

Equity Factor Insights

QUARTERLY REPORT: OCTOBER 2023

FOR PROFESSIONAL INVESTORS ONLY

Value holds edge in Q3 global malaise

Value perseveres as risk rallies lose steam

With most factors faring better than their home markets (albeit modestly), Value extended its lead over Quality globally in Q3 as increasingly hawkish central-bank messaging reignited 'higher for longer' rate and growth worries.

Soaring Energy stocks a major return driver

Unlike in Q2, factor return patterns were fairly similar across markets, reflecting the global gains in Energy and Financials, which gave Value and Yield a major leg up.

EM factors in synch with DM peers

After veering from DM patterns in prior quarters, EM factor returns largely tracked with those of markets elsewhere, though (Small) Size outranked Value.

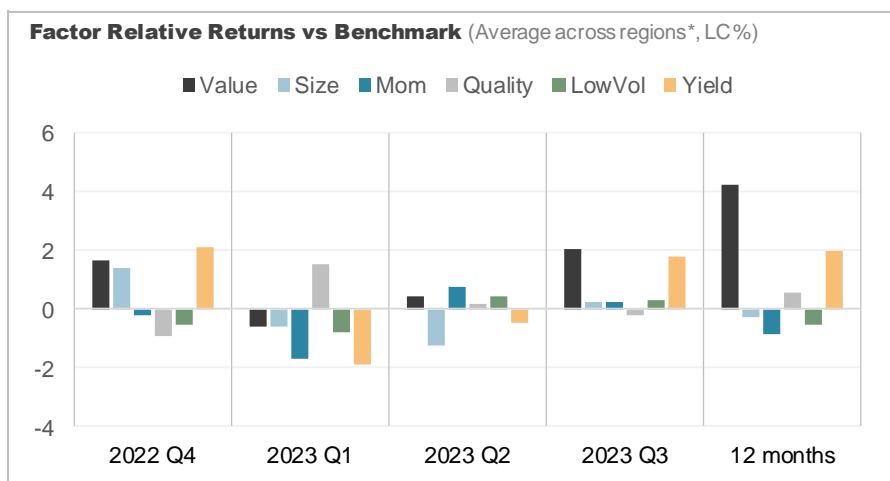
Factor valuations contract

Forward P/Es for most factors fell in the global downturn but remain at or slightly below 10-year averages. Quality/Value premiums are mostly back to long-term norms.

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Regional Factor Performance Highlights — Third Quarter 2023 Relative Returns

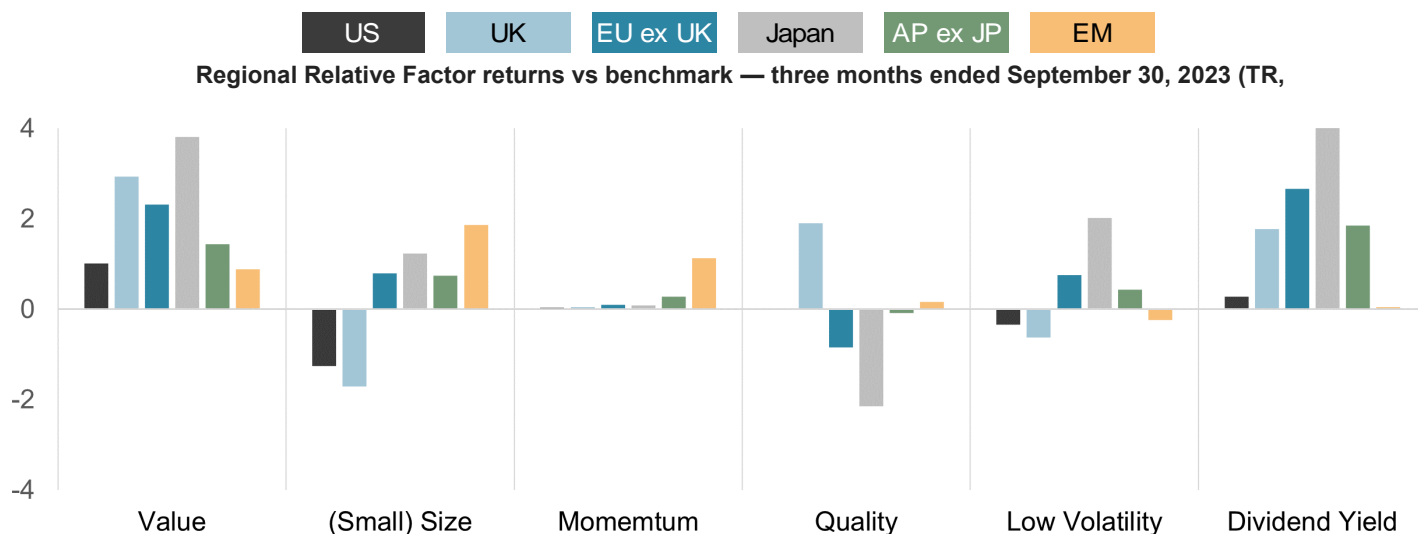


+1.0% US Value	+2.9% UK Value
-1.3% US (Small) Size	-1.7% UK (Small) Size
+3.8% Japan Value	+1.9% Emerging (Small) Size
-2.2% Japan Quality	+0.2% Emerging Quality

Source: FTSE Russell / Refinitiv. *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 September 30, 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.

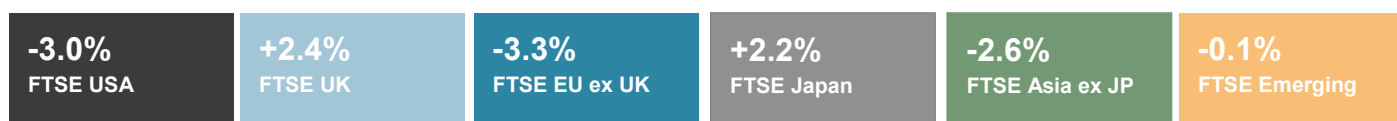
Global View – Factor and Benchmark Performance Highlights – Q3 2023

Factor returns diverged widely in Q3, with Value and Yield strongly outperforming their respective broad-market benchmarks and other factors globally. Quality broadly lost steam after its Q2 rally, particularly in Japan. Size deviated the most widely, gaining traction in most markets, particularly in EM and Japan, but lagging badly in the UK and US.

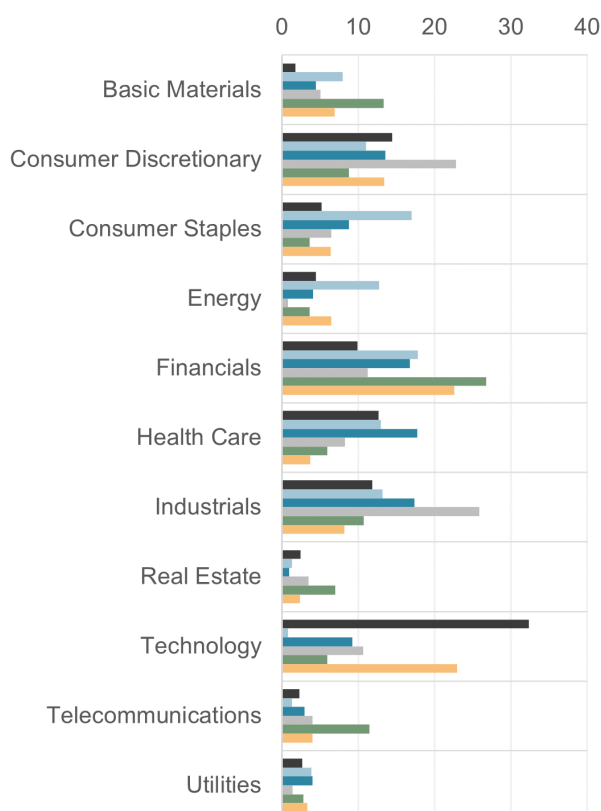


Regional Equity Market Returns Q3 2023 (TR, LC %) – UK & Japan fare best in global slump

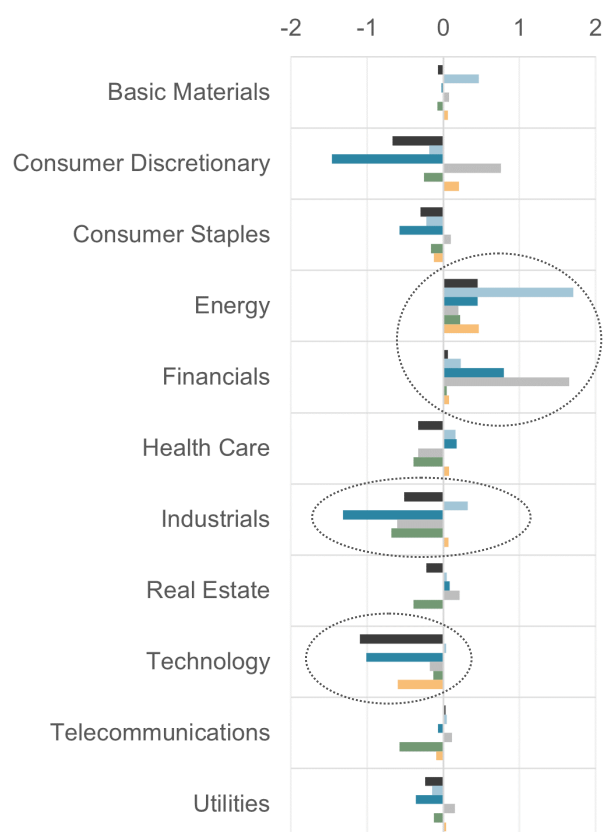
Market returns swung on exposures to Energy and Financials (among the few bright spots in Q3), and to the broad selloff in growth-tilted groups (e.g., Industrials, Tech & Discretionary), with only the UK and Japan defying the general malaise.



Benchmark Industry Weights, 3M average (%)



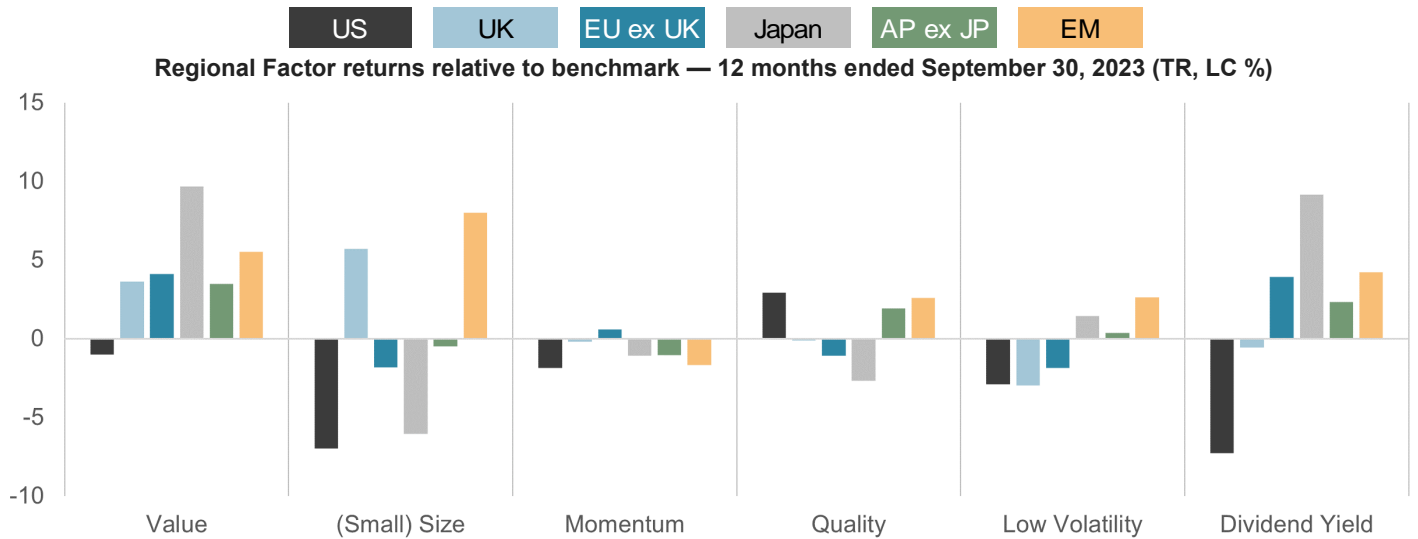
3M – Contributions to Total Benchmark Returns (%)



Source: FTSE Russell / Refinitiv. All data as of September 30, 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.

