

European Snapshot

Revisions: price targets doubled, DPS halved

Quantitative Strategy

Screen of the Week: highest/lowest breadth of revisions

The European 3-month ratios for sales (at 0.64), EPS (at 0.69) and DPS (at 0.76) remain in net downgrade territory for the 3rd consecutive month. The current Q4 '23 earnings season, however, has so far showed an improvement in companies' positive commentary and the European economic surprises have troughed, both suggesting early signs of potential stabilisation and upgrades may come this month. In our Screen of the Week, we focus on European large-cap stocks with the highest and lowest 1-month Sales, EPS and DPS Revision Ratios (Exhibit 1).

All three: sales, EPS and DPS revisions decline

The 1-month Sales and EPS Revision Ratios declined deeper into net downgrade territory (to 0.58 and 0.65, respectively), and the DPS Revision Ratio halved over the month to 0.54. The increased weakness in revisions led the majority of countries/sectors/styles/exposure baskets to note declines over the month, while only Switzerland recorded improvements (see Exhibit 51 for details).

Price targets in net upgrades, buybacks neutral

The 1-month Revision Ratio doubled for price targets (to 1.94 from 0.99, the highest reading since Apr '23, driven by Industrials and Technology) and increased for capex (to 0.65 from 0.53, due to net upgrades in Real Estate). The net debt ratio declined the most (to 1.84 from 2.05, driven by Energy and Staples), followed by the inventories ratio (to 0.42 from 0.62, the lowest since May '20, as Technology fell to net downgrades) and buybacks ratio (to 1.00 from 1.18, the lowest since Jan '21, due to declines in Energy).

5th consecutive weekly outflow from Europe-focused funds

Europe-focused equity funds recorded their 5th consecutive weekly outflow of \$0.69bn, with a net -26.7% seeing net inflows. Outflows amounted to \$1.74bn from active funds and \$1.05bn of inflows into passive funds, the highest since Mar '23. Europe-focused funds have seen \$5.32bn of outflows YTD: \$7.31bn of outflows from active funds and \$2.00bn of inflows into passive funds. Size stocks (\$0.47bn) and Switzerland (\$0.42bn) had the largest inflows last week, while the UK (\$0.46bn), Risk stocks (\$0.20bn) and Financials (\$0.17bn) posted the largest outflows. No sector recorded inflows last week.

05 February 2024

Quant Strategy
Europe

Paulina Strzelinska >>
Quant Strategist
MLI (UK)
+44 20 7996 7059
paulina.strzelinska@bofa.com

Samuel Bruce >>
Research Analyst
MLI (UK)
+44 20 7996 2271
samuel.bruce@bofa.com

Latest European Snapshot notes:

[European Snapshot: Who may benefit secondarily from increased EU defense spending? 26 January 2024](#)

[European Snapshot: Who might profit-warn for Q4 '23? 17 January 2024](#)

[European Snapshot: Who outperforms when cutting cycle starts? 10 January 2024](#)

We highlight the latest C-suite changes, insider buying stats and new buyback announcements in our screens in the Appendix.

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.

>> Employed by a non-US affiliate of BofAS and is not registered/qualified as a research analyst under the FINRA rules.

Refer to "Other Important Disclosures" for information on certain BofA Securities entities that take responsibility for the information herein in particular jurisdictions.

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 22 to 24.

12655002

Timestamp: 05 February 2024 12:31AM EST

Screen of the week

Exhibit 1: The top/bottom European stocks with the highest and lowest 1-month Sales/EPS/DPS Revision Ratios among the largest 250 European names within MSCI Europe index as per the market cap

Sales/EPS/DPS Revision Ratio per company, measured as: ((# of FY1 and FY2 upward Sales/EPS/DPS revisions over past month)-(# of FY1 and FY2 downward Sales/EPS/DPS revisions over past month))/ # of FY1 and FY2 estimates over past month

BBG Ticker	Name	1m SRR	1m ERR	1m DRR	BBG Ticker	Name	1m SRR	1m ERR	1m DRR
TSCO LN	Tesco	0.21	0.71	0.36	RI FP	Pernod Ricard	-0.80	-0.67	-0.50
ACA FP	Credit Agricole	0.31	0.28	0.34	NIBEB SS	NIBE Industrier	-0.55	-0.55	-0.53
					EL FP	EssilorLuxottica	-0.36	-0.62	-0.57
					SY1 GR	Symrise	-0.52	-0.68	-0.20
					PGHN SW	Partners	-0.59	-0.56	-0.23
					BNP FP	BNP Paribas	-0.30	-0.62	-0.31
					COLOB DC	Coloplast	-0.46	-0.38	-0.25
					RTO LN	Rentokil Initial	-0.30	-0.47	-0.23
					STMN SW	Straumann	-0.31	-0.34	-0.30
					GLE FP	SocieteGenerale	-0.21	-0.44	-0.29
					1COV GR	Covestro	-0.26	-0.45	-0.22
					MONC IM	Moncler	-0.22	-0.35	-0.37
					NOKIA FH	Nokia	-0.32	-0.20	-0.22
					RMS FP	Hermes	-0.24	-0.25	-0.21

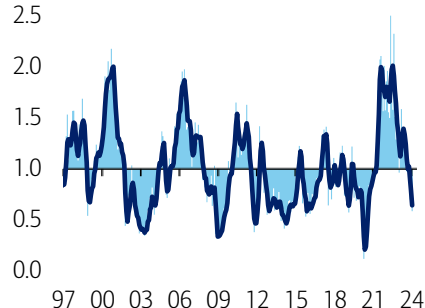
Source: BofA European Equity Quant Strategy, IBES. Disclaimer: The screen above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research. This screen was not created to act as a benchmark.

BofA GLOBAL RESEARCH

Revisions

Exhibit 2: Sales Revision Ratio for Europe

1-month (light blue) and 3-month (dark blue); the 3-month ratio has gone down to 0.64 in January, from 0.78 previously

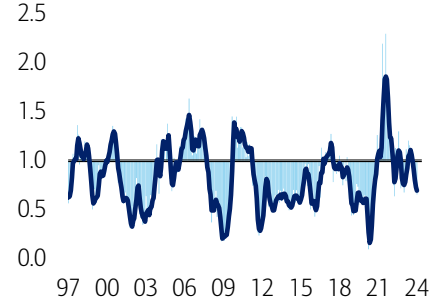


Source: BofA European Equity Quant Strategy, IBES. The Sales Revision Ratio measures the number of stocks for which the consensus Sales estimate has risen, versus the number for which it has fallen.

BofA GLOBAL RESEARCH

Exhibit 3: EPS Revision Ratio for Europe

1-month (light blue) and 3-month (dark blue); the 3-month ratio has decreased to 0.69 in January, from 0.73 previously

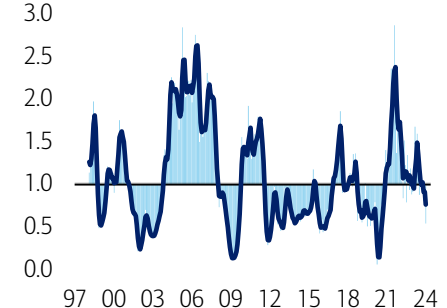


Source: BofA European Equity Quant Strategy, IBES. The EPS Revision Ratio measures the number of stocks for which the consensus EPS estimate has risen, versus the number for which it has fallen.

BofA GLOBAL RESEARCH

Exhibit 4: DPS Revision Ratio for Europe

1-month (light blue) and 3-month (dark blue); the 3-month ratio has declined to 0.76 in January, from 0.91 previously

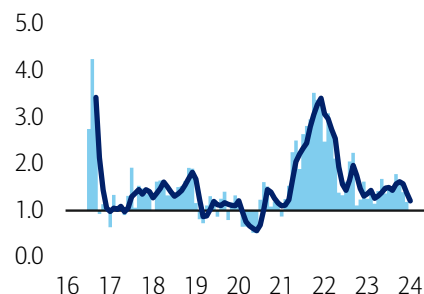


Source: BofA European Equity Quant Strategy, IBES. The DPS Revision Ratio measures the number of stocks for which the consensus DPS estimate has risen, versus the number for which it has fallen.

BofA GLOBAL RESEARCH

Exhibit 5: Buybacks Revision Ratio for Europe

1-month (light blue) and 3-month (dark blue); the 3-month ratio has decreased to 1.20 in January, from 1.37 previously

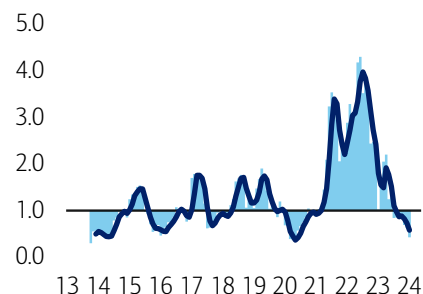


Source: BofA European Equity Quant Strategy, Factset. The Buybacks Revision Ratio measures the number of stocks for which the consensus number of share repurchases estimate has risen, versus the number for which it has fallen.

BofA GLOBAL RESEARCH

Exhibit 6: Inventories Revision Ratio for Europe

1-month (light blue) and 3-month (dark blue); the 3-month ratio has fallen to 0.57 in January, from 0.73 previously

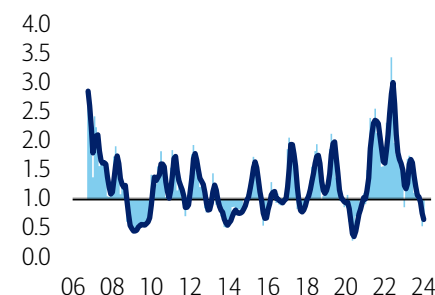


Source: BofA European Equity Quant Strategy, Factset. The Inventories Revision Ratio measures the number of stocks for which the consensus number of inventories estimate has risen, versus the number for which it has fallen.

BofA GLOBAL RESEARCH

Exhibit 7: Capex Revision Ratio for Europe

1-month (light blue) and 3-month (dark blue); the 3-month ratio has declined to 0.65 in January, from 0.76 previously

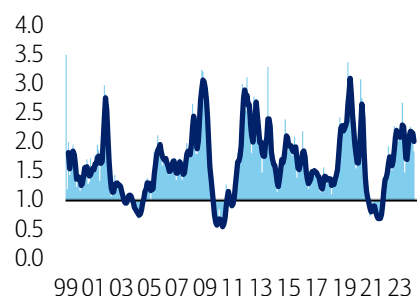


Source: BofA European Equity Quant Strategy, Factset. The Capex Revision Ratio measures the number of stocks for which the consensus number of capex estimate has risen, versus the number for which it has fallen

BofA GLOBAL RESEARCH

Exhibit 8: Net Debt Revision Ratio for Europe

1-month (light blue) and 3-month (dark blue); the 3-month ratio has gone down to 2.01 in January, from 2.15 previously

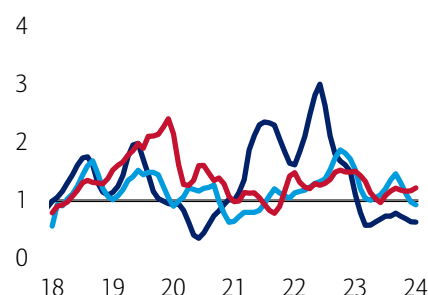


Source: BofA European Equity Quant Strategy, Factset. The Net Debt Revision Ratio measures the number of stocks for which the consensus number of net debt estimate has risen, versus the number for which it has fallen

BofA GLOBAL RESEARCH

Exhibit 9: 1-month cash and short-term ratios decreased further in the net downgrade territory, while long-term debt ratio increased in the net upgrades territory

European 3-month revision ratios for cash (dark blue), short-term debt (light blue) and long-term debt (red line)

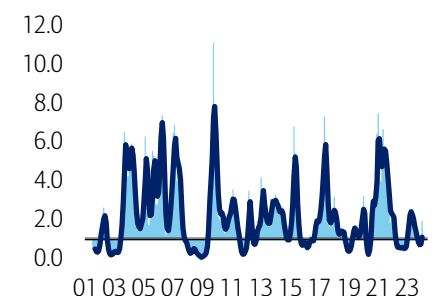


Source: BofA European Equity Quant Strategy, Factset. The Cash/Short-term debt/Long-term debt Revision Ratio measures the number of stocks for which the consensus number of cash/short-term debt/long-term debt estimates have risen, versus the number for which they have fallen

BofA GLOBAL RESEARCH

Exhibit 10: Price Target Revision Ratio for Europe

1-month (light blue) and 3-month (dark blue); the 3-month ratio has increased to 1.09 in January, from 0.72 previously

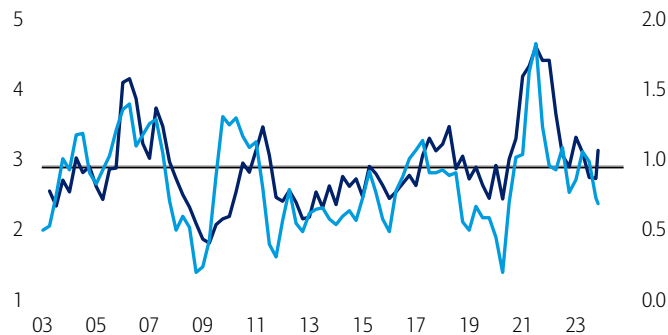


Source: BofA European Equity Quant Strategy, Factset. The Price Target Revision Ratio measures the number of stocks for which the consensus number of price target estimate has risen, versus the number for which it has fallen

BofA GLOBAL RESEARCH

Exhibit 11: Company commentary has improved, while sell-side earnings upgrades remain negative

