

Equity Factor Insights

QUARTERLY REPORT: JANUARY 2024

FOR PROFESSIONAL INVESTORS ONLY

Factor patterns reverse in Q4 global rally

(Small) Size and Momentum shine in Q4 risk rally

On average, (Small) Size and Momentum extended Q3 gains, and Quality came back to finish ahead in Q4. In a reversal from the previous quarter, Value, Yield and Low Vol underperformed in most markets in Q4.

Energy malaise and lower yields are major return drivers

While factor return patterns were mixed in Q4, Value's energy tilt hurt its performance across the board, and Low Vol struggled in a risk-on market environment.

Emerging's factor patterns deviate from developed market peers

The Emerging region's factors once again veered from developed market patterns, with Low Vol and Yield outperforming, although Momentum led in Q4.

Factor valuations expand

Factor forward P/Es mostly expanded in the global rally. Absolute forward P/Es for Quality and Low Vol were at or above 10-year averages, except in the UK. Quality/Value spreads were above historical norms in the US, Europe, Asia Pacific and Emerging.

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Regional Factor Performance Highlights — Fourth Quarter 2023 Relative Returns

Factor Relative Returns vs Benchmark
(Average across regions*, LC %)

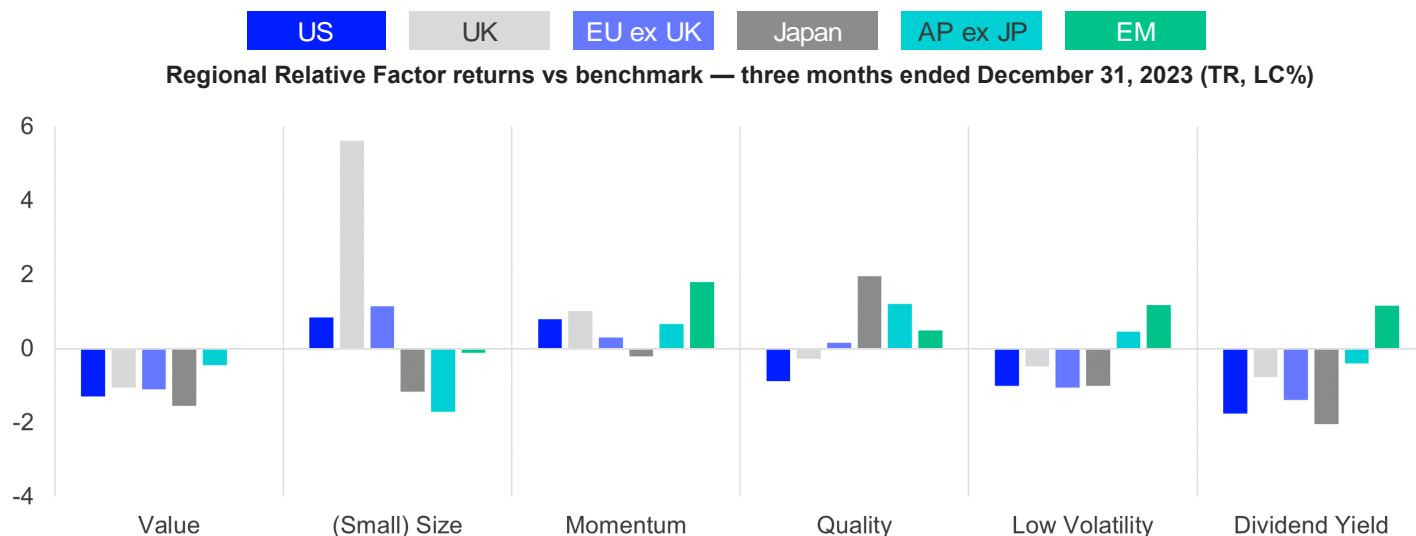


+0.8% US (Small) Size	+5.6% UK (Small) Size
-1.7% US Yield	-1.0% UK Value
+1.9% Japan Quality	+1.8% Emerging Momentum
-2.0% Japan Yield	-0.1% Emerging (Small) Size

Source: FTSE Russell and LSEG. *Combined average of factor performance across FTSE USA, FTSE UK, FTSE Europe ex UK, FTSE Japan, FTSE Asia Pacific ex Japan and FTSE Emerging regional indexes. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. This report should not be considered 'research' for the purposes of MIFID II. Please see Appendices at the end and FTSE Russell website for important legal disclosures and details on rules-based factor indicator calculations and construction methodology.

Global View – Factor and Benchmark Performance Highlights – Q4 2023

In Q4, factor returns relative to their respective broad-market benchmarks were mixed, except for Value which broadly underperformed, likely hurt by Energy and defensives lagging over the quarter. Yield underperformed except in Emerging. Quality and Low Vol posted mixed results. (Small) Size notably outperformed in the UK, and Momentum outperformed except in Japan.

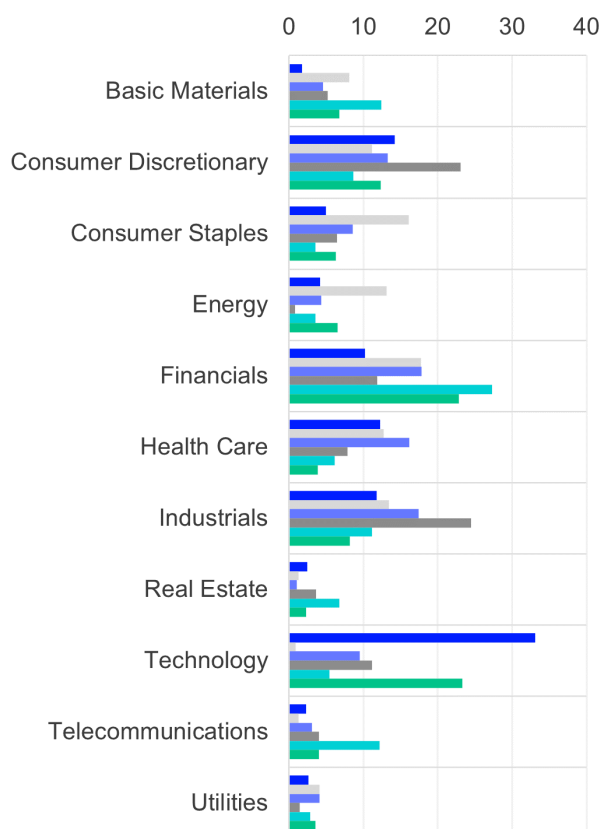


Regional Equity Market Returns Q4 2023 (TR, LC %) – US fares best in global rally

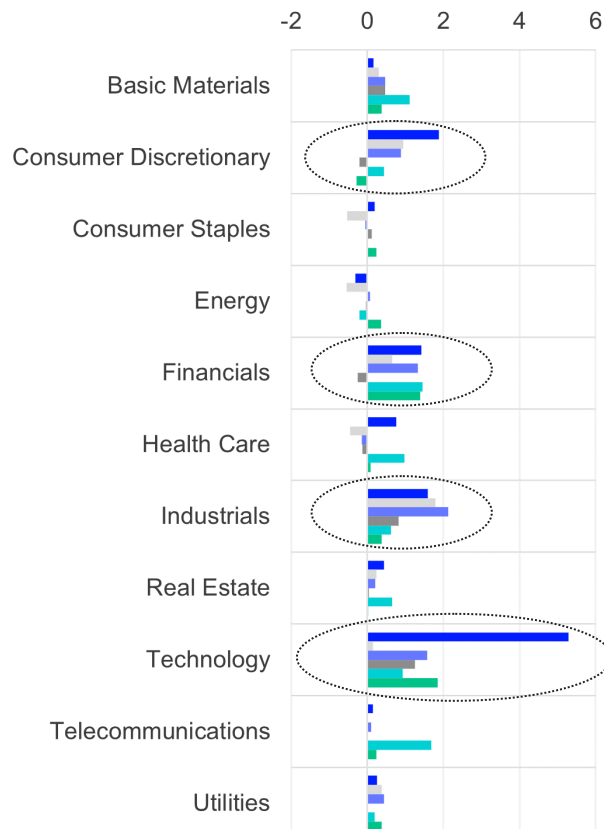
Global markets were up in Q4 in a broad-based rally. Cyclical boosted returns, with Technology, Industrials, Financials and Discretionary leading contributions in most markets. The US outperformed other regions, while Japan lagged most.



Benchmark Industry Weights, 3M average (%)



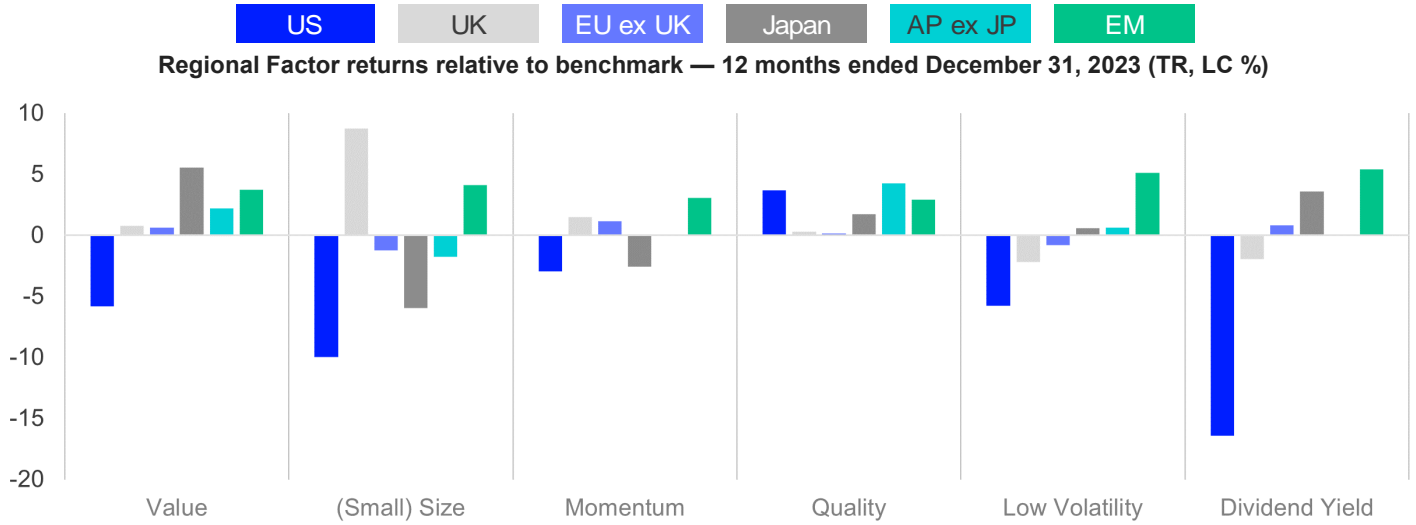
3M – Contributions to Total Benchmark Returns (%)



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Industry results based on Industry Classification Benchmark (ICB) data. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

Global View – Factor and Benchmark Performance Highlights – Last 12 Months

Over 12M, Quality outperformed across the board, as did Value with the notable exception of the US. (Small) Size outperformed in the UK and Emerging, with a large underperformance in the US. Momentum, Low Vol and Yield posted mixed results across regions, with these factors lagging badly in the US and performing best in Emerging.

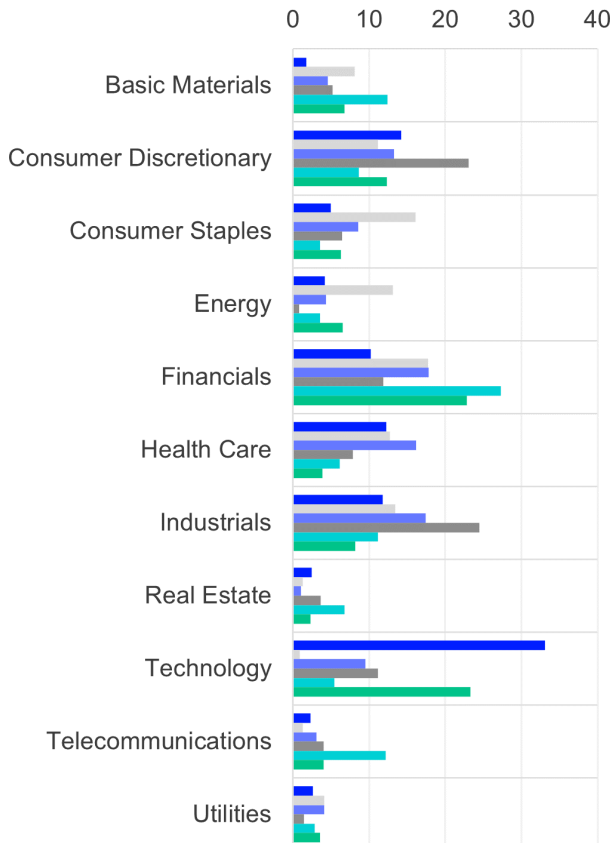


Regional Equity Market Returns 12M (TR, LC %) – Japan and US top the charts

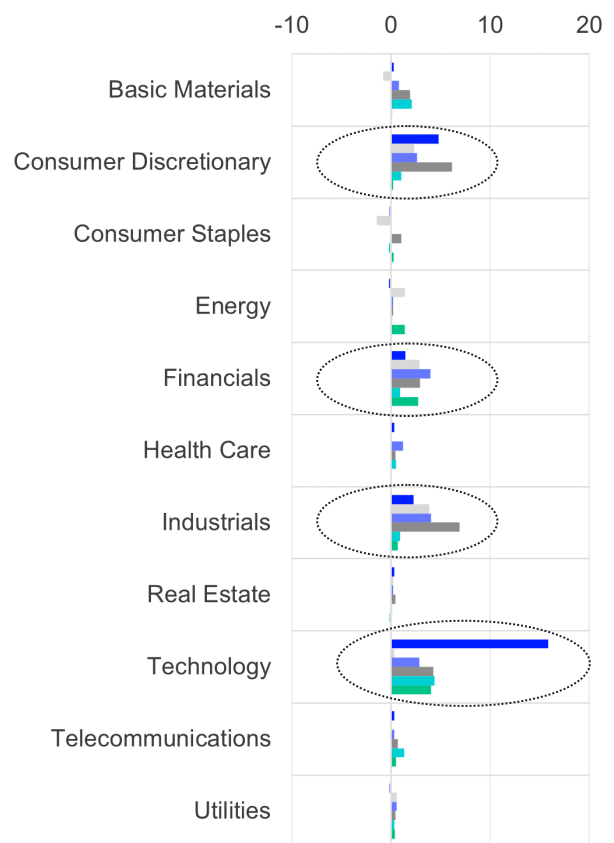
Japan and the US led the pack in 2023. The UK and Emerging lagged. Technology boosted returns in all regions except the UK with its small Tech exposure. Industrials, Financials and Discretionary contributed substantially for the year.