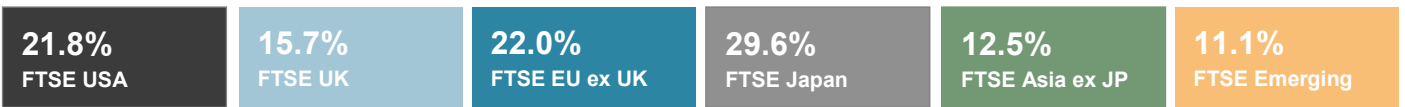
Global View – Factor and Benchmark Performance Highlights – Last 12 Months

Value and Yield retained leadership in all but the US for the 12 months, while Size and Momentum mostly lagged. Quality was the sole outperformer in the US, boosted by its large exposure to outperforming Tech stocks, while Value and Yield did best in Japan and Europe, reflecting big overweights in outperforming Industrials and Financials. Size was the top performer in EM and the UK.

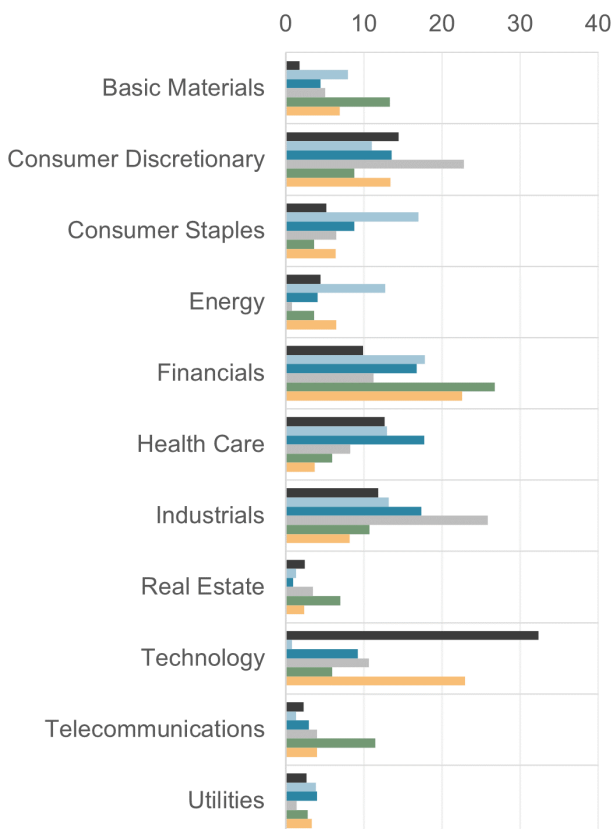


Regional Equity Market Returns 12M (TR, LC %) – Japan tops the charts in global rally

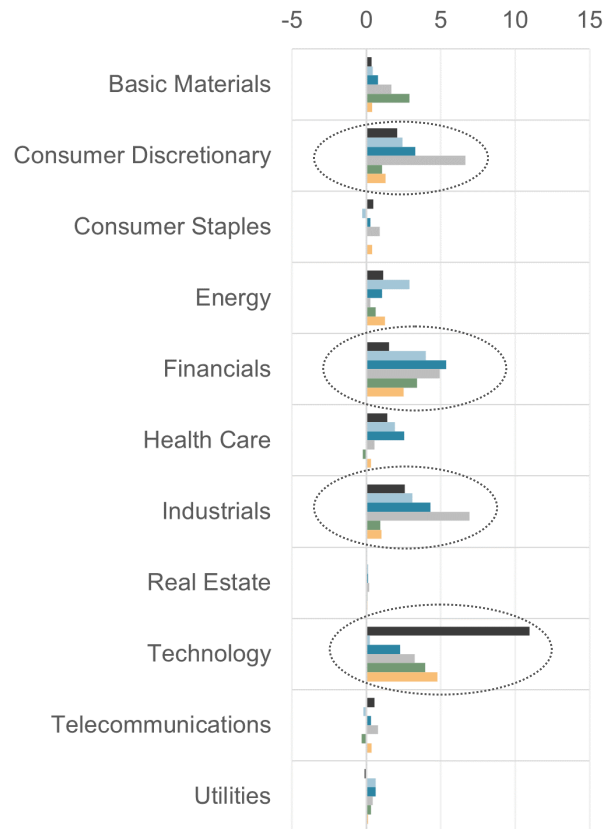
Japan, the US and Europe led the global rally of the past year, paced by strong gains in Financials, Tech, Discretionary and Industrials. Real Estate and defensive groups (Telecom and Staples) broadly lagged, particularly in the UK and Asia Pac.



Benchmark Industry Weights, 3M average (%)



12M – Contributions to Total Benchmark Returns (%)



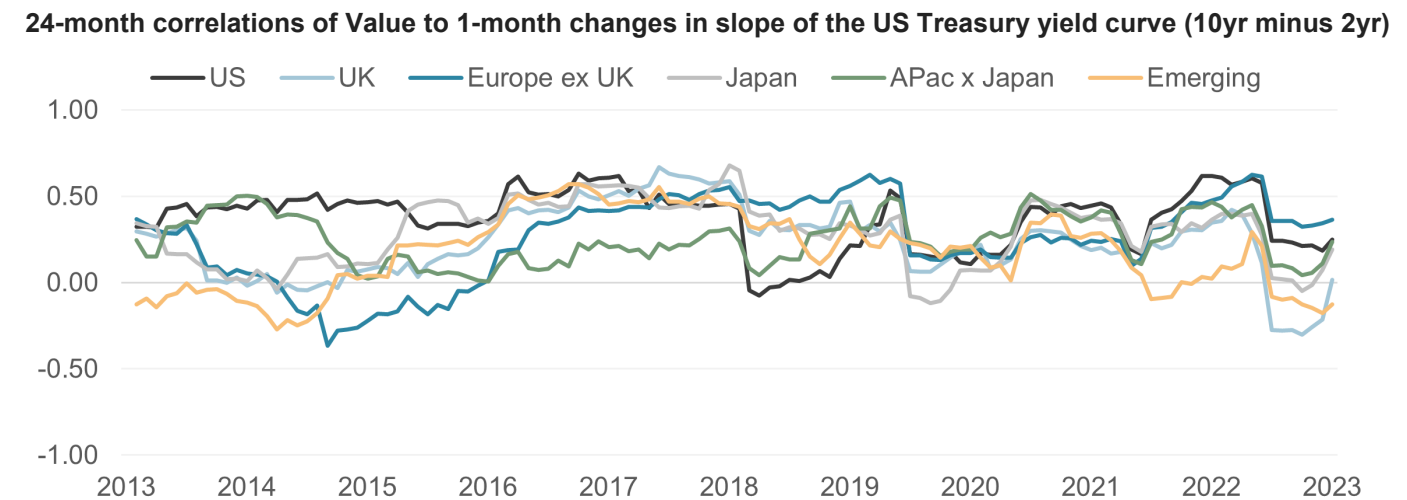
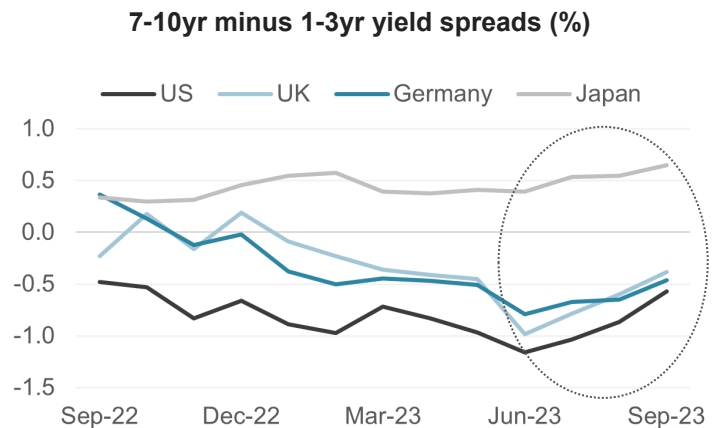
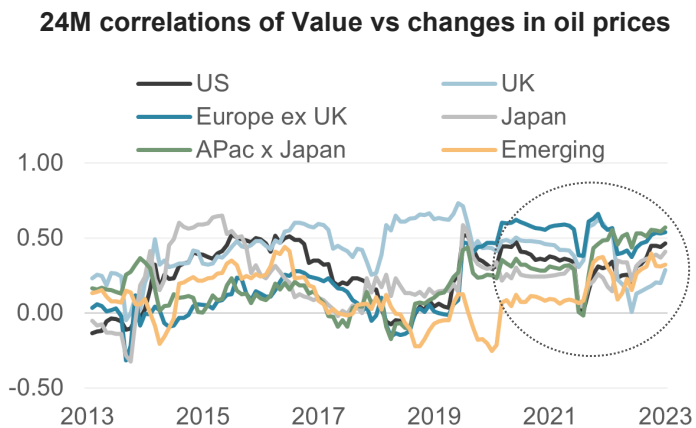
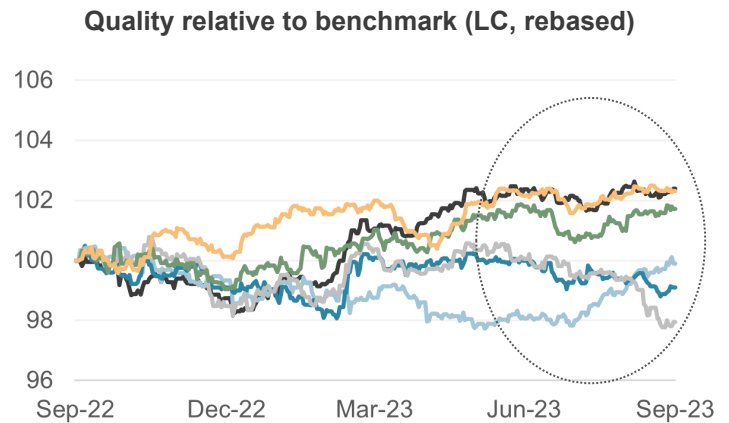
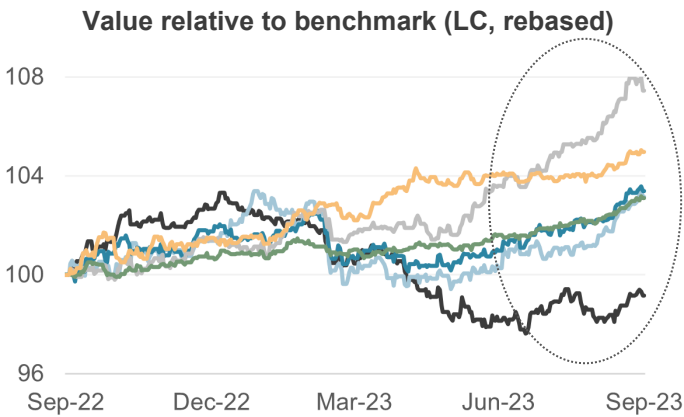
Source: FTSE Russell / Refinitiv. All data as of September 30, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Industry results based on Industry Classification 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 holds strong on booming Energy stocks

Value held up far better than Quality globally in Q3 (top charts). Value’s relative strength owes much to its big tilt to Energy stocks, which were among the few industries to post gains globally in the quarter amid soaring oil prices. As illustrated below (middle chart, left), Value has a strong positive correlation to swings in oil prices. Value also benefited from its smaller exposure to the selloff in Tech and other growth stocks triggered by the sharp rise in interest rates across developed markets in reaction to increasingly hawkish central-bank signalling (led by the Fed). Though yield curves remained inverted in the US, UK and Germany, long yields rose much more sharply than short yields in Q3, causing yield spreads to narrow significantly (middle chart, right).