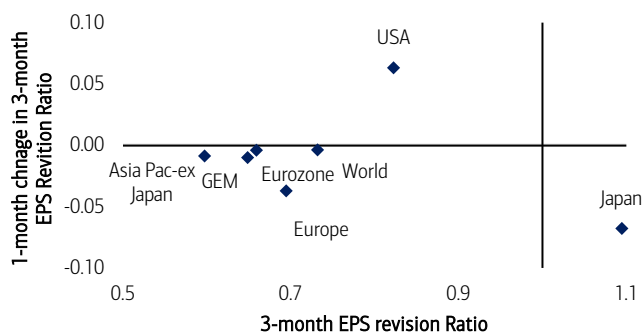
Stoxx 600 Company Sentiment Ratio (dark blue line) and European 3-month EPS Revision Ratio (light blue line, rhs)



Source: BofA European Equity Quant Strategy, IBES, Factset. Stoxx 600 Company Sentiment Ratio is calculated as a ratio of mentions “better” and “stronger” to “worse” and “weaker” in the earnings transcripts for Europe Stoxx 600 companies that have reported in each quarter.
BofA GLOBAL RESEARCH

Exhibit 13: Only Japan remains in net upgrades territory in spite of biggest drop over the month, while only USA ratio improved over the month

The 3-month EPS Revision Ratio and its MoM change by region in January

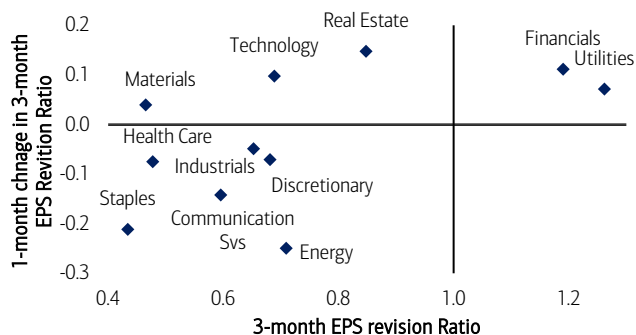


Source: BofA European Equity Quant Strategy, IBES

BofA GLOBAL RESEARCH

Exhibit 15: Only Utilities and Financials stayed in net upgrades territory, while Energy and Staples showed biggest decline

The 3-month EPS Revision Ratio and its MoM change by sector in January

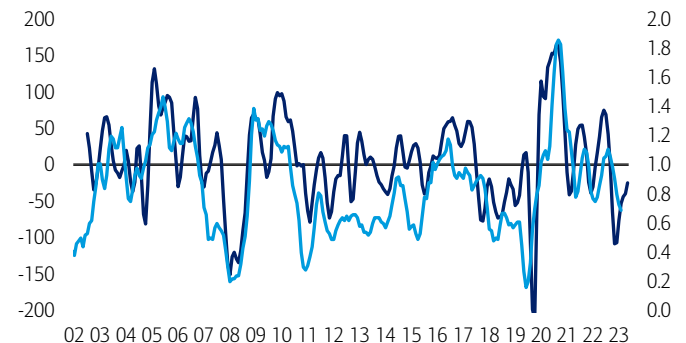


Source: BofA European Equity Quant Strategy, IBES

BofA GLOBAL RESEARCH

Exhibit 12: Sell-side earnings forecasts are likely to improve from early this year

Eurozone Economic Surprise Index (dark blue line, 3m mva, 3m lag) and European 3-month EPS Revision Ratio (light blue line, rhs)

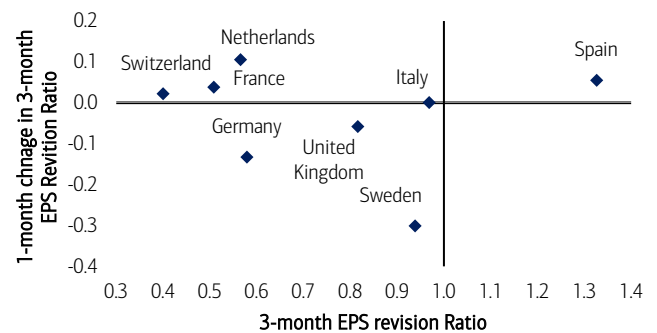


Source: BofA European Equity Quant Strategy, IBES, Refinitiv

BofA GLOBAL RESEARCH

Exhibit 14: Only Spain remained in net upgrades territory, while Sweden, Germany and the UK ratios decreased the most

The 3-month EPS Revision Ratio and its MoM change by country in January

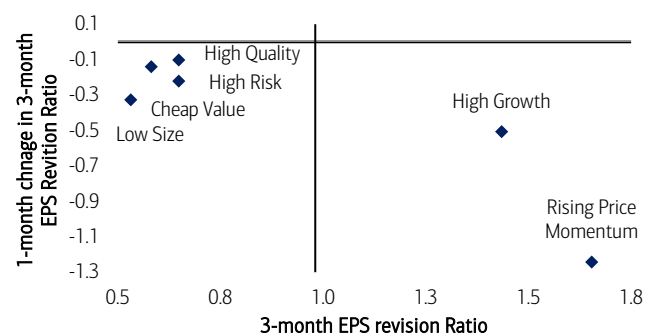


Source: BofA European Equity Quant Strategy, IBES

BofA GLOBAL RESEARCH

Exhibit 16: Only Rising Price Momentum and High Growth stayed in net upgrades territory despite of showing biggest declines over the month

The 3-month EPS Revision Ratio and its MoM change by style in January

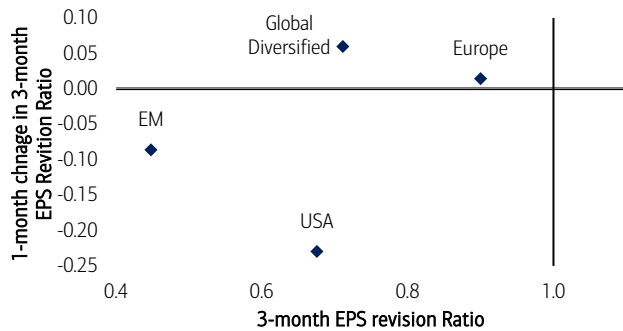


Source: BofA European Equity Quant Strategy, IBES

BofA GLOBAL RESEARCH

Exhibit 17: Europe-exposed stocks had the highest EPS Revision Ratio, while the breadth of upgrades decreased the most in USA-exposed stocks

The 3-month EPS Revision Ratio and 1-month change in the 3-month EPS Revision Ratio by revenue exposure basket in January

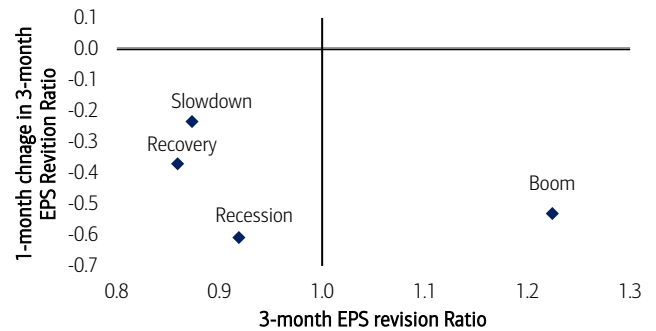


Source: BofA European Equity Quant Strategy, IBES

BofA GLOBAL RESEARCH

Exhibit 18: Only Boom stocks remained in net upgrades territory, while the breadth of upgrades decreased the most for Recession stocks

The 3-month EPS Revision Ratio and its MoM change by top phase in January



Source: BofA European Equity Quant Strategy, IBES

BofA GLOBAL RESEARCH

Exhibit 19: Financials continue to contribute the most to 2024/25 expected growth numbers, while Energy, Real Estate and Utilities the least

2024 and 2025 expected SPS/EPS/DPS growth contribution for MSCI Europe per country and sector

	Sales Growth (%)		EPS Growth (%)		Dividend Growth (%)	
	2024	2025	2024	2025	2024	2025
Europe	2.14	2.97	4.44	9.40	5.89	6.26
Contribution per sector						
Energy	-0.17	-0.38	-0.39	0.03	0.24	0.36
Materials	0.11	0.23	0.68	0.57	0.07	0.40
Industrials	0.54	0.93	0.93	1.62	0.42	1.17
Discretionary	0.38	0.64	0.27	1.11	0.61	0.84
Staples	0.34	0.22	0.48	0.74	0.65	0.71
Healthcare	0.37	0.51	0.94	1.78	0.71	0.95
Financials	0.71	0.43	1.55	2.06	2.63	0.97
IT	0.08	0.27	-0.29	0.96	0.22	0.40
Communication Svs	0.10	0.10	0.31	0.30	0.11	0.19
Utilities	-0.31	0.02	0.00	0.07	0.12	0.21
Real Estate	-0.01	0.02	-0.04	0.03	0.11	0.06
Contribution per country						
France	0.72	0.62	0.63	1.55	1.04	1.47
Germany	0.40	0.92	0.71	1.72	0.77	1.15
Italy	0.03	0.12	-0.07	0.13	0.34	0.17
Netherlands	0.13	0.04	0.25	0.92	0.17	0.50
Spain	0.05	0.07	0.15	0.19	0.35	0.42
Sweden	0.02	0.17	-0.06	0.32	0.08	0.23
Switzerland	0.33	0.32	1.03	1.59	0.78	0.85
UK	0.00	0.03	1.10	1.91	1.95	0.75

Source: MSCI, Refinitiv

BofA GLOBAL RESEARCH

Exhibit 20: Materials, UK and High Growth top the 12m fwd EPS growth estimates

12m fwd EPS growth (%)

Sectors	Europe: 4.83%		Styles	
	Countries			
Materials	10.94	UK	9.01	High Growth 7.56
Communication Svs	9.86	Spain	6.55	Rising Price 3.87
Healthcare	8.55	Italy	5.08	Momentum 3.37
Industrials	8.12	France	4.83	Low Size 1.65
Financials	5.99	Germany	4.09	High Quality 0.71
Staples	5.62	Sweden	2.85	High Risk -2.37
Discretionary	3.44	Switzerland	-0.72	Top Value
Utilities	0.01	Netherlands	-0.92	
Energy	-3.22			
IT	-3.44			
Real Estate	-3.56			

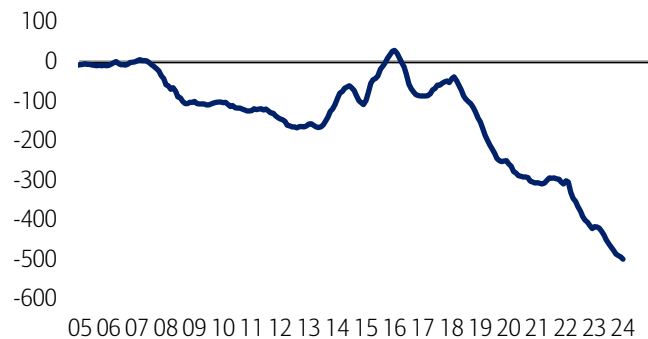
Source: BofA European Equity Quant Strategy, MSCI, Refinitiv, Factset

BofA GLOBAL RESEARCH

Flows

Exhibit 21: Europe-focused equity funds have seen \$491bn of outflows since 2005 (active funds: \$-618bn, passive funds: \$127bn)

Long-term cumulative flows into Europe-focused equity funds (\$bn)

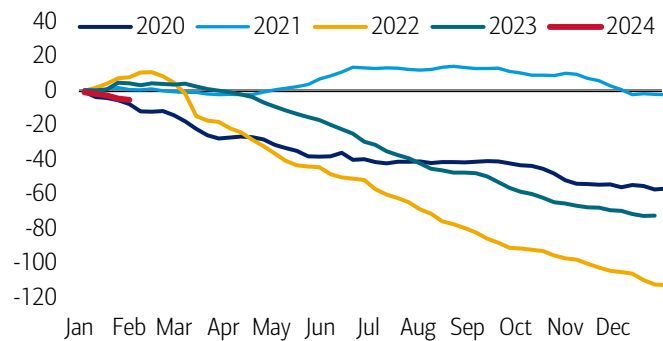


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 23: Europe-focused equity funds have seen \$5.3bn of outflows YTD, with \$5.2bn of outflows from European-domiciled funds and \$0.16bn of outflows from US-domiciled funds

Cumulative annual flows into Europe-focused equity funds (\$bn)

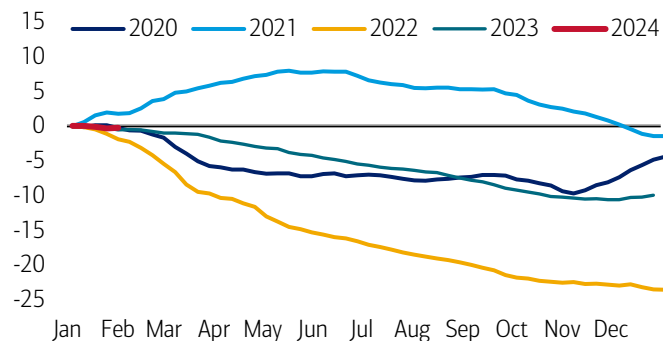


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 25: SMID focused European equity funds have seen \$0.22bn of outflows YTD, \$0.43bn of outflows from active funds and \$0.21bn of inflows into passive funds

Cumulative annual flows into SMID-focused European equity funds (\$bn)