Benchmark Industry Weights, 3M average (%)



12M – Contributions to Total Benchmark Returns (%)



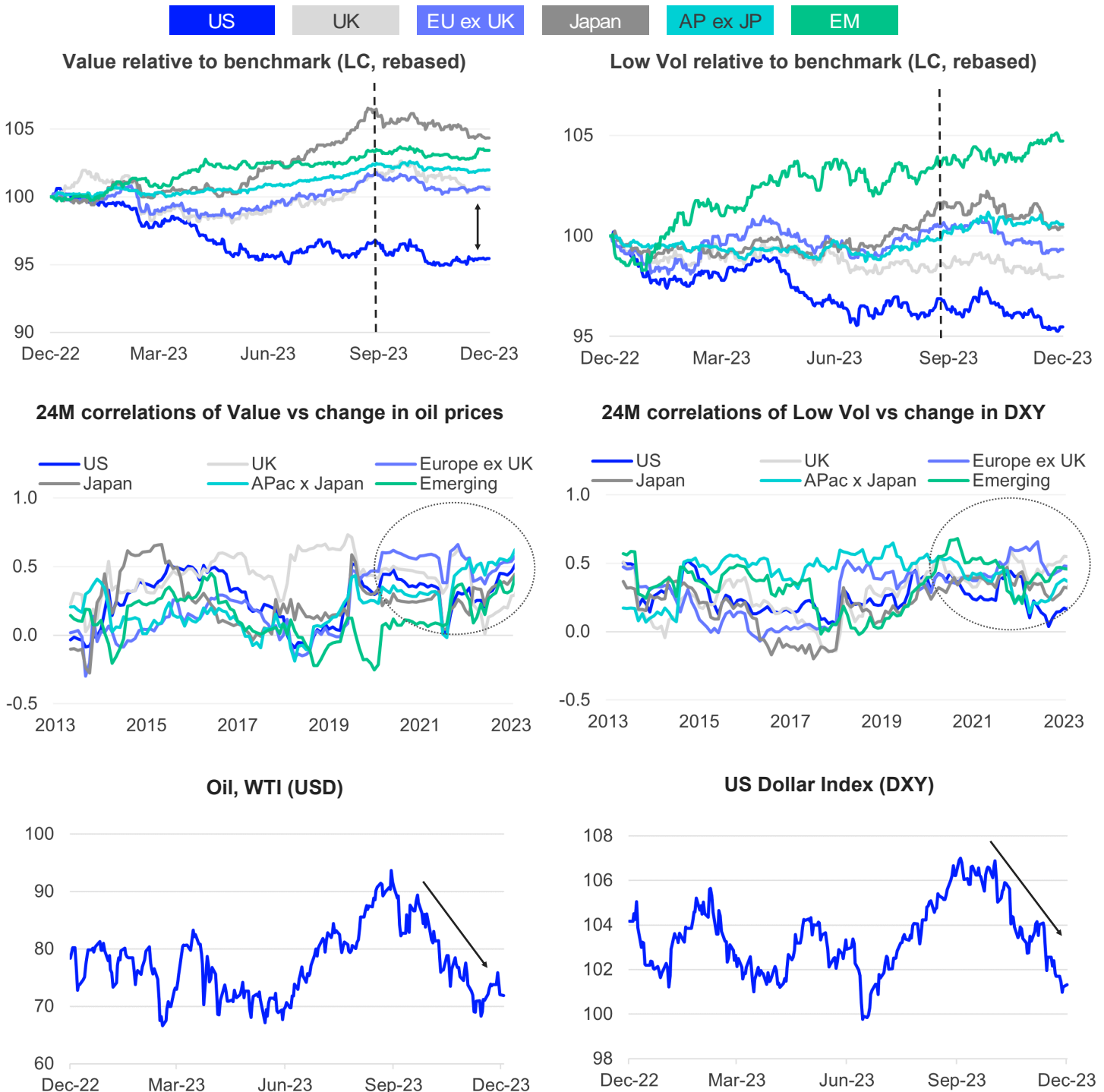
Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Industry results based on Industry Classification Benchmark (ICB) data. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

Global View – Factor rotation

Value retreats on Energy malaise and declining yields

The Q4 global rally was accompanied by declining long yields in major developed markets such as the US, UK and Germany, while long yields remained flat in Japan with its ultra loose monetary policy and yield curve control. Further, the USD retreated (bottom right chart) and oil posted steep losses (bottom left chart). Given this backdrop, Value underperformed its benchmark for the quarter in a strong reversal from Q3 (top left chart). With its large tilt towards Energy, Value is typically positively correlated with changes in oil prices (middle left chart). Value still outperformed over 12M, with the notable exception of the US, where its underweight to Tech's rally hurt the factor's relative performance.

Low Vol is typically positively correlated with the USD that is often a safe haven currency (middle right chart). With the return of market risk-on sentiment in Q4, as the USD retreated, not surprisingly, Low Vol underperformed in most regions except in Asia Pacific and Emerging. In Asia Pacific, the factor's exposure to Telecoms and a strong selection effect within Materials helped. In Emerging, its underweight to Discretionary supported its outperformance. Low Vol's 12M performance was mixed.

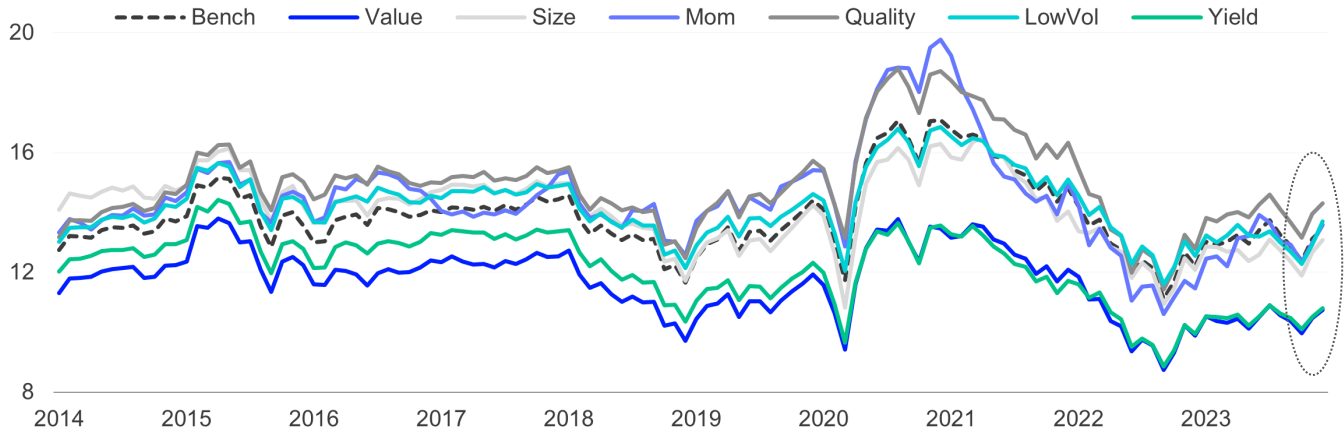


Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

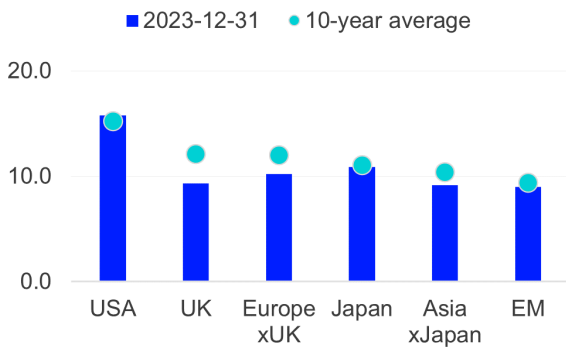
Global View – Factor Valuations

Forward P/Es rose across factors over the last two months of Q4. On average, Quality, Low Vol and Momentum were the most expensive, while Value and Yield remained the cheapest. As has long been the case, US factors continued to trade at a premium to those of peers. At quarter-end, with the exception of Yield, US factors were above their 10-year average.

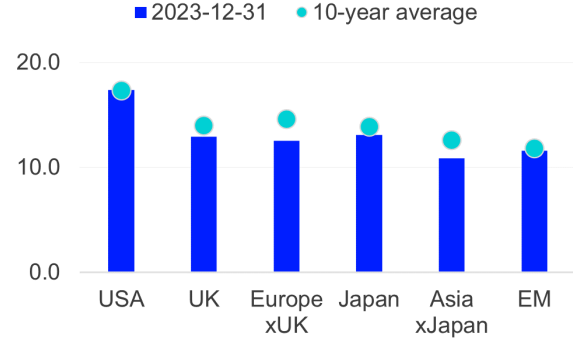
12-month factor forward P/E ratios, average of six regions*



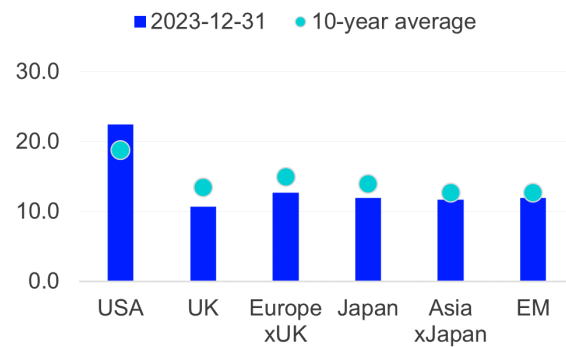
Value - 12M forward P/E



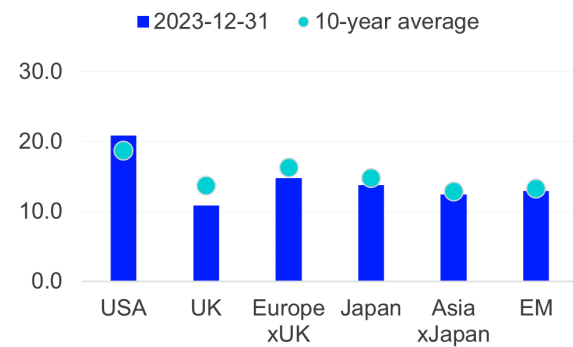
Size - 12M forward P/E



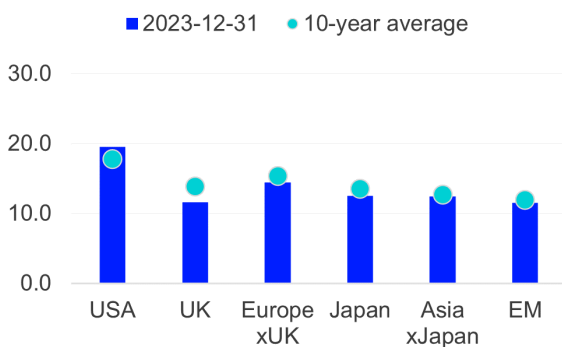
Momentum - 12M forward P/E



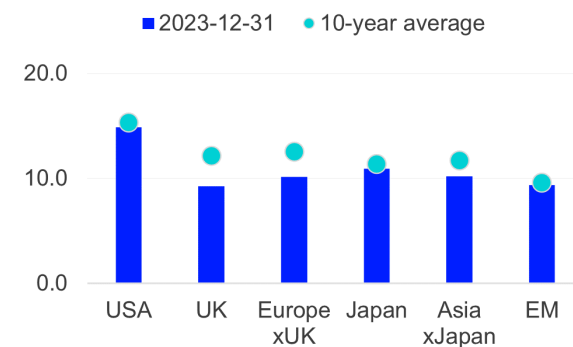
Quality - 12M forward PE



Low Volatility - 12M forward PE



Yield - 12M forward PE



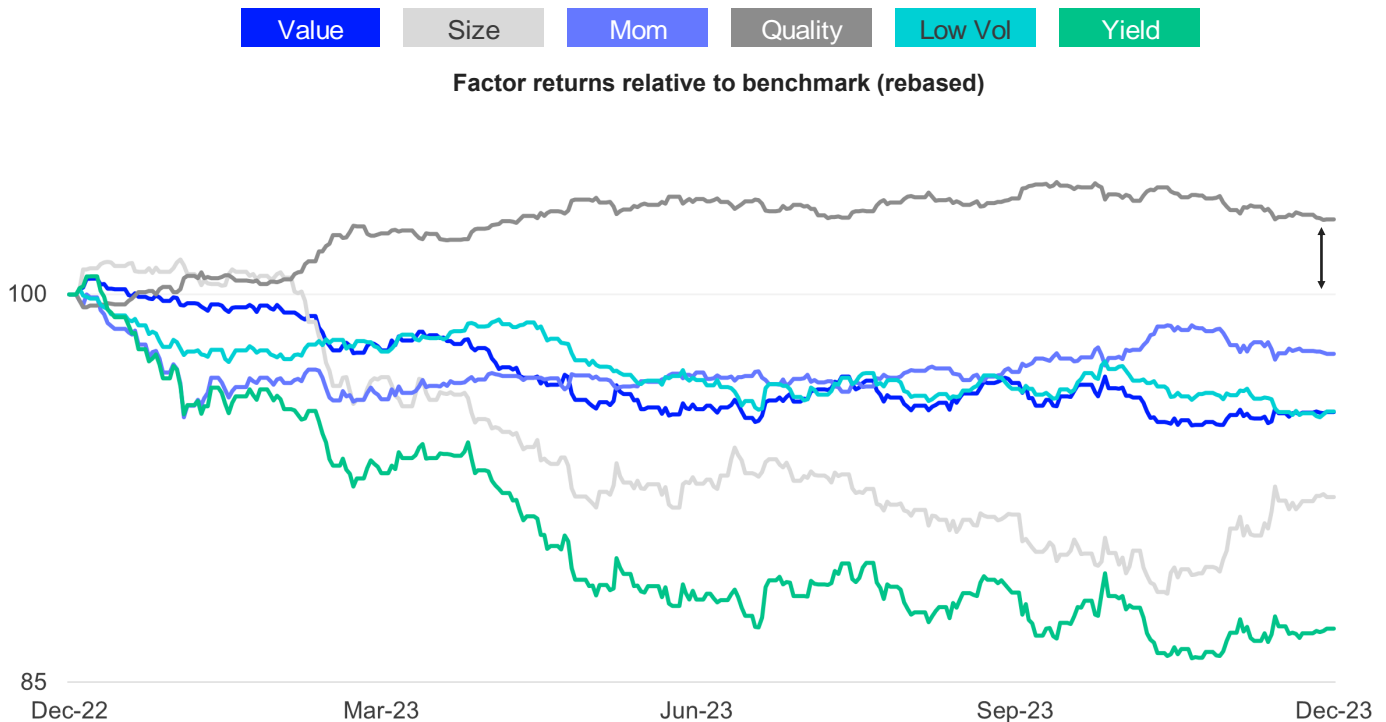
Source: FTSE Russell and LSEG. All data as of December 31, 2023. *Combined average 12M forward P/Es for FTSE USA, FTSE UK, FTSE Europe ex UK, FTSE Japan, FTSE Asia Pacific ex Japan and FTSE Emerging regional indexes. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please refer to important disclosures and information on factor calculations. For professional investors only.

US Equity Factor Insights

Fourth Quarter 2023

Key Observations

- (Small) Size and Momentum were the sole outperformers in Q4. Though the months-long rally in Quality stalled, it remained the sole outperformer over 12M. Yield was the biggest laggard for the quarter and year.
- Given Tech's large contribution to benchmark returns, factors underweight Tech, such as Value, (Small) Size, Low Vol and Yield, had negative allocation effects from that industry in Q4. Conversely, Value, Quality and Yield's overweight to underperforming Energy also led to negative allocation effects.
- Momentum outperformed, supported by its large Tech exposure. Despite its underweight to Tech, (Small) Size outperformed on the back of its overweight to cyclicals such as Financials, Industrials and Real Estate, and its underweight to Health Care.
- After the Q4 re-rating, absolute forward P/Es for most US factors are now at or above 10-year averages.
- However, relative to the broad market, Value, (Small) Size and Yield remain at large discounts versus history, while Momentum trades at a relative premium.