As the bottom chart shows, 24-month correlations between global Value returns and changes in the slope of the US yield curve have generally been positive and have grown far less so this year (downshifting to neutral in the UK and turning negative in EM). The recent upward slope in the US yield curve provided a modest tailwind for the factor in most markets.

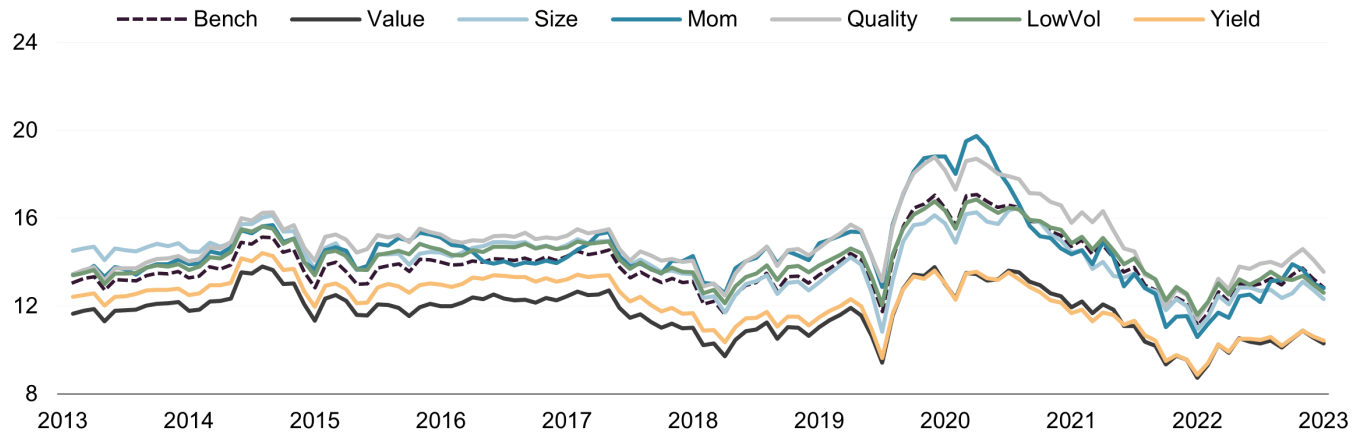


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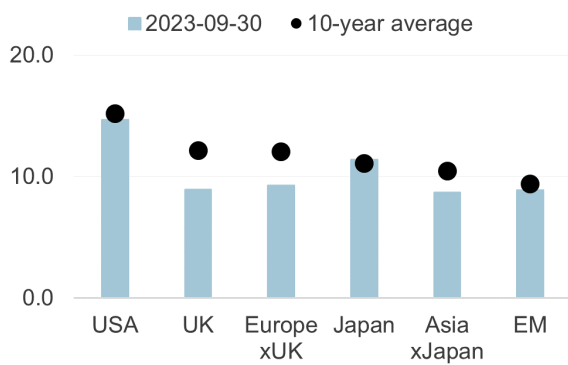
Global View – Factor Valuations

With the global equity downturn, forward P/E's fell across factors in Q3, leaving most at or modestly below 10-year averages across markets. On average, Quality and Momentum remain the most expensive, while Value and Yield remain the cheapest. As has long been the case, US factors trade at big premiums to those of peers, particularly Momentum and Quality.

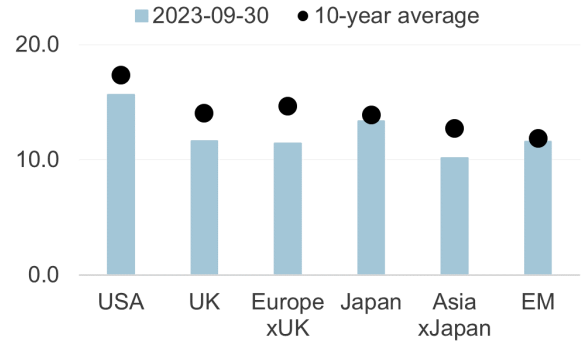
12-month forward factor P/E ratios, average of six regions*



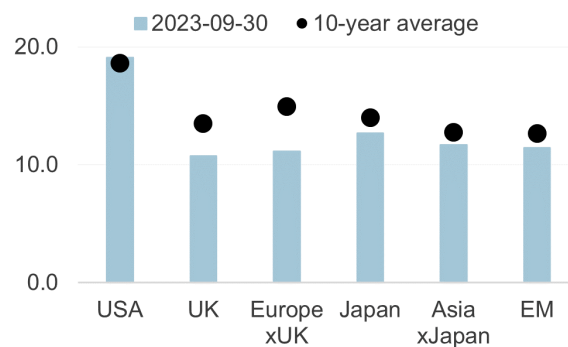
Value - 12M forward P/E



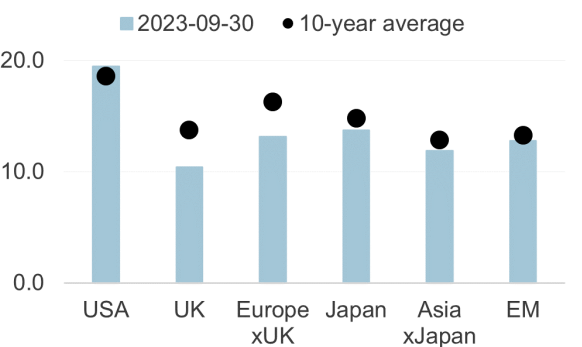
Size - 12M forward P/E



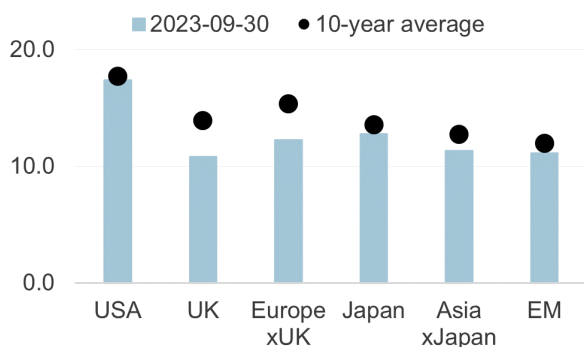
Momentum - 12M forward P/E



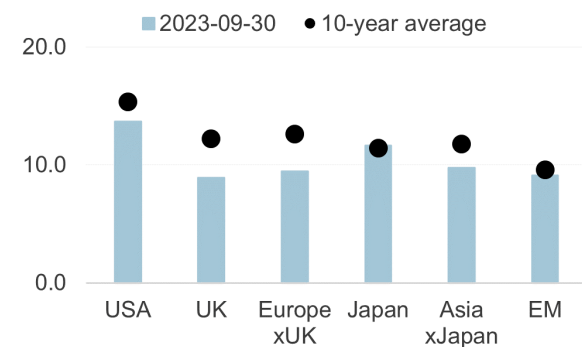
Quality - 12M forward PE



Low Volatility - 12M forward PE



Yield - 12M forward PE



Source: FTSE Russell/Refinitiv. All data as of September 30, 2023. *Combined average 12M forward P/E's 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

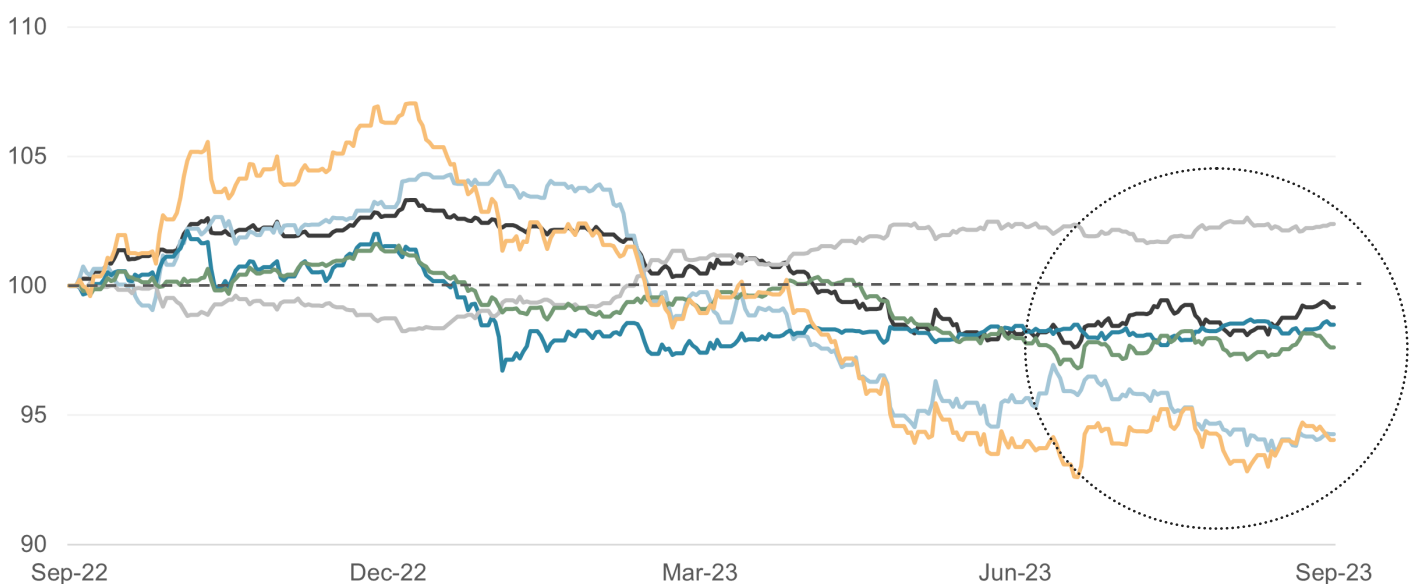
Third Quarter 2023

Key Observations

- Value and Yield were the lone outperformers in Q3. Though the months-long rally in Quality stalled, it remained the sole 12-month outperformer. Size was the biggest laggard for the quarter and longer timeframe.
- Value benefited overwhelmingly from its big overweights in outperforming Energy and Financial stocks. Quality was hurt most by its large underweight in Financials and significant exposure to the Big Tech selloff.
- (Small) Size suffered most from the continued investor favor for larger players across most industries, particularly within Health Care and Discretionary. Overweights in Real Estate and Utilities also hurt.
- After Q3 de-ratings, forward P/Es for most US factors are now in line or modestly below 10-year averages in absolute terms.
- However, Yield, Size and Value remain at far bigger discounts to the broad market and other factors versus history, while Quality now trades well above its long-term premium to the market — and substantially so versus Value.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell / Refinitiv. All data as of September 30, 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.