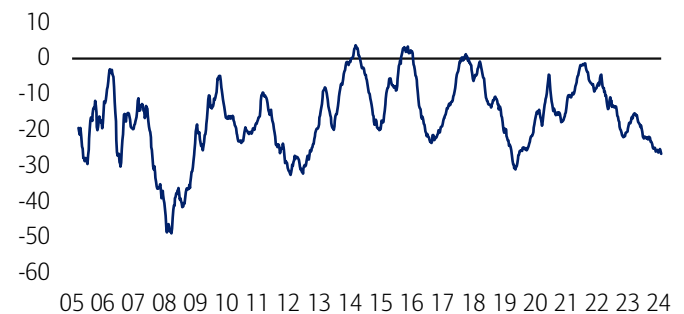


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 22: A net -26.7% of Europe-focused funds saw inflows last week, the lowest reading since Jun '19

Net % of Europe-focused equity funds seeing inflows on weekly basis (12w mva)

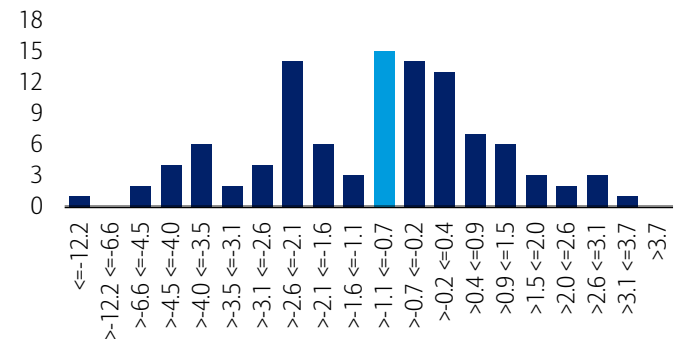


BofA European Equity Quant Strategy, EPFR Global. Note: Net % calculated as % of funds that saw inflows minus % of funds that saw outflows

BofA GLOBAL RESEARCH

Exhibit 24: Europe-focused equity funds saw \$0.69bn of outflows last week; 5th consecutive outflow since the beginning of 2024

Distribution of weekly flows into Europe-focused equity funds over the last two years (\$bn)

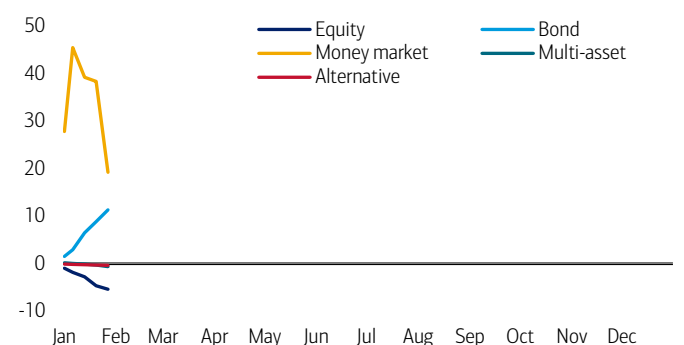


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 26: Equity funds have seen the largest outflows YTD (\$5.3bn), while Money market funds have seen the largest inflows (\$19.3bn)

YTD cumulative flows into Europe-focused funds by asset-class (\$bn)

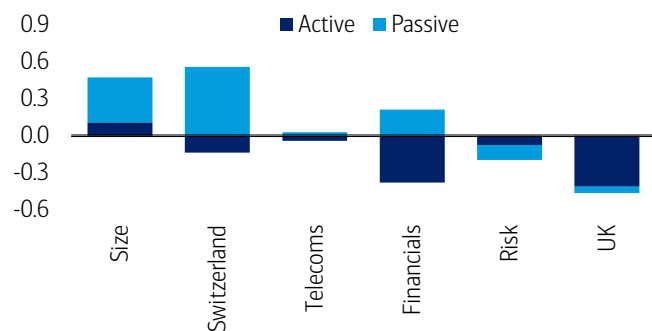


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 27: Size stocks recorded the largest inflows (\$0.47bn), while the UK noted the largest outflows (\$0.46bn) last week

Top and bottom inflows/outflows last week into Europe-focused equity funds/stocks by country, sector, style split into active and passive (\$bn)

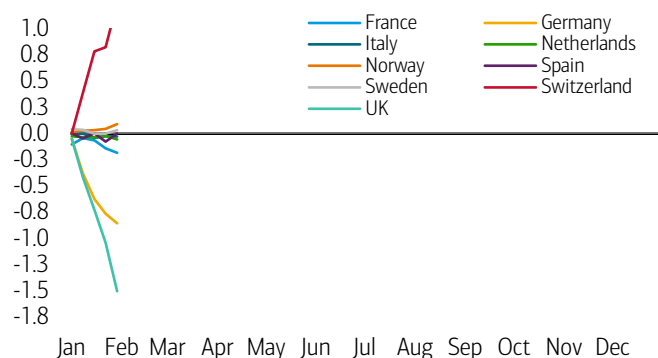


Source: BofA European Equity Quant Strategy, EPFR Global. Note: flows into styles are aggregated from stock level data

BofA GLOBAL RESEARCH

Exhibit 29: Switzerland noted the largest inflows YTD (\$1.25bn), while the UK recorded the largest outflows (\$1.50bn)

YTD cumulative flows into Europe-focused equity funds by country (\$bn)

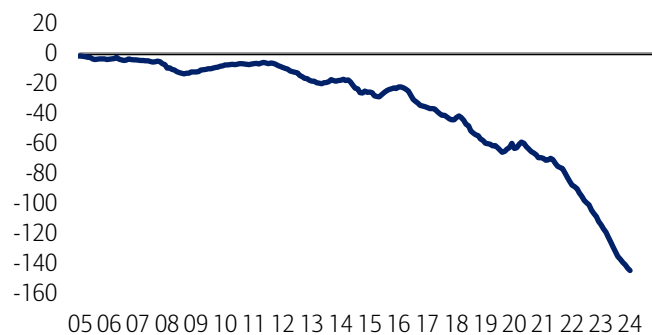


Source: BofA European Equity Quant Strategy, EPFR Global.

BofA GLOBAL RESEARCH

Exhibit 31: UK-focused equity funds have seen \$143bn of outflows since 2005 (active funds: -\$161bn, passive funds: \$18bn)

Long-term cumulative flows into UK-focused equity funds (\$bn)

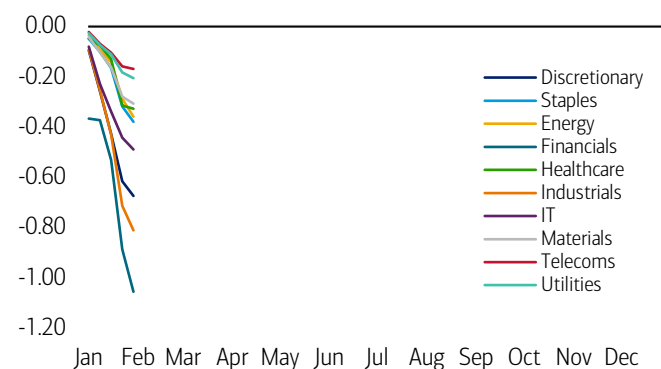


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 28: Telecoms noted the smallest outflows YTD (\$0.17bn), while Financials recorded the largest outflows (\$1.06bn)

YTD cumulative flows into Europe-focused equity funds by sector (\$bn)

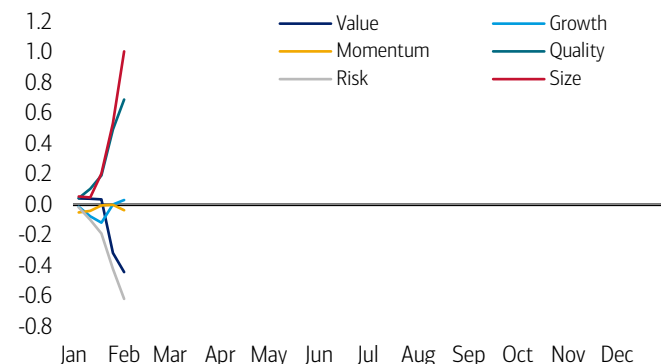


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 30: Size has seen the largest inflows YTD (\$1.0bn), while Risk has recorded the largest outflows (\$0.6bn)

YTD cumulative flows into European equities by style (long-short, \$bn)

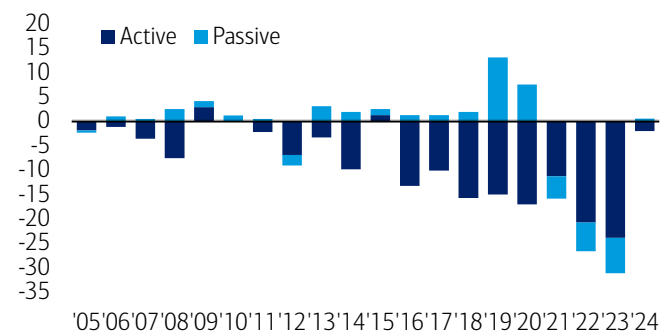


Source: BofA European Equity Quant Strategy, EPFR Global. Note: flows into styles are aggregated from stock level data

BofA GLOBAL RESEARCH

Exhibit 32: YTD active UK equities focused funds note -2 bn USD outflow, while passive funds record 1 bn USD inflow

Yearly flows into UK-focused equity funds (\$bn) split between active and passive funds

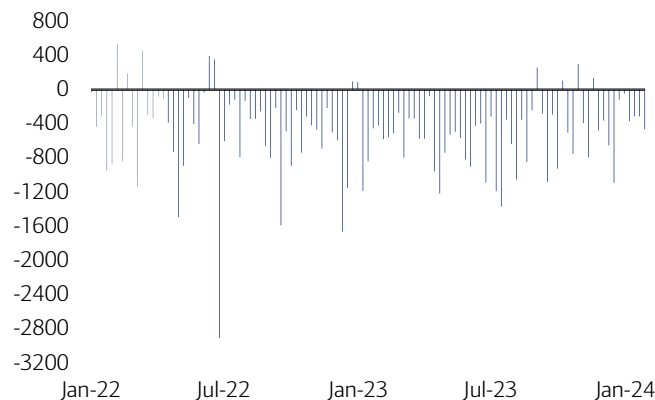


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 33: UK-focused equity funds saw \$0.46bn of outflows last week, the 10th consecutive outflow

UK-focused equity funds weekly flows (\$mn)

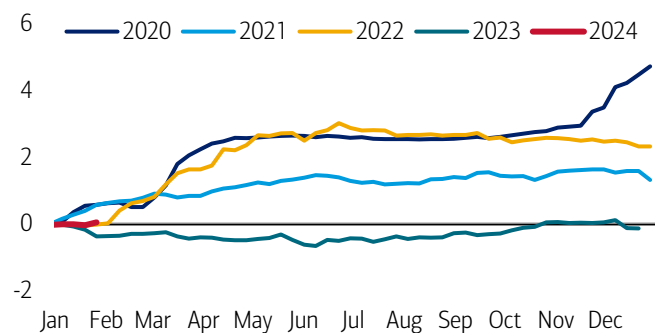


Source: BofA European Equity Quant Strategy, EPFR Global.

BofA GLOBAL RESEARCH

Exhibit 35: UK-focused equity funds benchmarked to FTSE 100 have seen \$0.05bn of inflows YTD

Cumulative annual flows into UK-focused equity funds benchmarked to FTSE 100 index (\$bn)

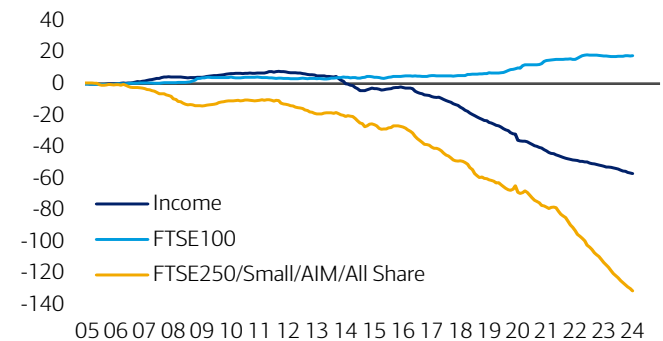


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 34: Since 2005, UK equity-focused income funds saw \$57bn of outflows, \$18bn of inflows into FTSE100 benchmarked funds and \$132bn of outflows from FTSE250/AIM/All Share/Small caps

Long-term cumulative flows into UK-focused equity funds (\$bn) split by focus

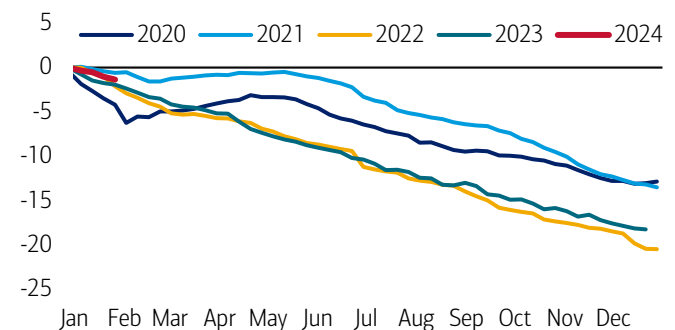


Source: BofA European Equity Quant Strategy, EPFR Global.