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

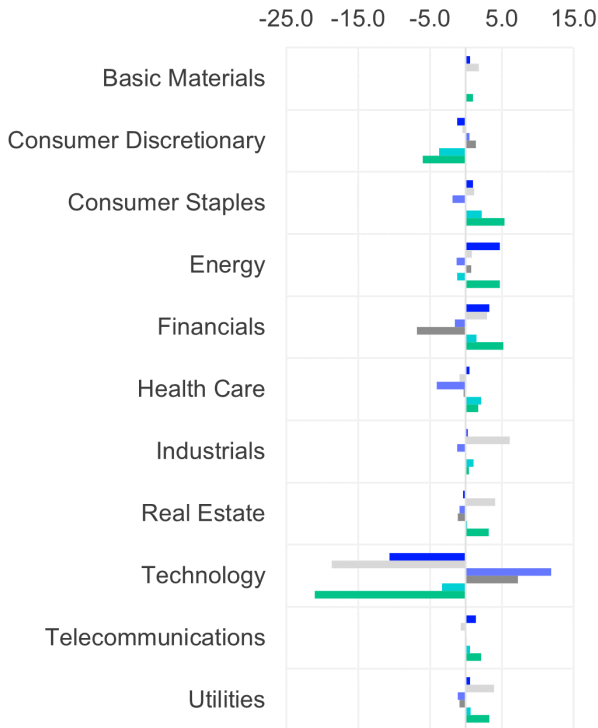
US Factor Performance & Industry Attributions — Q4 2023

Soaring Tech dictates factor performance

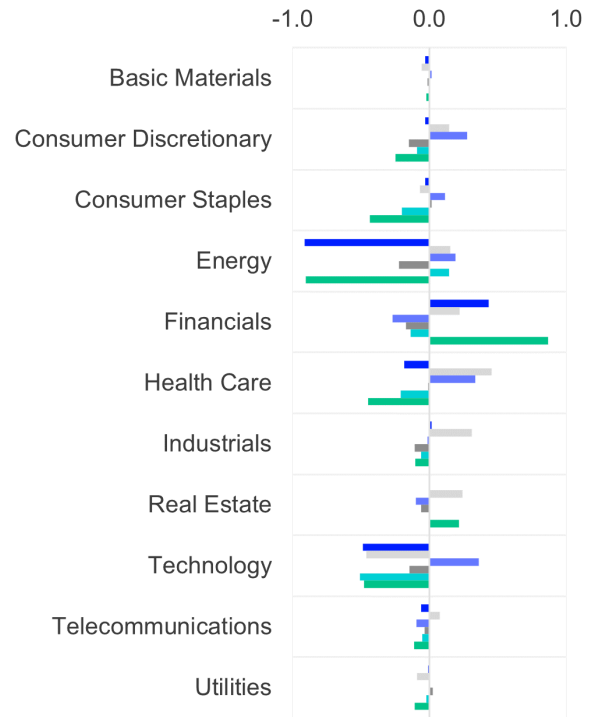
Given Tech's large contributions to benchmark returns, factors underweight Tech, such as Value, (Small) Size, Low Vol and Yield, had negative allocation effects from that industry in Q4. Conversely, Value, Quality and Yield's overweight to underperforming Energy also led to negative allocation effects. Momentum outperformed, supported by its large Tech exposure.

2023 Q4	Relative to Benchmark (TR %)					
FTSEUSA	Value	Size	Mom	Quality	Low Vol	Yield
11.9%	-1.3	0.8	0.8	-0.9	-1.0	-1.7

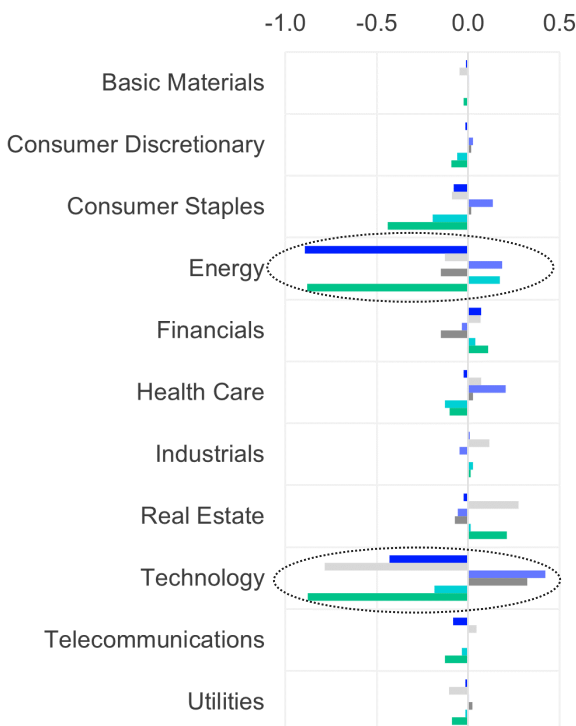
Industry active weights, Q4 2023 average



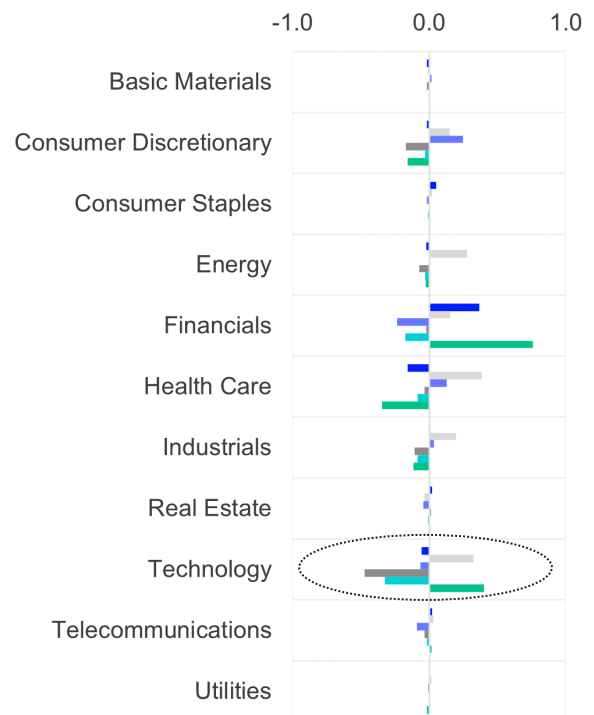
Total industry effects, Q4 2023



Industry allocation effects, Q4 2023



Stock selection within industry, Q4 2023

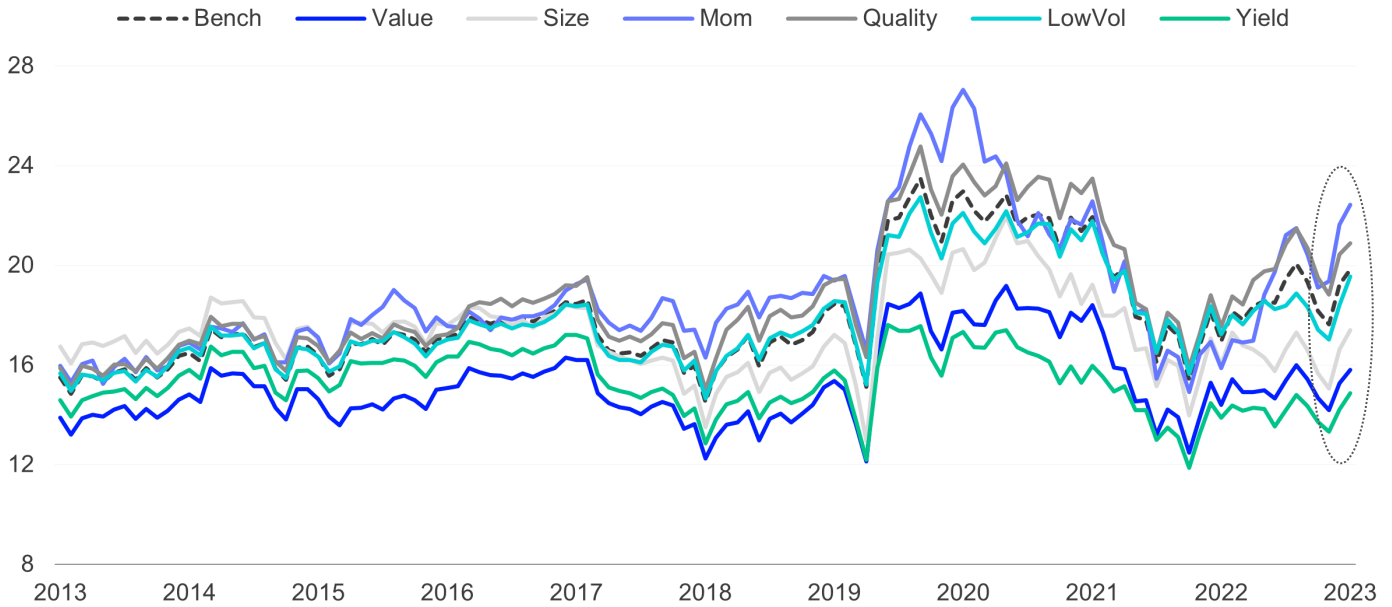


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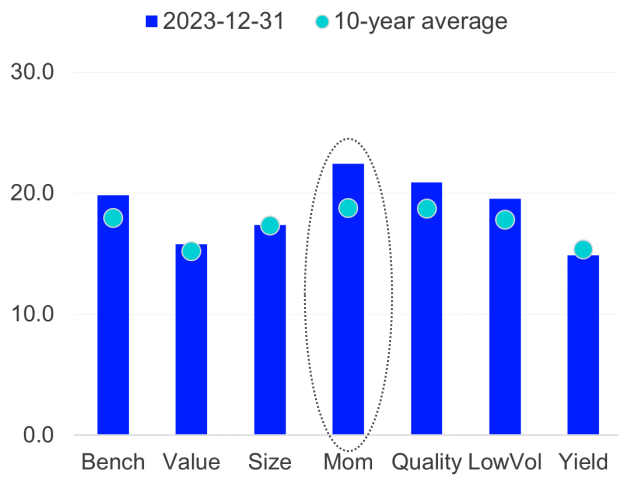
US Factor Valuations

Forward P/Es expanded across US factors in Q4, bringing them close to or above their 10-year averages in absolute terms. Momentum, in particular, traded well above the 10-year average in both absolute and relative terms, supported by its exposure to the Tech rally in Q4. Unsurprisingly, given their underweight to Tech, Value, (Small) Size and Yield remain at deeper discounts to the market and relative to their history.

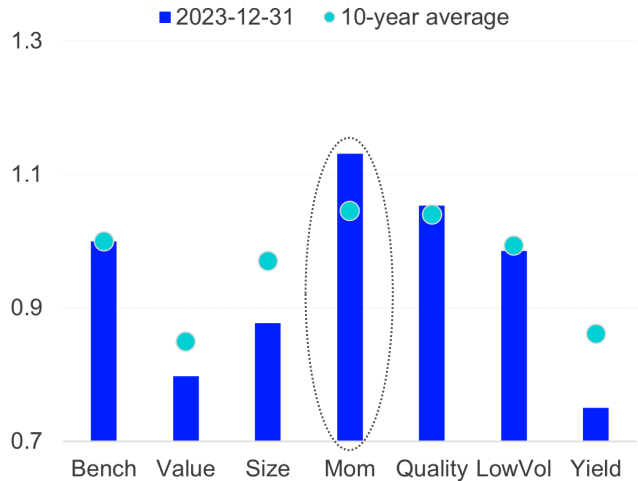
FTSE USA – Absolute 12M forward P/Es



Current Absolute 12M forward P/E vs history



Current Relative 12M forward P/E vs history



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UK Equity Factor Insights

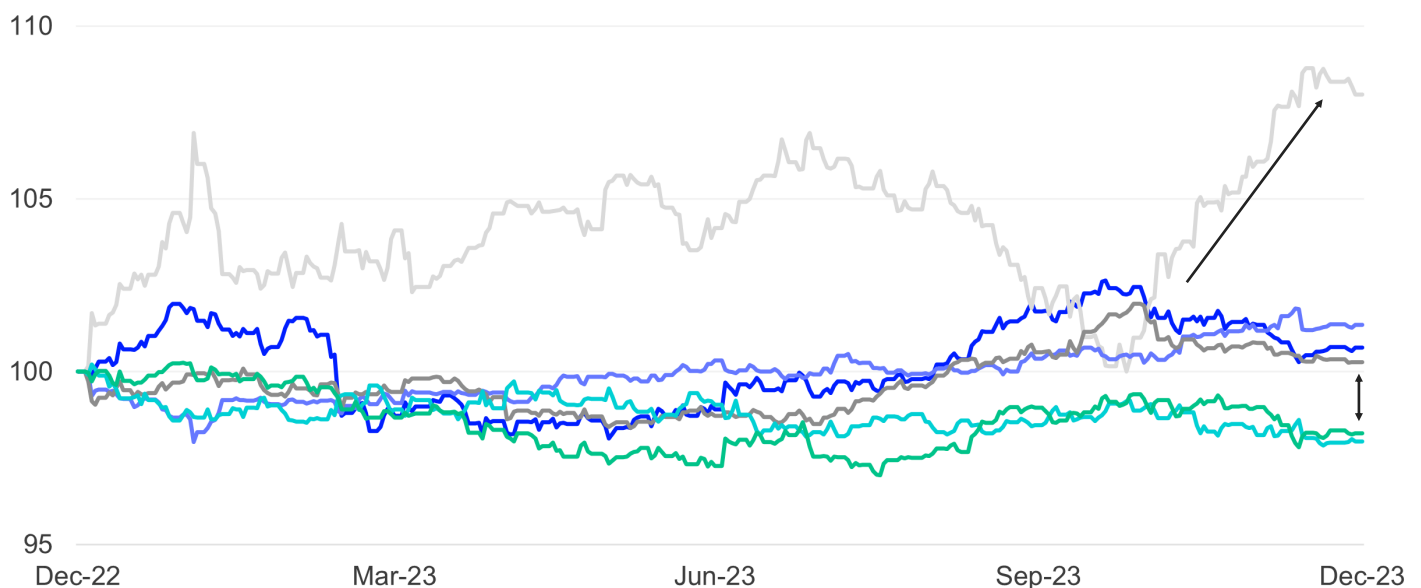
Fourth Quarter 2023

Key Observations

- (Small) Size significantly outperformed in Q4, followed by Momentum a distant second. All other factors underperformed for the quarter. Over 12M, (Small) Size was the clear winner, with Momentum, Value and Quality also outperforming. Low Vol and Yield underperformed for the year.
- (Small) Size's large outperformance came from overweights to outperforming cyclicals such as Industrials, Discretionary and Real Estate, and underweights to lagging defensives such as Energy, Staples and Health Care. Momentum was helped by a similar underweight to Staples and overweight to Industrials. A large Energy overweight hurt Value, Quality and Yield for the quarter.
- Forward P/Es for all factors rose in Q4 but still remained well below 10-year averages in absolute terms.
- With its Q4 outperformance, (Small) Size now trades at 1.18x the benchmark relative to its 10-year average of 1.07x.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

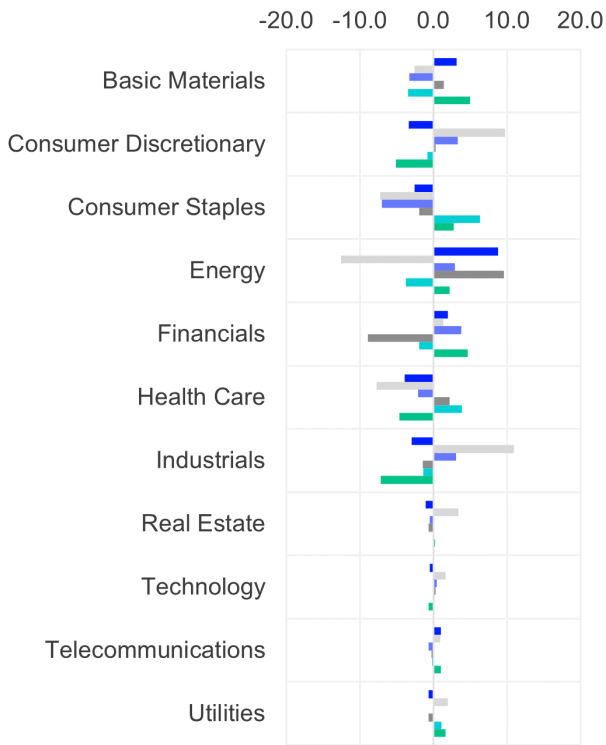
UK Factor Performance & Industry Attribution — Q4 2023