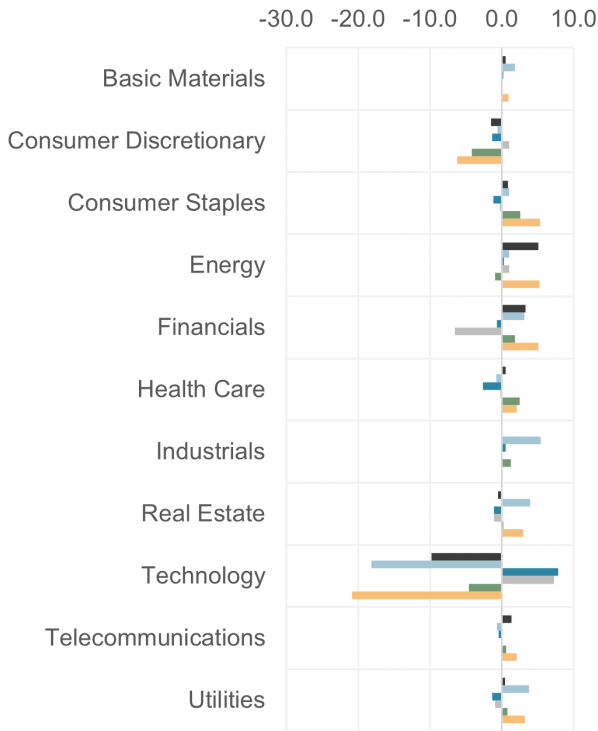
US Factor Performance & Industry Attributions — Q3 2023

Booming Energy stocks give Value the edge

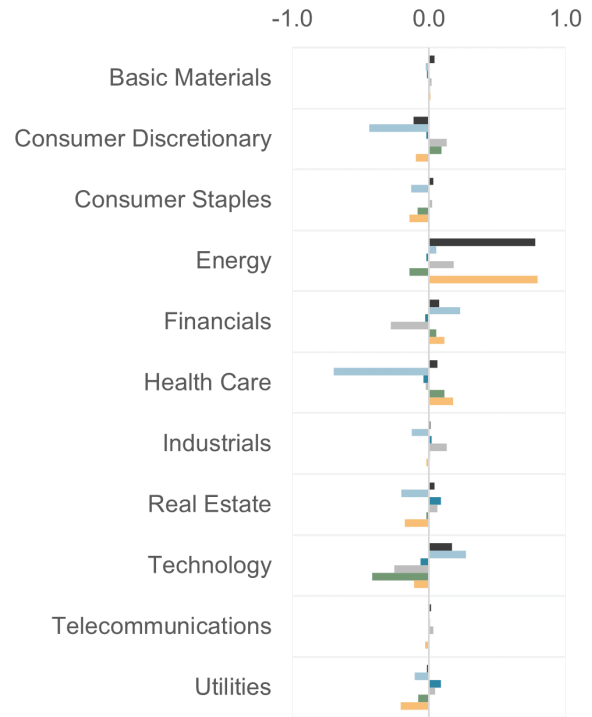
Value and Yield regained traction in the Q3 rout, underpinned predominantly by their overweights in outperforming Energy & Financials. Quality's recent winning streak stalled in Q3, upended by its underweight in Financials and the selloff in Big Tech. Size was the biggest laggard, hurt most by selection effects within Health Care & Discretionary, and its Real Estate overweight.

2023 Q3	Relative to Benchmark (TR %)					
FTSE USA	Value	Size	Mom	Quality	Low Vol	Yield
-3.0%	1.0	-1.3	0.0	0.0	-0.3	0.3

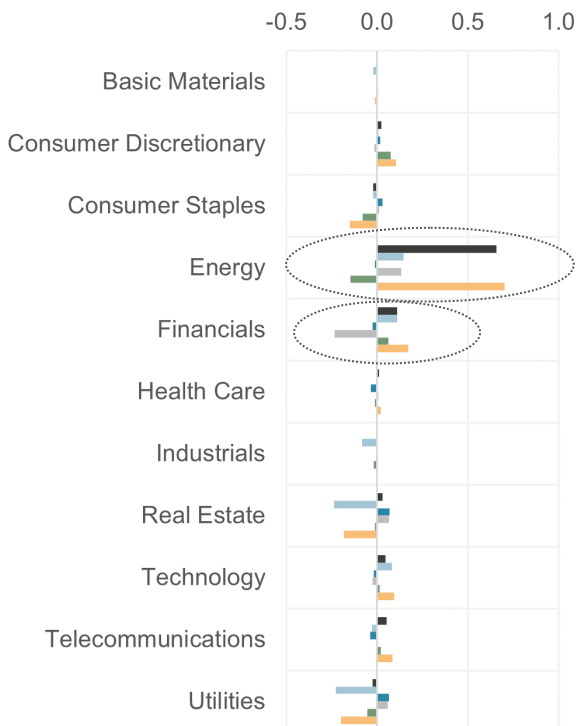
Industry active weights, Q3 2023 average



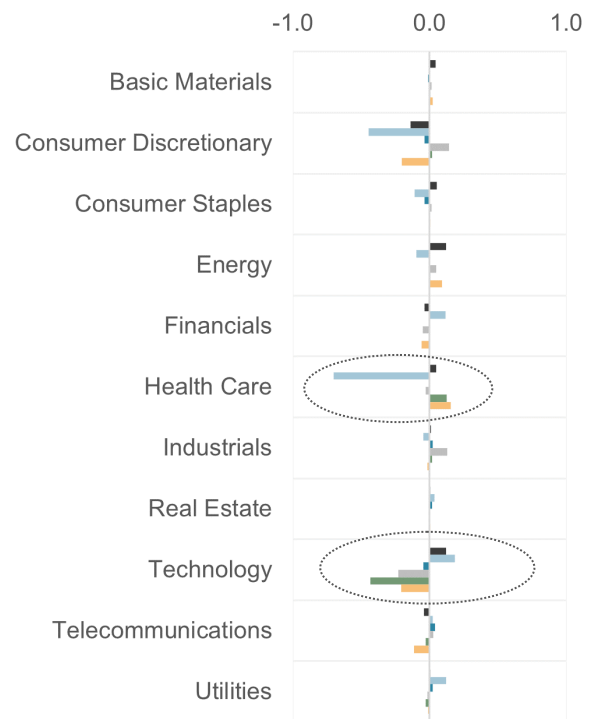
Total industry effects, Q3 2023



Industry allocation effects, Q3 2023



Stock selection within industry, Q3 2023

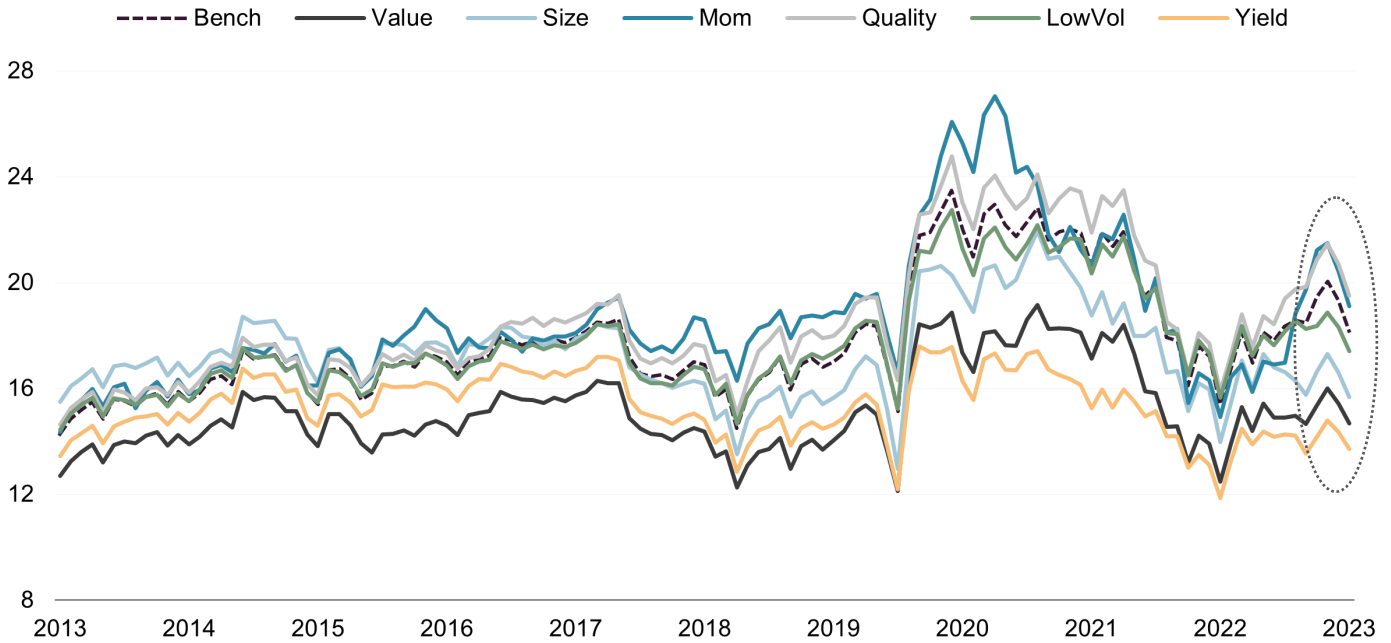


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US Factor Valuations

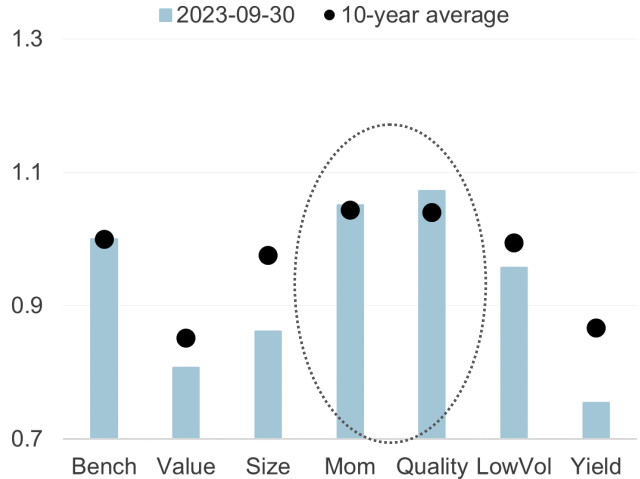
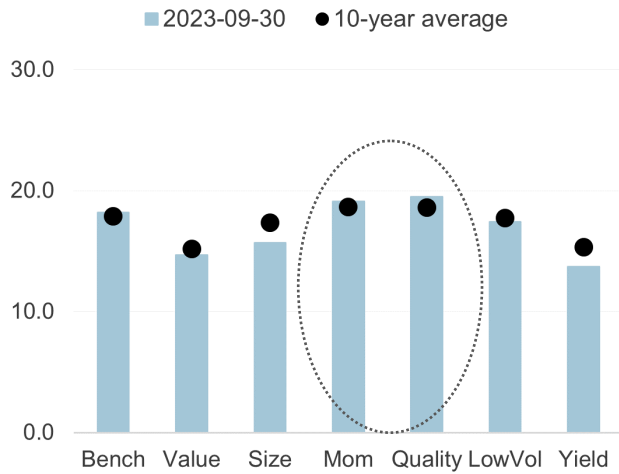
Forward P/Es contracted across US factors in Q3, though most still stand close to or slightly above their 10-year averages in absolute terms. Despite recent setbacks, Quality and Momentum continue to trade modestly above their historical premiums versus the benchmark, while Yield, Size and Value remain at deeper discounts to the market. In turn, Quality stands at a 4.8-point premium to Value, well above its long-term average of 3.4 points.