BofA GLOBAL RESEARCH

Exhibit 36: UK-focused equity funds benchmarked to FTSE 250/Small/AIM/All Share indices have seen \$-1.40bn of outflows YTD

Cumulative annual flows into UK-focused equity funds benchmarked to FTSE 250/AIM/Small/ALL Share indices (\$bn)



Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 37: Beiersdorf has seen the largest inflows last week as % of mcap, while Convatec largest outflows across funds

Top 5 and bottom 5 European companies that are part of Europe Stoxx 600 index and saw the largest inflow/outflow from different types of funds last week as % of market capitalisation

Stocks that saw the highest inflows last week

BBG		Flow as % of			
Ticker	Name	Sector	Country	mcap	Group
BEI GR	Beiersdorf	PCDG Stores	Germany	0.09	Active
GALP PL	Galp Energia	Energy	Portugal	0.07	Active
QIA GR	Qiagen	Health Care	Germany	0.06	Active
MRK GR	Merck	Health Care	Germany	0.05	Active
CARLB DC	Carlsberg B	Food, Bev & Tobacco	Denmark	0.04	Active
PST IM	Poste Italiane	Insurance	Italy	0.05	Passive
COV FP	Covivio	Real Estate	France	0.04	Passive
ADP FP	Adp	Industrial Gds & Svs	France	0.03	Passive
IPN FP	Ipsen	Health Care	France	0.03	Passive
DIE BB	D'leteren Group	Automobiles and Parts	Belgium	0.03	Passive

Stocks that saw the highest outflows last week

BBG Ticker Name		Sector	Country	mcap	Group
CTEC LN	Convatec Plc	Health Care	UK	-0.10	Active
BYG LN	Big Yellow Group	Real Estate	UK	-0.08	Active
JMAT LN	Johnson Matthey	Chemicals	UK	-0.08	Active
DWL LN	Dowla Group	Automobiles & Parts	UK	-0.08	Active
LAND LN	Land Securities	Real Estate	UK	-0.06	Active
HOLMB SS	Holmen B	Basic Resources	Sweden	-0.01	Passive
BYG LN	Big Yellow Group	Real Estate	UK	-0.01	Passive
YAR NO	Yara	Chemicals	Norway	-0.01	Passive
SYDB DC	Sydbank	Banks	Denmark	-0.01	Passive
SCAB SS	Svenska Cellulosa B	Basic Resources	Sweden	-0.01	Passive

Source: BofA European Equity Quant Strategy, EPFR Global. Disclaimer: The screen 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 screen was not created to act as a benchmark.

BofA GLOBAL RESEARCH

Performance

Exhibit 38: The SXXP index typically registers a 1.4% gain in Q1, while the current quarter-to-date return stands at a 1.02% gain

Historical average performance of Europe Stoxx 600 index (EUR, price return)



Source: BofA European Equity Quant Strategy, Refinitiv. Note: historical average performance calculated over 1992-2023

BofA GLOBAL RESEARCH

Exhibit 39: Q1 '24 so far notes stronger gains in Netherlands, IT and Quality compared to historical trends

Current QTD and YTD performance in comparison with historical average relative performance of MSCI sectors/countries indices (vs MSCI Europe, local currency, price return) and styles (long/short, EUR, price return)

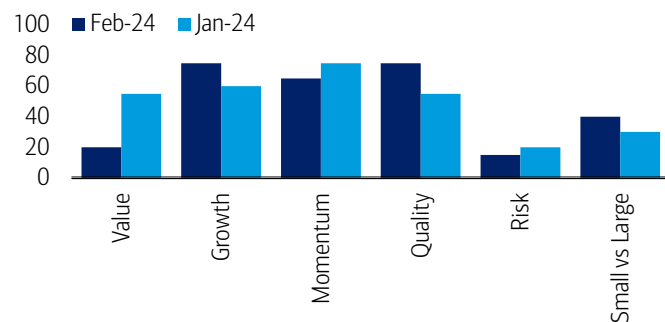
	QTD (%)	Diff vs historical	YTD (%)	Diff vs historical
Germany	-0.4	-0.9	-0.4	-0.9
France	-0.2	-0.8	-0.2	-0.8
Italy	0.6	-1.8	0.6	-1.8
Netherlands	7.3	6.9	7.3	6.9
Spain	-1.4	-2.1	-1.4	-2.1
Sweden	-2.1	-4.0	-2.1	-4.0
Switzerland	-0.3	0.1	-0.3	0.1
UK	-2.3	-1.1	-2.3	-1.1
Materials	-5.4	-4.9	-5.4	-4.9
Communication Svs	2.1	1.2	2.1	1.2
Discretionary	1.3	0.4	1.3	0.4
Staples	-0.4	1.3	-0.4	1.3
Energy	-2.7	-1.4	-2.7	-1.4
Financials	-1.7	-1.6	-1.7	-1.6
Healthcare	2.0	2.8	2.0	2.8
Industrials	0.0	-0.7	0.0	-0.7
IT	9.2	6.2	9.2	6.2
Utilities	-5.6	-5.5	-5.6	-5.5
Real Estate	-4.7	-5.4	-4.7	-5.4
Value	-2.3	-2.8	-2.3	-2.8
Growth	5.8	2.1	5.8	2.1
Momentum	3.8	1.7	3.8	1.7
Quality	1.5	4.3	1.5	4.3
Risk	-5.1	-8.5	-5.1	-8.5
Size	-3.6	-5.1	-3.6	-5.1

Source: BofA European Equity Quant Strategy, Refinitiv, MSCI. Note: historical average performance calculated over 1993-2023

BofA GLOBAL RESEARCH

Exhibit 40: Growth Quality have outperformed in 15 out of 20 sectors so far in February

% of SXXP index super-sectors in which styles (L/S) are outperforming in Feb

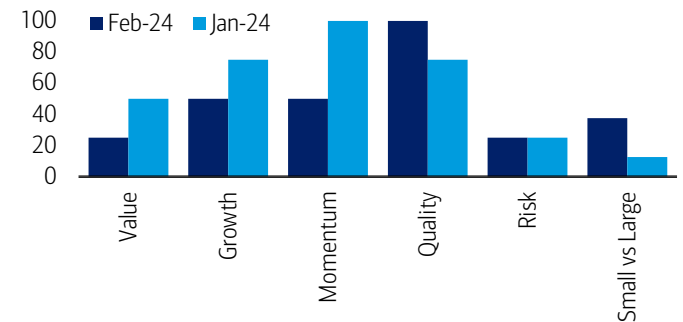


Source: BofA European Equity Quant Strategy, FactSet

BofA GLOBAL RESEARCH

Exhibit 41: Quality has outperformed in 8 out of 8 countries so far in February

% of SXXP index countries* in which styles (L/S) are outperforming in Feb



Source: BofA European Equity Quant Strategy, FactSet. Note: * countries included: France, Germany, Italy, Netherlands, Spain, Sweden, Switzerland, UK

BofA GLOBAL RESEARCH

Exhibit 42: Q1 has been historically the strongest for Sweden, IT and Low vs High Size

Historical average returns for countries, sectors, styles (L/S) in each quarter

Quarter	Germany	France	Italy	Netherlands	Spain	Sweden	Switzerland	UK				
Q1	-0.1%	1.8%	1.5%	1.5%	0.6%	3.2%	-0.3%	-2.0%				
Q2	0.2%	-0.1%	-2.3%	1.2%	0.2%	0.9%	1.1%	-0.3%				
Q3	-2.3%	-1.2%	-0.1%	-0.6%	0.1%	1.0%	0.5%	0.9%				
Q4	2.5%	0.2%	-1.0%	0.8%	0.7%	0.7%	-0.3%	-1.0%				
Quarter	Materials	Communication Svs	Discretionary	Staples	Energy	Financials	Healthcare	Industrials	IT	Utilities	Real Estate	
Q1	0.9%	-1.0%	1.5%	0.8%	0.8%	-2.4%	-0.7%	1.7%	2.3%	-0.7%	-7.4%	
Q2	0.6%	-4.0%	-0.4%	1.8%	2.2%	-1.4%	2.8%	0.2%	-0.4%	0.6%	-6.5%	
Q3	-2.2%	-0.4%	-1.8%	2.2%	-0.3%	0.2%	2.9%	-1.0%	-1.2%	0.8%	-1.8%	
Q4	1.6%	2.1%	1.2%	-2.1%	-2.4%	0.2%	-2.4%	0.8%	2.0%	-0.7%	3.2%	
Quarter	Value	Growth	Momentum	Quality	Risk	Size (Low vs High)						
Q1	-1.1%	3.4%	3.1%	-0.2%	0.0%	4.5%						
Q2	-1.3%	0.7%	5.9%	2.1%	-2.5%	0.0%						
Q3	0.7%	0.5%	5.1%	2.4%	-3.6%	0.8%						
Q4	0.2%	0.4%	1.6%	0.9%	3.3%	0.1%						

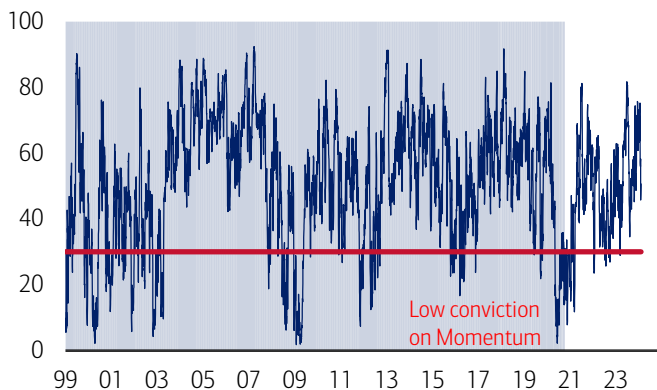
Source: BofA European Equity Quant Strategy, Refinitiv, MSCI. Note: historical average performance calculated over 1993-2023

BofA GLOBAL RESEARCH

European Momentum Conviction Indicator

Exhibit 43: BofA European Momentum Conviction Indicator (MCI) stands at 51, above the threshold of 30 which signals a potential crash in the Momentum style

BofA European Momentum Conviction Indicator (100=High, 0 = Low)

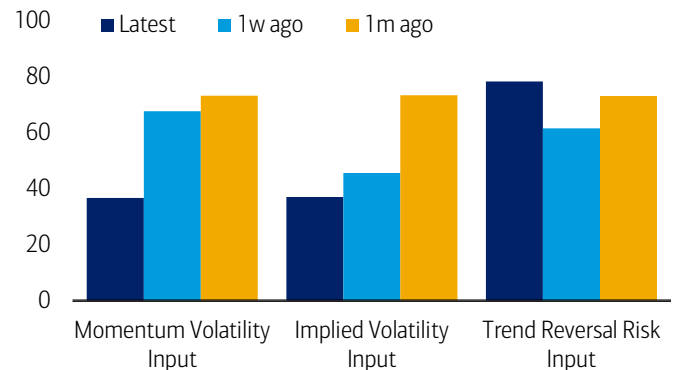


Source: BofA European Equity Quant Strategy, FactSet. Disclaimer: Performance through 06 October 2020 (shaded on the chart above) is backtested and does not represent the actual performance of any account or fund. Backtested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. The indicator identified as the BofA European Conviction Momentum 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 European Equity Quant Strategy. This indicator was not created to act as a benchmark

BofA GLOBAL RESEARCH

Exhibit 44: Declines in Momentum Volatility and Implied Volatility inputs pushed the indicator down by 6 points over the week

BofA European Momentum Conviction Indicator's inputs latest readings (100=High, 0=Low)



Source: BofA European Equity Quant Strategy, FactSet. For definitions of the inputs please see European Momentum Conviction Indicator

BofA GLOBAL RESEARCH

Valuations

Exhibit 45: MSCI Europe Market-Level Valuation Multiples

The most attractive multiple on z-score is FWD Buyback at 8.9%, while the least attractive is FWD DY at 7.9%

	Latest Value	Historical Z-Score	2-Year Z-Score	5-Year Z-Score	10-Year Z-Score	Historical Average	2-Year Average	5-Year Average	10-Year Average
TTM P/B	2.0	0.2	0.7	0.6	0.9	1.8	1.9	1.9	1.8
Shiller P/E	24.7	0.1	1.1	1.2	1.8	23.6	23.6	21.7	20.1
TTM P/E	14.3	-0.2	-0.4	-0.7	-1.2	15.3	14.7	16.8	17.8
FWD P/E	12.1	-0.1	1.1	-0.4	-0.3	12.4	11.6	12.6	12.5
TTM EV/EBITDA	8.1	0.1	-0.2	-0.8	-0.7	8.0	8.2	8.9	8.7
FWD EV/EBITDA	7.9	0.3	0.1	-0.7	-0.5	7.5	7.8	8.3	8.1
TTM Net Debt/EBITDA	1.3	-0.7	1.2	-0.8	-1.0	1.4	1.3	1.5	1.5
FWD Net Debt/EBITDA	1.2	-0.4	1.8	-0.6	-0.7	1.3	1.1	1.3	1.3
TTM Interest Coverage	8.9	-0.8	1.7	0.0	-0.5	7.5	10.8	9.0	7.9
FWD Interest Coverage	9.1	-0.4	1.6	0.4	-0.2	8.4	10.9	9.7	8.8
TTM DY	3.1	0.5	0.0	-0.1	0.2	3.7	3.1	3.1	3.2
FWD DY	3.9	0.8	-0.1	0.2	0.7	4.7	3.9	4.0	4.2
TTM ROE	13.8	-0.8	-1.6	-1.4	-2.0	12.0	13.0	11.4	10.6
FWD ROE	14.0	-0.4	0.1	-0.9	-1.5	13.2	14.0	12.5	12.2
TTM Buyback	1.8	-1.4	0.1	-1.1	-	1.1	1.9	1.3	-
FWD Buyback	1.6	-1.6	-1.2	0.4	-	1.1	1.6	1.2	-
TTM Cash Yield	5.3	-1.1	0.1	-0.8	-	4.5	5.3	4.7	-
FWD Cash Yield	5.2	-0.9	0.3	-0.7	-	4.7	5.3	4.8	-
TTM FCF Yield	7.3	-0.1	1.5	-0.1	-0.5	7.3	8.1	7.3	6.9
FWD FCF Yield	8.0	0.4	1.5	0.3	-0.2	8.4	8.9	8.2	7.8

Source: BofA European Equity Quant Strategy, Refinitiv Datastream, IBES Consensus Estimates, note: Z-scores have been inversed for 12m Trailing and Forward Return on Equity, Dividend Yield, Interest Coverage, FCF Yield, Buyback Yield, and Cash Yield. Consequently, for Dividend Yield a Z-score of -0.8 implies that the current level is 0.8 standard deviations higher than the historical average, while for the P/E ratio a Z-score of -0.8 implies that the current level is 0.8 standard deviations below the historical average.