Cyclicals help (Small) Size soar in Q4

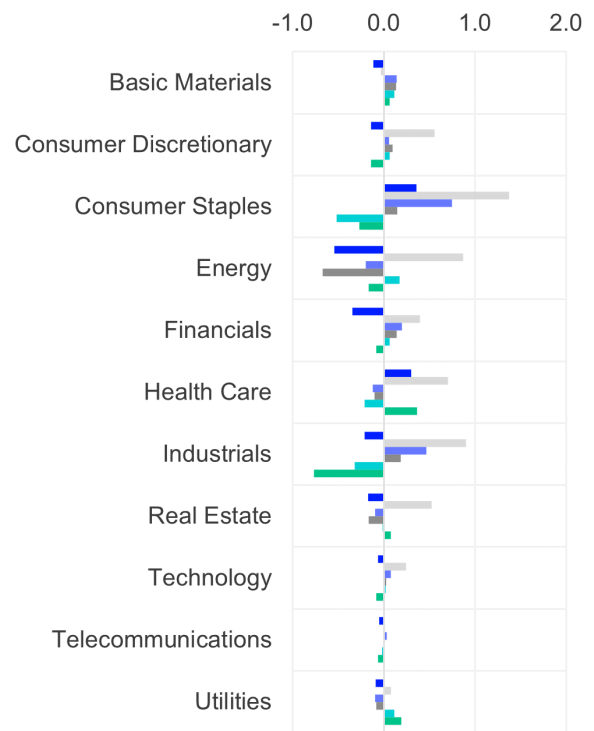
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2023 Q4	Relative to Benchmark (TR %)					
FTSE UK	Value	Size	Mom	Quality	Low Vol	Yield
2.7%	-1.0	5.6	1.0	-0.3	-0.5	-0.8

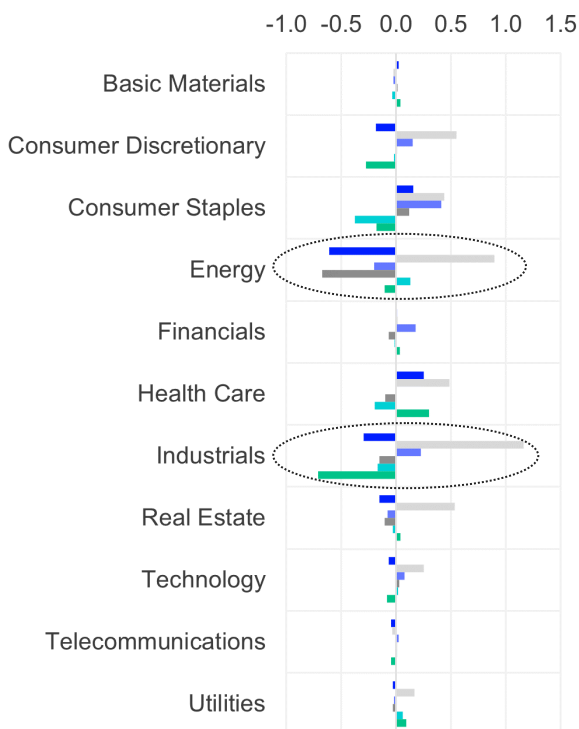
Industry active weights, Q4 2023 average



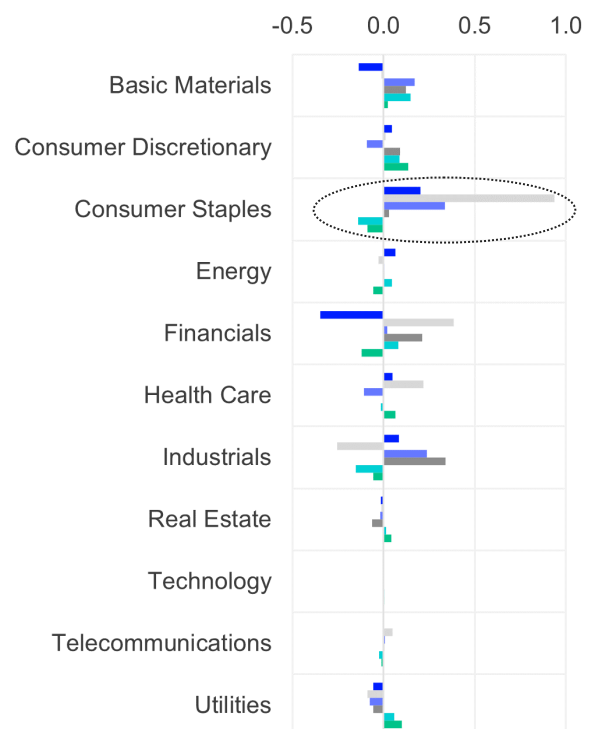
Total industry effects, Q4 2023



Industry allocation effects, Q4 2023



Selection effect within industry, Q4 2023

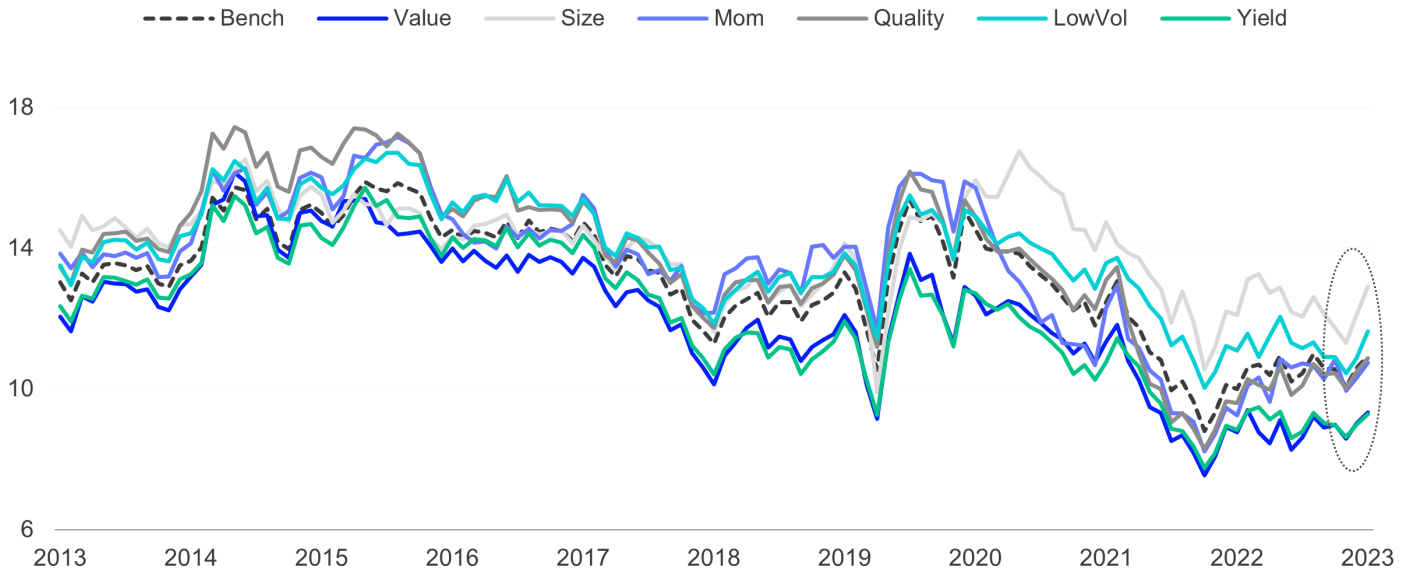


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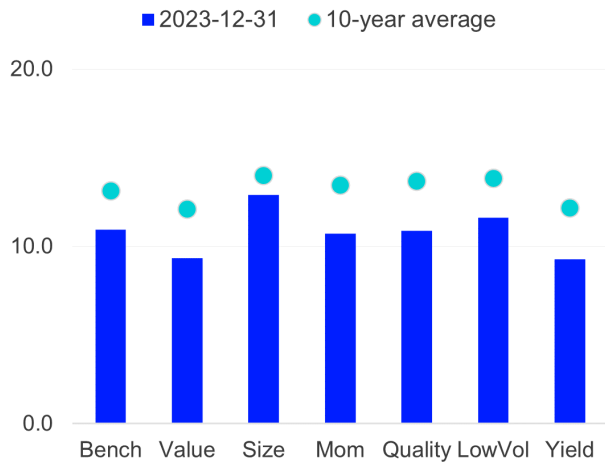
UK Factor Valuations

Forward P/Es for all factors rose in Q4 but still remained well below 10-year averages in absolute terms. The Quality/Value spread was 1.53 points, just below its historical average of 1.58 points. (Small) Size's significant outperformance in Q4 pushed its already high relative valuation higher. At quarter-end it traded at 1.18x the benchmark relative to its 10-year average of 1.07x. Low Vol traded around its historical average of 1.06x.

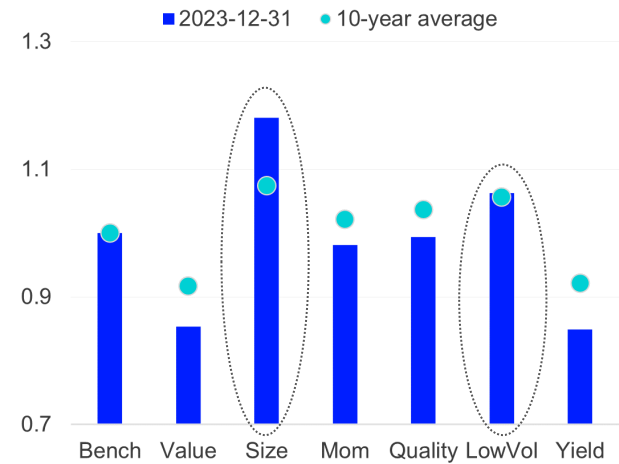
FTSE UK – Absolute 12M forward P/Es



Current Absolute 12M forward P/Es vs history



Current Relative 12M forward P/Es vs history



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

Europe ex UK Equity Factor Report

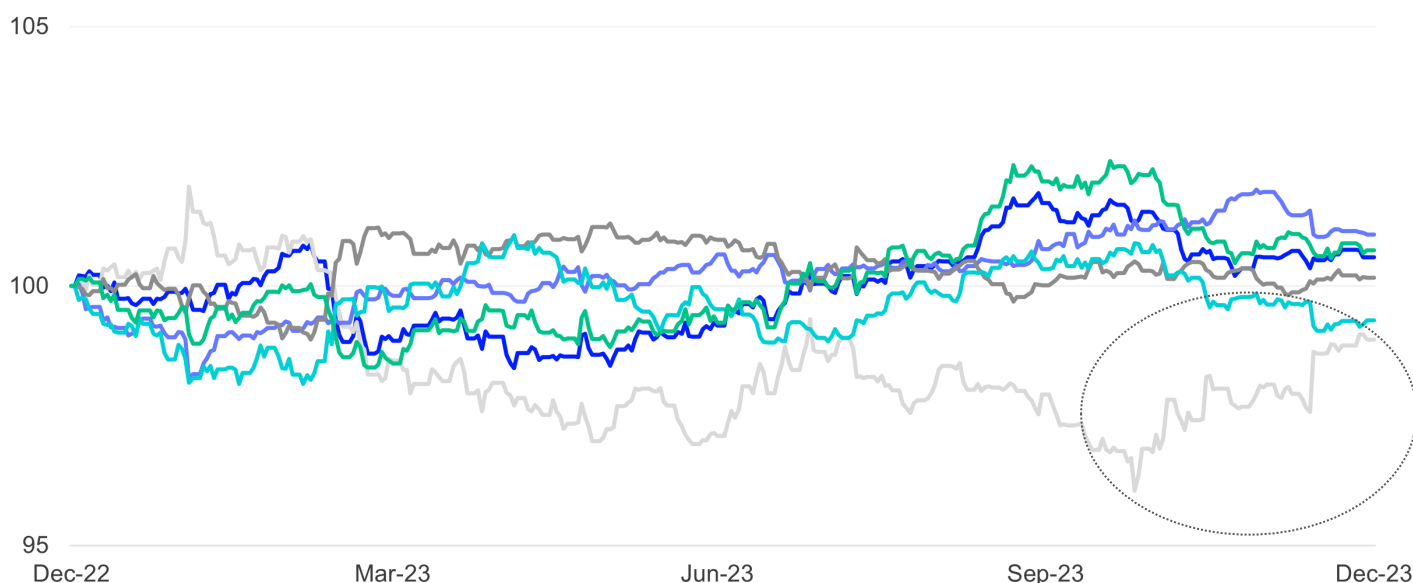
Fourth Quarter 2023

Key Observations

- (Small) Size outperformed in the Q4 rally, followed by Momentum and Quality to a smaller extent. Value and Yield lost ground in Q4 to underperform the benchmark along with Low Vol. Their Q4 moves dented Value and Yield's performance over 12M, and Momentum finished ahead for 2023.
- (Small) Size's Q4 outperformance was helped by its underweight to Health Care, Staples and Energy, and overweight to Real Estate, which rebounded strongly over the quarter.
- Value and Yield reversed their Q3 gains as Tech shone and Energy retreated in Q4. Overweights to cyclicals such as Tech, Industrials and Discretionary pushed Quality to outperform for the quarter.
- Forward P/Es expanded across factors in Q4, but absolute forward P/Es were still well below 10-year averages. The Quality/Value spread widened in Q4.
- Valuations for Quality and Low Vol moved the most, with their relative 12M forward P/Es now trading at or above 10-year averages.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

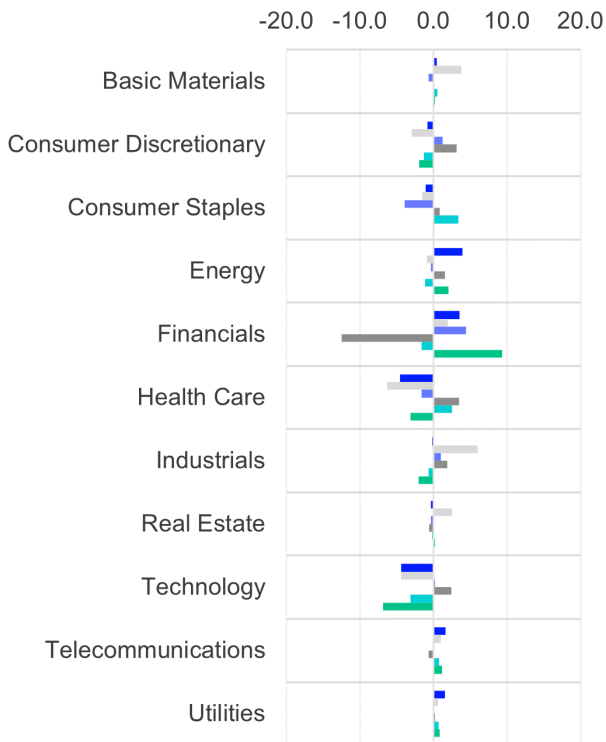
Europe ex UK Factor Performance & Industry Attribution — Q4 2023

Smaller defensives exposure helps (Small) Size outperform

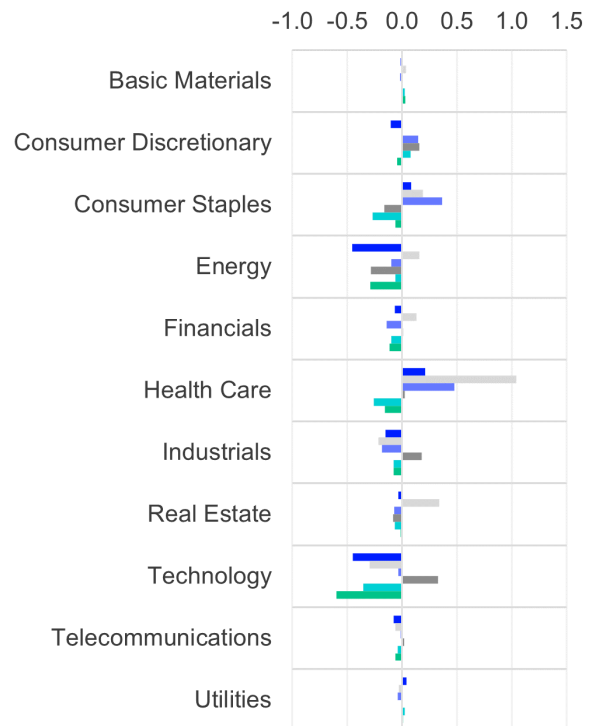
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2023 Q4	Relative to Benchmark (TR %)					
FTSE Dev Europe ex UK	Value	Size	Mom	Quality	Low Vol	Yield
6.9%	-1.1	1.1	0.3	0.2	-1.1	-1.4