FTSE USA – Absolute 12M forward P/Es



Current Absolute 12M forward P/E vs history

Current Relative 12M forward P/E vs history



Source: FTSE Russell / Refinitiv. All data as of September 30, 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 Equity Factor Insights

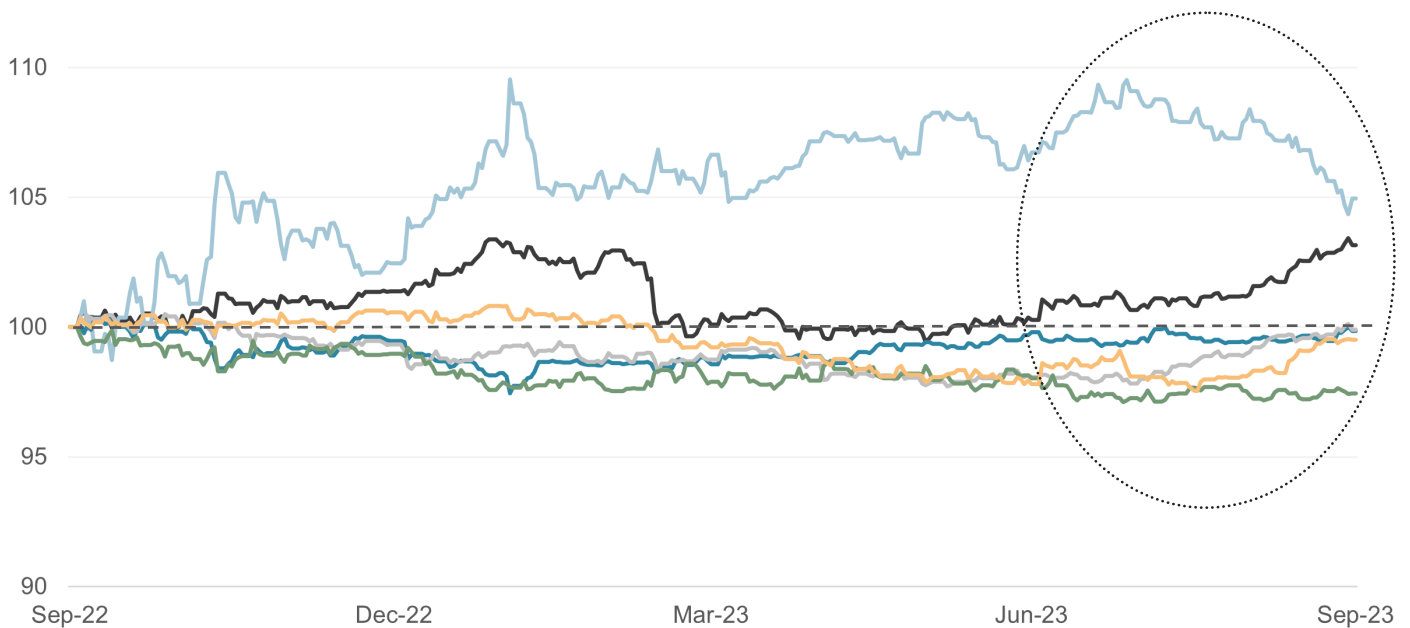
Third Quarter 2023

Key Observations

- Value rebounded strongly in Q3, mostly at the expense of longtime winner (Small) Size, pushing it into positive territory for the 12 months. Quality and Yield also gained ground in Q3 but remain laggards for the longer period (along with Low Vol and Momentum).
- Factor returns overwhelmingly revolved around allocations and selection effects in Energy, Financials and Materials — helping Value, Quality and Yield and weighing on Size.
- Forward P/Es for most factors continued to fall in Q3 and remain well below 10-year averages in absolute and relative terms (except for Size and Momentum).
- Size remains the most expensive factor, trading at even larger premiums to the market and other factors versus history. The Quality/Value premium is now back in line with its long-term average.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell / Refinitiv. All data as of September 30, 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.

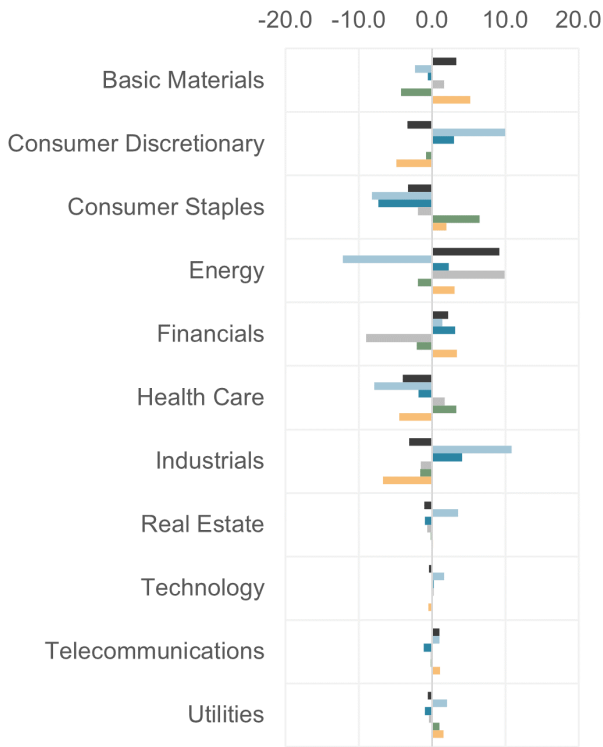
UK Factor Performance & Industry Attribution — Q3 2023

Energy overweight drives Value leadership in Q3

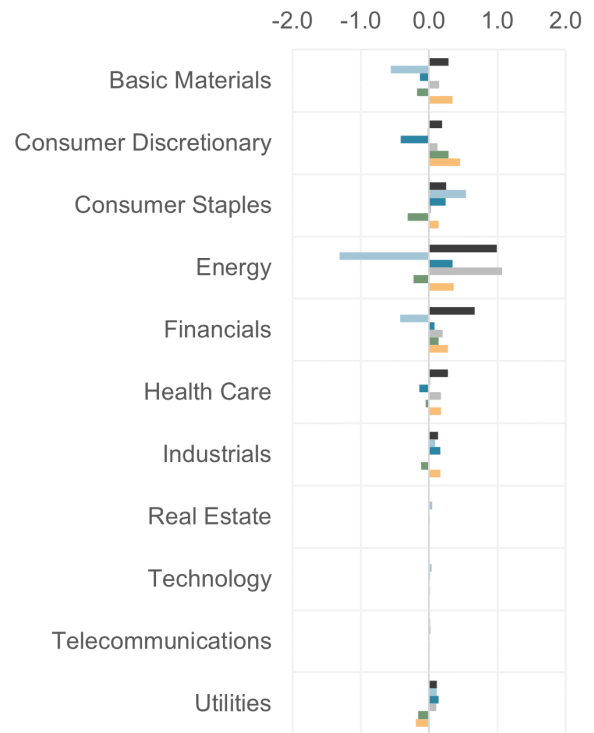
Value built on its yearlong outperformance in Q3, mostly at the expense of longtime leader (Small) Size. Quality also gained ground. Value, Quality and Yield benefitted overwhelmingly from big overweights in Energy and positive selection within Financials and Discretionary. The Energy underweight and a bias for larger players in Financials and Materials hurt Size most.

2023 Q3	Relative to Benchmark (TR %)					
	Value	Size	Mom	Quality	Low Vol	Yield
FTSE UK	2.4%	-1.7	0.0	1.9	-0.6	1.8

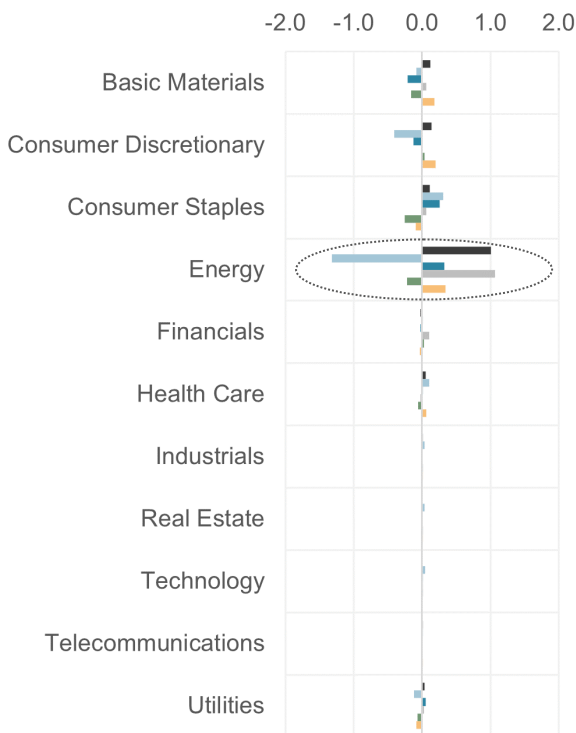
Industry active weights, Q3 2023 average