BofA GLOBAL RESEARCH

Exhibit 46: Financials currently ranks the most attractive on historical z-score at 6.2%, while Industrials ranks the least attractive at 2.7%

MSCI Europe 12m FWD Dividend Yield (%) by Sector

	Latest Value	Historical Z-Score	2-Year Z-Score	5-Year Z-Score	10-Year Z-Score	Historical Average	2-Year Average	5-Year Average	10-Year Average
MSCI Europe	3.9	-0.8	0.1	-0.2	-0.7	4.7	3.9	4.0	4.2
Discretionary	3.3	-0.7	0.1	0.4	-0.2	4.0	3.3	3.1	3.4
Staples	3.9	-0.2	1.4	1.2	0.6	4.0	3.5	3.6	3.6
Energy	5.7	-0.2	1.1	-0.4	-0.6	6.0	5.3	6.2	6.4
Financials	6.2	0.3	0.7	0.7	1.0	5.9	5.9	5.8	5.7
Health Care	2.8	-1.0	0.5	-0.6	-1.1	3.8	2.8	3.0	3.3
Industrials	2.7	-1.2	-1.8	-0.8	-1.2	3.7	2.9	2.9	3.2
Materials	3.9	-0.3	-1.9	-1.7	-0.6	4.1	4.7	4.6	4.2
Technology	1.3	-1.2	-2.0	-0.6	-1.1	2.4	1.5	1.5	1.8
Communication Svs	4.8	-0.9	-0.2	-0.6	-0.9	6.6	4.8	5.1	5.3
Utilities	5.8	-0.4	1.7	1.2	0.2	6.3	5.4	5.4	5.7
Real Estate	4.6	-0.6	-1.1	-0.5	-0.6	5.1	5.5	5.1	5.1

Source: BofA European Equity Quant Strategy, Refinitiv Datastream, IBES Consensus Estimates

BofA GLOBAL RESEARCH

Exhibit 47: Energy currently ranks the most attractive on historical z-score with a multiple of 6.6x, while Industrials ranks the least attractive at 16.7x

MSCI Europe 12m FWD P/E ratio by Sector

	Latest Value	Historical Z-Score	2-Year Z-Score	5-Year Z-Score	10-Year Z-Score	Historical Average	2-Year Average	5-Year Average	10-Year Average
MSCI Europe	12.1	-0.1	1.1	-0.4	-0.3	12.4	11.6	12.6	12.5
Discretionary	11.6	-0.3	-0.1	-0.6	-0.3	12.7	11.6	13.3	12.2
Staples	14.3	0.0	-1.1	-1.5	-0.9	14.3	15.4	15.5	15.7
Energy	6.6	-1.0	1.3	-0.6	-1.1	11.1	5.8	8.5	10.2

Exhibit 47: Energy currently ranks the most attractive on historical z-score with a multiple of 6.6x, while Industrials ranks the least attractive at 16.7x

MSCI Europe 12m FWD P/E ratio by Sector

	Latest Value	Historical Z-Score	2-Year Z-Score	5-Year Z-Score	10-Year Z-Score	Historical Average	2-Year Average	5-Year Average	10-Year Average
Financials	8.1	-0.5	-0.1	-0.8	-1.1	10.0	8.2	8.8	9.2
Health Care	15.4	0.0	0.1	0.4	0.6	15.4	15.4	15.1	14.6
Industrials	16.7	1.0	1.7	0.3	0.8	13.2	15.3	16.1	14.9
Materials	13.2	0.7	1.8	0.8	0.4	11.1	11.0	11.8	12.4
Technology	24.5	0.4	3.9	1.1	1.7	20.0	19.6	21.0	18.7
Communication Svs	13.0	0.0	-0.2	0.2	-0.3	21.7	13.1	12.8	13.6
Utilities	11.2	-0.3	-1.5	-2.1	-1.3	12.0	12.6	13.2	12.7
Real Estate	13.2	-0.8	0.5	-0.4	-0.8	14.8	12.3	14.1	14.8

Source: BofA European Equity Quant Strategy, Refinitiv Datastream, IBES Consensus Estimates

BofA GLOBAL RESEARCH

Exhibit 48: Energy currently ranks the most attractive on historical z-score with a multiple of 1.3x, while Industrials ranks the least attractive at 3.5x

MSCI Europe 12m Trailing Price/Book ratio by Sector

	Latest Value	Historical Z-Score	2-Year Z-Score	5-Year Z-Score	10-Year Z-Score	Historical Average	2-Year Average	5-Year Average	10-Year Average
MSCI Europe	2.0	0.2	0.7	0.6	0.9	1.8	1.9	1.9	1.8
Discretionary	2.0	-0.5	-0.2	-0.3	-0.7	2.3	2.0	2.1	2.2
Staples	3.0	-0.9	-0.9	-1.1	-1.2	3.5	3.2	3.3	3.5
Energy	1.3	-0.9	-0.4	0.4	0.3	2.0	1.3	1.2	1.2
Financials	1.0	-0.6	1.5	1.7	1.0	1.4	0.9	0.9	0.9
Health Care	3.9	-0.5	0.2	-0.1	-0.2	4.7	3.8	3.9	4.0
Industrials	3.5	1.4	0.8	0.2	0.7	2.7	3.2	3.4	3.2
Materials	1.8	-0.1	0.3	-0.2	-0.1	1.9	1.8	1.9	1.9
Technology	5.1	0.2	0.5	0.2	0.9	4.5	4.7	4.8	4.1
Communication Svs	1.3	-0.5	-0.6	-1.1	-1.4	2.0	1.4	1.5	1.6
Utilities	1.7	-0.4	-0.5	-0.8	0.1	1.9	1.8	1.8	1.7
Real Estate	0.9	-0.2	1.3	0.2	-0.2	0.9	0.7	0.8	0.9

Source: BofA European Equity Quant Strategy, Refinitiv Datastream, IBES Consensus Estimates

BofA GLOBAL RESEARCH

Exhibit 49: Discretionary currently ranks the most attractive on historical z-score with a multiple of 18.9x, while Staples ranks the least attractive at 8.6x

MSCI Europe 12m FWD Interest Coverage by Sector

	Latest Value	Historical Z-Score	2-Year Z-Score	5-Year Z-Score	10-Year Z-Score	Historical Average	2-Year Average	5-Year Average	10-Year Average
MSCI Europe	9.1	0.4	-1.6	-0.4	0.2	8.4	10.9	9.7	8.8
Discretionary	18.9	1.3	-0.6	0.6	1.0	13.2	19.6	16.4	14.2
Staples	8.6	-1.0	-0.8	-0.5	-0.9	9.5	9.4	9.0	9.5
Energy	15.8	0.2	-1.3	0.0	0.3	14.6	23.4	16.1	14.1
Health Care	13.3	0.5	-1.7	0.0	0.4	12.6	14.7	13.4	12.7
Industrials	8.8	0.2	-1.6	-0.6	0.0	8.5	10.9	9.8	8.8
Materials	8.8	0.0	-1.3	-0.8	-0.2	8.9	13.6	11.4	9.5
Technology	19.6	0.6	-0.7	0.0	0.4	17.5	21.2	19.6	18.7
Communication Svs	4.1	0.1	-1.6	-0.5	0.1	4.1	4.5	4.4	4.1
Utilities	4.4	0.4	-0.8	-1.0	0.1	4.1	4.6	4.8	4.3

Source: BofA European Equity Quant Strategy, Refinitiv Datastream, IBES Consensus Estimates

BofA GLOBAL RESEARCH

Exhibit 50: Communication Services currently ranks the most attractive on historical z-score with a multiple of 4.8x, while Materials ranks the least attractive at 0.3x

MSCI Europe 12m Forward Buyback Yield

	Latest Value	Historical Z-Score	2-Year Z-Score	5-Year Z-Score	Historical Average	2-Year Average	5-Year Average
MSCI Europe	1.6	1.2	-0.4	1.0	1.1	1.6	1.2
Financials	3.0	1.8	1.1	1.4	1.2	2.8	1.6
Industrials	1.0	0.5	-1.7	0.1	0.9	1.3	1.0
Real Estate	0.0	-0.7	-1.1	-0.7	0.1	0.1	0.2
Utilities	0.4	0.0	-0.1	0.0	0.4	0.4	0.4
Consumer Discretionary	0.4	-0.3	-0.6	-0.4	0.6	0.6	0.5
Communication Services	4.8	3.6	2.4	3.5	1.0	2.2	1.4
Energy	5.8	0.9	-0.5	0.5	3.4	6.3	4.7
Materials	0.3	-1.0	-1.9	-1.3	0.9	1.0	1.0
Health Care	0.8	-0.1	1.1	1.1	0.9	0.7	0.7
Consumer Staples	1.3	0.2	-1.0	0.0	1.2	1.5	1.3
Information Technology	0.8	0.3	-0.1	0.2	0.7	0.8	0.8

Source: BofA European Equity Quant Strategy, Refinitiv Datastream, IBES Consensus Estimates

BofA GLOBAL RESEARCH

Appendix

Revision ratios by country, sector, style and exposure baskets

Exhibit 51: Revision ratios by country, sector, style and exposure baskets

January readings of the Sales, EPS, DPS, Price target, Buybacks, Net debt, Inventories and Capex Revision Ratios