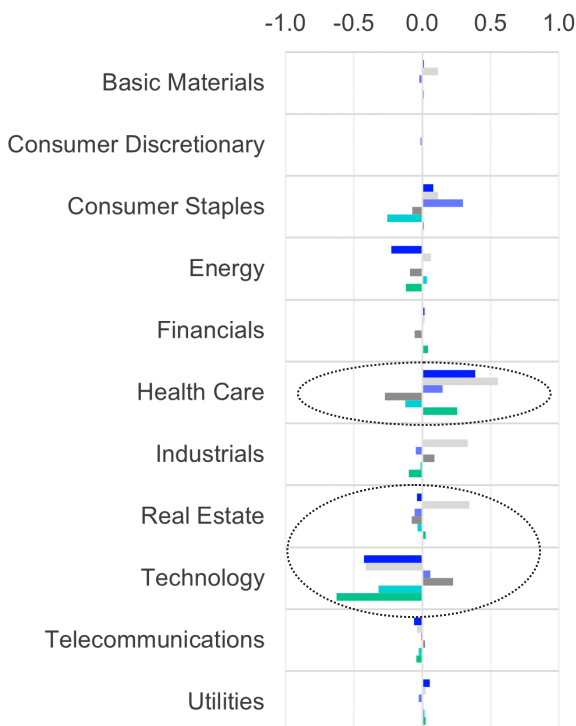
Industry active weights, Q4 2023 average



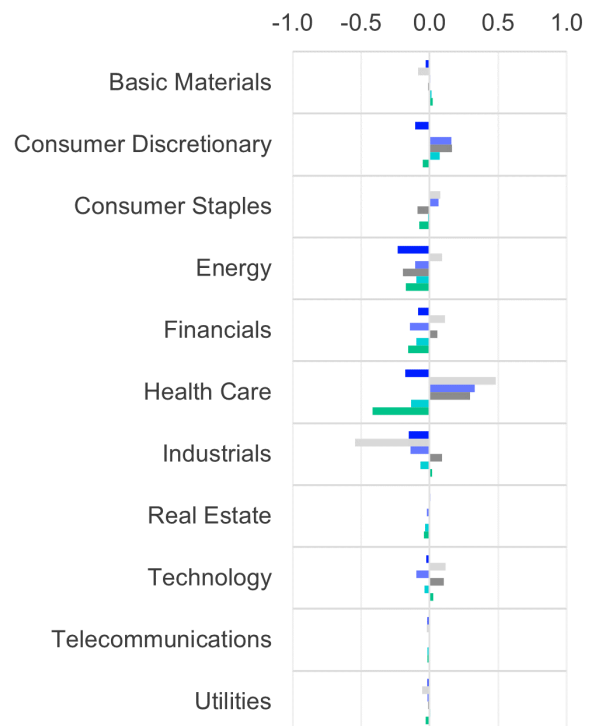
Total industry effects, Q4 2023



Industry allocation effects, Q4 2023



Selection effect within industry, Q4 2023

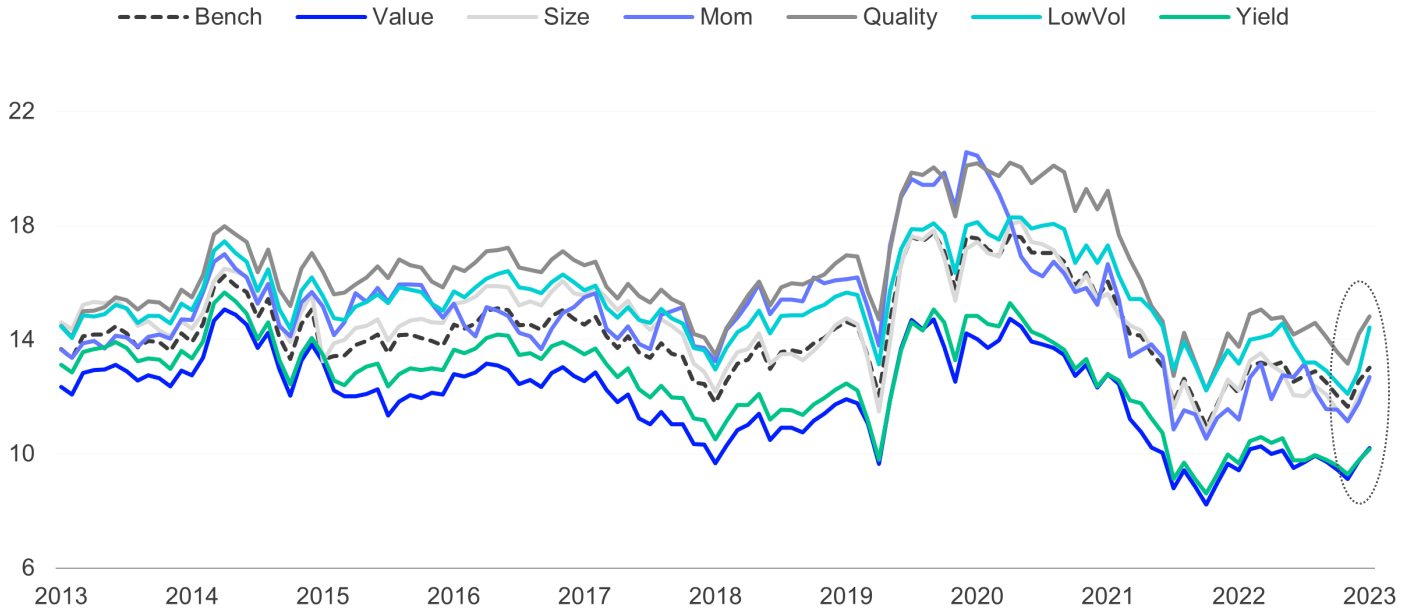


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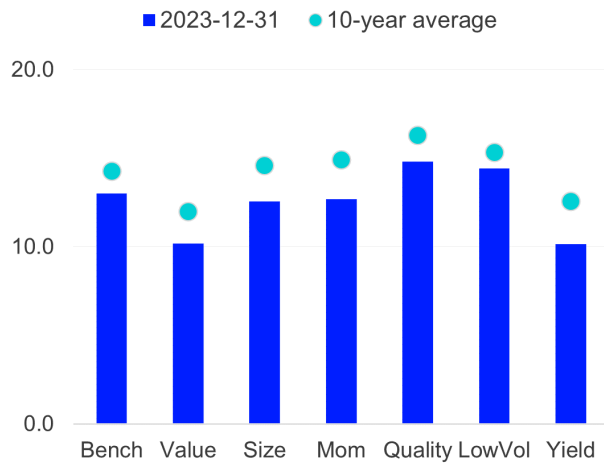
Europe ex UK Factor Valuations

Forward P/Es expanded across factors in Q4, but absolute forward P/Es were still well below 10-year averages. Valuations for Quality and Low Vol moved the most, with their relative 12M forward P/Es now trading at or above 10-year averages. Quality's premium versus Value is now at 4.6 points, higher than its 10-year average spread of 4.3 points.

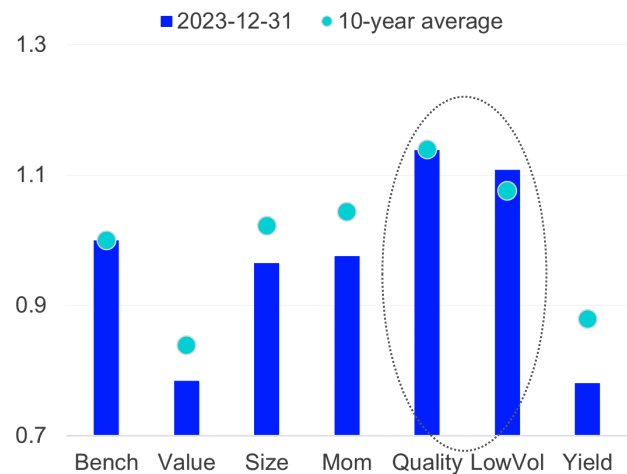
FTSE Europe ex UK – Absolute 12M forward P/Es



Current Absolute 12M forward P/Es vs history



Current Relative 12M forward P/Es vs history



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

Japan Equity Factor Report

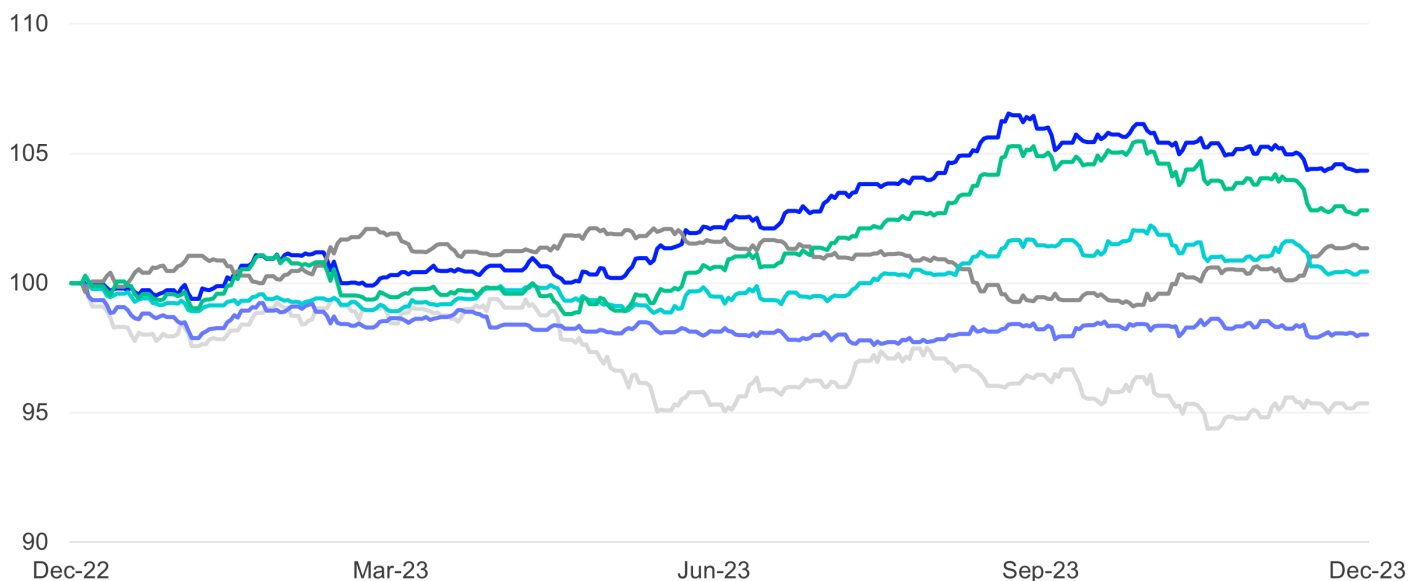
Fourth Quarter 2023

Key Observations

- Factor trends reversed in Q4, with Quality being the lone factor to outperform the benchmark, while Value and Yield retreated. Value and Yield still finished ahead for the year followed by Quality and Low Vol. (Small) Size and Momentum underperformed over 12M.
- Quality benefitted from strong positive allocation effects in Financials with its underweight to the industry. Its overweight to Tech, Industrials and Materials also helped. Value and Yield retreated given their small or negative active exposure to Discretionary, Industrials and Technology which drove the cyclical rally in Q4.
- Factors in Japan de-rated over Q4, with the exception of Quality, within the context of the benchmark's modest gains relative to other regions.
- Forward P/Es for most factors are below 10-year averages in both absolute and relative terms, except for Value which trades in line with history. The Quality/Value spread rose over Q4, but is still below its long-term average spread.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

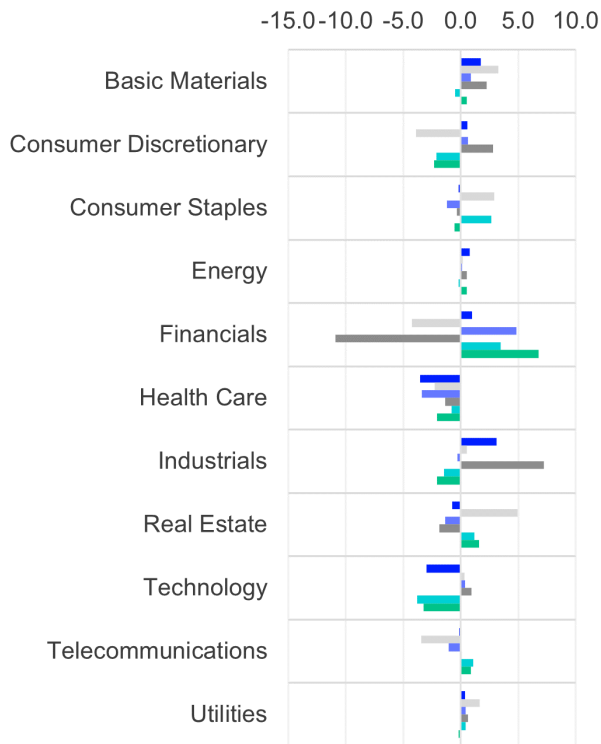
Japan Factor Performance & Industry Attribution — Q4 2023

Quality rebounds in cyclical rally

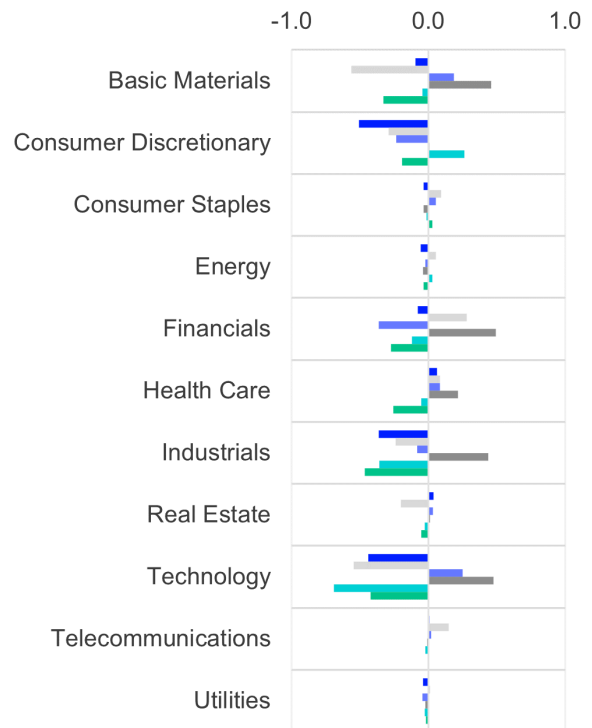
Quality led in Q4 factor performance benefitting from its overweight to Tech, Industrials and Materials with strong selection effects. Its underweight to Financials helped with additive allocation effects. Value and Yield retreated given their small or negative active exposure to Discretionary, Industrials and Technology, industries which drove the cyclical rally in Q4.

