

Style Cycle

'Recovery' goes on with strong returns

Quantitative Strategy

'Recovery' goes on, with strong Top-vs-Bottom returns

The European Composite Macro Indicator (CMI) remained unchanged in July, keeping the Style Cycle in the 'Recovery' phase for the 17th consecutive month, the longest on record. 'Recovery' favours Value over Growth, Rising Momentum, Low Quality, High Risk and Small-Mid over Large caps. Top 'Recovery' stocks have outperformed Bottom stocks by 40% in the current 'Recovery' episode so far (see Exhibit 44 for the latest screens).

Muted changes in inputs keeps CMI moving sideways

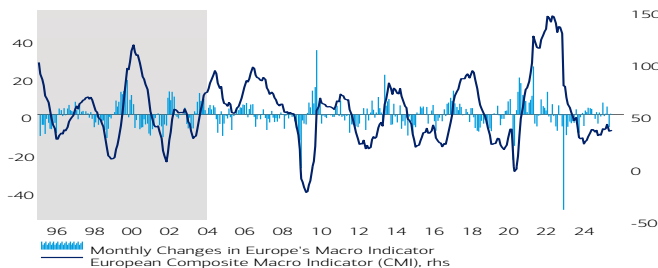
All inputs in the CMI saw muted changes over the past month, keeping the CMI broadly unchanged and in the sideways motion seen this year. The 12-month change in the European 10Y bond yield, the German IFO index and European GDP forecasts increased, while the Global EPS Revision Ratio, European PPI and the BofA Europe Leading Indicator declined.

Inflows into Europe continue with rising breadth

Europe-focused equity funds recorded an inflow of \$2.87bn over the past four weeks, comprising \$6.66bn of inflows into passive funds, while active funds saw outflows of \$3.79bn. Only a net 4% of funds saw outflows last week, the lowest in almost four years (Exhibit 29). Size stocks (\$6.02bn) and Industrials (\$1.25bn) recorded the biggest inflows over the past four weeks, while the UK (\$2.13bn) posted the biggest outflows.

Exhibit 2: The European Composite Macro Indicator (CMI) is flat in July

European Composite Macro Indicator (CMI) and its monthly changes



Source: BofA European Equity Quant Strategy – Based on BY, GDP Forecasts, OECD, IFO Survey, PPI & EPS Revs. The shaded area on the chart above shows back-tested results during the period from Jan-95 to Dec-03. The un-shaded portion represents actual performance since Jan-04. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. The sentiment indicator identified as European Composite Macro Indicator above is intended to be an indicative metric only and may not be used for reference purposes or as a measure of performance for any financial instrument or contract, or otherwise relied upon by third parties for any other purpose, without the prior written consent of BofA Global Research.

BofA GLOBAL RESEARCH

16 July 2025

Quant Strategy
Europe

Sebastian Raedler >>
Investment Strategist
MLI (UK)
sebastian.raedler@bofa.com

Thomas Pearce, CFA >>
Investment Strategist
MLI (UK)
tpearce@bofa.com

Andreas Bruckner >>
Investment Strategist
MLI (UK)
andreas.bruckner@bofa.com

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

The European 'Style Cycle' ties phases of the economic cycle with investment style returns.

Exhibit 1: Summary of Europe's macro signals

3 inputs are rising and 3 inputs are falling

Inputs of EU Composite Macro Indicator	Direction
BofA Europe Leading Indicator	FALLING
German IFO Indicator	RISING
12mth Change in Pan EU BY	RISING
Producer Price Inflation	FALLING
Pan Europe. Cons. GDP Forecasts	RISING
Global EPS Revision Ratio	FALLING

Source: BofA European Equity Quant Strategy.
BofA GLOBAL RESEARCH

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.

12851416

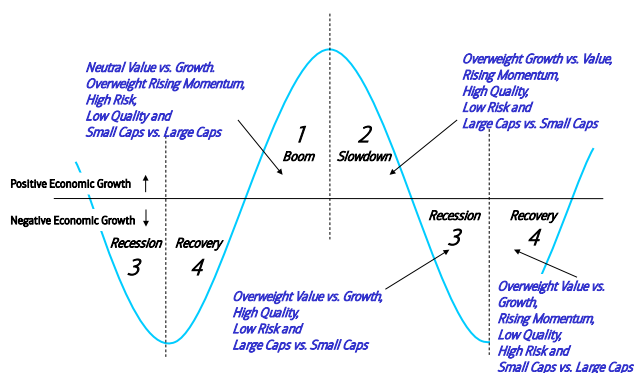
Timestamp: 16 July 2025 12:30AM EDT

Summary – European Style Cycle

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

Exhibit 3: European Style Cycle framework

Style Cycle is currently in the 'Recovery' phase



Phase 1- Rising & Accelerating; Phase 2- Rising & Decelerating; Phase 3- Falling & Decelerating; Phase 4- Falling & Accelerating.

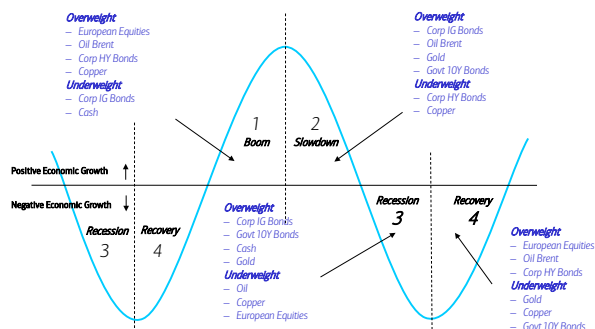
*Economic Cycle based on the ML Composite Macro Indicator

Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 4: Suggested European cross-asset allocations in respective phases of the Style Cycle

Style Cycle is currently in the 'Recovery' phase



Phase 1- Rising & Accelerating; Phase 2- Rising & Decelerating; Phase 3- Falling & Decelerating; Phase 4- Falling & Accelerating.

*Economic Cycle based on the ML Composite Macro Indicator

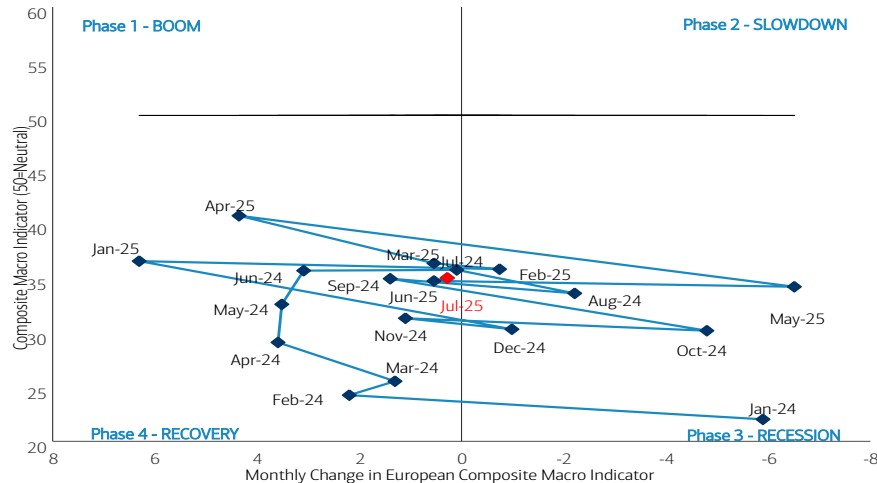
Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH



Exhibit 5: Economic signals generated over the past 18m from the EU Composite Macro Indicator

Style Cycle is currently in the 'Recovery' phase



Source: BofA European Equity Quant Strategy – Based on BY, GDP Forecasts, BofA Europe LI, IFO Survey, PPI & EPS Revision Ratio.

BofA GLOBAL RESEARCH

This month 3 inputs are rising and 3 are falling.

Our European Composite Macro Indicator (CMI) is a composite indicator based on 6 variables:

- 1) 12m change in European bond yields,
- 2) 12m forward consensus GDP forecasts,
- 3) 12m change in BofA Europe Leading Indicator
- 4) Germany's IFO Survey,
- 5) 12m change in European PPI and
- 6) Global consensus EPS Revision Ratio

See Exhibit 60 for a complete list of the historical phases of the economic cycle according to the Composite Macro Indicator (CMI).

To move from 'Recession' to 'Recovery' or 'Boom' to 'Slowdown' the model is required to note 2 consecutive months of increases/decreases in the CMI.

Exhibit 6: Style Cycle 'Recovery' preference and styles' exposures by country

As of the end of the last month

Name	Style Cycle Preference (100=Top)	Value Rank (100=Cheap)	Growth Rank (100=High)	Momentum Rank (100=Rising)	Quality Rank (100=High)	Risk Rank (100=High)	Size Rank (100=High)
Italy	89	67	51	70	38	63	46
Spain	77	65	57	70	35	55	51
Norway	71	69	44	50	52	47	33
Finland	61	54	36	49	51	45	41
Germany	54	47	59	58	43	58	52
Sweden	48	44	36	28	56	60	39
UK	47	57	46	52	51	38	50
France	46	50	42	41	47	50	53
Netherlands	38	34	62	38	62	77	52
Denmark	32	38	69	31	65	37	49
Switzerland	28	36	50	49	62	40	53

Source: BofA European Equity Quant Strategy. Note: The exposure/preference are market cap weighted average Styles ranks /Style Cycle Rank aggregated from the stock level, 100 indicates the highest exposure to the Style/Style Cycle phase, 50 is equal to market cap weighted average, while 1 indicates the lowest exposure to the Style/Style Cycle phase

BofA GLOBAL RESEARCH

Exhibit 7: Style Cycle 'Recovery' preference and styles' exposures by sector

As of the end of the last month

Name	Style Cycle Preference (100=Top)	Value Rank (100=Cheap)	Growth Rank (100=High)	Momentum Rank (100=Rising)	Quality Rank (100=High)	Risk Rank (100=High)	Size Rank (100=High)
Banks (SX7P)	100	89	54	80	19	60	52
Real Estate (SX86P)	100	44	41	58	13	59	26
Travel & Leisure (SXTLP)	81	60	59	58	55	81	34
Autos (SXAP)	79	75	29	33	47	81	47
Basic Resources (SXPP)	78	79	20	26	45	74	42
Energy (S600ENP)	70	88	27	28	44	79	53
Insurance (SXIP)	69	73	61	80	37	37	51
Telecoms (SXKP)	69	67	47	52	32	50	48
Utilities (SX6P)	68	68	40	69	31	22	49
Construction (SXOP)	59	50	44	47	49	65	46
Financial Svs (SXFP)	51	44	66	48	40	59	46
Retail (SXRFP)	47	41	43	48	69	49	40
Chemicals (SX4P)	37	40	49	34	52	42	47
Industrial Gds & Svs (SXNP)	35	26	58	47	59	59	48
Media (SXMP)	34	43	40	35	65	50	42
Consumer Pds & Svs (S600CPP)	29	25	38	33	69	58	51
Food, Bev & Tobacco (S600FOP)	25	45	24	39	55	13	52
PCDG Stores (S600PDP)	23	47	36	36	62	11	50
Health Care (SXDP)	19	40	59	47	65	26	54
Technology (SX8P)	15	13	67	34	72	69	55

