1=largest decrease in shares):** Year-over-year change in shares outstanding.

## Miscellaneous Factors

**Price (Q1=highest):** The month-end closing price.

**Analyst Coverage (Q1=highest):** The number of available I/B/E/S FY1 earnings estimates submitted by analysts.

**Short Interest Ratio (Days to Cover) (Q1=highest):** The number of shares held short divided by the average daily trading volume. It can be interpreted as the number of days it would take short sellers to cover the short position.

**Short Interest 12M z-score (Q1=highest):** The z-score of the most recent number of shares shorted vs. the last 12 months history.

**Foreign Exposure (Q1=highest):** The ratio of foreign sales to total sales.

## US Regime Indicator methodology

Inputs for the US regime indicator include the following eight macroeconomic or top-down variables:

- **Earnings Revision ratio:** Calculated as [the ratio](#) (see our 1 January 2018 report) between the number of companies in the S&P 500 for which Thomson Financial consensus earnings estimates have been raised versus those that have been lowered. A rising ratio indicates an improving economic cycle.
- **ISM PMI:** ISM PMI Institute for Supply Management Manufacturing Purchasing Managers Index, represented as the Z-Score. The ISM Manufacturing Index monitors economic activity as reported by 300 supply management professionals. The reading of the index above (below) 50 indicated economic expansion (contraction).
- **Inflation:** The 12-month change in the BofA Inflation Composite (see methodology further below), represented as the Z-Score. Rising inflation indicates improving economic conditions.
- **GDP Forecast:** The next 12-month US GDP growth forecast from the Federal Reserve Bank of Philadelphia Survey, represented as the Z-Score.
- **Leading Economic Indicators index:** The 12-month change in the Conference Board US Leading Index of Ten Economic Indicators, represented as a Z-Score. A rising Z-Score indicates improving economic conditions.
- **US Capacity Utilization:** The 12-month change in US capacity utilization, represented as the Z-score. The capacity utilization rate indicates the percentage of total economic capacity currently utilized. Rising capacity utilization implies improving economic conditions. Rising capacity utilization suggests more expanding economic cycle and potentially rising inflationary pressure.

- **10-year US Treasury Bond Yield:** The 12-month change in the bond yield, represented as the Z-Score. Rising yields indicate improving economic conditions.
- **High Yield corporate bond credit spread:** The 12-month change in the US High Yield credit spread of the ICE BofA US High Yield Index, represented as a Z-score. Falling spreads indicate improving economic conditions.

## Note on back-testing

---

The analysis of certain indicators in this report is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the hypothetical back-tested 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 back-tested returns and the actual results realized in the actual management of a portfolio. Back-tested 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. Back-tested 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. Back-tested returns do not reflect advisory fees, trading costs, or other fees or expenses.



# 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 <sup>R1</sup>
Buy	≥ 10%	≤ 70%
Neutral	≥ 0%	≤ 30%
Underperform	N/A	≥ 20%

<sup>R1</sup> 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. ("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](http://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; BofA 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 or any of its affiliates or their research analysts has any authority whatsoever to make any representation or warranty on behalf of the issuer(s). BofA Global Research policy prohibits research personnel from disclosing a recommendation, investment rating, or investment thesis for review by an issuer prior to the publication of a research report containing such rating, recommendation or investment thesis.

Any information relating to the tax status of financial instruments discussed herein is not intended to provide tax advice or to be used by anyone to provide tax advice. Investors are urged to

seek tax advice based on their particular circumstances from an independent tax professional.

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

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

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.