2023 Q4	Relative to Benchmark (TR %)					
FTSE Japan	Value	Size	Mom	Quality	Low Vol	Yield
1.9%	-1.5	-1.2	-0.2	1.9	-1.0	-2.0

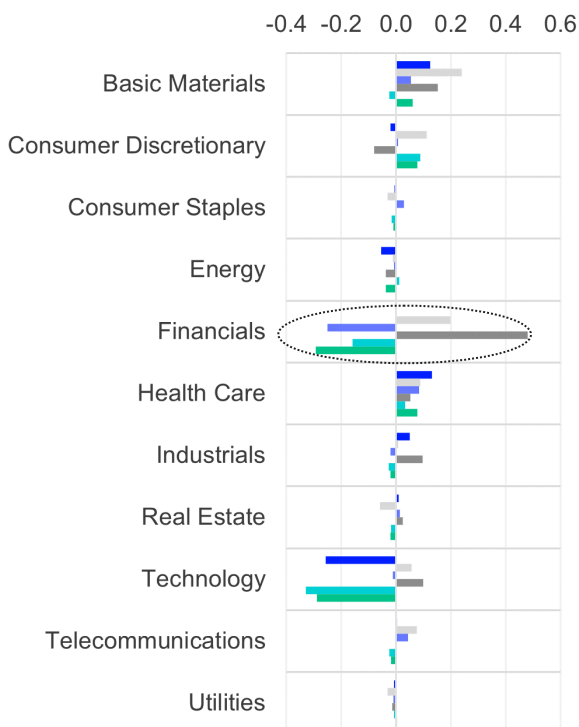
Industry active weights, Q4 2023 average



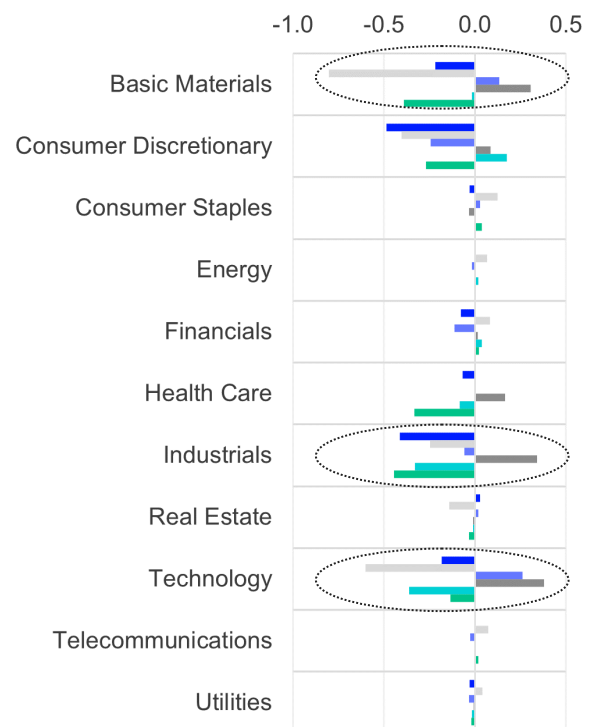
Total industry effects, Q4 2023



Industry allocation effects, Q4 2023



Selection effect within industry, Q4 2023

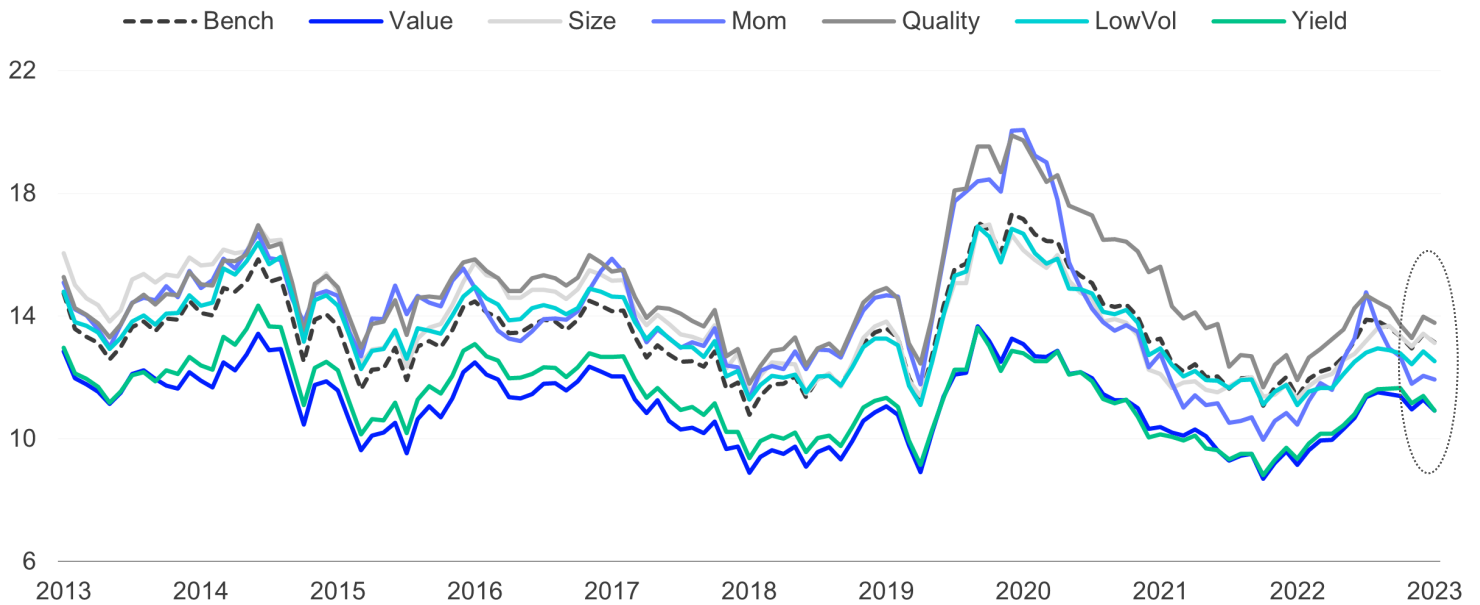


Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Industry results based on Industry Classification Benchmark (ICB) data. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

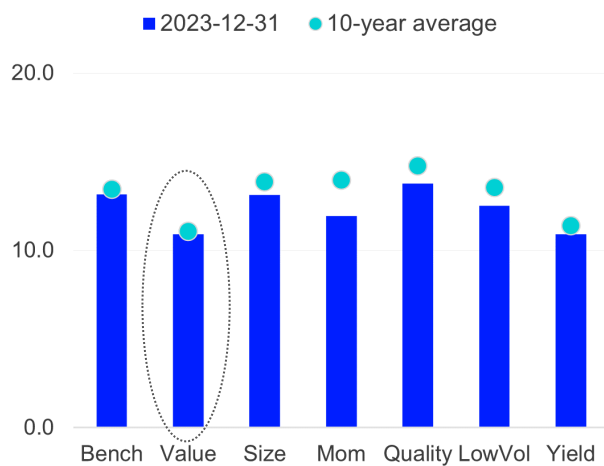
Japan Factor Valuations

Factors in Japan de-rated over Q4 with the exception of Quality, not surprising within the context of the benchmark's modest gains relative to other regions. Forward P/E's for most factors are below 10-year averages in both absolute and relative terms, except for Value whose forward P/E's are in line with history. Japan's Quality/Value spread rose over Q4 to 2.9 points from 2.3 points at the end of the previous quarter, but is still significantly below its long-term average spread of 3.7 points.

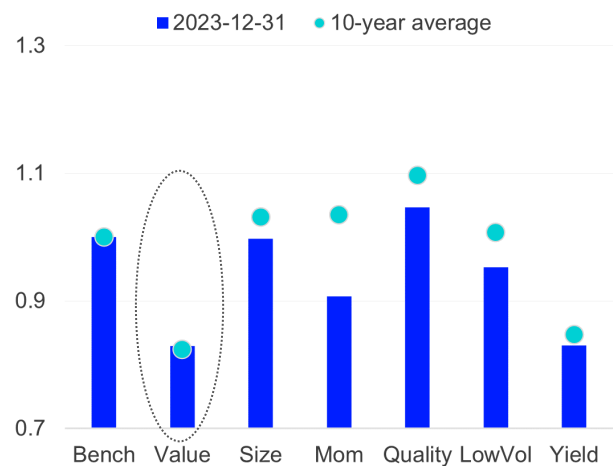
FTSE Japan – Absolute 12M forward P/E's



Current Absolute 12M P/E's vs history



Current Relative 12M P/E's vs history



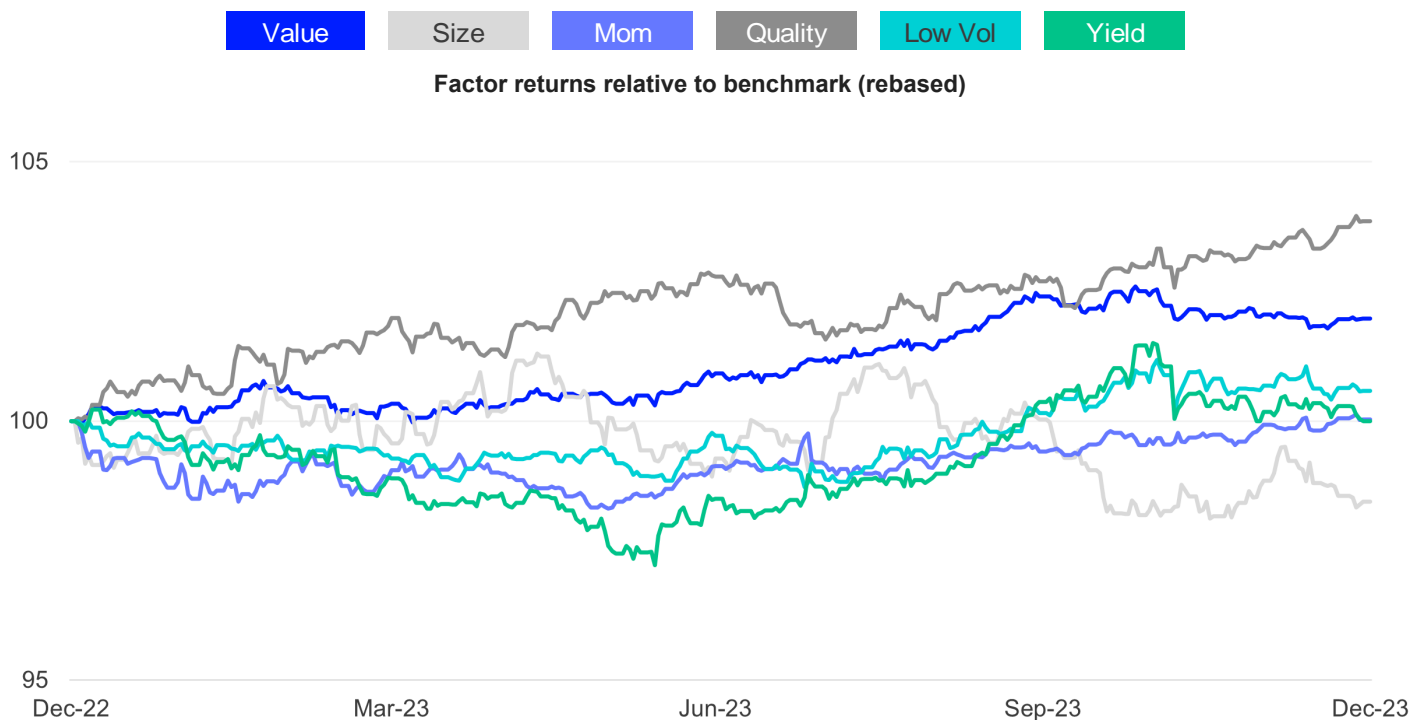
Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

Asia Pacific ex Japan Equity Factor Insights

Fourth Quarter 2023

Key Observations

- Quality, Momentum and Low Vol fared better than the broad market in Q4. In a reversal, Value and Yield underperformed, but (Small) Size lagged the most. Over 12M, Quality finished ahead, followed by Value, while (Small) Size underperformed the most.
- Investor preference for large, quality stocks within Telecoms and Materials boosted the Quality factor's outperformance, and hurt (Small) Size's performance in Q4. Value and Yield underperformed with negative allocation effects in Health Care, Energy and Technology.
- Forward P/Es expanded across factors in the Q4 rally, bringing valuations for Quality and Low Vol in line with their 10-year averages in both absolute and relative terms. They rank as the most expensive.
- Forward P/Es for Value, (Small) Size, Momentum and Yield are close to historical averages in absolute terms, but trade at deeper discounts to the benchmark relative to their history. The Quality-Value premium expanded over Q4.



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

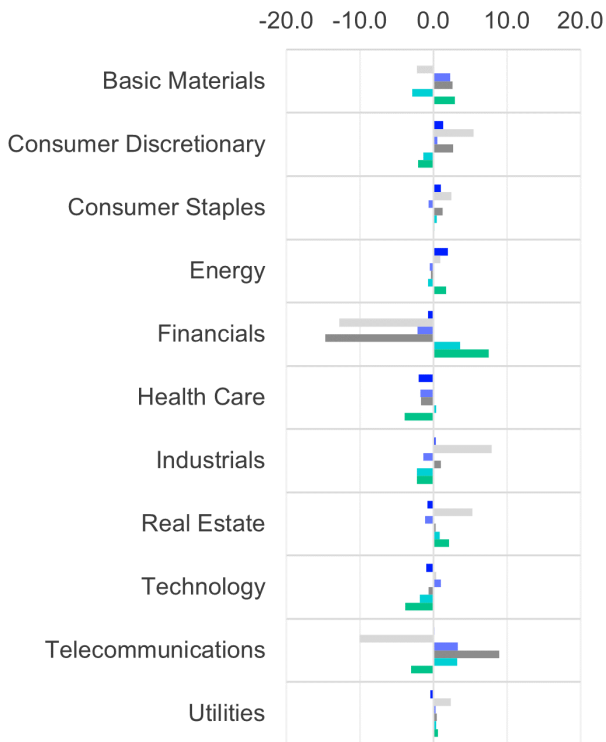
Asia Pac ex Japan Factor Performance & Industry Attribution — Q4 2023

Preference for large, quality stocks drives performance

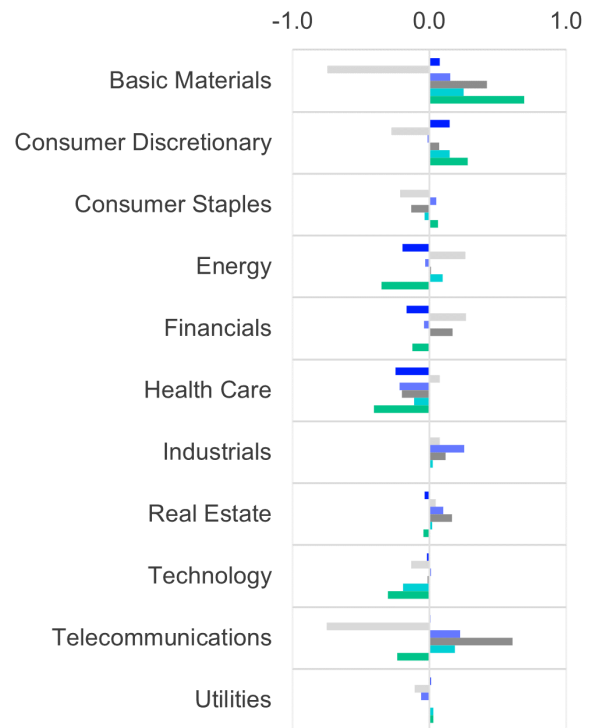
Investor preference for large, quality stocks within Materials boosted the Quality factor's outperformance, and hurt (Small) Size's performance in Q4. Quality was also helped by allocation effects within Telecom and Financials. Value and Yield underperformed with negative allocation effects in Health Care, Energy and Technology. Low Vol benefitted from a large selection effect in Materials.