Source: BofA European Equity Quant Strategy. Note: The exposure/preference are market cap weighted average Styles ranks /Style Cycle Rank aggregated from the stock level, 100 indicates the highest exposure to the Style/Style Cycle phase, 50 is equal to market cap weighted average, while 1 indicates the lowest exposure to the Style/Style Cycle phase

BofA GLOBAL RESEARCH



European Composite Macro Indicator (CMI) – FLAT - inputs overview

Exhibit 8: Input is RISING, z-score ticked up to -0.49, the highest reading this year

Pan Europe – Economists' 12m fwd GDP forecasts

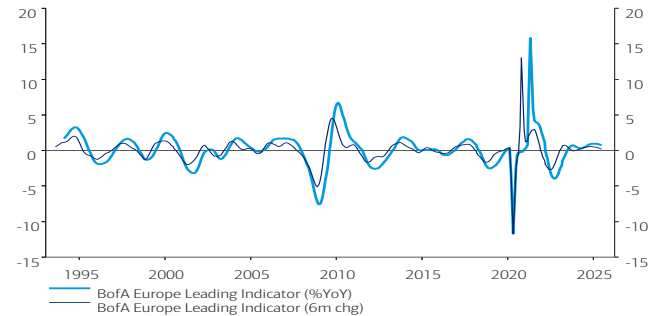


Source: BofA European Equity Quant Strategy, Consensus Economics

BofA GLOBAL RESEARCH

Exhibit 9: Input is FALLING, z-score declined to 0.31, the lowest since Sep '24

12m change in BofA Europe Leading Indicator

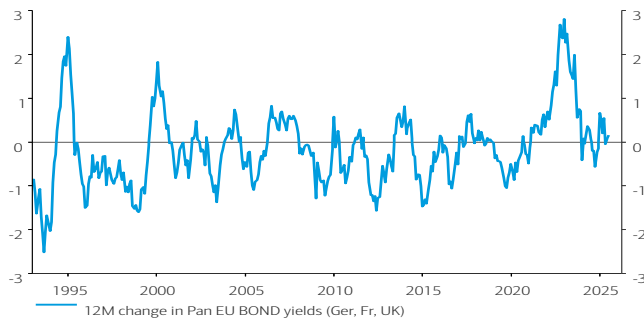


Source: BofA European Equity Quant Strategy, OECD

BofA GLOBAL RESEARCH

Exhibit 10: Input is RISING, z-score rose to 0.38, the highest in 3 months

12m change in 10Y European Bond Yield (average of Germany, France, UK)

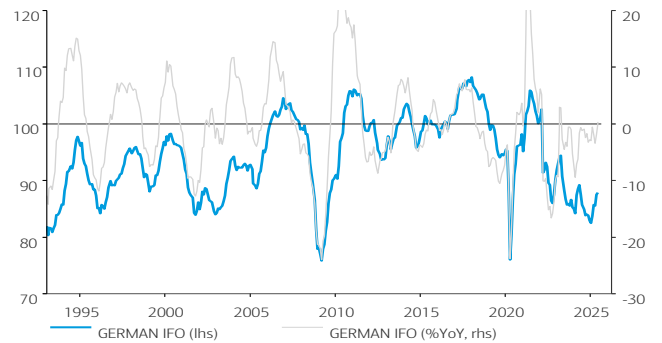


Source: BofA European Equity Quant Strategy, LSEG Data & Analytics

BofA GLOBAL RESEARCH

Exhibit 11: Input is RISING, z-score increased to -0.97, the first reading below -1 since Jun '24

German IFO Indicator

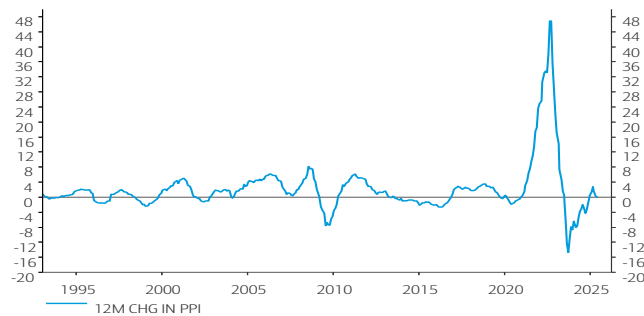


Source: BofA European Equity Quant Strategy, IFO Institute

BofA GLOBAL RESEARCH

Exhibit 12: Input is FALLING, z-score declined to -0.36, the lowest reading this year

Pan European Inflation (PPI) - 12m change

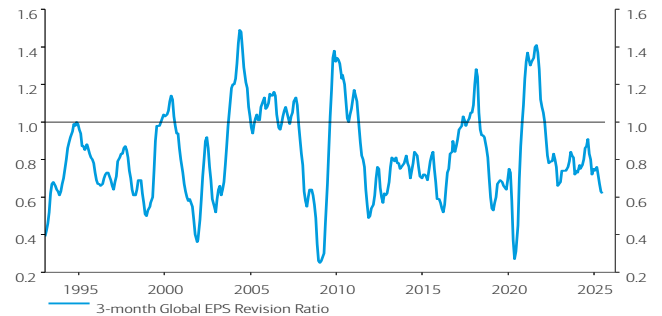


Source: BofA European Equity Quant Strategy, LSEG Data & Analytics

BofA GLOBAL RESEARCH

Exhibit 13: Input is FALLING, z-score dropped to -0.89, the lowest in 5 years

Global EPS Revision Ratio (>1 = net EPS upgrades)



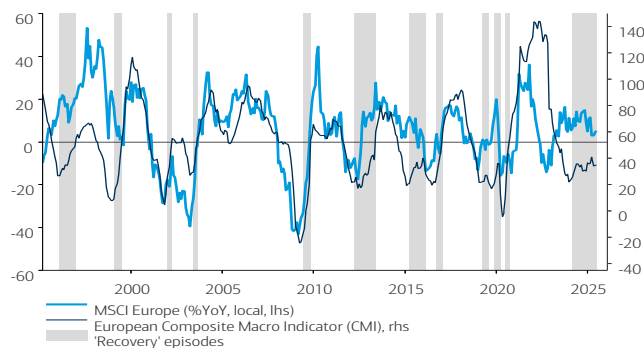
Source: BofA European Equity Quant Strategy, IBES, MSCI

BofA GLOBAL RESEARCH

Key Charts

Exhibit 14: European equities are sensitive to moves in the CMI

European CMI versus MSCI Europe performance (%YoY)

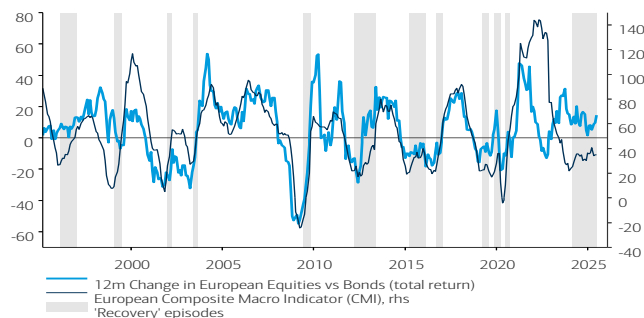


Source: BofA European Equity Quant Strategy, LSEG Data & Analytics

BofA GLOBAL RESEARCH

Exhibit 15: European equities vs bonds performance is sensitive to moves in the CMI

European CMI versus European equities to bonds performance (%YoY)

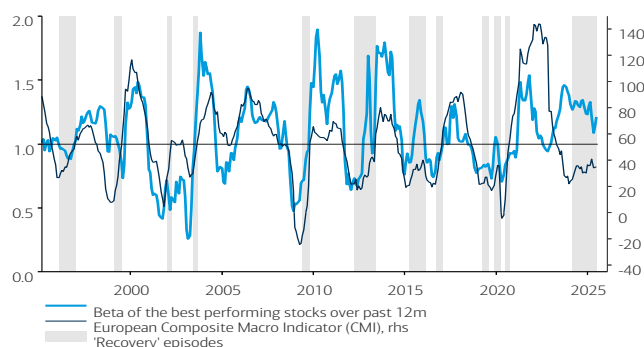


Source: BofA European Equity Quant Strategy, LSEG Data & Analytics, ICE

BofA GLOBAL RESEARCH

Exhibit 16: Typically, beta of best performing stocks moves in-line with CMI

European CMI versus beta of the best performing stocks over past 12m

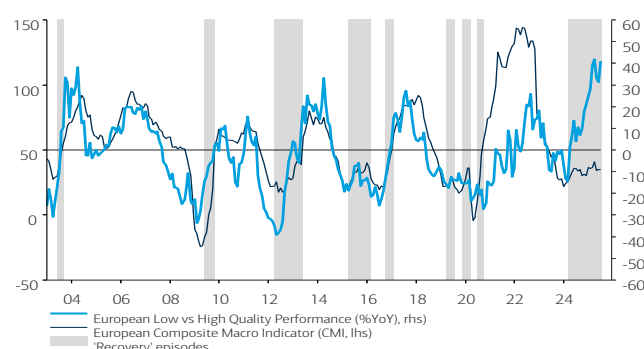


Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 17: Low versus High Quality style performance is sensitive to moves in the CMI

European CMI versus Low vs High Quality performance (%YoY)

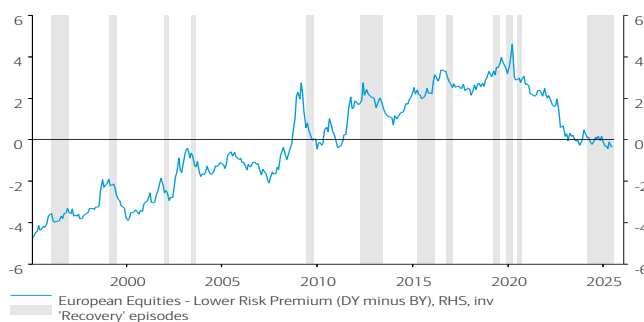


Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 18: European equities' lower risk premium declined over the month

European equities lower risk premium (lower risk premium = dividend yield minus European 10Y bond yield)

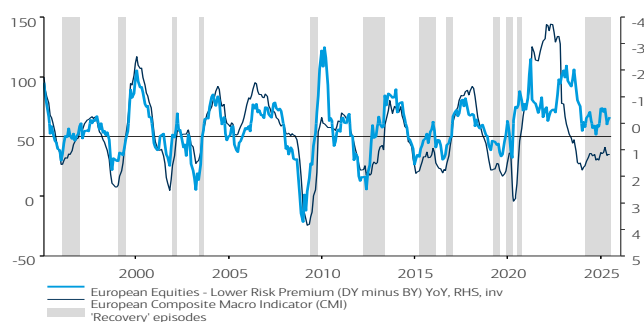


Source: BofA European Equity Quant Strategy, LSEG Data & Analytics. Note: European bond yield is average of UK, France and Germany 10Y bond yields

BofA GLOBAL RESEARCH

Exhibit 19: Typically, European lower risk premium moves in-line with CMI

European CMI versus actual yearly change in European equities lower risk premium (lower risk premium = dividend yield minus European 10Y bond yield)