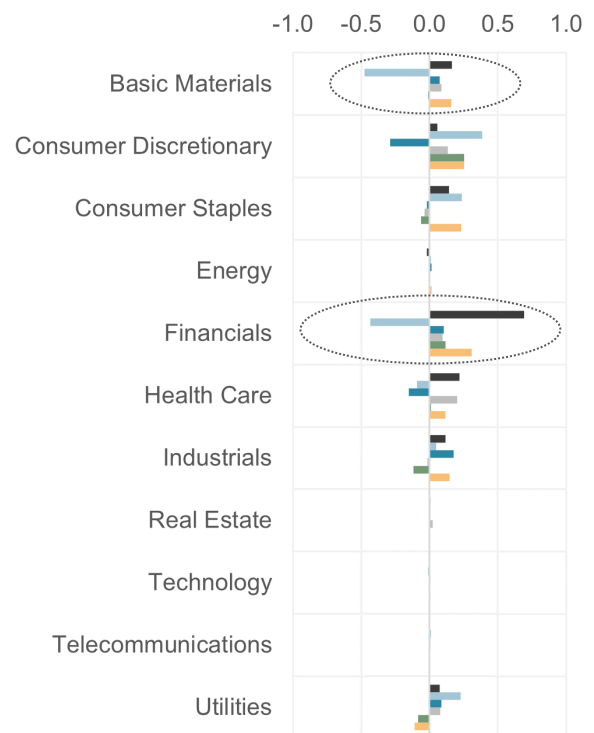
Total industry effects, Q3 2023



Industry allocation effects, Q3 2023



Selection effect within industry, Q3 2023

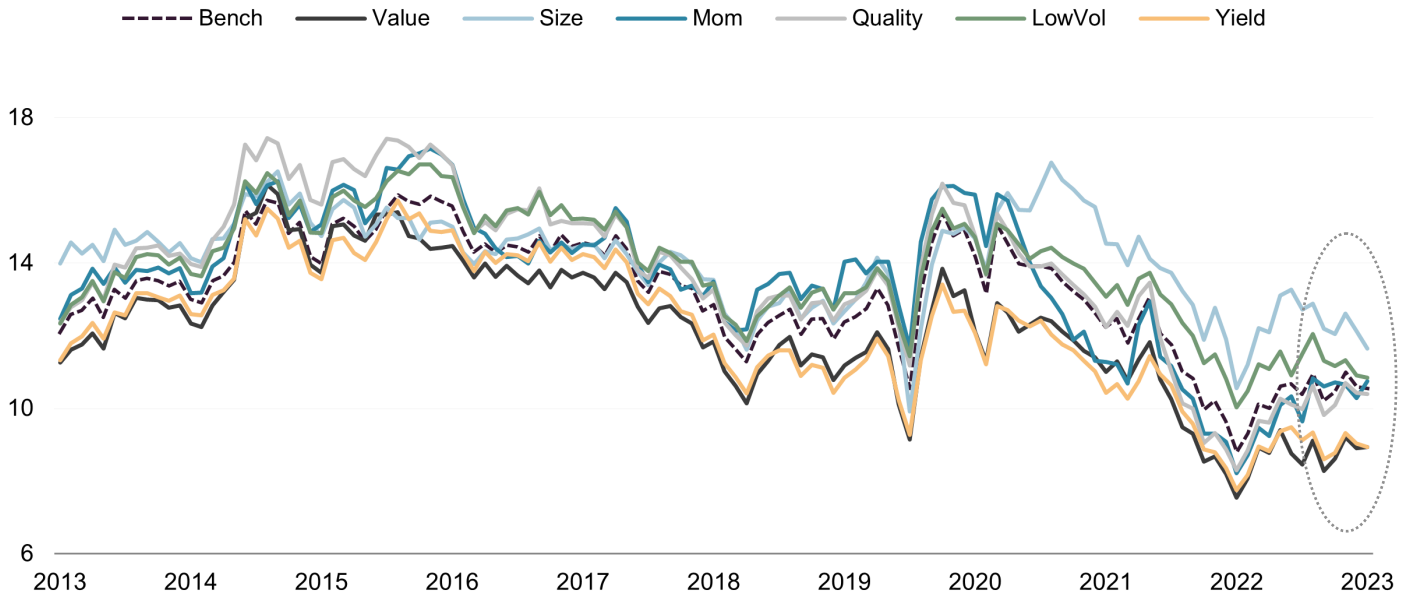


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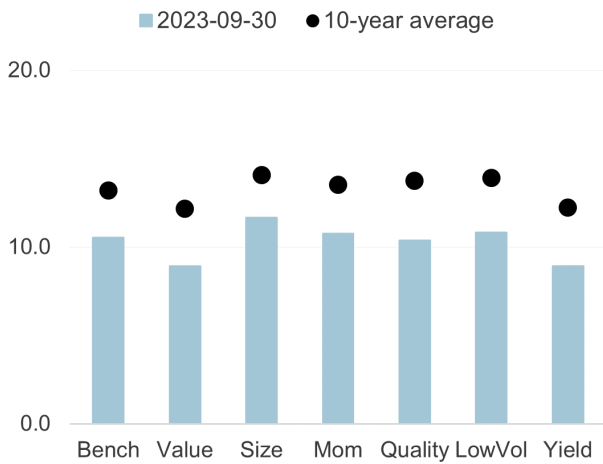
UK Factor Valuations

Forward P/Es for most factors fell in Q3 and remained well below 10-year averages in absolute terms. Value and Yield continue to trade at bigger discounts to the benchmark and other factors versus history, while Quality now sits at a discount to the market (vs a historical premium). Despite recent underperformance, Size remains the most expensive factor, trading above other factors and above its historical premium to the market. The Quality/Value premium narrowed, to 1.5 points, matching its historical spread.

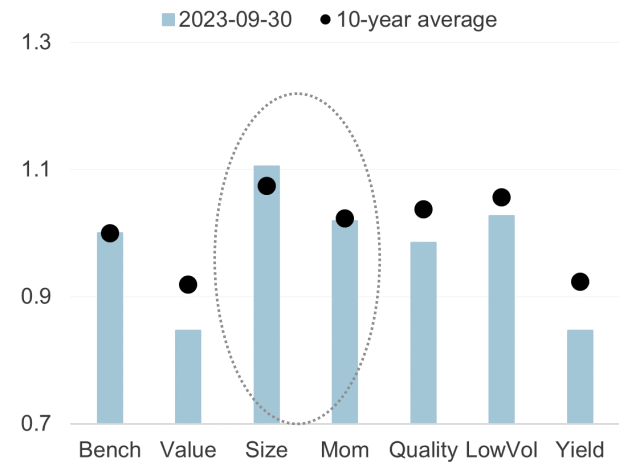
FTSE UK – Absolute 12M forward P/Es



Current Absolute 12M forward P/Es vs history



Current Relative 12M forward P/Es vs history



Source: FTSE Russell / Refinitiv. All data as of September 30, 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

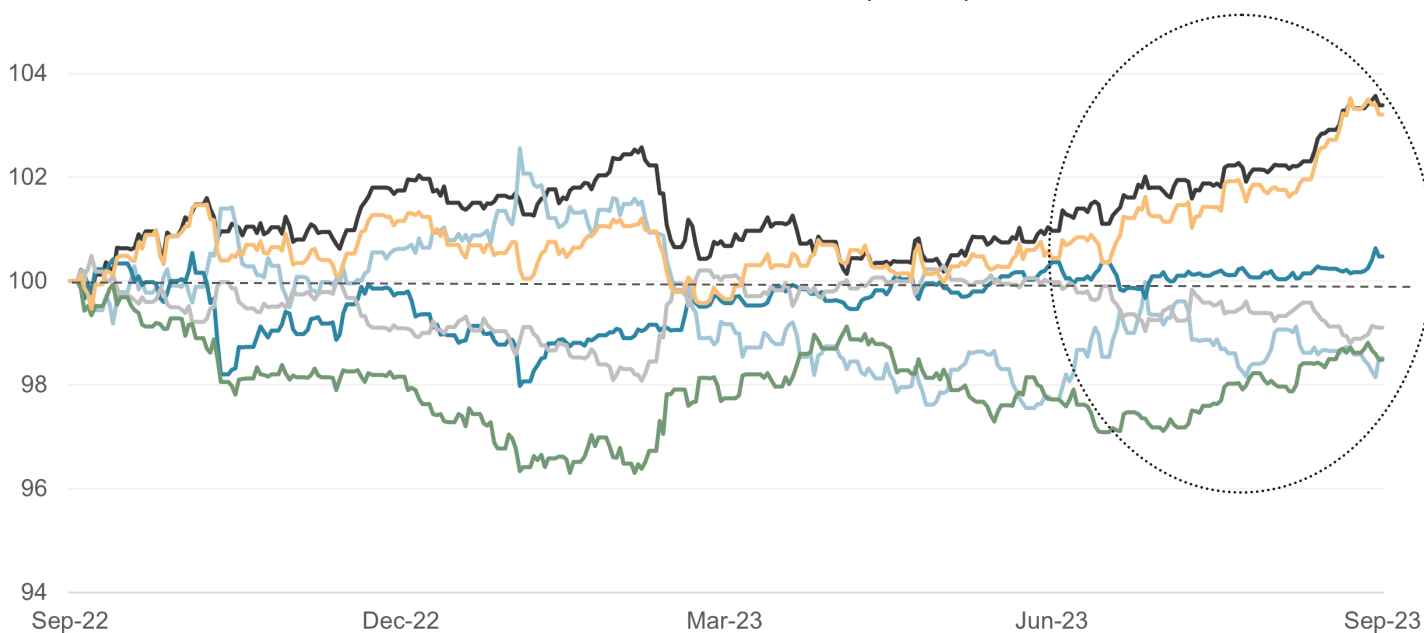
Third Quarter 2023

Key Observations

- Value and Yield widened their lead over all other factors amid the Q3 slump, cementing their YTD and 12-month outperformances. Quality was the lone laggard for Q3, joining Size and Low Vol in negative territory for the 12 months.
- Factor performance in Q3 largely revolved around exposures to rising Energy and Financial stocks and the selloffs in Tech and Industrials — boosting Value and Yield while dragging on Quality.
- Size continued to suffer from the strong investor favoritism for larger players in many industries, particularly Health Care, Financials and Energy.
- Forward P/Es across factors suffered major de-ratings in the Q3 downturn, leaving them well below 10-year averages in both absolute and relative terms.
- Value, Yield and Size remain at deeper-than-normal discounts to the market, while Quality and Momentum now trade below their historical premiums to the benchmark. The Quality/Value premium is now at its long-term average.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell / Refinitiv. All data as of September 30, 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.

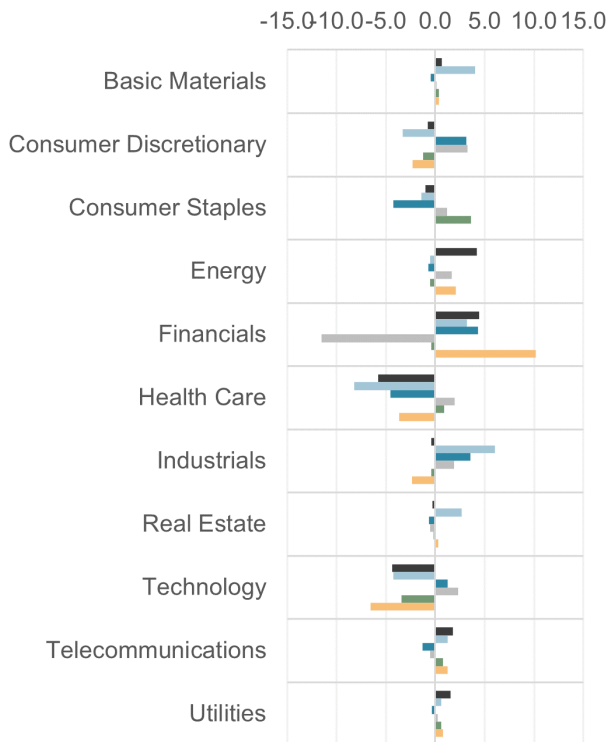
Europe ex UK Factor Performance & Industry Attribution — Q3 2023

Energy-fueled Value resilience provides ballast in Q3 market slump

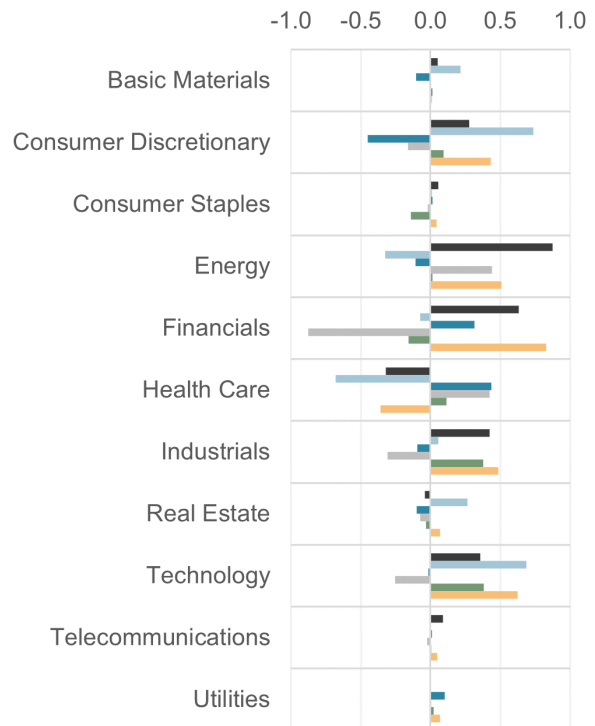
Yield and Value gained further traction in Q3, bolstered mostly by overweights and strong stock selection in outperforming Financials and Energy stocks. Stock selection within Industrials also helped. Quality was the worst performer, hurt most by its large underweight in Financials, overweights in Tech and Discretionary, and negative selection effects within Industrials.