2023 Q4	Relative to Benchmark (TR%)					
FTSE Dev Asia Pacific ex JP	Value	Size	Mom	Quality	Low Vol	Yield
7.7%	-0.4	-1.7	0.7	1.2	0.5	-0.4

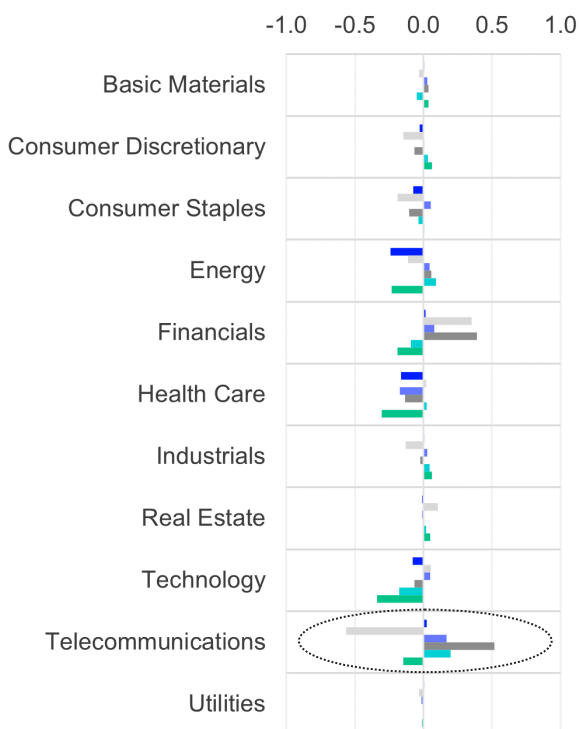
Industry active weights, Q4 2023 average



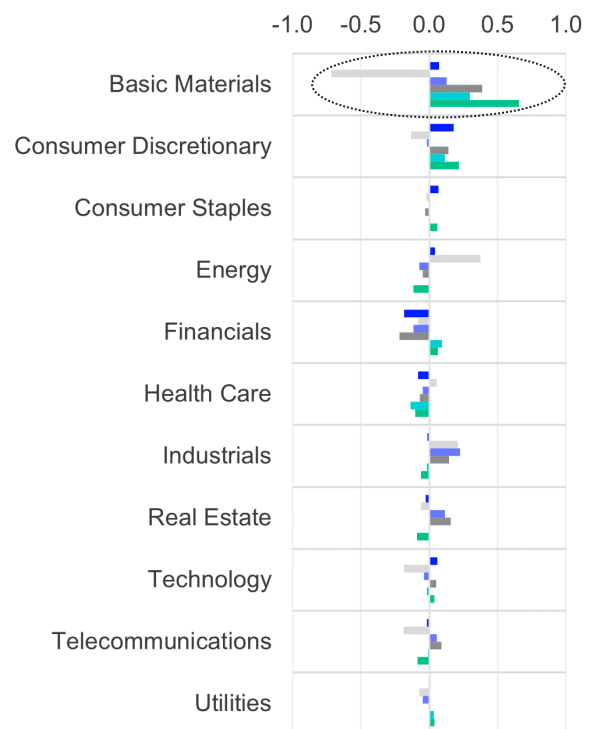
Total industry effects, Q4 2023



Industry allocation effects, Q4 2023



Selection effect within industry, Q4 2023

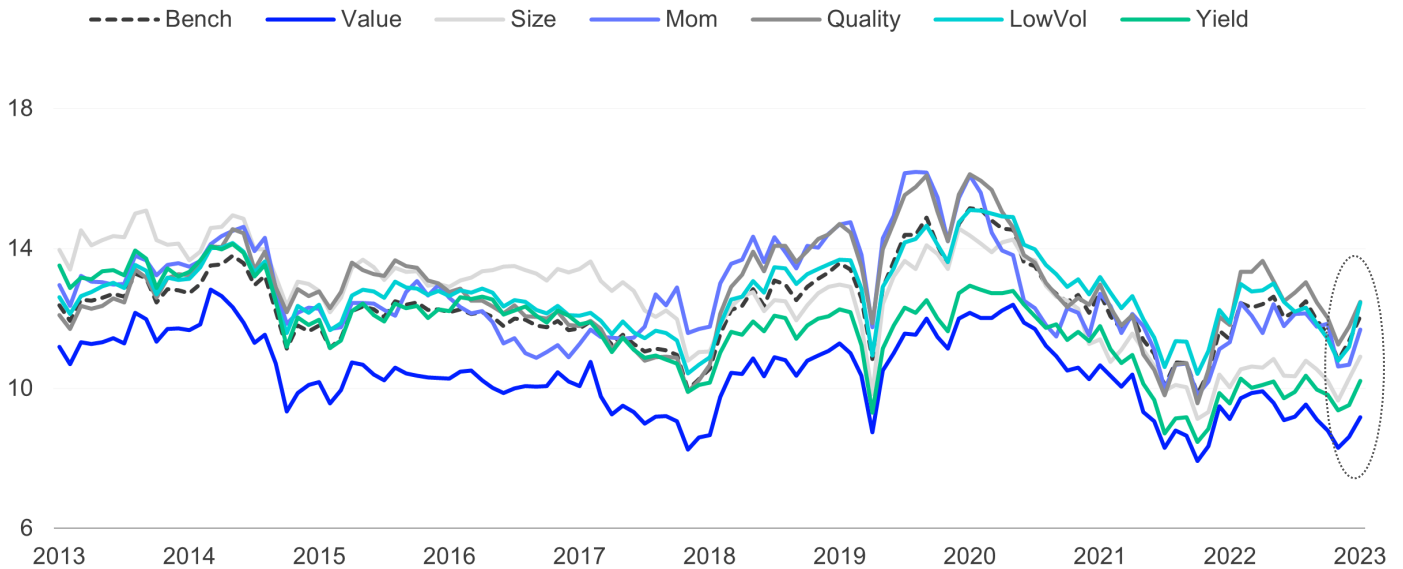


Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Industry results based on Industry Classification Benchmark (ICB) data. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

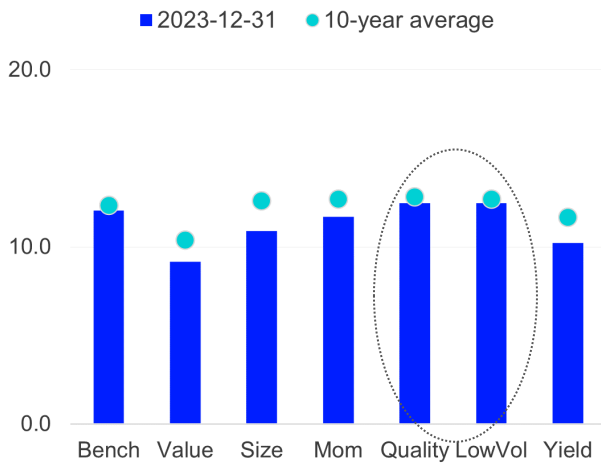
Asia Pacific ex Japan Factor Valuations

Forward P/Es expanded across factors in the Q4 rally, bringing valuations for Quality and Low Vol in line with their 10-year averages in both absolute and relative terms. They rank as the most expensive. Forward P/Es for Value, (Small) Size, Momentum and Yield are close to historical averages in absolute terms, but trade at deeper discounts to the benchmark relative to their history. The Quality/Value spread expanded over the quarter to 3.3 points, well above its long-term average spread of 2.4 points.

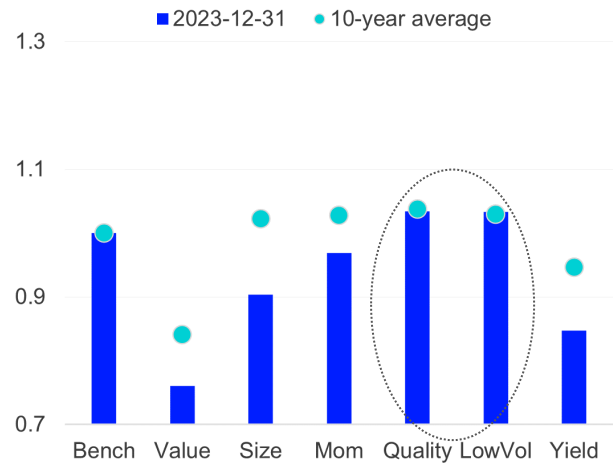
FTSE Asia Pacific ex Japan – Absolute 12M forward P/Es



Current Absolute 12M forward P/Es vs history



Current Relative 12M forward P/Es vs history



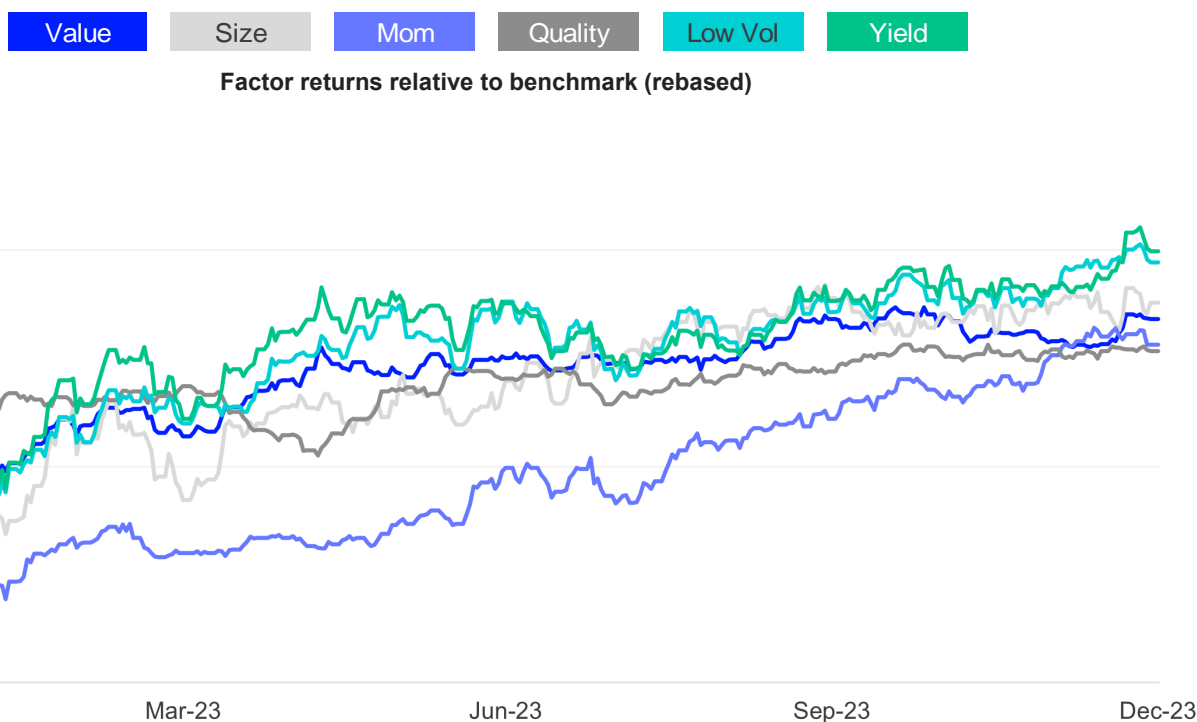
Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

Emerging Markets Factor Report

Fourth Quarter 2023

Key Observations

- Momentum led factor returns over Q4, with Low Vol, Yield and Quality also outperforming the benchmark. (Small) Size and Value lagged in a reversal from the previous quarter. All EM factors outperformed over 12M, led by Yield.
- Momentum led in Q4 with strong positive allocation and selection effects in Tech. Quality benefitted similarly. Low Vol and Yield's underweight to poorly performing Discretionary, supported the two factors' outperformance. (Small) Size was hurt by investor preference for larger names in Materials, Industrials and Utilities.
- Forward P/Es expanded across EM factors in Q4, bringing most factor valuations close to 10-year averages in both absolute and relative terms.
- Value and Yield remain the least expensive, though they trade in line with their historical discounts to the broad market. Quality is the most expensive. Despite Q4 gains, Momentum still trades below its 10-year averages in absolute and relative terms.



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

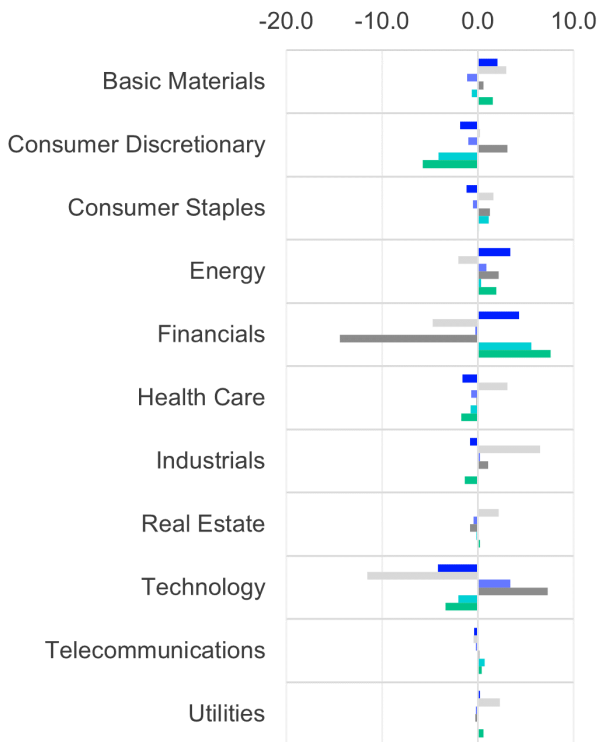
Emerging Markets Factor Performance & Industry Attribution — Q4 2023

Momentum leads on the back of Tech exposure

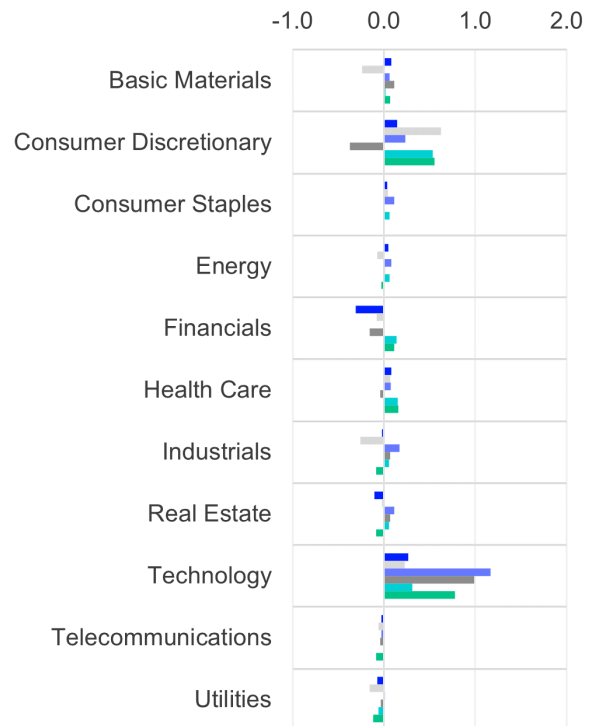
Momentum led in Q4 with strong positive allocation and selection effects in Tech. Quality benefitted similarly. Low Vol and Yield's underweight to poorly-performing Discretionary supported the two factors' outperformance. (Small) Size was hurt by investor preference for larger names in Materials, Industrials and Utilities.