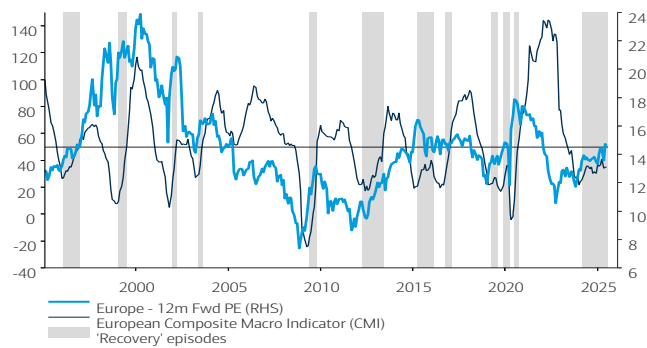
Source: BofA European Equity Quant Strategy. Note: European bond yield is average of UK, France and Germany 10Y bond yields

BofA GLOBAL RESEARCH



Exhibit 20: European 12m fwd P/E is sensitive to moves in the CMI

European CMI versus MSCI Europe's 12m fwd P/E

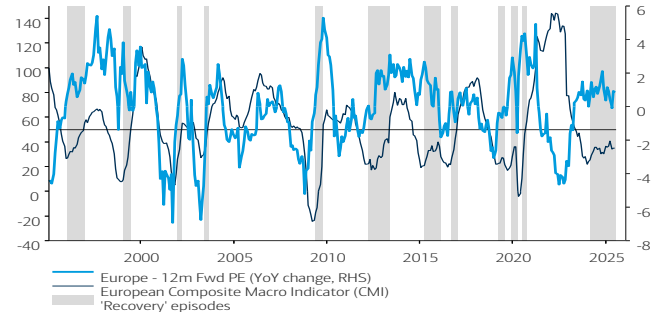


Source: BofA European Equity Quant Strategy, LSEG Data & Analytics

BofA GLOBAL RESEARCH

Exhibit 21: Typically, European YoY change in 12m fwd P/E moves in-line with CMI

European CMI versus MSCI Europe's 12m fwd P/E YoY change

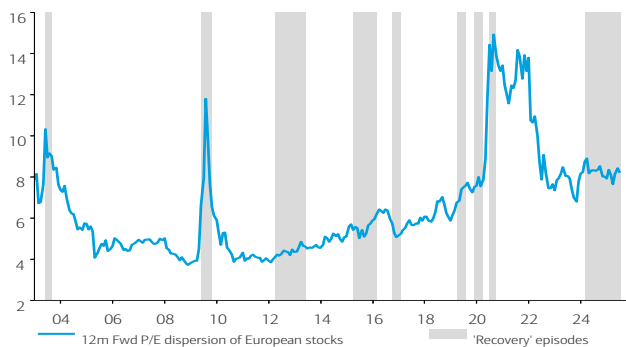


Source: BofA European Equity Quant Strategy, LSEG Data & Analytics

BofA GLOBAL RESEARCH

Exhibit 22: The current P/E dispersion stands at 8.21

European stocks - standard deviation of 12m Fwd P/E excluding 1% of top and bottom extreme readings

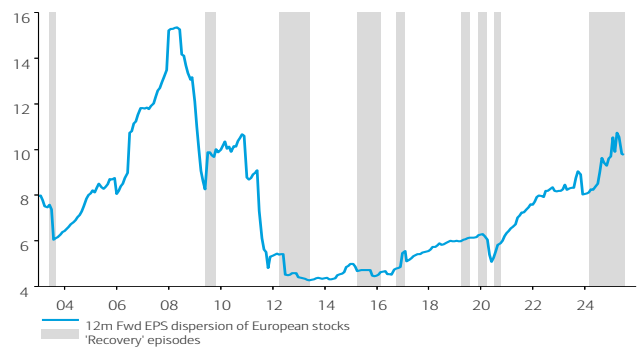


Source: BofA European Equity Quant Strategy, MSCI, I/B/E/S

BofA GLOBAL RESEARCH

Exhibit 23: The current 12m Fwd EPS dispersion stands at 9.76

European stocks - standard deviation of 12m Fwd EPS excluding 1% of top and bottom extreme readings

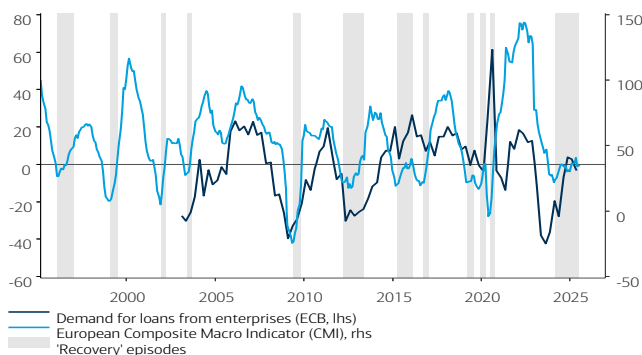


Source: BofA European Equity Quant Strategy, MSCI, I/B/E/S

BofA GLOBAL RESEARCH

Exhibit 24: Typically, CMI moves in-line with demand for loans from enterprises

European CMI versus demand for loans from enterprises (Lending survey, ECB)

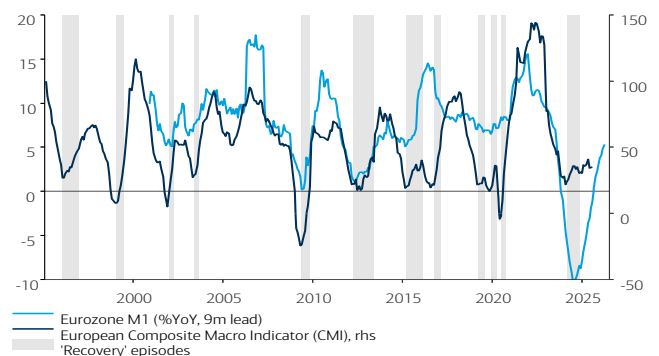


Source: BofA European Equity Quant Strategy, LSEG Data & Analytics

BofA GLOBAL RESEARCH

Exhibit 25: Typically, CMI moves in-line with Eurozone M1 growth

European CMI versus Eurozone M1 growth (9m lead)



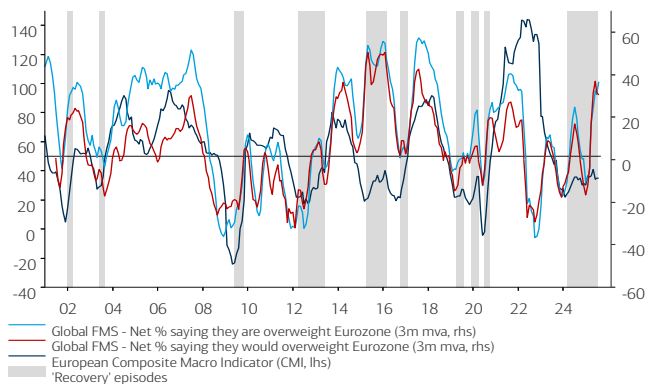
Source: BofA European Equity Quant Strategy, LSEG Data & Analytics.

BofA GLOBAL RESEARCH

Sentiment & Flows

Exhibit 26: Net 41% of global investors said they are overweight Europe in July and net 34% of them intend to overweight the region over the next 12 months

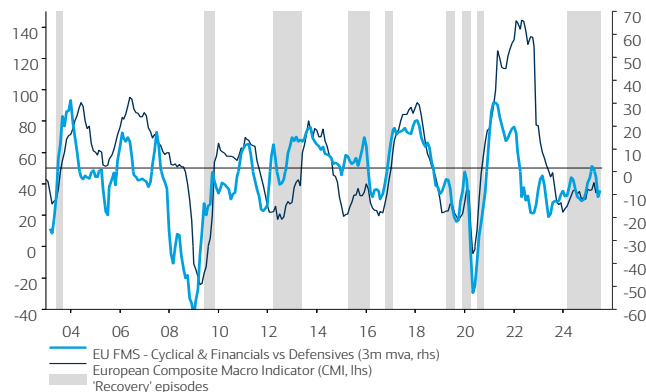
Question: Please indicate for each of the following equity markets, how overweight or underweight you consider your position to be relative to your internal benchmark:



Source: BofA European Equity Quant Strategy, BofA Global Fund Manager Survey

Exhibit 27: Investors decreased their underweight in cyclicals, cut an overweight in financial sectors and increased an underweight in defensive sectors in July

Question: Please indicate for each of the following European sectors, whether you consider your position to be overweight, underweight or neutral relative to your internal benchmark

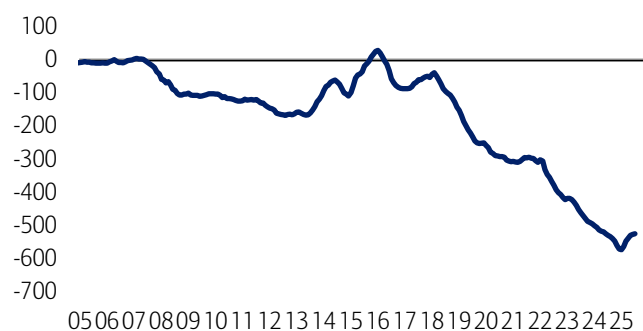


Source: BofA European Equity Quant Strategy, BofA European Fund Manager Survey. Note: The positioning is a difference between average net positioning in cyclical and financial sectors (Autos, Basic Resources, Chemicals, Construction, Consumer Pds&Svs, Industrial Gds&Svs, Media, Retail, Technology, Travel&Leisure, Banks, Financial Svs, Insurance, Real Estate) and defensive sectors (Food&Beverages, Pharma/Healthcare, Telecoms, Utilities, PCDG Stores).

BofA GLOBAL RESEARCH

Exhibit 28: Europe-focused equity funds have seen \$516bn of outflows since 2005 (active funds: \$-705bn, passive funds: \$189bn)

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

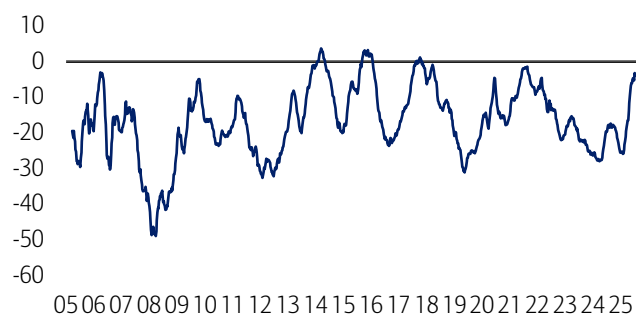


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 29: A net -4.0% of Europe-focused funds saw inflows last week (the least since Sep '21), with an inflow of \$1.43bn last week

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



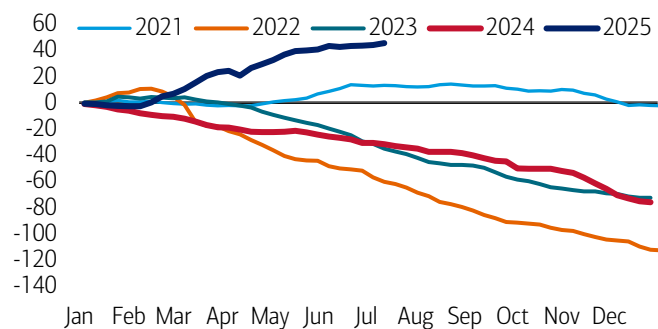
Source: BofA European Equity Quant Strategy, EPFR Global. Note: Net % calculated as % of funds that saw inflows minus % of funds that saw outflows