	Sales Revision Ratio				EPS Revision Ratio				Dividend Revision Ratio				Price Target Revision Ratio				Buybacks Revision Ratio				Net Debt Revision Ratio				Inventories Revision Ratio				Capex Revision Ratio			
	1m ratio	3m ratio	MoM: 1m ratio	MoM: 3m ratio	1m ratio	3m ratio	MoM: 1m ratio	MoM: 3m ratio	1m ratio	3m ratio	MoM: 1m ratio	MoM: 3m ratio	1m ratio	3m ratio	MoM: 1m ratio	MoM: 3m ratio	1m ratio	3m ratio	MoM: 1m ratio	MoM: 3m ratio	1m ratio	3m ratio	MoM: 1m ratio	MoM: 3m ratio	1m ratio	3m ratio	MoM: 1m ratio	MoM: 3m ratio	1m ratio	3m ratio	MoM: 1m ratio	MoM: 3m ratio
Europe	0.58	0.64	-0.06	-0.14	0.65	0.69	-0.04	-0.04	0.54	0.76	-0.47	-0.15	1.94	1.09	0.96	0.37	1.00	1.20	-0.18	-0.17	1.84	2.01	-0.21	-0.14	0.42	0.57	-0.20	-0.15	0.65	0.65	0.12	-0.11
Countries																																
United Kingdom	0.71	0.85	-0.21	-0.18	0.76	0.82	-0.06	-0.06	0.97	0.94	-0.03	-0.14	2.67	1.55	1.24	0.63	0.79	1.00	-0.15	-0.16	2.81	2.94	0.13	0.61	0.61	0.83	-0.34	-0.27	0.70	0.94	-0.12	-0.32
Germany	0.39	0.41	-0.06	-0.10	0.43	0.58	-0.21	-0.13	0.50	0.62	-0.14	-0.09	1.24	1.08	0.04	0.28	0.50	1.21	-0.90	-0.48	0.96	1.38	-0.64	-0.67	0.31	0.44	-0.21	-0.07	0.47	0.42	0.14	-0.03
France	0.58	0.53	0.10	-0.09	0.71	0.51	0.29	0.04	0.26	0.59	-0.66	-0.17	2.17	0.91	1.26	0.39	1.00	1.29	-0.25	-0.07	2.00	2.88	-1.23	-0.61	0.36	0.35	0.05	-0.08	0.47	0.67	-0.13	-0.21
Switzerland	0.53	0.38	0.09	-0.05	0.45	0.40	0.04	0.02	0.89	0.73	0.12	0.13	1.11	0.73	0.43	0.09	2.00	1.00	1.60	0.00	3.11	2.50	0.84	0.07	0.24	0.30	-0.10	-0.11	0.55	0.29	0.40	0.02
Spain	0.59	1.02	-0.66	-0.42	1.13	1.33	-1.48	0.06	0.44	1.20	-3.22	-0.80	1.83	1.25	0.72	0.32	0.00	1.60	-1.50	-0.80	0.78	0.84	-0.10	-0.36	0.67	1.25	-1.83	-0.30	2.50	1.56	0.90	0.09
Italy	0.73	1.00	0.00	-0.16	0.86	0.97	0.00	0.00	0.60	1.14	-0.57	-0.69	2.29	0.97	1.57	0.21	0.00	3.00	-	-2.00	4.67	4.30	1.17	0.75	0.33	0.67	-0.29	-0.33	0.63	0.96	-0.25	-0.25
Netherlands	0.52	0.39	0.26	-0.03	0.71	0.57	0.17	0.11	0.46	0.68	-0.44	-0.09	2.43	1.18	1.51	0.49	1.50	1.00	0.50	0.08	1.83	1.62	-0.50	0.03	0.25	0.36	-0.19	-0.19	0.50	0.44	0.00	0.08
Sweden	0.29	0.71	-0.76	-0.50	0.58	0.94	-0.55	-0.30	0.59	1.00	-1.16	-0.19	2.33	1.35	0.96	0.54	2.50	1.18	1.50	0.10	2.00	1.68	0.36	-0.07	0.26	0.76	-0.61	-0.55	1.00	0.71	0.70	-0.13
Sectors																																
Discretionary	0.40	0.48	-0.01	-0.10	0.63	0.68	-0.06	-0.07	0.48	0.67	-0.10	-0.13	0.92	0.76	-0.04	0.20	1.00	1.07	0.20	-0.24	2.00	2.71	-0.36	-0.26	0.40	0.49	-0.12	-0.05	0.48	0.56	-0.02	-0.15
Staples	0.67	0.65	0.02	-0.21	0.28	0.43	-0.15	-0.21	0.67	0.76	-0.13	-0.11	1.00	0.74	0.30	0.22	1.00	0.85	0.13	0.02	2.78	3.54	-2.39	-0.04	0.21	0.31	-0.16	-0.19	0.42	0.53	-0.02	-0.24
Energy	0.15	0.61	-0.56	-0.68	0.45	0.71	-0.05	-0.25	0.57	1.25	-0.43	-1.75	0.38	1.20	-0.83	-0.55	0.00	0.80	-1.33	-1.60	4.50	7.00	-5.50	3.43	0.50	1.20	-0.50	-1.47	1.00	0.76	0.43	0.10
Financials	1.04	1.03	0.08	-0.05	1.17	1.19	-0.01	0.11	0.96	1.29	-0.88	0.01	2.48	1.51	1.18	0.30	1.33	1.75	-0.56	-0.33	2.80	2.00	1.00	0.41	1.00	0.33	1.00	-0.07	0.83	1.25	-0.57	-0.32
Health Care	0.51	0.54	-0.07	-0.15	0.50	0.48	-0.01	-0.07	0.26	0.36	-0.21	-0.13	1.44	0.75	0.73	0.21	0.38	0.81	-0.38	-0.91	2.45	3.18	-1.55	-0.61	0.57	0.80	-0.43	-0.18	0.70	0.61	0.15	-0.07
Industrials	0.62	0.63	0.01	-0.13	0.67	0.65	-0.02	-0.05	0.39	0.66	-0.54	-0.21	4.64	1.29	3.71	0.65	1.00	1.04	0.10	-0.10	1.57	1.57	0.08	-0.16	0.41	0.57	-0.18	-0.23	0.76	0.71	0.30	-0.20
Materials	0.41	0.33	0.12	-0.13	0.55	0.47	0.17	0.04	0.21	0.42	-0.73	-0.02	1.27	0.88	0.50	0.30	1.67	2.11	-1.00	-0.14	2.08	1.82	0.51	-0.40	0.22	0.27	-0.09	-0.01	0.33	0.35	0.03	-0.04
Technology	0.50	0.50	-0.18	-0.01	0.68	0.69	-0.26	0.10	0.86	0.87	-0.48	0.08	4.67	1.83	3.24	0.83	6.00	2.00	4.33	0.64	2.20	2.50	-1.05	-0.35	0.80	1.54	-1.20	-0.64	0.55	0.40	0.21	0.07
Communication Svs	0.48	0.61	-0.26	-0.28	0.55	0.60	-0.13	-0.14	0.50	0.63	-0.20	-0.50	3.20	1.63	1.34	0.56	1.50	0.67	1.10	0.31	1.44	1.79	-0.70	0.07	1.25	1.45	0.25	-0.05	1.10	0.64	0.79	-0.04
Utilities	0.88	1.26	-0.70	-0.03	0.78	1.26	-1.13	0.07	1.50	2.00	-0.50	-0.29	1.67	0.71	1.07	0.36	-	-	-	-	1.00	1.00	0.00	-0.16	0.83	1.00	-0.67	0.06	1.10	1.91	-1.73	0.00
Real Estate	0.92	0.93	0.12	-0.05	1.00	0.85	0.55	0.15	0.57	0.82	-1.76	-0.33	#DIV/0!	3.13	-	1.91	-	-	-	-	0.43	0.43	0.00	-0.24	0.00	1.33	-	-2.17	1.50	0.90	1.10	-0.19
Styles																																
Top Value	0.38	0.69	-0.35	-0.50	0.25	0.53	-0.27	-0.33	0.50	1.03	-1.03	-0.31	1.24	1.03	0.11	0.06	0.45	1.29	-1.15	-0.63	1.40	3.31	-4.60	-1.44	0.40	0.96	-0.70	-0.25	0.75	0.42	0.58	-0.02
High Growth	0.34	0.78	-0.66	-0.50	0.74	1.47	-0.76	-0.51	1.00	1.63	-0.71	-0.25	3.18	2.44	0.41	0.69	1.60	4.09	-4.07	-0.08	1.43	1.51	-0.19	0.16	0.60	0.51	0.25	-0.16	1.00	1.02	-0.07	-0.04
Rising Price Momentum	0.65	1.15	-0.44	-0.42	0.63	1.70	-1.30	-1.24	0.60	1.69	-2.10	-1.19	5.86	8.60	-17.14	3.64	1.50	2.69	-1.70	-0.45	1.20	1.25	-0.57	0.01	0.92	1.45	-0.58	-0.23	0.82	1.54	-0.64	-0.59
High Quality	0.37	0.62	-0.29	-0.21	0.38	0.65	-0.42	-0.22	0.59	0.74	-0.30	-0.11	1.94	1.58	0.27	0.55	0.80	0.96	-0.20	-0.04	4.38	2.77	2.31	0.34	0.71	0.90	-0.23	-0.09	0.72	0.81	0.03	-0.19
High Risk	0.27	0.49	-0.28	-0.27	0.54	0.65	-0.12	-0.10	0.64	0.66	-0.21	-0.12	1.42	1.17	0.23	0.26	0.86	1.22	-0.57	-0.03	1.38	1.42	0.00	-0.68	0.59	0.68	0.03	-0.08	1.21	0.87	0.71	0.12
Low Size	0.75	0.51	0.34	-0.06	0.30	0.58	-0.41	-0.14	0.84	0.68	-0.01	0.01	2.62	1.06	1.66	0.48	1.00	0.91	0.00	0.08	1.56	1.89	-0.75	-0.57	0.65	0.64	0.00	-0.06	0.95	0.75	0.41	0.09
Exposure Baskets																																
Developed Europe	0.69	1.00	-0.51	-0.13	0.64	0.90	-0.36	0.01	0.99	1.03	-0.17	0.05	2.23	1.13	1.26	0.40	0.83	1.04	-0.09	-0.17	1.20	1.45	-0.40	-0.13	0.76	0.86	-0.17	-0.18	1.12	1.06	0.18	-0.05
USA	0.36	0.51	-0.26	-0.30	0.38	0.68	-0.35	-0.23	0.35	0.64	-0.39	-0.27	2.86	1.48	1.66	0.49	1.38	1.59	-0.10	-0.14	1.91	2.03	-0.02	-0.12	0.46	0.52	-0.03	-0.08	0.53	0.64	-0.14	-0.08
EM	0.22	0.32	-0.17	-0.18	0.34	0.45	-0.27	-0.09	0.44	0.63	-0.45	-0.07	1.14	0.70	0.48	0.26	2.00	1.03	1.13	0.08	2.26	2.16	0.11	-0.28	0.32	0.40	-0.08	-0.06	0.67	0.48	0.28	0.01
Global Diversified	0.52	0.57	0.03	-0.11	0.75	0.71	-0.20	0.06	0.48	0.64	-0.52	-0.06	1.61	0.95	0.72	0.34	4.00	2.22	1.67	-0.03	1.29	1.51	-0.08	-0.36	0.38	0.64	-0.45	-0.20	0.45	0.49	-0.03	-0.14

Source: BofA European Equity Quant Strategy, IBES, Factset, MSCI

BofA GLOBAL RESEARCH



Latest C-suite changes, insider trading and buyback program screens

Exhibit 52: Unilever, Allianz and Dassault Systemes are the largest companies in Europe that saw C-suite changes last month

Latest European companies which saw CEO/President/CFO change effective in January 2024

BBG Ticker	Name	Sector	Country	New CEO	New CEO Effective Date	New President	New President Effective Date	New CFO	New CFO Effective Date
HMB SS	Hennes & Mauritz	Discretionary	Sweden	Daniel Erv�r	31/01/2024	Daniel Erv�r	31/01/2024		
GBG LN	GB	Technology	UK	Dev Dhiman	30/01/2024				
				Peter H. A. M. Bijvelds;					
EBUS NA	Ebusco	Industrials	Netherlands	Frank Meurs	29/01/2024				
IGG LN	IG	Financials	UK	Breon Thomas Corcoran	29/01/2024				
PSON LN	Pearson	Discretionary	UK	Andy Bird	26/01/2024				
CPI LN	Capita	Industrials	UK	Adolfo Hernandez	17/01/2024				
	Spirax-Sarco								
SPX LN	Engineering	Industrials	UK	Nimesh Balvir Patel	16/01/2024			Philip Andrew Scott	16/01/2024
ATO FP	Atos	Technology	France	Paul N. Saleh	15/01/2024			Jacques Francois de Prest	29/01/2024
FIA1S FH	Finnair	Industrials	Finland	Jaakko Schildt	15/01/2024				
MARS LN	Marston's	Discretionary	UK	Justin Mark Platt	10/01/2024				
STORYB SS	Storytel	Comm. Svs	Sweden	Line Miller	08/01/2024				
				Torben Vedel Stahl					
BIOT SS	Biotage	Health Care	Sweden	J�rgensen	04/01/2024				
EDV CN	Endeavour Mining	Materials	UK	Ian David Cockerill	04/01/2024				
				Mario Eugenio Cosimino					
EVT GR	Evotec	Health Care	Germany	Polywka	03/01/2024				
ASCL LN	Ascential	Comm. Svs	UK	Philip Owain Thomas	02/01/2024				
TYMN LN	Tyman	Industrials	UK	Rutger A. Helbing	02/01/2024			Jason Russel Gary Ashton	02/01/2024
ADN1 GR	adesso	Technology	Germany	Mark Lohweber	01/01/2024				
AGR AV	Agrana Beteiligungs	Staples	Austria	Stephan B�ttner	01/01/2024				
ALKB DC	ALK-Abello	Health Care	Denmark	Peter Halling	01/01/2024	Peter Halling	01/01/2024		
AZE BB	Azelis	Industrials	Belgium	Anna Bertona	01/01/2024				
CLTN SW	Coltene	Health Care	Switzerland	Dominik Arnold	01/01/2024				
DSY FP	Dassault Systemes	Technology	France	Pascal Daloz	01/01/2024				
DOKA SW	dormakaba	Industrials	Switzerland	Till Reuter	01/01/2024				
EXM BB	Exmar	Energy	Belgium	Carl-Antoine Saverys	01/01/2024				
GLB ID	Glanbia	Staples	Ireland	Hugh McGuire	01/01/2024				
IMCD NA	IMCD	Industrials	Netherlands	Valerie Diele-Braun	01/01/2024				
				Herv� Eloi Dominique					
IPH FP	Innate Pharma	Health Care	France	Brailly	01/01/2024				
						Carl Peter Hugo			
INWI SS	Inwido	Industrials	Sweden	Carl Peter Hugo Welin	01/01/2024	Welin	01/01/2024		
KNEBV FH	Kone	Industrials	Finland	Philippe Delorme	01/01/2024	Philippe Delorme	01/01/2024		
LGEM LN	Legal & General Nordic	Financials	UK	Ant�nio Sim�es	01/01/2024				
NOD NO	Semiconductor	Technology	Norway	Vegard Wollan	01/01/2024				
TPE GR	PVA TePla	Technology	Germany	Jalin Ketter	01/01/2024				
SANOMA FH	Sanoma	Comm. Svs	Finland	Kolkman Rob	01/01/2024	Kolkman Rob	01/01/2024		
SBO AV	Schoeller Bleckmann	Energy	Austria	Klaus Hermann Mader	01/01/2024				
	Sparebank 1 Nord-								
NONG NO	Norge	Financials	Norway	Hanne Karoline Kr�mer	01/01/2024				
SPINN FH	Spinnova	Discretionary	Finland	Tuomas Oijala	01/01/2024				
	Svenska								
SHBA SS	Handelsbanken	Financials	Sweden	Michael Green	01/01/2024	Michael Green	01/01/2024		
TM17 LN	Team17	Comm. Svs	UK	Stephen Bell	01/01/2024				
TNIE GR	tonies	Discretionary	Germany	Tobias Wann	01/01/2024				
UTG LN	UNITE	Real Estate	UK	Joseph Julian Lister	01/01/2024				
UPM FH	UPM-Kymmene	Materials	Finland	Massimo Reynaudo	01/01/2024	Massimo Reynaudo	01/01/2024		
VACN SW	VAT	Industrials	Switzerland	Urs Gantner	01/01/2024				
VIMIAN SS	Vimian	Health Care	Sweden	Patrik Eriksson	01/01/2024				
				Christel Rendu de Lint;					
				Georg Schubiger					
VONN SW	Vontobel	Financials	Switzerland		01/01/2024				
MRX GR	Mister Spex	Discretionary	Germany					Stephan Schulz-Gohritz	01/01/2024
RENEW SS	Re:NewCell	Materials	Sweden					Peter Schulz	01/01/2024
THULE SS	Thule	Discretionary	Sweden					Toby James Lawton	01/01/2024
IDS LN	Intl. Distri. Svs	Industrials	UK					Michael David Snape	18/01/2024