2023 Q3	Relative to Benchmark (TR %)					
FTSE Dev Europe ex UK	Value	Size	Mom	Quality	Low Vol	Yield
-3.3%	2.3	0.8	0.1	-0.8	0.7	2.7

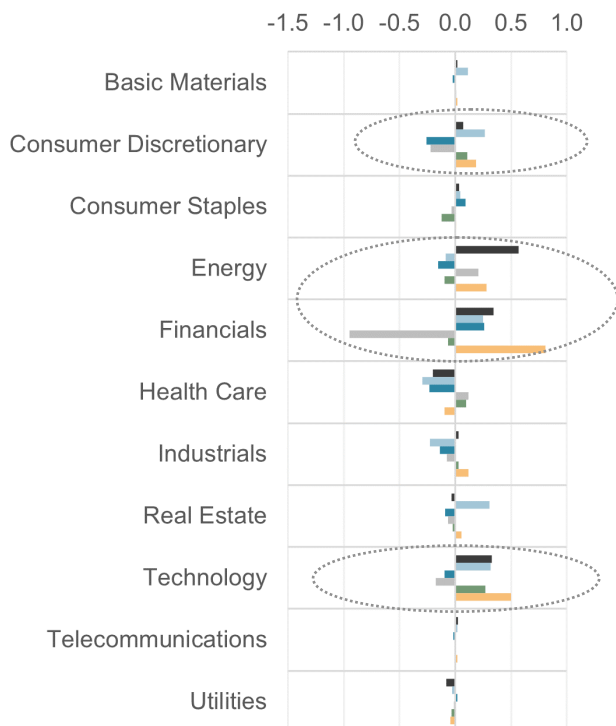
Industry active weights, Q3 2023 average



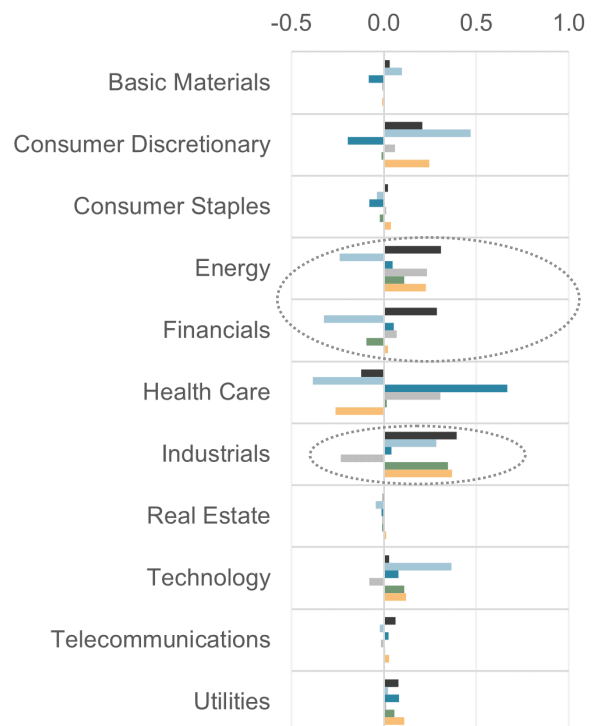
Total industry effects, Q3 2023



Industry allocation effects, Q3 2023



Selection effect within industry, Q3 2023

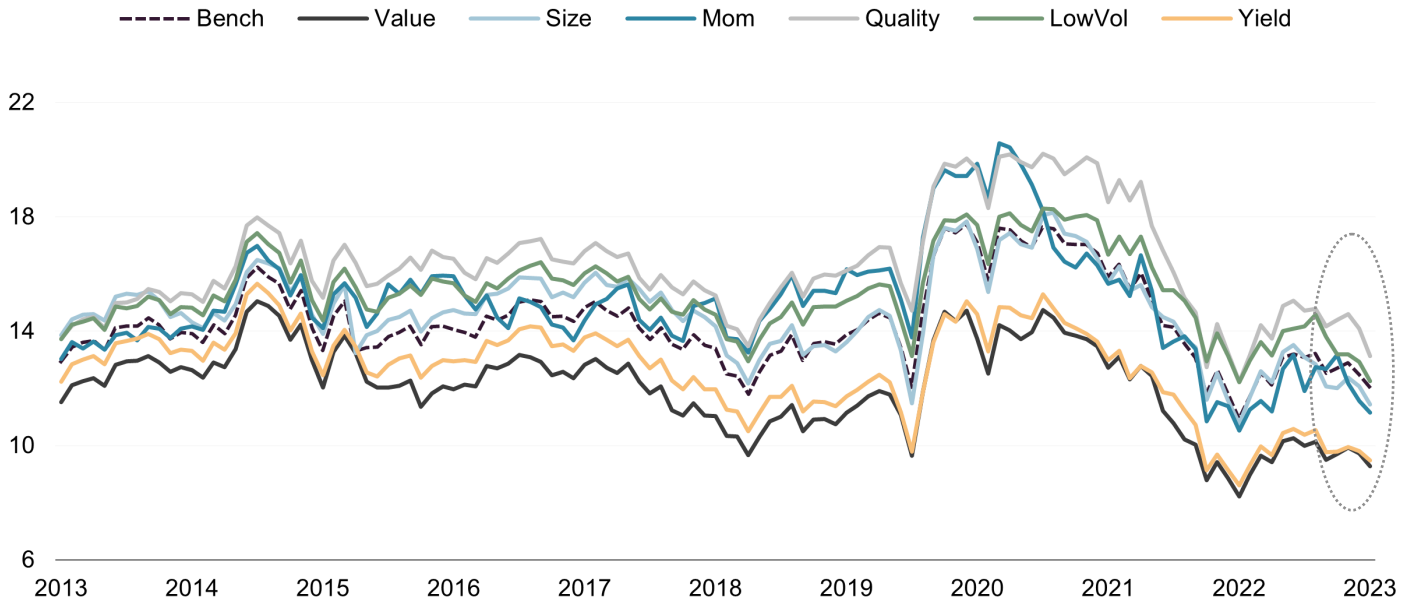


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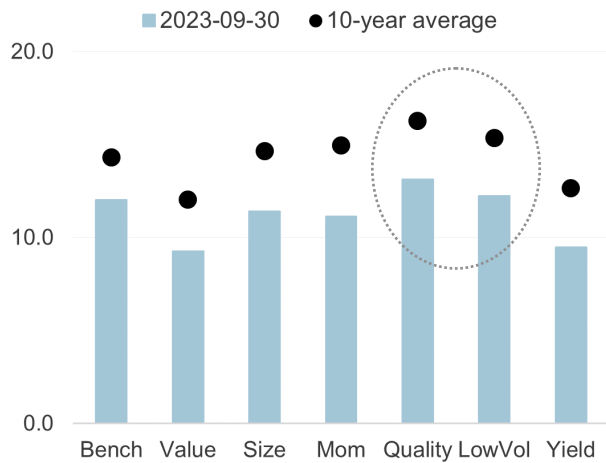
Europe ex UK Factor Valuations

Forward P/Es contracted across factors in Q3, with all ending well below 10-year averages in both absolute and relative terms. Yield, Value and Size continue to trade at far deeper-than-average discounts to the broad market and other factors. Quality and Low Vol remain the most expensive factors, though they trade at significantly lower premiums to the benchmark versus history. Quality's premium versus Value remains roughly in line with its 10-year average spread of 4.2 points.

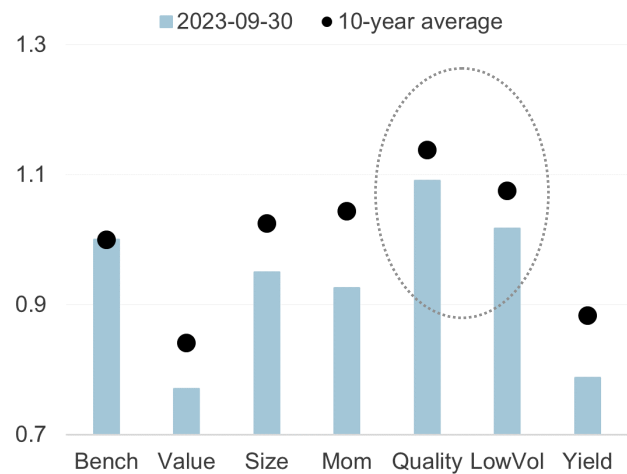
FTSE Europe ex UK – Absolute 12M forward P/Es



Current Absolute 12M forward P/Es vs history



Current Relative 12M forward P/Es vs history



Source: FTSE Russell / Refinitiv. All data as of September 30, 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

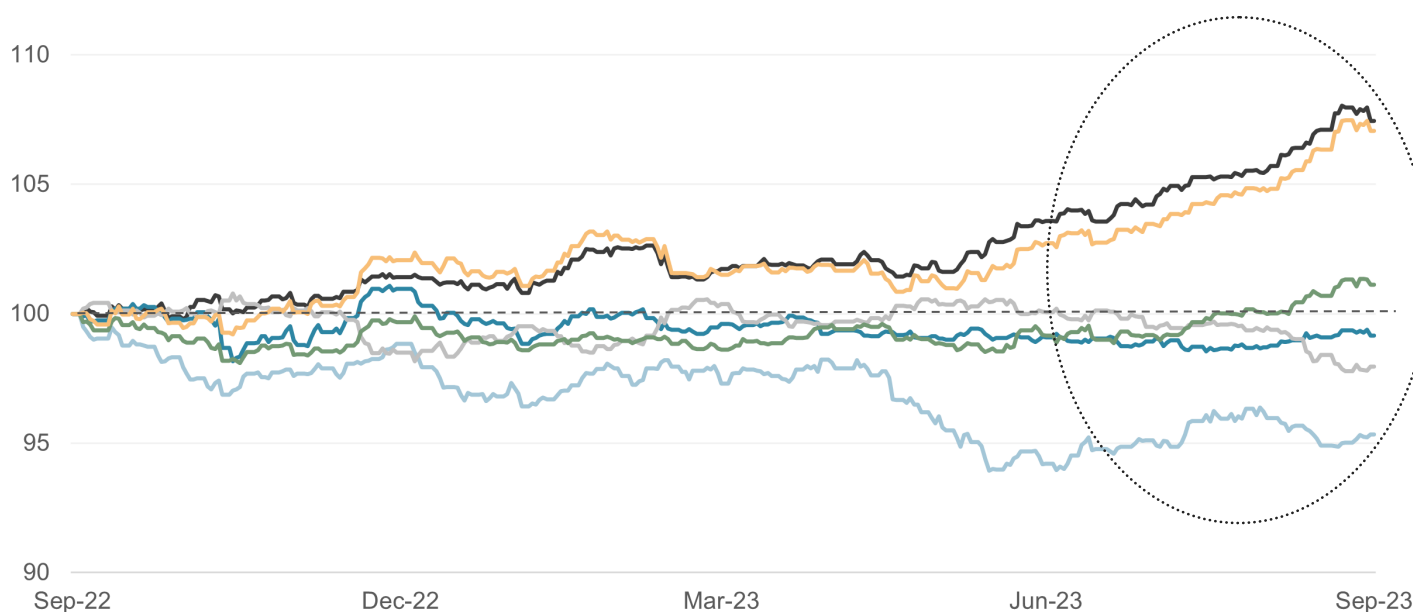
Third Quarter 2023

Key Observations

- Value and Yield added to their already strong lead in Q3, mainly at the expense of Quality, the lone underperformer. Low Vol also did well in the quarter, joining Value and Yield in positive territory for the 12 months.
- Value and Yield benefited overwhelmingly from positive selection effects within Industrials and Discretionary and overweights in Financials. Quality suffered most from its big underweight in Financials and large exposure to the selloff in Industrials stocks.
- Bolstered by Japan's continued rally, forward P/Es for most factors are now at or close to 10-year averages in absolute and relative terms.
- Quality and Momentum now look particularly attractive, sitting well below their historical norms relative to the market, while Yield and Value trade at smaller discounts to the market versus history. The Quality/Value premium is well below its long-term average.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell / Refinitiv. All data as of September 30, 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.