BofA GLOBAL RESEARCH



Exhibit 30: Europe-focused equity funds have seen \$45.51bn of inflows YTD, with \$28.02bn of inflows into European-domiciled funds and \$15.11bn of inflows into US-domiciled funds

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

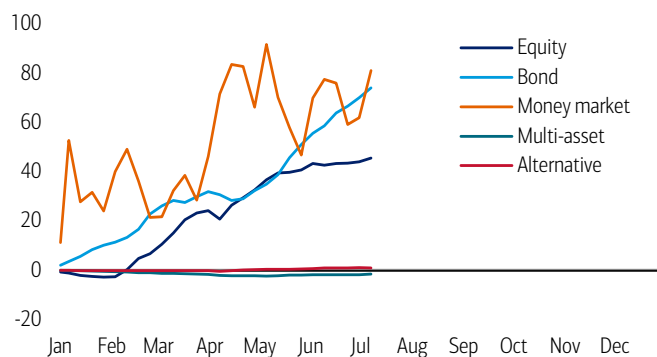


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 31: Only Multi-asset funds have seen outflows YTD (\$1.5bn), while Money market funds have seen the largest inflows (\$81.1bn)

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

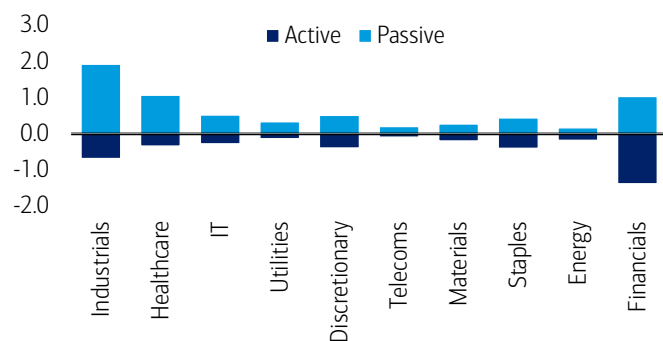


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 32: Industrials have seen the largest inflows in the past 4 weeks (\$1.2bn), while Financials saw the largest outflows (\$0.3bn)

The past 4-weeks' cumulative flows into Europe-focused funds by sector (\$bn)

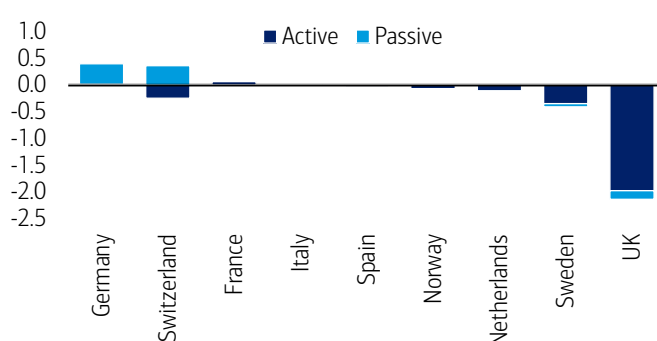


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 33: Germany has seen the largest inflows in the past 4 weeks (\$0.4bn), while the UK has seen the largest outflows (\$2.1bn)

The past 4-weeks' cumulative flows into Europe-focused funds by country (\$bn)

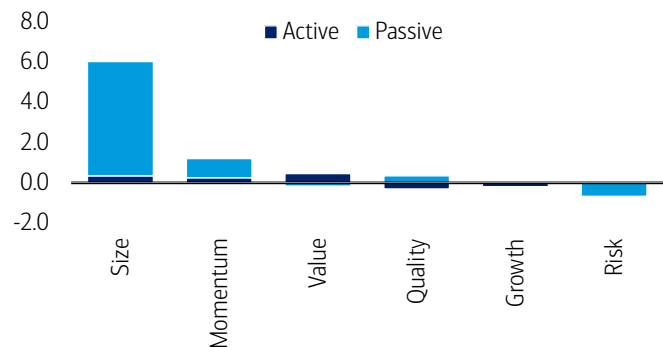


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 34: Size stocks have seen the largest inflows in the past 4 weeks (\$6.0bn), while Risk stocks the largest outflows (\$0.6bn)

The past 4-weeks' cumulative flows into European stocks by style (l/s) (\$bn)

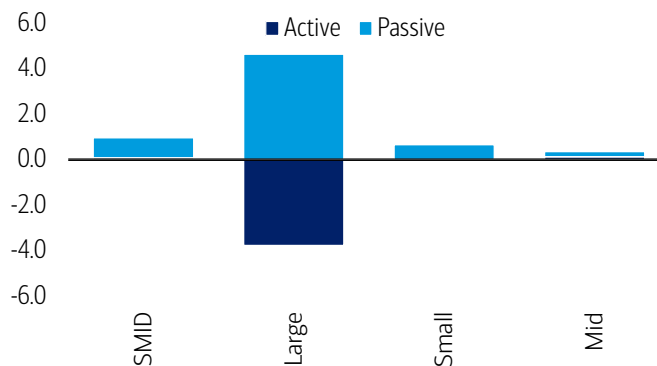


Source: BofA European Equity Quant Strategy, EPFR Global. Data aggregated from the stock level information.

BofA GLOBAL RESEARCH

Exhibit 35: SMID-focused funds have seen the largest inflows in the past 4 weeks (\$1.0bn), no size group noted weekly outflows

The past 4-weeks' cumulative flows into Europe-focused funds by size (\$bn)



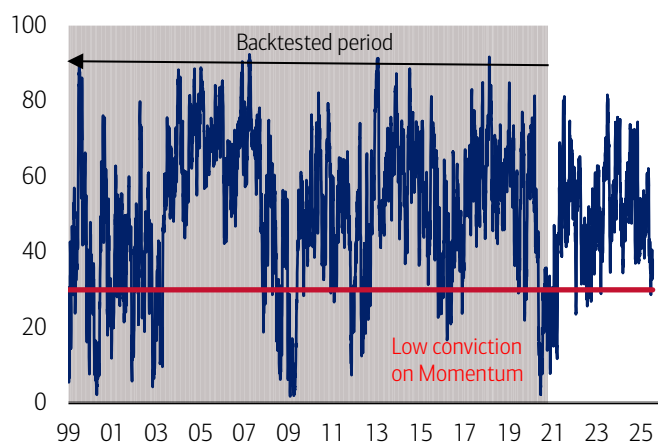
Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

European Momentum Conviction Indicator

Exhibit 36: BofA European Momentum Conviction Indicator (MCI) stands at 38, above the threshold of 30 which signals a potential crash in the Momentum style

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

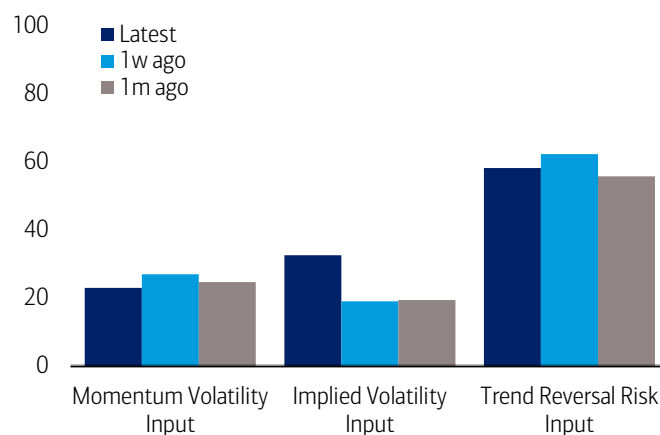


Source: BofA European Equity Quant Strategy, FactSet. Disclaimer: Performance through 06 October 2020 (shaded on the chart above) is back-tested and does not represent the actual performance of any account or fund; actual performance from 07 October 2020. Backtested performance depicts the theoretical (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. Data as of 14th July 2025.

BofA GLOBAL RESEARCH

Exhibit 37: Increases in Implied Volatility and Trend Reversal Risk inputs pushed the indicator up over the last month

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 Appendix. Data as of 14th July 2025.

BofA GLOBAL RESEARCH

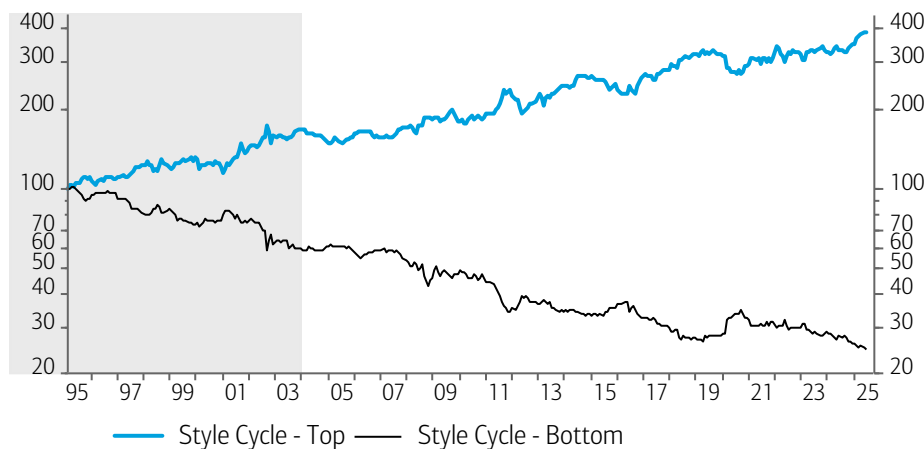


European Style Cycle - performance

Style Cycle: The European 'Style Cycle' links phases of the economic cycle with performance of investment style. Stocks are screened based on their equal weighted rank of Value, Growth, Momentum, Quality, Risk and Size.

Exhibit 38: Top & Bottom Style Cycle relative price performance

Relative price performance to largest 250 European stocks (price, EUR, equally weighted)



Source: BofA European Equity Quant Strategy, FactSet. The shaded area on the chart above shows back-tested results during the period from Mar-95 to Dec-03. The un-shaded portion represents actual performance since Jan-04. The Style Cycle back-testing is a rolling monthly performance based on the changing phases of the Style Cycle. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. The data displayed in this exhibit depends in part on certain monthly screens and other data that were not previously published. Please see [Style Cycle: 'Boom' persists 30 June 2021](#) for details and relevant data.