Exhibit 52: Unilever, Allianz and Dassault Systemes are the largest companies in Europe that saw C-suite changes last month

Latest European companies which saw CEO/President/CFO change effective in January 2024

BBG Ticker	Name	Sector	Country	New CEO	New CEO Effective Date	New President	New President Effective Date	New CFO	New CFO Effective Date
ULVR LN	Unilever	Staples	UK					Fernando Fernandez	01/01/2024
KAMUX FH	Kamux	Discretionary	Finland					Jukka Petteri Havia	17/01/2024
PPGN SW	PolyPeptide	Health Care	Switzerland					Marc Augustin	02/01/2024
ALNOV FP	Novacyt	Health Care	France					Steven Michael Gibson	02/01/2024
AMBUB DC	Ambu	Health Care	Denmark					Henrik Skak Bender	01/01/2024
SCST SS	Scandi Standard	Staples	Sweden					Fredrik Sylwan	15/01/2024
FR FP	Valeo	Discretionary	France					Édouard de Pirey	02/01/2024
IQE LN	IQE	Technology	UK					Jutta Meier	22/01/2024
RXL FP	Rexel	Industrials	France					Laurent Delabarre	01/01/2024
BONAVB SS	Bonava	Discretionary	Sweden					Lars Ingman	09/01/2024
CAP FP	Cappgemini	Technology	France					Nivedita Krishnamurthy Bhagat	01/01/2024
TPK LN	Travis Perkins	Industrials	UK					Duncan John Cooper	09/01/2024
SHOT SS	Scandic Hotels	Discretionary	Sweden					Jens Jacob Mathiesen	17/01/2024
CHG LN	Chemring	Industrials	UK					James Stephen Mccready Mortensen	22/01/2024
LEON SW	Leonteq	Financials	Switzerland					Antoine Boublil	01/01/2024
FIE GR	Fielmann	Discretionary	Germany					Steffen Bätjer	01/01/2024
HHFA GR	HHLA	Industrials	Germany					Annette Walter	01/01/2024
ALV GR	Allianz	Financials	Germany					Claire-Marie Coste-Lepoutre	01/01/2024
TESB BB	Tessenderlo	Materials	Belgium					Miguel de Potter	01/01/2024
MTU FP	Manitou	Industrials	France					Céline Brard	29/01/2024
	Oxford Nanopore								
ONT LN	Technologies	Health Care	UK					Nicholas Patrick Keher	22/01/2024
STO3 GR	STO	Materials	Germany					Désirée Konrad	01/01/2024

Source: BofA European Equity Quant Strategy, Factset. Disclaimer: The screen 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 screen was not created to act as a benchmark.

BofA GLOBAL RESEARCH

Exhibit 53: BASF, Credit Agricole and RWE are the largest companies that saw net insider buying in January 2024

Top 25 European stocks with the largest net insider buying in January 2024 (shares bought – sold as percentage of total outstanding shares)

BBG Ticker	Name	Industry	Country	No of shares purchased	No of shares sold	Net % of shares outstanding bought	Mkt value of net shares outstanding bought (EUR mn)
VTSC GR	Vitesco Technologies	Consumer Discretionary	Germany	15,561,630	-2,043,196	33.78	1,259.09
KCO GR	Kloeckner	Industrials	Germany	11,533,660	0	11.56	112.45
ACA FP	Credit Agricole	Financials	France	3,833,775	0	0.13	50.60
PNDORA DC	Pandora	Consumer Discretionary	Denmark	248,827	0	0.28	32.70
EDV CN	Endeavour Mining	Materials	United Kingdom	1,698,957	0	0.69	30.07
TRYG DC	Tryg	Financials	Denmark	832,000	0	0.13	16.19
TE FP	Technip Energies	Energy	France	793,112	0	0.44	15.66
ALLEI SS	Alleima	Materials	Sweden	2,258,760	0	0.90	13.19
KBC BB	KBC	Financials	Belgium	79,000	0	0.02	4.81
STG DC	Scandinavian Tobacco	Consumer Staples	Denmark	208,873	0	0.24	4.06
IPS FP	Ipsos	Communication Services	France	39,962	0	0.09	2.26
MRL SM	MERLIN Properties SOCIMI	Real Estate	Spain	80,000	0	0.02	0.78
BOSS GR	HUGO BOSS	Consumer Discretionary	Germany	12,156	0	0.02	0.71
FEVR LN	Fevertree Drinks	Consumer Staples	United Kingdom	45,000	0	0.04	0.51
COLR BB	Colruyt	Consumer Staples	Belgium	10,870	0	0.01	0.46
PSM GR	ProSiebenSat 1 Media	Communication Services	Germany	74,840	0	0.03	0.43
BAS GR	BASF	Materials	Germany	8,700	0	0.00	0.41
FDR SM	Fluidra	Industrials	Spain	20,364	-720	0.01	0.36
RWE GR	RWE	Utilities	Germany	8,505	0	0.00	0.30
CEC GR	CECONOMY	Consumer Discretionary	Germany	107,800	0	0.02	0.25
GBF GR	Bilfinger	Industrials	Germany	6,000	0	0.02	0.21
JD/ LN	JD Sports Fashion	Consumer Discretionary	United Kingdom	155,081	0	0.00	0.20
DEZ GR	DEUTZ	Industrials	Germany	40,000	0	0.03	0.19
SKAB SS	Skanska	Industrials	Sweden	10,911	0	0.00	0.17
PNN LN	Pennon	Utilities	United Kingdom	18,648	0	0.01	0.16

Source: BofA European Equity Quant Strategy, Factset. Disclaimer: The screen 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 screen was not created to act as a benchmark.

BofA GLOBAL RESEARCH



Exhibit 54: ASML, Iberdrola and Experian are the largest companies that saw net insider selling in January 2024

Top 25 European stocks with the largest net insider selling in January 2024 (shares sold – bought as percentage of total outstanding shares)

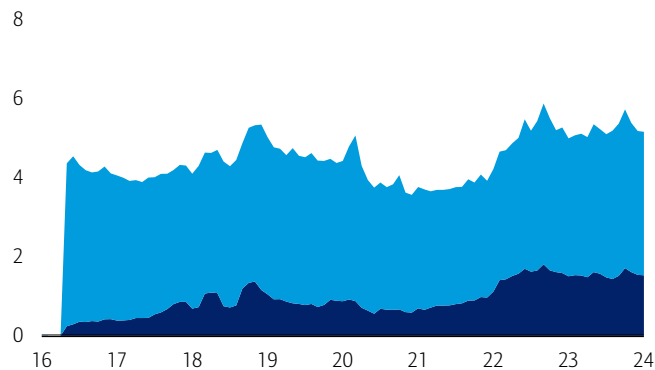
BBG Ticker	Name	Industry	Country	No of shares purchased	No of shares sold	Net % of shares outstanding sold	Mkt value of net shares outstanding sold (EUR mn)
SCYR SM	Sacyr	Industrials	Spain	0	-110,123,600	-16.12	-254.05
MAERSKB DC	A.P. Moller - Maersk B	Industrials	Denmark	0	-43,557	-0.58	-81.70
SL IM	Sanlorenzo	Consumer Discretionary	Italy	0	-13,900	-0.04	-74.18
EQT SS	EQT	Financials	Sweden	0	-3,125,500	-0.25	-73.75
BFIT NA	Basic-Fit	Consumer Discretionary	Netherlands	0	-1,700,890	-2.58	-45.14
MAERSKB DC	A.P. Moller - Maersk A	Industrials	Denmark	0	-14,437	-0.14	-26.58
ASML NA	ASML	Information Technology	Netherlands	0	-26,969	-0.01	-20.26
VTY LN	Vistry	Consumer Discretionary	United Kingdom	10,555	-896,557	-0.26	-9.90
EXPN LN	Experian	Industrials	United Kingdom	0	-226,166	-0.02	-8.40
NXT LN	Next	Consumer Discretionary	United Kingdom	0	-73,000	-0.06	-7.14
WISE LN	Wise	Financials	United Kingdom	119	-479,909	-0.05	-4.79
CPR IM	Davide Campari-Milano	Consumer Staples	Italy	485,000	-848,000	-0.03	-3.79
IBE SM	Iberdrola	Utilities	Spain	0	-253,164	0.00	-3.00
ASCL LN	Ascential	Communication Services	United Kingdom	0	-850,000	-0.19	-2.84
AC FP	Accor	Consumer Discretionary	France	0	-40,000	-0.02	-1.42
SBMO NA	SBM Offshore	Energy	Netherlands	0	-104,388	-0.06	-1.32
UCB BB	UCB	Health Care	Belgium	0	-15,666	-0.01	-1.30
SUS SS	Surgical Science Sweden	Health Care	Sweden	0	-119,982	-0.24	-1.28
DLG IM	De'Longhi	Consumer Discretionary	Italy	0	-39,982	-0.03	-1.23
DNORD DC	D/S Norden	Industrials	Denmark	0	-22,889	-0.07	-1.18
FRAS LN	Fraser's	Consumer Discretionary	United Kingdom	0	-100,000	-0.02	-0.93
CHG LN	Chemring	Industrials	United Kingdom	0	-192,412	-0.07	-0.78
BZU IM	Buzzi	Materials	Italy	0	-23,937	-0.01	-0.68
SGO FP	Compagnie de Saint-Gobain	Industrials	France	0	-10,000	0.00	-0.67
AMS SM	Amadeus IT	Consumer Discretionary	Spain	0	-9,000	0.00	-0.59

Source: BofA European Equity Quant Strategy, Factset. Disclaimer: The screen 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 screen was not created to act as a benchmark

BofA GLOBAL RESEARCH

Exhibit 55: The expected 12m fwd cash yield ticked up last month to 5.2%, with expected 1.5% yield on buyback and 3.6% on dividends

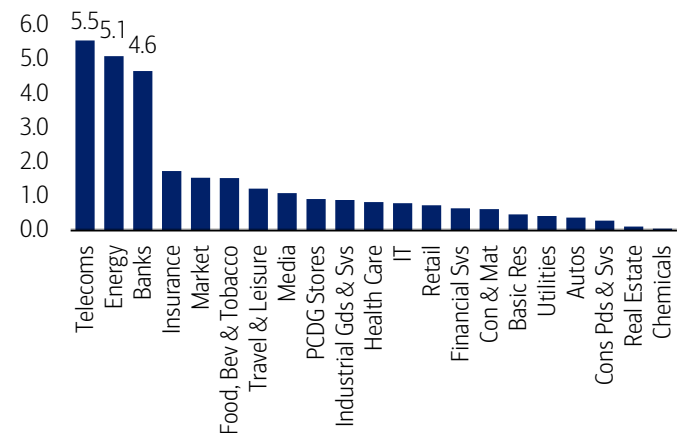
12m fwd expected buyback (dark blue) and dividend yield (light blue) for Europe Stoxx 600 index

**Source:** BofA European Equity Quant Strategy, FactSet

BofA GLOBAL RESEARCH

Exhibit 56: Telecoms, Energy and Banks show the highest 12m fwd expected buyback yield

12m fwd expected buyback yield by European sector (%)

**Source:** BofA European Equity Quant Strategy, Factset

BofA GLOBAL RESEARCH

Exhibit 57: There were 14 new buyback programs announced in Europe in the last month

European companies that have announced new buyback programs in January 2024

BBG Ticker Name	Country	Sector	Announcement date	Value	Expiry date
BBY LN	Balfour Beatty	United Kingdom	02/01/2024	first tranche of GBP 50mn; total 2024 buyback will be confirmed in March along with annual results NOK 370mn (first part of NOK 10mn between 9-15 Feb 2024; second part between 21/03/2024 to	30/06/2024
KOG NO	Kongsberg	Norway	04/01/2024	15/06/2024)	15/06/2024
PRU LN	Prudential	United Kingdom	05/01/2024	GBP 38mn	26/01/2024
QIA GR	Qiagen	Netherlands	07/01/2024	USD 300mn	will be settled in line with market convention in the subsequent days
QQ/ LN	QinetiQ	United Kingdom	16/01/2024	GBP 100mn	12m program starting in Feb-24; so, should end by 31/01/2025
SEBA SS	SEB	Sweden	24/01/2024	SEK 1.75bn	18/03/2024
VIS SM	Viscofan	Spain	25/01/2024	EUR 76mn	31/12/2024
NOKIA FH	Nokia	Finland	25/01/2024	EUR 600mn	program to begin in 1Q 2024 and end within 2 years so by 31/03/2026
AFX GR	Carl Zeiss Meditec	Germany	29/01/2024	EUR 150mn	program to start on 09/02/2024 and expected to end in a year so by 08/02/2025
BBVA SM	BBVA	Spain	30/01/2024	EUR 781mn	subject to regulatory authorizations; program specific terms and conditions will be disclosed before its effective start
GIM	Assicurazioni Generali	Italy	30/01/2024	EUR 500mn	company to submit proposal at annual shareholder meet in April
RILBA DC	Ringkjøbing Landbobank	Denmark	31/01/2024	DKK 1525mn (2 tranches DKK 750mn and DKK 775mn)	first tranche ends on 28/06/2024 and second tranche runs from 01/07/2024 to 27/01/2025
NOVOB DC	Novo Nordisk	Denmark	31/01/2024	DKK 20bn	valid for next 12 months so by 31/01/2025
KPN NA	Koninklijke KPN	Netherlands	31/01/2024	EUR 200mn	31/05/2024

Source: Refinitiv, Bloomberg

BofA GLOBAL RESEARCH

European Momentum Conviction Indicator

We launched our European Momentum Conviction Indicator on 06 October 2020. This indicator aims to identify episodes where volatility of a cross-sectional approach to Momentum investing is too high to support consistent returns or when trends might break. We use three inputs to construct the indicator, these inputs are equally weighted and form an indicator scaled from 0-100 (100 = highest conviction in positive Momentum performance, 0 = lowest conviction):

- Momentum Volatility Risk:** Volatility of Momentum performance for risk-management is crucial as uncertainty on the economic cycle rises. High levels of volatility can compromise Momentum's performance. Since the strategy's volatility tends to be clustered, we use a GARCH (1, 1) model to forecast 1-step-ahead volatility levels and adjust the exposure to Momentum accordingly (high volatility levels = low confidence in Momentum).
- Implied Volatility for Equities:** Large Momentum drawdowns tend to occur following turning points in market cycles. We use a combination of fast- and slow- moving averages of implied volatility in European markets to detect volatility shocks and retracement. A warning signal against Momentum is given when implied volatility retraces following a volatility shock. This often corresponds to the start of a recovery phase following a recessionary episode.
- Trend Reversal Risk:** This is a contrarian signal monitoring the 2nd derivative of Momentum's short-term performance. This input identifies episodes where Momentum's performance has accelerated near term – signalling the formation of a potential "Momentum bubble" or an episode of potential profit booking. We estimate the risk of trend reversal using the month-on-month difference in trends of the Momentum strategy.