2023 Q4	Relative to Benchmark (TR %)					
FTSE Emerging	Value	Size	Mom	Quality	Low Vol	Yield
5.0%	0.0	-0.1	1.8	0.5	1.2	1.2

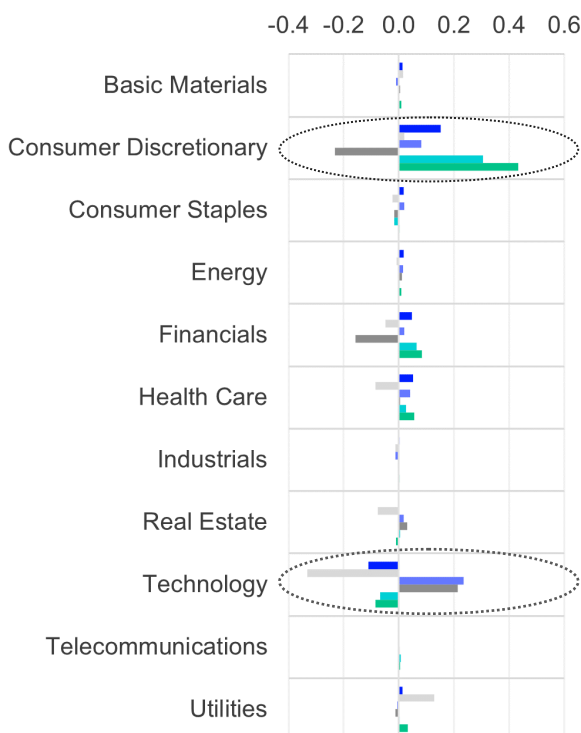
Industry active weights, Q4 2023 average



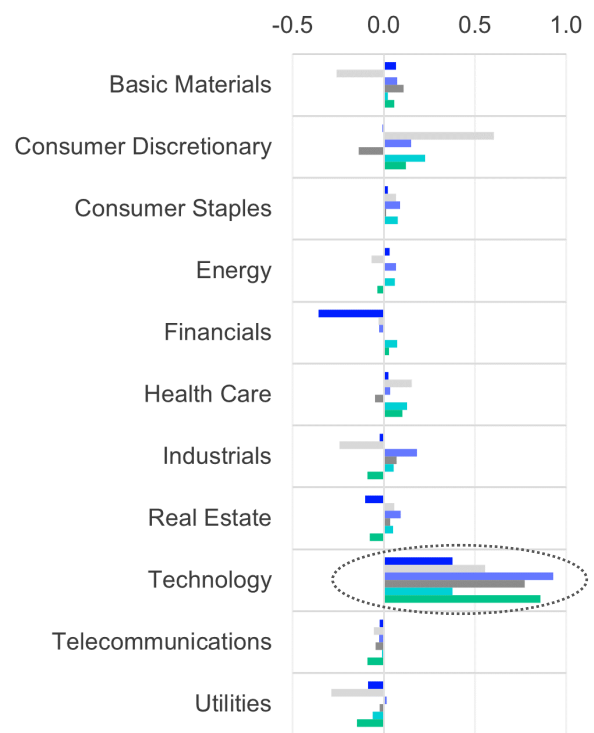
Total industry effects, Q4 2023



Industry allocation effects, Q4 2023



Selection effect within industry, Q4 2023

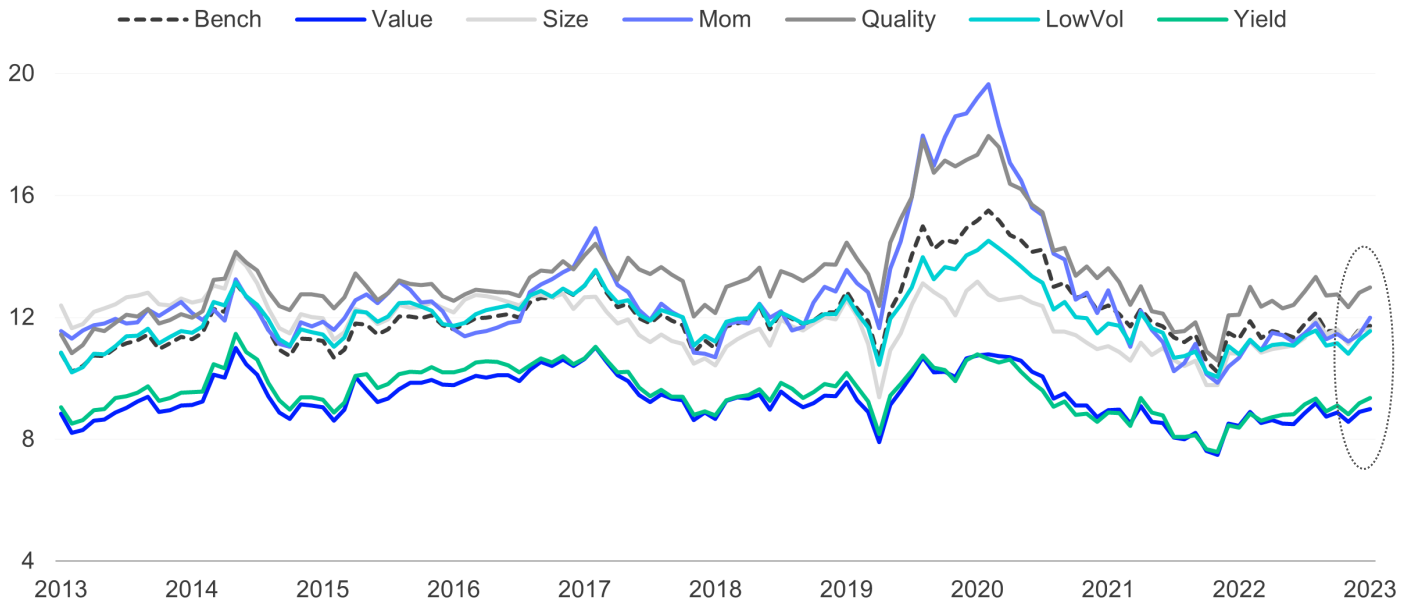


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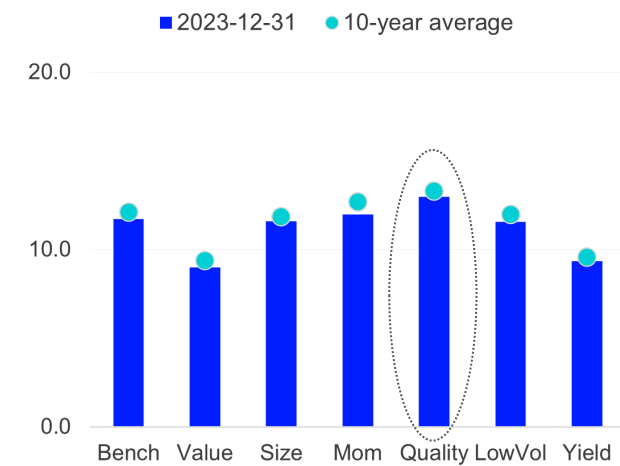
Emerging Markets Factor Valuations

Forward P/Es expanded across Emerging factors in Q4, bringing most factor valuations close to 10-year averages in both absolute and relative terms. Value and Yield remain the least expensive, though they trade in line with their historical discounts to the broad market. Quality is the most expensive. Despite Q4 gains, Momentum still trades below its 10-year averages in absolute and relative terms.

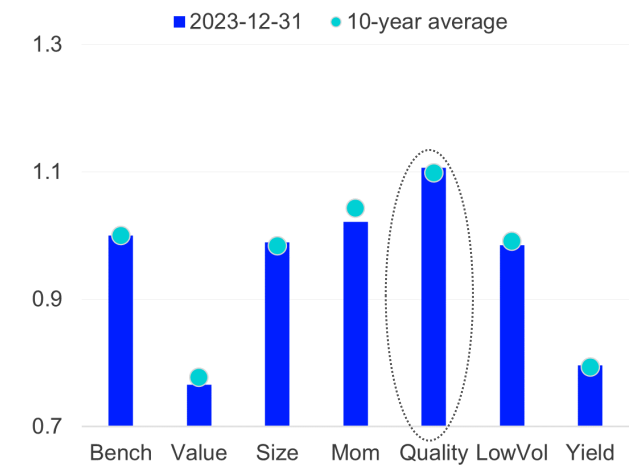
FTSE Emerging – Absolute 12M forward P/Es



Current Absolute 12M forward P/Es vs history



Current Relative 12M forward P/Es vs history



Source: FTSE Russell and LSEG. All data as of December 31, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Past performance is no guarantee of future results. Please see end for important disclosures and information on factor calculations. For professional investors only.

FTSE Russell US Factor Index Risk/Return Performance



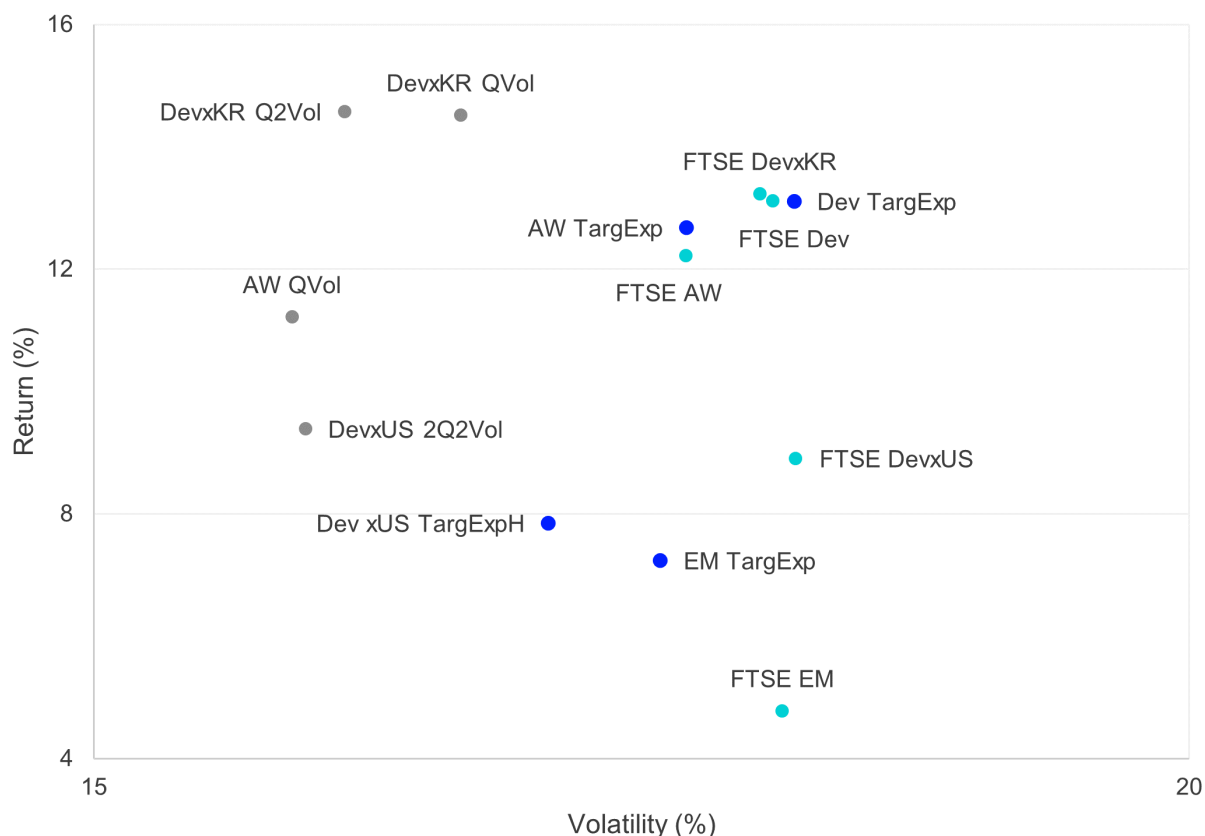
Annualized Returns and Volatility (USD %)

Label	Index	1-yr return	5-yr return	5-yr volatility
Diversified Indexes				
● R1000 ERC	Russell 1000 Comprehensive Equal Factor Risk Contribution	26.2	16.5	19.0
● R1000 TargExp	Russell 1000 Comprehensive Target Exposure Factor Index	22.9	16.3	19.0
Defensive Indexes				
● R2000 2Q2Vol	Russell 2000 2Qual/2Vol 3% Capped Factor Index	17.1	10.3	20.1
● USA QVolYld	FTSE USA Qual/Vol/Yield Factor Index	2.2	10.4	15.9
Benchmarks				
● FTSE USA	FTSE USA Index	27.1	15.6	18.7
● R1000	Russell 1000® Index	26.5	15.5	18.8
● R2000	Russell 2000® Index	16.9	10.0	24.0

Source: FTSE Russell and LSEG. All data as of December 31, 2023. Past performance is no guarantee of future results. Please see end for important disclosures. For professional investors only.

FTSE Russell Global Factor Index Risk/Return Performance

5-Year Annualized Return and Volatility (USD)



Annualized Return and Volatility (USD)

Label	Index	1-yr return	5-yr return	5-yr volatility
Diversified Indexes				
● AW TargExp	FTSE All-World Comprehensive Target Exposure Factor Index	24.7	12.7	17.7
● Dev TargExp	FTSE Developed Comprehensive Target Exposure Factor Index	24.4	13.1	18.2
● Dev xUS TargExpH	FTSE Developed ex US Comprehensive High Target Exposure	20.2	7.9	17.1
● EM TargExp	FTSE Emerging Comprehensive Target Exposure Factor Index	14.8	7.2	17.6
Defensive Indexes				
● AW QVol	FTSE All-World Target Exposure Qual Vol Factor Index	19.9	11.2	15.9
● DevxKR Q2Vol	FTSE Developed ex Korea Qual/2 Vol Factor Index	20.7	14.6	16.1
● DevxKR QVol	FTSE Developed ex Korea Qual/Vol Factor Index	21.0	14.5	16.7
● DevxUS 2Q2Vol	FTSE Developed ex US 2Qual/2Vol 5% Capped Factor Index	20.1	9.4	16.0
Benchmarks				
● FTSE AW	FTSE All-World Index	22.6	12.2	17.7
● FTSE DevxKR	FTSE Developed ex Korea Index	24.2	13.2	18.0
● FTSE DevxUS	FTSE Developed Ex US Index	18.7	8.9	18.2
● FTSE Dev	FTSE Developed Index	24.2	13.1	18.1
● FTSE EM	FTSE Emerging Index	9.1	4.8	18.1

Source: FTSE Russell and LSEG. All data as of December 31, 2023. Past performance is no guarantee of future results. Please see end for important disclosures. For professional investors only.

Notes and Glossary

Notes on Market Maps Factor Data

FTSE Russell employs a bottom-up “tilting” approach to create factor indexes. Factor scores are calculated that range from 0 to 1, with higher scores being better. The underlying cap-weighted benchmark weights are multiplied by these scores, and this product is renormalized to give the factor index weights.

Intuitively, the index weights start with the benchmark weights and “tilt” towards stocks with better factor scores and away from stocks with worse factor scores. The magnitude of the index’s factor exposure can be controlled by raising the factor scores by an exponent, with higher exponents yielding higher factor exposure. All data in the Market Maps Equity Factor Insights report uses an exponent (or tilt size) of 1.

See FTSE Global Factor Index Series Ground Rules v4.4, January 2019, below for further details on rules-based factor calculations and construction methodology.

For Information on Factor Index Ground Rules and Construction Methodology, see: [FTSE Global Factor Index Series Ground Rules v4.4, January 2019](#)

Glossary of Terms

VALUE

Earnings Yield (E/P) – Latest reported annual earnings per share divided by full market capitalization. Earnings are based on net income from continuing operations, before amortization of goodwill and extraordinary items and after tax, minority interests, preferred dividend, at fiscal year end.

Cash-Flow Yield (CF/P) – Latest reported annual cash-flow yield is cash earnings per share divided by full market capitalization. Cash earnings are earnings plus depreciation, amortization, deferred taxes, other non-cash items, extraordinary item and changes in working capital for the most recent fiscal year.

Sales-to-Price (S/P) – Latest annual sales from continuing operations per share for the full fiscal year divided by full market capitalization. Sales values are generally as reported but occasional adjustments may be made. They are also computed for banks, insurance and other financial companies based on appropriate definitions. Sales are attributed across different share classes, where common equity is comprised of more than one share type.

MOMENTUM: Measure of changes in total stock returns in local currency terms over those of the previous year excluding the most recent month.

SIZE: Size is calculated as the natural logarithm of each company’s full market capitalization in US dollars.

QUALITY

PROFITABILITY

Return on Assets (ROA) – Net income divided by average total assets, calculated relative to the regional median stock level.

Delta Turnover – Net sales revenue divided by average total assets, calculated relative to the regional median stock level.

Accruals – Net operating assets (NOA) for the most recent reporting period minus NOA from the previous reporting period, as calculated with following formula: Change in working capital + change in non-current net operating assets + change in net financial assets ([short-term investments + long-term investments] – [long-term debt + short-term debt + preferred stock]), divided by average total assets. Calculated relative to the regional median stock level.

LEVERAGE

Leverage Ratio – Operating cash flow divided by total debt. A company whose net operating cash flow is greater than total debt or has no debt is assigned a maximum Leverage Ratio of one.

VOLATILITY (LOW): Standard deviation of five years of weekly local total returns prior to the rebalance month. A minimum of 52 weekly return observations are required to calculate volatility.

YIELD

Dividend Yield 12M – Calculated as the natural logarithm of each company’s 12-month trailing dividend yield.

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