BofA GLOBAL RESEARCH

Exhibit 39: Last month Top stocks have outperformed Bottom stocks by 1.5%

Excess Price Returns (%)

	1M	3M	6M	12M	YTD	3 Yrs	5 Yrs	Since Incept.
Top Style Cycle	-0.3	4.5	11.5	17.3	11.5	23.0	41.9	133.7
Bottom Style Cycle	-1.7	-1.8	-5.5	-11.6	-5.5	-19.4	-26.3	-58.7
Top vs Bottom Style Cycle	1.5	6.4	18.0	32.7	18.0	52.7	92.4	465.7

Source: BofA European Equity Quant Strategy, FactSet. * - Inception = January 2004. Note: Month end data used for performance of stock screen. Performance based on equal weight portfolios, monthly rebalanced, no transaction costs are included, and performances based on price returns and not total returns (dividends are not included). Performance is shown not as a guide to any past recommendation, but as confirmation of each phase's characteristics

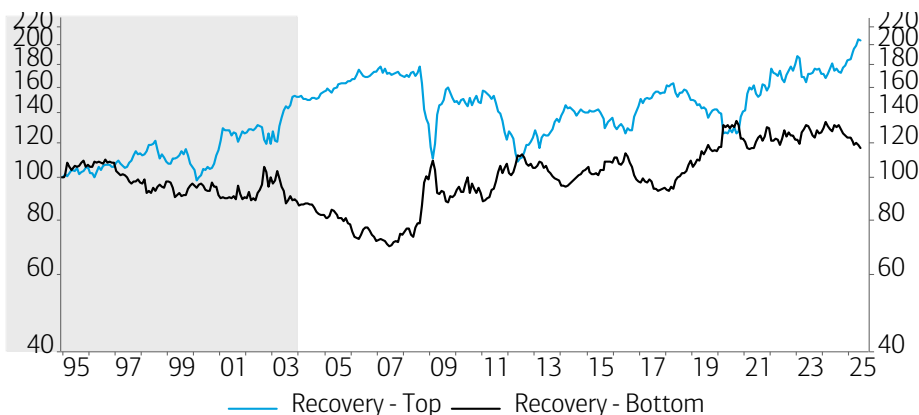
BofA GLOBAL RESEARCH

Style Cycle – Recovery

Style Cycle - Recovery: The European 'Style Cycle' links phases of the economic cycle with performance of investment style. The stocks below are screened by the characteristics of the 'Recovery' phase. Stocks are screened on their equal-weighted rank of Value, Growth, Momentum, Quality, Risk and Size.

Exhibit 40: Top & Bottom Recovery relative price performance

Price relative performance vs top 250 largest European stocks (EUR, equally weighted)



Source: BofA European Equity Quant Strategy, FactSet. Inception – January 2004. The shaded area shows back-tested results during the period from Dec-92 to Dec-03. The unshaded portion represents actual performance since Jan-04. This performance is back-tested and does not represent the actual performance of any account or fund. Back-tested performance depicts the theoretical (not actual) performance of a particular strategy over the time period indicated. No representation is being made that any actual portfolio is likely to have achieved returns similar to those shown herein. The data displayed in this exhibit depends in part on certain monthly screens and other data that were not previously published. Please see [Style Cycle: 'Boom' persists 30 June 2021](#) for details and relevant data.

BofA GLOBAL RESEARCH

Exhibit 41: Top Recovery stocks outperformed Bottom Recovery stocks by 1.5% last month

Excess Price Returns (%)

	1M	3M	6M	12M	YTD	3 Yrs	5 Yrs	Since Incept.
Top Recovery	-0.3	4.5	11.5	17.3	11.5	22.5	59.2	34.7
Bottom Recovery	-1.7	-1.8	-5.5	-11.6	-5.5	-5.2	-10.2	31.7
Top vs Bottom Recovery	1.5	6.4	18.0	32.7	18.0	29.2	77.4	2.3

Source: BofA European Equity Quant Strategy, FactSet. * - Inception = January 2004

BofA GLOBAL RESEARCH

Exhibit 42: Median Top Recovery

Latest valuations for Top Recovery stocks

	Fwd P/E	DY	RoE	ERR	Size	Beta
Top	10.1	5.5	11.4	2.1	12.6	1.2
LT Avg	11.4	3.5	7.8	1.7	8.0	1.3
EU Market	14.7	2.9	14.8	0.6	21.7	1.0

Source: BofA European Equity Quant Strategy, FactSet

BofA GLOBAL RESEARCH

Exhibit 43: Median Bottom Recovery

Latest valuations for Bottom Recovery stocks

	Fwd P/E	DY	RoE	ERR	Size	Beta
Bottom	25.5	1.8	28.7	0.2	87.3	1.0
LT Avg	20.3	2.1	26.0	0.6	33.7	0.7
EU Market	14.7	2.9	14.8	0.6	21.7	1.0

Source: BofA European Equity Quant Strategy, FactSet

BofA GLOBAL RESEARCH



Exhibit 44: Style Cycle - Recovery screens for Jul '25 (data as of 30/06/2025)

Top and Bottom Style Cycle Recovery stocks

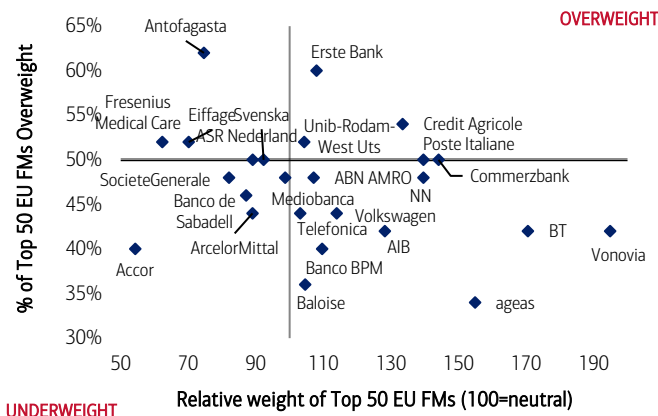
Top Stocks (Good Value, High Risk, Low Quality & Small Size)								Bottom Stocks (Poor Value, Low Risk, High Quality & Large Size)							
BBG Ticker	Name	Recovery Rank	Value Rank	ERR	Beta	RoE	Price	BBG Ticker	Name	Recovery Rank	Value Rank	ERR	Beta	RoE	Price
ABN NA	ABN AMRO	100	93	0.12	1.2	9.4	23.2	RMS FP	Hermes	1	1	-0.35	1.0	25.4	2299.0
FGR FP	Eiffage	100	83	-0.07	1.3	13.7	119.3	NOVOB DC	Novo Nordisk	1	33	-0.40	0.5	63.3	439.6
MT NA	ArcelorMittal	99	87	0.17	1.9	4.1	26.9	REL LN	RELX	1	4	-0.23	0.8	68.5	39.4
SAB SM	Banco de Sabadell	99	95	0.23	1.2	11.4	2.7	OR FP	L'Oreal	2	12	-0.37	1.1	20.0	363.1
BAMI IM	Banco BPM	98	95	0.47	0.9	12.9	9.9	ULVR LN	Unilever	2	35	-0.35	0.6	36.3	44.3
ACA FP	Credit Agricole	98	92	0.04	1.5	9.2	16.1	ASML NA	ASML	3	9	-0.18	1.4	45.1	677.6
TEF SM	Telefonica	98	84	0.13	0.8	4.0	4.5	ROG SW	Roche	3	46	-0.25	0.4	43.8	258.4
ASRNL NA	ASR Nederland	97	85	-0.04	1.0	11.6	56.4	WKL NA	Wolters Kluwer	3	10	-0.19	0.5	86.2	142.0
PST IM	Poste Italiane	97	65	0.34	1.1	17.9	18.2	AZN LN	AstraZeneca	4	39	0.10	0.6	31.0	101.2
FME GR	Fresenius Medical Care	96	81	0.03	1.1	6.9	48.7	NESN SW	Nestle	4	33	-0.33	0.7	31.9	78.8
URW FP	Unib-Rodam-West Uts	96	81	-0.14	2.1	8.4	81.1	ABBN SW	ABB	5	15	0.05	1.0	28.7	47.3
VOW GR	Volkswagen	96	100	-0.24	1.3	5.0	89.6	RACE US	Ferrari	5	1	-0.06	1.0	39.7	416.1
AIBG ID	AIB	95	85	-0.07	1.5	13.7	7.0	GIVN SW	Givaudan	5	8	-0.22	0.8	23.6	3841.0
GLE FP	SocieteGenerale	95	87	0.27	1.6	6.4	48.6	AI FP	Air Liquide	6	25	-0.18	1.0	13.3	175.1
EBS AV	Erste Bank	94	72	0.02	1.4	13.7	72.3	SU FP	Schneider Electric	6	22	-0.35	1.2	15.5	225.8
NN NA	NN	94	99	-0.03	0.9	8.2	56.4	EXPN LN	Experian	7	11	0.05	1.1	27.1	37.5
SHBA SS	Svenska	94	77	0.12	1.0	12.3	126.5	LSEG LN	London Stock Exchange	7	21	-0.50	0.7	8.6	106.4
ANTO LN	Antofagasta	93	36	0.00	1.5	8.0	18.1	SAP GR	SAP	7	7	-0.19	1.2	13.6	258.2
AGS BB	ageas	92	93	-0.05	1.0	15.1	57.4	ASM NA	ASM	8	5	-0.35	1.4	18.1	543.4
VNA GR	Vonovia	92	55	0.05	1.4	4.9	29.9	ITX SM	Inditex	8	25	-0.35	1.3	29.8	44.2
AC FP	Accor	91	52	-0.34	1.3	12.2	44.3	SPOT US	Spotify Technology	8	2	-0.26	1.3	21.7	767.3
BT/A LN	BT	91	89	-0.11	0.9	14.1	1.9	BA/LN	BAE Systems	9	27	-0.03	0.7	18.0	18.9
CBK GR	Commerzbank	91	69	0.17	1.2	8.5	26.8	NOVN SW	Novartis	9	43	0.35	0.8	35.4	96.2
BALN SW	Baloise	90	57	0.19	0.9	11.9	187.2	SAF FP	Safran	9	10	-0.02	1.4	25.6	275.9
								SGE LN	Sage	10	13	-0.16	0.7	49.7	12.5

Source: BofA European Equity Quant Strategy, FactSet, Price in Local Currency. Companies listed represent the top and bottom 10% of the largest 250 European stocks. The screen identified as Style Cycle – Recovery 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

Recovery characteristics**Exhibit 45: There are 5 stocks from the Top Recovery list which are unpopular with investors**

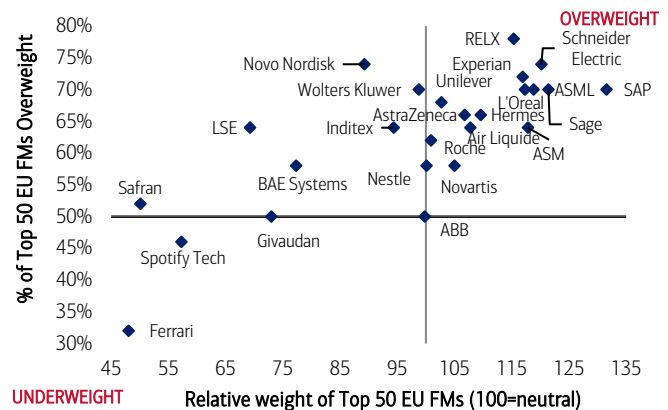
Top Recovery stocks ownership

**Source:** BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 46: There are 15 stocks from the Bottom Recovery list which are highly popular with investors

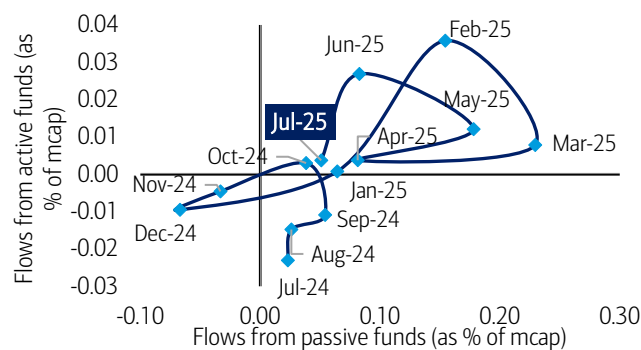
Bottom Recovery stocks ownership

**Source:** BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 47: So far in July, Top Recovery stocks saw \$0.02bn of inflows from active funds and \$0.22bn of inflows from passive