We define a Momentum crash as a drawdown of the 12m price momentum long-short strategy exceeding 10% over 20 trading days. Since the performance of the strategy is computed on a daily basis, we define unique drawdown events as the maximum

drawdown of the strategy over a 2-month window (1 month look-back, 1 month look forward). Following this methodology, we identify 30 Momentum crashes from January 1999 to September 2020. A Momentum crash is said to be correctly predicted if any of the input of the European Momentum Conviction Indicator is less than 50 (bearish signal on Momentum) 20 days prior to the drawdown event.

Using the definitions above, our backtested results suggest that the inputs of the European Momentum Conviction Indicator would have correctly identified 28 of these 30 drawdowns (i.e., sending a bearish signal 20 trading days prior to the event).

Exhibit 58: Backtested (shaded) and live results of the European Momentum Conviction Indicator

Momentum Conviction Indicator and its inputs readings 1, 4, 8 weeks before the momentum crashes

1 Week Before the Crash (defined as local minimum of 4W performance)						4 Weeks Before the Crash						8 Weeks Before the Crash (defined as local minimum of 4W performance)					
Date	1W Forward					Date	4W Forward					Date	8W Forward				
	Momentum Volatility	Implied Volatility	Trend Reversal	EMCI	Momentum Returns		Momentum Volatility	Implied Volatility	Trend Reversal	EMCI	Momentum Returns		Momentum Volatility	Implied Volatility	Trend Reversal	EMCI	Momentum Returns
10-Feb-99	37	1	7	15	-3%	20-Jan-99	17	1	6	8	-20%	04-Jan-99	7	38	22	-12%	
29-Apr-99	71	12	51	45	-4%	08-Apr-99	96	3	47	49	-12%	11-Mar-99	98	1	5	35	-14%
28-Mar-00	2	12	13	9	-26%	07-Mar-00	8	15	4	9	-49%	08-Feb-00	0	73	1	24	-31%
04-Aug-00	42	89	27	53	1%	14-Jul-00	38	95	61	65	-14%	16-Jun-00	17	86	43	48	-7%
11-Oct-00	37	6	25	23	0%	20-Sep-00	34	51	95	60	-16%	23-Aug-00	52	83	95	77	-9%
06-Dec-00	23	32	13	23	-6%	15-Nov-00	34	15	40	30	-26%	18-Oct-00	36	35	37	36	-29%
25-Apr-01	10	55	53	39	-9%	03-Apr-01	27	94	38	53	-24%	06-Mar-01	39	36	59	44	-7%
12-Nov-01	13	38	46	33	-15%	22-Oct-01	12	98	32	47	-26%	24-Sep-01	30	100	35	55	-36%
29-Oct-02	5	3	11	6	-10%	08-Oct-02	5	96	58	53	-25%	10-Sep-02	17	91	52	53	-4%
23-Apr-03	28	93	36	52	-6%	01-Apr-03	21	16	32	23	-25%	04-Mar-03	19	2	18	13	-22%
11-Jun-03	47	94	29	56	0%	21-May-03	37	95	38	57	-16%	23-Apr-03	28	93	36	52	-25%
25-Jul-03	79	76	78	78	-4%	04-Jul-03	67	92	25	61	-11%	06-Jun-03	51	94	29	58	-9%
01-Jun-06	31	95	83	70	-7%	11-May-06	71	35	85	64	-13%	12-Apr-06	77	41	76	65	-10%
05-Aug-08	5	9	37	17	-8%	15-Jul-08	19	28	56	34	-36%	17-Jun-08	31	8	57	32	-24%
11-Dec-08	3	79	53	45	4%	20-Nov-08	5	99	13	39	-20%	23-Oct-08	6	100	6	37	-2%
30-Mar-09	2	3	12	6	-16%	09-Mar-09	1	1	23	8	-51%	09-Feb-09	2	0	24	9	-28%
30-Jul-09	49	85	51	62	-7%	09-Jul-09	47	59	53	53	-18%	11-Jun-09	41	92	39	57	-8%
01-Feb-11	28	40	41	36	0%	11-Jan-11	57	29	52	46	-16%	14-Dec-10	30	29	77	45	-8%
03-Oct-11	12	97	36	48	-7%	12-Sep-11	38	98	21	52	-25%	15-Aug-11	17	98	58	58	-8%
27-Jan-12	27	87	24	46	-1%	06-Jan-12	44	23	47	38	-18%	08-Dec-11	23	2	57	27	-9%
14-Aug-12	26	35	34	32	-5%	24-Jul-12	35	67	46	49	-19%	26-Jun-12	27	13	44	28	-14%
08-Apr-14	50	47	81	59	-6%	18-Mar-14	65	68	86	73	-10%	18-Feb-14	76	60	89	75	-9%
19-Oct-15	23	22	48	31	2%	28-Sep-15	49	89	33	57	-12%	31-Aug-15	41	91	67	67	1%
24-Feb-16	16	89	73	59	-9%	03-Feb-16	33	77	61	57	-15%	06-Jan-16	46	10	38	31	-10%
15-Apr-16	11	37	27	25	-7%	24-Mar-16	31	58	66	51	-12%	25-Feb-16	14	88	74	59	-21%
07-Nov-16	49	19	64	44	-5%	17-Oct-16	50	22	67	46	-11%	19-Sep-16	38	38	69	48	-11%
19-Dec-16	35	66	23	41	0%	28-Nov-16	50	9	57	39	-13%	31-Oct-16	50	34	58	48	-14%
12-Apr-19	48	34	55	46	-4%	22-Mar-19	58	59	70	62	-11%	22-Feb-19	46	65	74	62	-9%
09-Sep-19	29	62	59	50	-6%	19-Aug-19	44	89	50	61	-14%	22-Jul-19	70	67	66	68	-10%
01-Jun-20	2	0	49	17	-21%	11-May-20	11	2	48	20	-27%	13-Apr-20	8	99	13	40	-12%
17-Nov-20	2	22	4	9	-8%	27-Oct-20	17	5	19	14	-32%	29-Sep-20	17	3	19	13	-33%
01-Mar-21	14	14	17	15	-9%	08-Feb-21	23	10	46	26	-18%	11-Jan-21	13	15	47	25	-16%
18-Jan-22	28	14	29	24	-1%	28-Dec-21	34	62	65	54	-10%	30-Nov-21	28	83	60	57	-13%
22-Jul-22	35	8	34	26	0%	01-Jul-22	43	5	54	34	-8%	03-Jun-22	43	10	53	35	-8%
04-Nov-22	18	45	56	40	-15%	14-Oct-22	24	70	72	55	-17%	16-Sep-22	28	12	70	36	-13%
26-Jan-23	33	83	67	61	-7%	05-Jan-23	24	81	55	53	-11%	08-Dec-22	20	91	30	47	-13%

Source: BofA European Equity Quant Strategy. 12m Momentum performance is computed from January 1999 using daily price returns in Euro, assuming daily rebalancing and excluding transaction costs. This performance is backtested (shaded) and does not represent the actual performance of any account or fund. Backtested (shaded) performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. The strategy indicated 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 strategy was not created to act as a benchmark.

BofA GLOBAL RESEARCH

Definitions

Value: Equal weighted combination of factors - Forecast/Trailing EPS Yield, Dividend Yield, Cash to Price Yield, Book to Price Yield, Price to Sales and Forecast PEG.

Growth: Equal weighted combination of factors - Forecast/Trailing EPS Growth, Forecast EPS Change and Forecast Long Term Growth.

Momentum: Equal weighted combination of factors - 3m EPS Change, EPS Revision Ratio, Sales Revision Ratio, 1m Price Change and 12m Price Change.

Quality: Equal weighted combination of factors - Return on Assets, Return on Capital, Return on Equity, 5yr Return on Equity and Leverage.

Risk: Equal weighted combination of factors - EPS Estimate Dispersion and Beta.

Size: Month end market capitalisation.

Value Factors

Forecast Earnings Yield: I/B/E/S next twelve month EPS divided by month end Price.

Trailing Earnings Yield: Trailing twelve month EPS divided by month end Price.

Dividend Yield: Trailing twelve month Dividend per share divided by month end Price.

Cash to Price: Trailing 12 month cash earnings per share divided by month end price. Cash Earnings are defined as earnings plus depreciation on fixed assets. (i.e. –not free cash flow).

Book to Price: Trailing twelve month Book Value per share divided by month end price.

Price to Sales: Month End Price divided by last reported Sales per share figure.

Forecast PEG: I/B/E/S FY1 P/E divided by I/B/E/S Long Term Growth Estimate.

Other valuations:

Free Cash Flow Yield: Trailing twelve month difference between operating cash flow and capital expenditures net of fixed assets disposals divided by the month end price

EV/EBITDA: Latest reported divided EV (market capitalisation plus total debt minus cash and cash equivalents) divided by the trailing twelve month EBITDA

Growth Factors

Forecast Earnings Growth: (I/B/E/S FY2 Mean EPS Est. less latest reported EPS) divided by the latest reported EPS.

Trailing Earnings Growth: Difference between Trailing Twelve Month EPS and Trailing Twelve Month EPS a year prior divided by absolute value of Trailing Twelve Month EPS a year prior.

Forecast EPS Change: Difference between I/B/E/S Forecast Twelve Month EPS and I/B/E/S Forecast Twelve Month EPS a year prior divided by I/B/E/S Forecast Twelve Month EPS a year prior.

Long Term Mean EPS Growth: I/B/E/S Mean Long Term Growth Estimate (+5years).

Momentum Factors

3 Month Change in Mean EPS: Difference between I/B/E/S FY1 mean EPS and I/B/E/S FY1 mean EPS 3 months prior, divided by absolute value of I/B/E/S FY1 mean EPS 3 months prior.

Earnings Revision Ratio: $((\# \text{ of FY1 and FY2 upward EPS revisions over last 3 months}) - (\# \text{ of FY1 and FY2 downward EPS revisions over last 3 months})) / \# \text{ of FY1 and FY2 estimates over last 3 months}$.

Sales Revision Ratio: $((\# \text{ of FY1 and FY2 upward Sales revisions over last 3 months}) - (\# \text{ of FY1 and FY2 downward Sales revisions over last 3 months})) / \# \text{ of FY1 and FY2 estimates over last 3 months}$.

1m Price Momentum: Latest month-end price / 1-month ago price.

12m Price Momentum: Latest month-end price / 12-months ago price.

Risk Factors

Beta: Calculated using regression analysis on 60 months of price performance versus the benchmark. High beta stocks have a high correlation to the market, whilst low beta stocks have a low correlation to market movements.

EPS Estimate Dispersion: Coefficient of variation of I/B/E/S FY2 EPS estimates. The coefficient of variation is defined as the Standard Deviation of Estimates divided by the absolute value of the Mean Estimate.

Quality Factors

Return on Assets: Annual Earnings divided by Total Assets.

Return on Capital: Annual Earnings divided by Total Capital.

Return on Equity – 1yr: Trailing Twelve Month EPS divided by Trailing Twelve Month Book value per Share.

Return on Equity – 5yrs: Average RoE over the last 5 years.

Leverage: Annual Long Term Debt / (Annual Long Term Debt + Annual Book Value).

Ownership

Top 50 European Fund Managers Weight: Relative weight of the Top 50 European fund managers in the stock vs their European market holdings. 100=neutral, >100 is overweight and <100 is underweight

% Top 50 European Fund Managers Weight: Based on the above we calculate the percentage of fund managers who are underweight.

Dividend Factors

12m Fwd dividend yield: 12m fwd DPS per share estimate from I/B/E/S divided by month end price

5 Year Dividend Growth: CAGR of trailing FY0, FY1 and FY2 and forecast FY1 and FY2 DPS growth.

Dividend Revision Ratio: $((\# \text{ of FY1 and FY2 upward DPS revisions over last 3 months}) - (\# \text{ of FY1 and FY2 downward DPS revisions over last 3 months})) / \# \text{ of FY1 and FY2 estimates over last 3 months}$.

DPS Estimate Dispersion: Coefficient of variation of I/B/E/S FY2 DPS estimates. The coefficient of variation is defined as the Standard Deviation of Estimates divided by the absolute value of the Mean Estimate.

Payout Ratio: prospective FY1 DPS divided by the prospective FY1 EPS.

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.

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

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

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

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

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

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

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

India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the 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 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.