Top Recovery stocks flows over the past 12 months as % of mcap

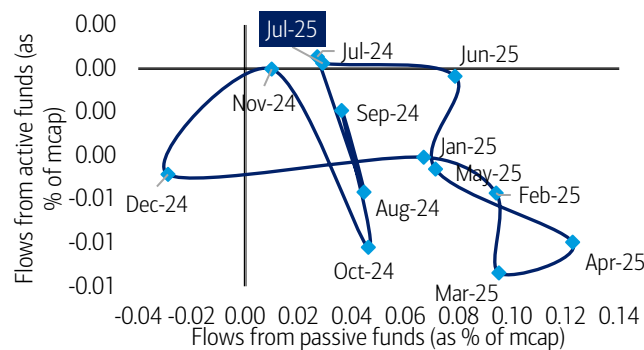


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 48: So far in July, Bottom Recovery stocks saw \$0.01bn of inflows from active funds and \$0.92bn inflows from passive funds

Bottom Recovery stocks flows over the past 12 months as % of mcap

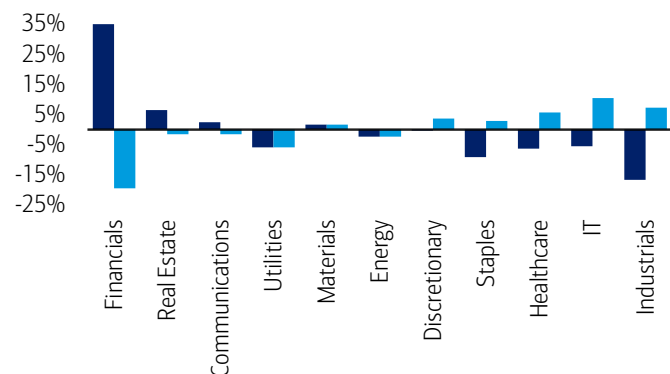


Source: BofA European Equity Quant Strategy, EPFR Global

BofA GLOBAL RESEARCH

Exhibit 49: Top Recovery stocks are most OW Financials, while bottom stocks are most OW IT

Top and bottom Recovery relative sector weights

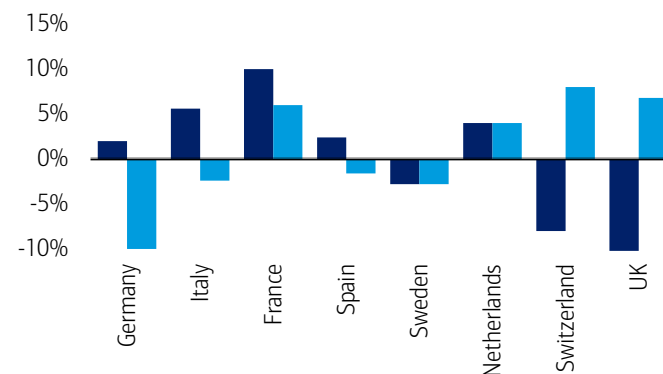


Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 50: Top Recovery stocks are most OW France, while bottom stocks are most OW Switzerland

Top and bottom Recovery relative country weights

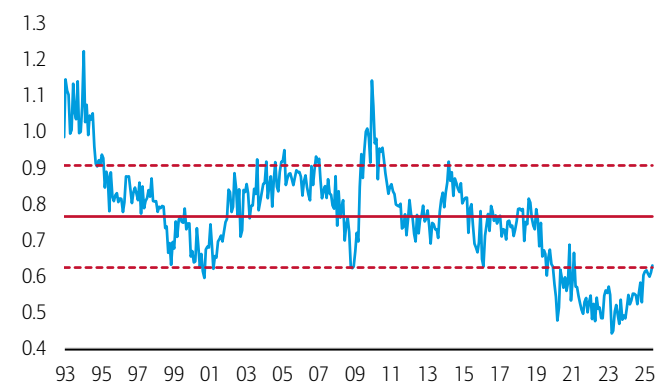


Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 51: Top Recovery stocks trade at a -18% P/E discount to the market relative to the long term average

Top Recovery stocks P/E relative to market

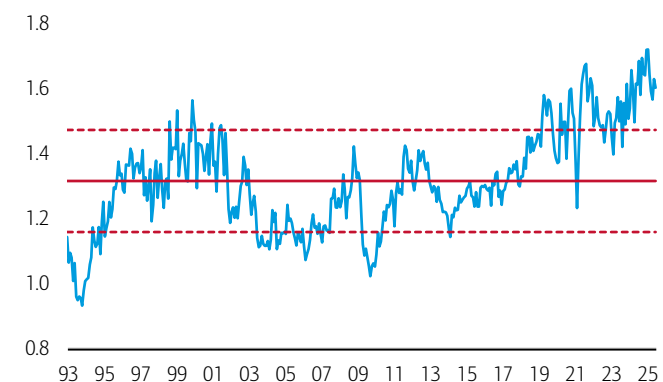


Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Exhibit 52: Bottom Recovery stocks trade at a 22% P/E premium to the market relative to the long term average

Bottom Recovery stocks P/E relative to market



Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH



Explaining the European Style Cycle

Style cycle: the relationship between the economic cycle and investment style

- We draw on the back-testing results first presented in February 2004, using data (since January 1992) on investment style price returns and the economic cycle to create the European 'Style Cycle'.
- The European 'Style Cycle' aims to offer what we believe are two vital components for investing across the cycle. These are: a) timing, and b) rotation.
- Investment styles with potential for success are based on favourable positioning within the cycle. Highlighted investment styles are expected to outperform the MSCI European equal-weight price index.
- We identify investment styles that we believe have the characteristics to underperform the MSCI European equal-weight price index, based on the unfavourable positioning within the cycle at a particular point in time. The screens resulting from the investment styles are not a recommended list, either individually or as a group of stocks. Investors should consider the fundamentals of the companies and their own individual circumstances/objectives before making any investment decision.

We observe the year on year changes for signals of economic expansion or contraction, and analyse monthly changes in the index for indications of peaks and troughs in macro data. The combination helps investors navigate the economic cycle, acting as a timing indicator for style rotation.

We show the relationship between the European economic cycle and price performance of various investment styles in the chart below. The four phases of the economic cycle are dictated by changes in the European CMI. The style preferences in each phase are based on the back-testing results of average monthly price returns from following individual investment styles during the changing conditions in the economic cycle

As a reminder, the CMI is an equal-weighted composite indicator of 6 inputs:

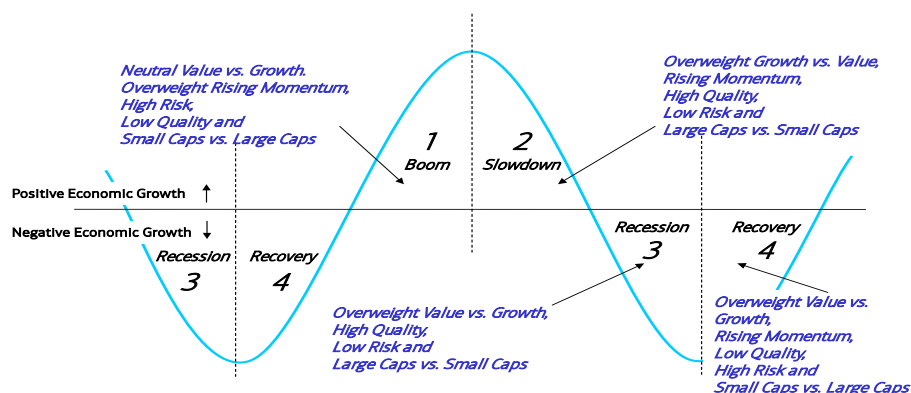
- Pan European GDP forecasts – 12m fwd forecasted GDP growth for the Developed European countries
- BofA Europe Leading Indicator – 12m change in BofA Europe Leading Indicator which indicates an acceleration (deceleration) in anticipated GDP growth, above (below) long-term GDP growth for Europe
- European 10Y bond yield – 12m actual change in average of 10Y bond yields of Germany, UK and France
- German IFO – level of indicator as published by the IFO institute for the Trade and Industry (Excluding Services) survey
- European PPI – Eurozone Producer Price inflation (expressed as 12m change) ex Construction, SRWG, Waste Management and Remediation Activities
- Global EPS Revision Ratio – ratio between the number of companies in the MSCI ACWI index for which LSEG Data & Analytics consensus earnings estimates have been raised versus those that have been lowered



We take each one of the six variables as they existed at month end and record the data, then using z-scores to normalise the data (some are percentages, some are levels and others are ratios). Using a percentile rank methodology of each variable can achieve the same outcome. We then aggregate the individual data series by using an equal-weight average. The sum of the individual data or aggregate macro series is referred to as the European Composite Macro Indicator (CMI).

Exhibit 53: Phases of the Economic Cycle* & Investment Style Preferences – ‘Style Cycle’

Style Cycle framework



Phase 1- Rising & Accelerating; Phase 2- Rising & Decelerating; Phase 3- Falling & Decelerating; Phase 4- Falling & Accelerating.

*Economic Cycle based on the ML Composite Macro Indicator

Source: BofA European Equity Quant Strategy

Back testing period from Dec 1992 to Dec 2003. Actual Performance Jan 2004.

BofA GLOBAL RESEARCH

Back testing – European Style Cycle

Back-testing the cycle with investment style

The table below includes the average excess price returns (monthly) for individual investment styles at each phase of the economic cycle. Style performance is versus MSCI Europe equal weight Price Index.

Exhibit 54: Monthly excess returns by investment style and phases of the economic cycle

Backtesting results (based on period from Dec '92 to Dec '03)

Economic cycle	Value	Growth	Momentum	Quality	Risk	Size
				hi-lo	high	(large-small)
Phase 1 - 'Boom' rising accelerating	1.10	0.78	0.97	-1.34	0.65	-0.75
Phase 2 - 'Slowdown' rising decelerating	0.00	0.44	0.89	0.52	0.07	0.25
Phase 3 - 'Recession' falling decelerating	-0.70	-1.91	-0.81	6.37	-2.85	1.10
Phase 4 - 'Recovery' falling accelerating	2.47	1.31	0.10	-3.00	2.66	-2.05
Cycle average	0.72	0.15	0.29	0.64	0.13	-0.36

Source: BofA European Equity Quant Strategy/ LSEG Data & Analytics/ OECD/ MSCI; Back testing period Dec 1992 to Dec 2003.

Performance based on equal weight portfolios, monthly rebalanced, no transaction costs are included, and performances based on price returns in EUR and not total returns (dividends are not included).

BofA GLOBAL RESEARCH

Summarising the results - we draw the following conclusions:

Phase 1 'Boom' - investors have benefited most by being overweight Momentum (Rising Price & EPS), High Risk (High Beta & High Estimate Dispersion), Small Caps vs Large Caps and being Neutral on Value vs Growth. Phase 2 'Slow-down' - investors have benefited most by overweighting Growth vs Value, Momentum (Rising Price & EPS), High Quality (Strong Balance Sheet indicators), Low Risk (Low Beta & Low Estimate Dispersion) and Large Caps vs Small Caps. Phase 3 'Recession' – overweight Value vs



Growth, High Quality (Strong Balance Sheet indicators), Low Risk (Low Beta & Low Estimate Dispersion) and Large Caps vs Small Caps. Phase 4 'Recovery' – overweight Value vs Growth, Momentum (Rising Price & EPS), Low Quality (Weak Balance Sheet indicators), High Risk and Small vs Large Caps.

The back-testing results illustrate how certain investment styles work well compared to others, depending on the economic conditions and ultimately where we are in the cycle. The data presented above looks at all periods since 1992, including 5 complete cycles.

For the purpose of the historical back-testing, we calculate price returns in our analysis, not total returns. Dividends are not re-invested and performance does not include tax withholdings or any investment advisory fees. We do not include transaction costs, and we not do include implementation costs or borrowing costs in the absolute 'Style Cycle' price returns.

Price returns are based on month end data, meaning we use closing stock prices for the last trading day of the calendar month. All screens are based on month end data and it is assumed on the 1st business day of the new month our screens would have been available to the market. We calculate the profit or loss for a particular month based on the month end data from one period to the month end data of the next period.

Screens are determined at the end of each month using month-end data. Price performance is calculated as the simple average performance of the stocks within the screen. In order that we compare like with like, screen performance is compared to an equal-weighted average performance of all stocks in the universe. In this way, we remove any size bias from the analysis, and thereby test whether the factors on which we are focused predict price performance. It is noteworthy that BofA restricted stocks have not been excluded from any part of the historical monthly screens as defined as the back-test period.

Back-tested performance is hypothetical in nature and reflects application of the screen prior to its introduction and is not intended to be indicative of future performance.

Definitions

Investment styles

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

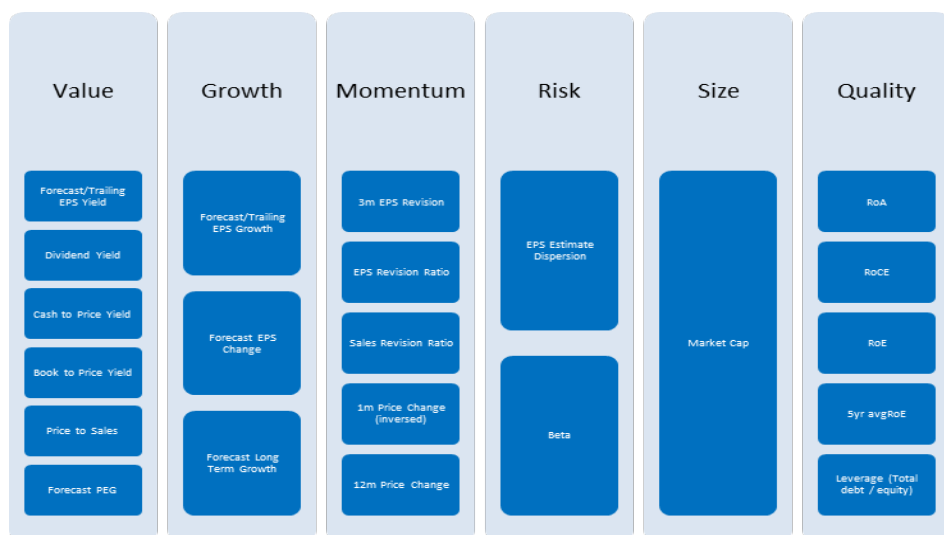
Momentum: Equal weighted combination of factors - 3m EPS Change, EPS Revision Ratio, Sales Revision Ratio, 1m Price Change and 12m Price Change

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

Exhibit 55: Style components

Individual factors that are used for style composites



Source: BofA European Equity Quant Strategy

BofA GLOBAL RESEARCH

Multi factor models

STYLE CYCLE: The European 'Style Cycle' links phases of the economic cycle with the performance of investment style. Stocks are screened based on their equal weighted rank of Value, Growth, Momentum, Quality and Risk.

Absolute return

Absolute return is calculated based on monthly returns and reflects simple price appreciation (depreciation) over the stated period of the screened stocks. For purposes of this calculation, the stocks in the screen are assumed to be equally weighted. Returns do not reflect dividend or costs.

Relative return

Relative return is calculated based on monthly returns and reflects simple price appreciation (depreciation) over the stated period of the screened stocks minus the return for our Equal weighted European Universe. Returns do not reflect dividend or costs.

Performances of phases**Exhibit 56: European Absolute factor returns by Style Cycle phase (%)**

Prices as of end of last month

Style	Factor Name	1M	3M	6M	12M	YTD	3YR	5YR	Since Incpt.*
Multi-factor	Style Cycle - Top	-1.3	7.8	21.0	29.8	21.0	66.9	118.4	574.4
Multi-factor	Style Cycle - Bottom	-2.8	1.3	2.5	-2.2	2.5	9.3	13.5	19.2
Multi-factor	Style Cycle - BOOM - Top	-1.5	10.2	26.0	39.5	26.0	89.3	157.6	369.7
Multi-factor	Style Cycle - BOOM - Bottom	-4.5	-4.4	-4.1	-6.7	-4.1	2.5	8.7	185.0
Multi-factor	Style Cycle - SLOWDOWN - Top	-2.2	2.2	3.4	2.3	3.4	38.2	35.1	523.3
Multi-factor	Style Cycle - SLOWDOWN - Bottom	-1.1	1.3	7.2	10.7	7.2	29.3	62.8	19.8
Multi-factor	Style Cycle - RECESSION - Top	-2.5	-2.6	2.5	2.0	2.5	20.9	43.2	107.8
Multi-factor	Style Cycle - RECESSION - Bottom	0.1	5.2	6.7	10.9	6.7	26.5	25.4	133.7
Multi-factor	Style Cycle - RECOVERY - Top	-1.3	7.8	21.0	29.8	21.0	66.2	145.1	288.6
Multi-factor	Style Cycle - RECOVERY - Bottom	-2.8	1.3	2.5	-2.2	2.5	28.6	38.2	280.0
Market	European Market (abs)	-1.1	3.1	8.6	10.6	8.6	35.6	53.9	188.6

Source: BofA European Equity Quant Strategy, FactSet. *Inception – January 2003.

BofA GLOBAL RESEARCH



Exhibit 57: European Relative factor returns by Style Cycle phase (%)

Prices as of end of last month

Style	Factor Name	1M	3M	6M	12M	YTD	3YR	5YR	Since Incpt.*
Multi-factor	Style Cycle - Top	-0.3	4.5	11.5	17.3	11.5	23.0	41.9	133.7
Multi-factor	Style Cycle - Bottom	-1.7	-1.8	-5.5	-11.6	-5.5	-19.4	-26.3	-58.7
Multi-factor	Style Cycle - BOOM - Top	-0.5	6.9	16.1	26.1	16.1	39.6	67.3	62.7
Multi-factor	Style Cycle - BOOM - Bottom	-3.5	-7.3	-11.6	-15.6	-11.6	-24.4	-29.4	-1.2
Multi-factor	Style Cycle - SLOWDOWN - Top	-1.1	-0.9	-4.8	-7.5	-4.8	1.9	-12.2	116.0
Multi-factor	Style Cycle - SLOWDOWN - Bottom	-0.1	-1.7	-1.2	0.1	-1.2	-4.6	5.7	-58.5
Multi-factor	Style Cycle - RECESSION - Top	-1.4	-5.6	-5.6	-7.8	-5.6	-10.9	-7.0	-28.0
Multi-factor	Style Cycle - RECESSION - Bottom	1.1	2.0	-1.7	0.3	-1.7	-6.7	-18.6	-19.0
Multi-factor	Style Cycle - RECOVERY - Top	-0.3	4.5	11.5	17.3	11.5	22.5	59.2	34.7
Multi-factor	Style Cycle - RECOVERY - Bottom	-1.7	-1.8	-5.5	-11.6	-5.5	-5.2	-10.2	31.7

Source: BofA European Equity Quant Strategy, FactSet. *Inception – January 2003.

BofA GLOBAL RESEARCH

Exhibit 58: European Style Cycle advancers

Number of companies which saw their price up over the last month

Factor Name	1M	3M	6M	12M	YTD	3YR	5YR	Since Incpt.*
Style Cycle - Top	9	43	93	180	93	513	827	3701
Style Cycle - Bottom	5	36	77	147	77	458	781	3544
Style Cycle - BOOM - Top	7	43	93	189	93	530	861	3722
Style Cycle - BOOM - Bottom	3	32	68	139	68	450	776	3660
Style Cycle - SLOWDOWN - Top	6	38	78	148	78	489	798	3715
Style Cycle - SLOWDOWN - Bottom	9	39	86	161	86	492	802	3555
Style Cycle - RECESSION - Top	7	35	83	153	83	477	818	3660
Style Cycle - RECESSION - Bottom	9	37	79	162	79	478	774	3605
Style Cycle - RECOVERY - Top	9	43	93	180	93	519	851	3677
Style Cycle - RECOVERY - Bottom	5	36	77	147	77	478	805	3681
Market	90	403	852	1627	852	4871	8004	14823

Source: BofA European Equity Quant Strategy, FactSet. *Inception – January 2003.

BofA GLOBAL RESEARCH

Exhibit 59: European Style Cycle decliners

Number of companies which saw their price down over the last month

Factor Name	1M	3M	6M	12M	YTD	3YR	5YR	Since Incpt.*
Style Cycle - Top	16	32	57	120	57	387	615	3070
Style Cycle - Bottom	20	39	73	153	73	442	646	3223
Style Cycle - BOOM - Top	18	32	57	111	57	370	582	3045
Style Cycle - BOOM - Bottom	22	43	82	161	82	450	641	3110
Style Cycle - SLOWDOWN - Top	19	36	71	151	71	410	629	3055
Style Cycle - SLOWDOWN - Bottom	16	36	64	139	64	408	634	3210
Style Cycle - RECESSION - Top	18	39	66	146	66	422	614	3107
Style Cycle - RECESSION - Bottom	16	38	71	138	71	421	654	3155
Style Cycle - RECOVERY - Top	16	32	57	120	57	380	591	3088
Style Cycle - RECOVERY - Bottom	20	39	73	153	73	422	622	3089
Market	160	346	647	1372	647	4124	6339	12897

Source: BofA European Equity Quant Strategy, FactSet. *Inception – January 2003.

BofA GLOBAL RESEARCH

Historical phases of the 'Style Cycle'

Exhibit 60: Currently Style Cycle remains in the 'Recovery' phase for the 17th month

List of Style Cycle historical phases' episodes with length and a following phase mentioned

Phase	Phase start	Phase end	Length	Followed by
Slowdown	Feb-95	Sep-95	8	Recession
Recession	Oct-95	Jan-96	4	Recovery
Recovery	Feb-96	Dec-96	11	Boom
Boom	Jan-97	Dec-97	12	Slowdown
Slowdown	Jan-98	Mar-98	3	Recession
Recession	Apr-98	Jan-99	10	Recovery
Recovery	Feb-99	Jun-99	5	Boom
Boom	Jul-99	Mar-00	9	Slowdown
Slowdown	Apr-00	Jan-01	10	Recession
Recession	Feb-01	Dec-01	11	Recovery
Recovery	Jan-02	Mar-02	3	Boom
Boom	Apr-02	Apr-02	1	Slowdown
Slowdown	May-02	Dec-02	8	Recession
Recession	Jan-03	May-03	5	Recovery
Recovery	Jun-03	Aug-03	3	Boom
Boom	Sep-03	Jul-04	11	Slowdown
<i>Slowdown</i>	<i>Aug-04</i>	<i>Jul-05</i>	12	<i>Boom</i>
Boom	Aug-05	Jul-06	12	Slowdown
Slowdown	Aug-06	Aug-08	25	Recession
Recession	Sep-08	May-09	9	Recovery
Recovery	Jun-09	Oct-09	5	Boom
Boom	Nov-09	Feb-10	4	Slowdown
<i>Slowdown</i>	<i>Mar-10</i>	<i>Nov-10</i>	9	<i>Boom</i>
Boom	Dec-10	Mar-11	4	Slowdown
Slowdown	Apr-11	Aug-11	5	Recession
Recession	Sep-11	Mar-12	7	Recovery
Recovery	Apr-12	May-13	14	Boom
Boom	Jun-13	Oct-13	5	Slowdown
Slowdown	Nov-13	Aug-14	10	Recession
Recession	Sep-14	Mar-15	7	Recovery
<i>Recovery</i>	<i>Apr-15</i>	<i>Feb-16</i>	11	<i>Recession</i>
Recession	Mar-16	Sep-16	7	Recovery
Recovery	Oct-16	Jan-17	4	Boom
Boom	Feb-17	Mar-18	14	Slowdown
Slowdown	Apr-18	Sep-18	6	Recession
Recession	Oct-18	Mar-19	6	Recovery
<i>Recovery</i>	<i>Apr-19</i>	<i>Jul-19</i>	4	<i>Recession</i>
Recession	Aug-19	Nov-19	4	Recovery
<i>Recovery</i>	<i>Dec-19</i>	<i>Mar-20</i>	4	<i>Recession</i>
Recession	Apr-20	Jun-20	3	Recovery
Recovery	Jul-20	Sep-20	3	Boom
Boom	Oct-20	Jun-21	9	Slowdown
<i>Slowdown</i>	<i>Jul-21</i>	<i>Oct-21</i>	4	<i>Boom</i>
Boom	Nov-21	Mar-22	5	Slowdown
Slowdown	Apr-22	May-23	14	Recession
Recession	Jun-23	Feb-24	9	Recovery
Recovery	Mar-24	Jul-25	17	

Source: BofA European Equity Quant Strategy. Note episodes in italics are those which went off the usual path

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):



- a) **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).
- b) **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.
- c) **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 61: 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)					
1W Forward						4W Forward						8W Forward					
Momentum	Implied	Trend			Momentum	Momentum	Implied	Trend			Momentum	Momentum	Implied	Trend			
Date	Volatility	Volatility	Reversal	EMCI	Returns	Date	Volatility	Volatility	Reversal	EMCI	Returns	Date	Volatility	Volatility	Reversal	EMCI	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%

Exhibit 61: 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	Momentum	Implied	Trend	1W Forward		Date	Momentum	Implied	Trend	4W Forward		Date	Momentum	Implied	Trend	8W Forward	
	Volatility	Volatility	Reversal	EMCI	Returns		Volatility	Volatility	Reversal	EMCI	Returns		Volatility	Volatility	Reversal	EMCI	Returns
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

Disclosures

Important Disclosures

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 Sector Conduct Authority; MLI (UK): Merrill Lynch International, regulated by the Financial Conduct Authority (FCA) and the Prudential Regulation Authority (PRA); BofASE (France): BofA Securities Europe SA is authorized by the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers (AMF). BofA Securities Europe SA ("BofASE") with registered address at 51, rue La Boétie, 75008 Paris is registered under no 842 602 690 RCS Paris. In accordance with the provisions of French Code Monétaire et Financier (Monetary and Financial Code), BofASE is an établissement de crédit et d'investissement (credit and investment institution) that is authorised and supervised by the European Central Bank and the Autorité de Contrôle Prudentiel et de Résolution (ACPR) and regulated by the ACPR and the Autorité des Marchés Financiers. BofASE's share capital can be found at www.bofam.com/BofASEdisclaimer; BofA Europe (Milan): Bank of America Europe Designated Activity Company, Milan Branch, regulated by the Bank of Italy, the European Central Bank (ECB) and the Central Bank of Ireland (CBI); BofA Europe (Frankfurt): Bank of America Europe Designated Activity Company,



Frankfurt Branch regulated by BaFin, the ECB and the CBI; BofA Europe (Madrid): Bank of America Europe Designated Activity Company, Sucursal en España, regulated by the Bank of Spain, the ECB and the CBI; Merrill Lynch (Australia): Merrill Lynch Equities (Australia) Limited, regulated by the Australian Securities and Investments Commission; Merrill Lynch (Hong Kong): Merrill Lynch (Asia Pacific) Limited, regulated by the Hong Kong Securities and Futures Commission (HKSF); Merrill Lynch (Singapore): Merrill Lynch (Singapore) Pte Ltd, regulated by the Monetary Authority of Singapore (MAS); Merrill Lynch (Canada): Merrill Lynch Canada Inc, regulated by the Canadian Investment Regulatory Organization; Merrill Lynch (Mexico): Merrill Lynch Mexico, SA de CV, Casa de Bolsa, regulated by the Comisión Nacional Bancaria y de Valores; BofAS Japan: BofA Securities Japan Co., Ltd., regulated by the Financial Services Agency; Merrill Lynch (Seoul): Merrill Lynch International, LLC Seoul Branch, regulated by the Financial Supervisory Service; Merrill Lynch (Taiwan): Merrill Lynch Securities (Taiwan) Ltd., regulated by the Securities and Futures Bureau; BofAS India: BofA Securities India Limited, regulated by the Securities and Exchange Board of India (SEBI); Merrill Lynch (Israel): Merrill Lynch Israel Limited, regulated by Israel Securities Authority; Merrill Lynch (DIFC): Merrill Lynch International (DIFC Branch), regulated by the Dubai Financial Services Authority (DFSA); Merrill Lynch (Brazil): Merrill Lynch S.A. Corretora de Títulos e Valores Mobiliários, regulated by Comissão de Valores Mobiliários; Merrill Lynch KSA Company: Merrill Lynch Kingdom of Saudi Arabia Company, regulated by the Capital Market Authority. This information has been approved for publication and is distributed in the United Kingdom (UK) to professional clients and eligible counterparties (as each is defined in the rules of the FCA and the PRA) by MLI (UK), which is authorized by the PRA and regulated by the FCA and the PRA - details about the extent of our regulation by the FCA and PRA are available from us on request; has been approved for publication and is distributed in the European Economic Area (EEA) by BofASE (France), which is authorized by the ACPR and regulated by the ACPR and the AMF; has been considered and distributed in Japan by BofAS Japan, a registered securities dealer under the Financial Instruments and Exchange Act in Japan, or its permitted affiliates; is issued and distributed in Hong Kong by Merrill Lynch (Hong Kong) which is regulated by HKSF; is issued and distributed in Taiwan by Merrill Lynch (Taiwan); is issued and distributed in India by BofAS India; and is issued and distributed in Singapore to institutional investors and/or accredited investors (each as defined under the Financial Advisers Regulations) by Merrill Lynch (Singapore) (Company Registration No 198602883D). Merrill Lynch (Singapore) is regulated by MAS. Merrill Lynch Equities (Australia) Limited (ABN 65 006 276 795), AFS License 235132 (MLEA) distributes this information in Australia only to 'Wholesale' clients as defined by s.761G of the Corporations Act 2001. With the exception of Bank of America N.A., Australia Branch, neither MLEA nor any of its affiliates involved in preparing this information is an Authorised Deposit-Taking Institution under the Banking Act 1959 nor regulated by the Australian Prudential Regulation Authority. No approval is required for publication or distribution of this information in Brazil and its local distribution is by Merrill Lynch (Brazil) in accordance with applicable regulations. Merrill Lynch (DIFC) is authorized and regulated by the DFSA. Information prepared and issued by Merrill Lynch (DIFC) is done so in accordance with the requirements of the DFSA conduct of business rules. BofA Europe (Frankfurt) distributes this information in Germany and is regulated by BaFin, the ECB and the CBI. BofA Securities entities, including BofA Europe and BofASE (France), may outsource/delegate the marketing and/or provision of certain research services or aspects of research services to other branches or members of the BofA Securities group. You may be contacted by a different BofA Securities entity acting for and on behalf of your service provider where permitted by applicable law. This does not change your service provider. Please refer to the [Electronic Communications Disclaimers](#) for further information.

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

General Investment Related Disclosures:

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

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

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

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

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

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

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

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

Copyright and General Information:

Copyright 2025 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. This document and its content is provided solely for informational purposes and cannot be used for training or developing artificial intelligence (AI) models or as an input in any AI application (collectively, an AI tool). Any attempt to utilize this document or any of its content in connection with an AI tool without explicit written permission from BofA Global Research is strictly prohibited. BofA Global Research information is distributed simultaneously to internal and client websites and other portals by BofA Securities and is not publicly-available material. Any unauthorized use or disclosure is prohibited. Receipt and review of this information constitutes your agreement not to redistribute, retransmit, or disclose to others the contents, opinions, conclusion, or information contained herein (including any investment recommendations, estimates or price targets) without first obtaining express permission from an authorized officer of BofA Securities.



Materials prepared by BofA Global Research personnel are based on public information. Facts and views presented in this material have not been reviewed by, and may not reflect information known to, professionals in other business areas of BofA Securities, including investment banking personnel. BofA Securities has established information barriers between BofA Global Research and certain business groups. As a result, BofA Securities does not disclose certain client relationships with, or compensation received from, such issuers. To the extent this material discusses any legal proceeding or issues, it has not been prepared as nor is it intended to express any legal conclusion, opinion or advice. Investors should consult their own legal advisers as to issues of law relating to the subject matter of this material. BofA Global Research personnel's knowledge of legal proceedings in which any BofA Securities entity and/or its directors, officers and employees may be plaintiffs, defendants, co-defendants or co-plaintiffs with or involving issuers mentioned in this material is based on public information. Facts and views presented in this material that relate to any such proceedings have not been reviewed by, discussed with, and may not reflect information known to, professionals in other business areas of BofA Securities in connection with the legal proceedings or matters relevant to such proceedings.

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

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

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

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

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

Certain outstanding reports or investment opinions relating to securities, financial instruments and/or issuers may no longer be current. Always refer to the most recent research report relating to an issuer prior to making an investment decision.

In some cases, an issuer may be classified as Restricted or may be Under Review or Extended Review. In each case, investors should consider any investment opinion relating to such issuer (or its security and/or financial instruments) to be suspended or withdrawn and should not rely on the analyses and investment opinion(s) pertaining to such issuer (or its securities and/or financial instruments) nor should the analyses or opinion(s) be considered a solicitation of any kind. Sales persons and financial advisors affiliated with BofAS or any of its affiliates may not solicit purchases of securities or financial instruments that are Restricted or Under Review and may only solicit securities under Extended Review in accordance with firm policies.

Neither BofA Securities nor any officer or employee of BofA Securities accepts any liability whatsoever for any direct, indirect or consequential damages or losses arising from any use of this information.