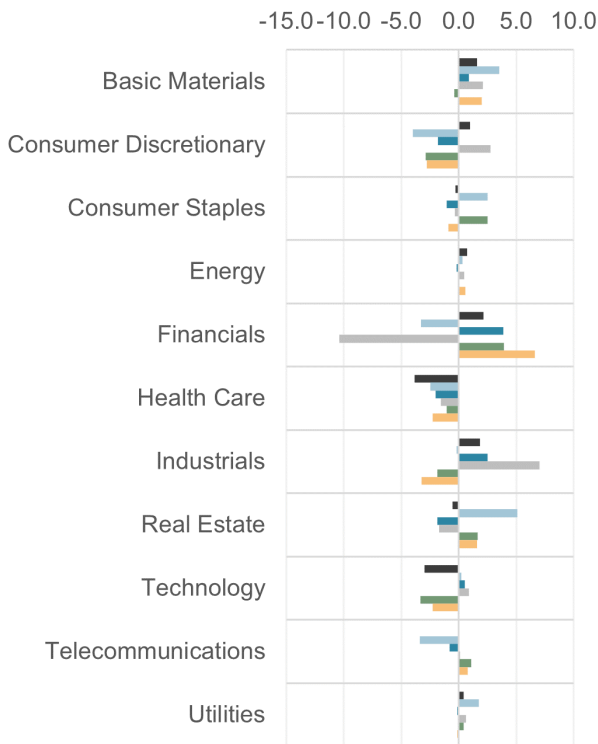
Japan Factor Performance & Industry Attribution — Q3 2023

Bargain-hunting helps Value retain edge over Quality

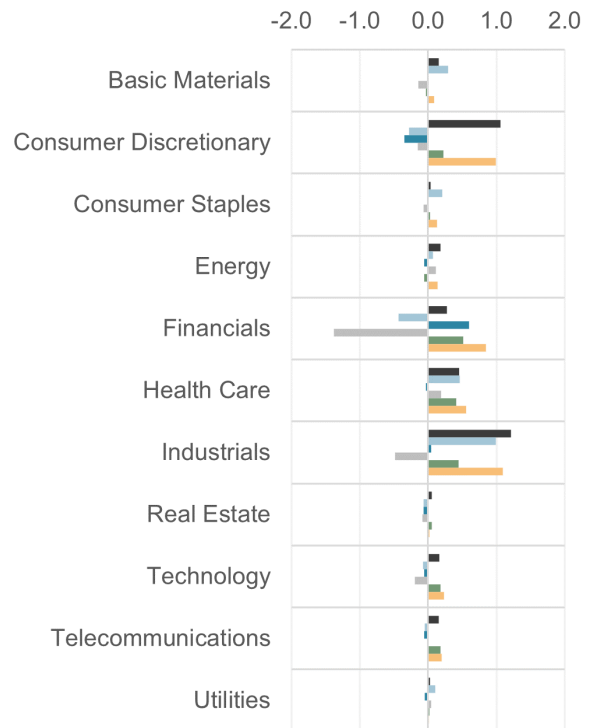
Value and Yield continued to strongly outpace the market and other factors in Q3, particularly Quality. Low Vol also made strides. Value, Yield and Low Vol benefited most from large overweights in Financials, underweights and additive selection in Health Care, and positive stock selection within Industrials and Discretionary. Quality was hurt most by its large Financials underweight.

2023 Q3	Relative to Benchmark (TR %)					
FTSE Japan	Value	Size	Mom	Quality	Low Vol	Yield
2.2%	3.8	1.2	0.1	-2.2	2.0	4.3

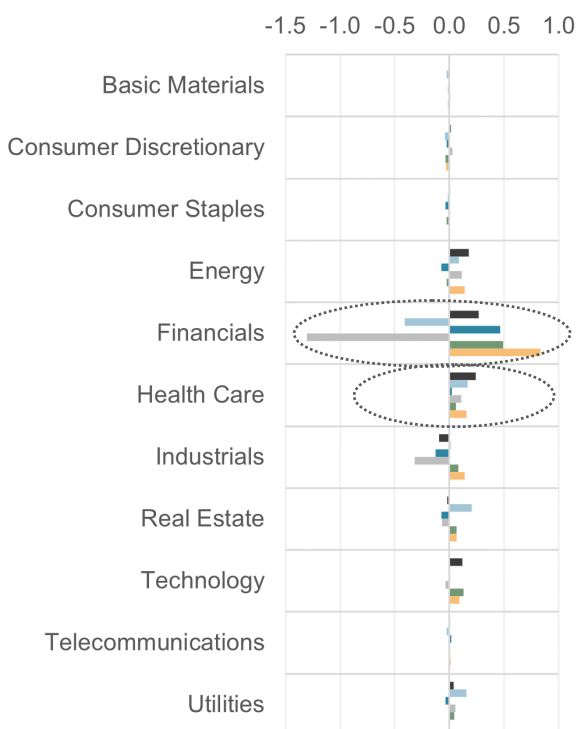
Industry active weights, Q3 2023 average



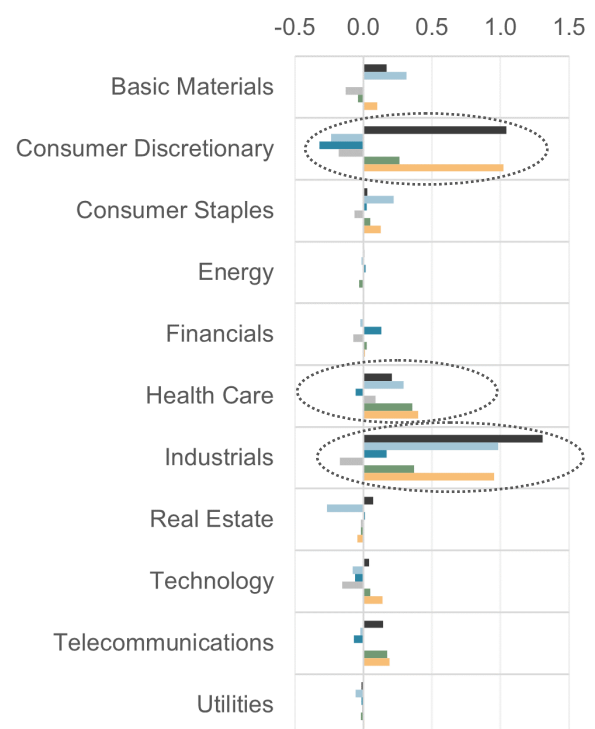
Total industry effects, Q3 2023



Industry allocation effects, Q3 2023



Selection effect within industry, Q3 2023

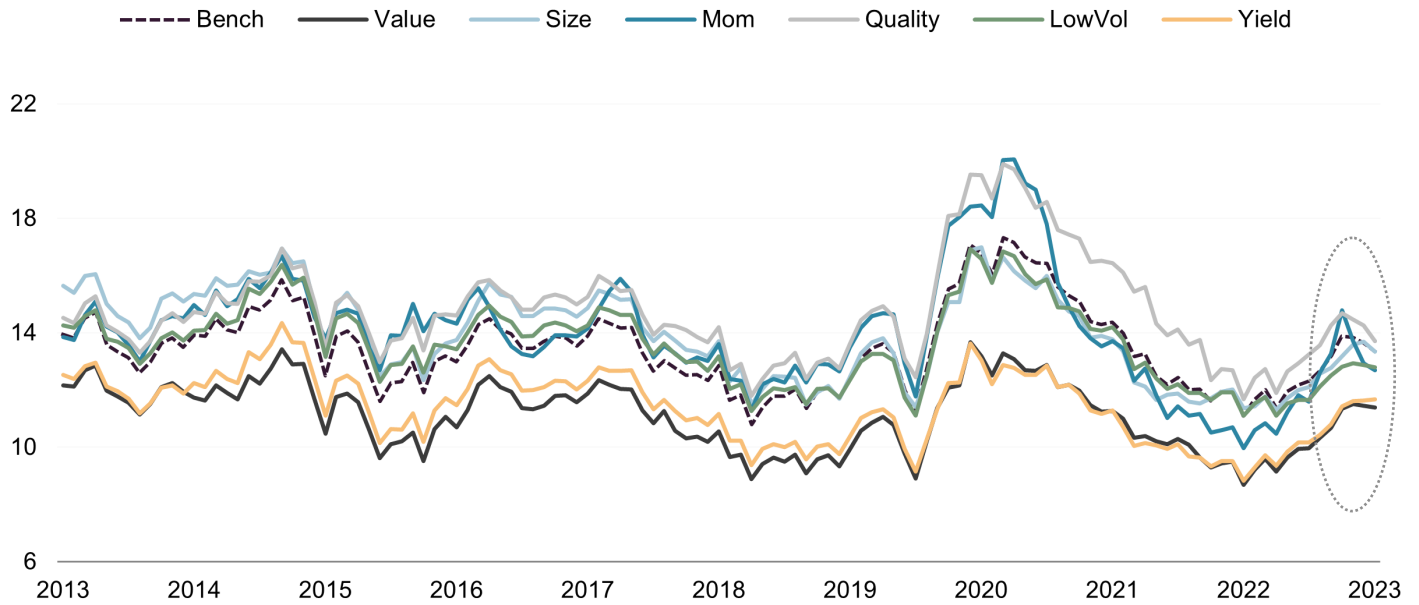


Source: FTSE Russell / Refinitiv. All data as of September 30, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Industry results based on Industry Classification 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.

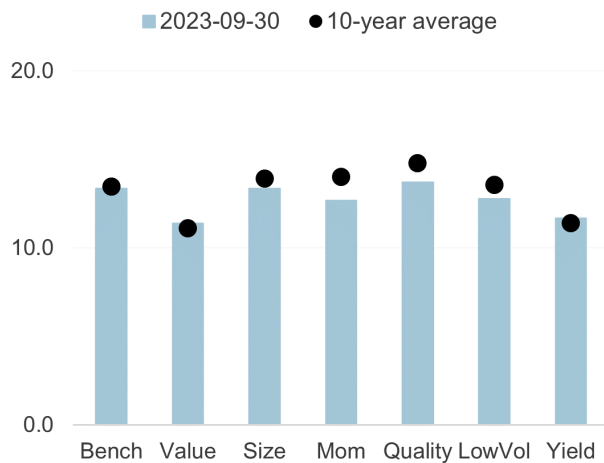
Japan Factor Valuations

Following Japan's continued rally, forward P/E's for most factors are now at or near 10-year averages in absolute terms. Value and Yield remain the cheapest factors, though they now trade at smaller-than-normal discounts to the market and other factors. Reflecting recent underperformance, Quality trades below its 10-year averages in both absolute and relative terms. Unlike peers elsewhere, Japan's Quality/Value premium, at 2.3 points, is still significantly below its long-term average spread of 3.7 points.

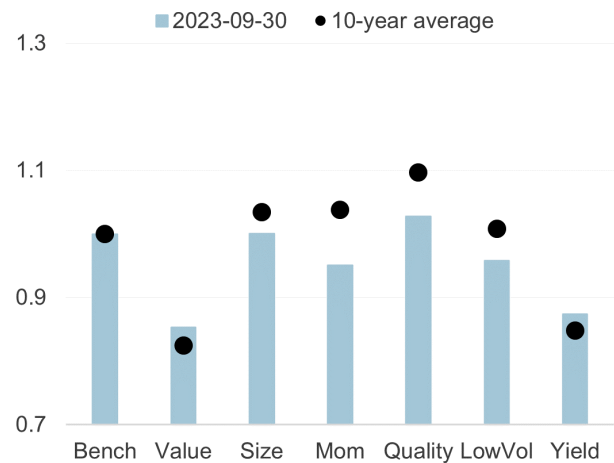
FTSE Japan – Absolute 12M forward P/E's



Current Absolute 12M P/E's vs history



Current Relative 12M P/E's vs history



Source: FTSE Russell / Refinitiv. All data as of September 30, 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

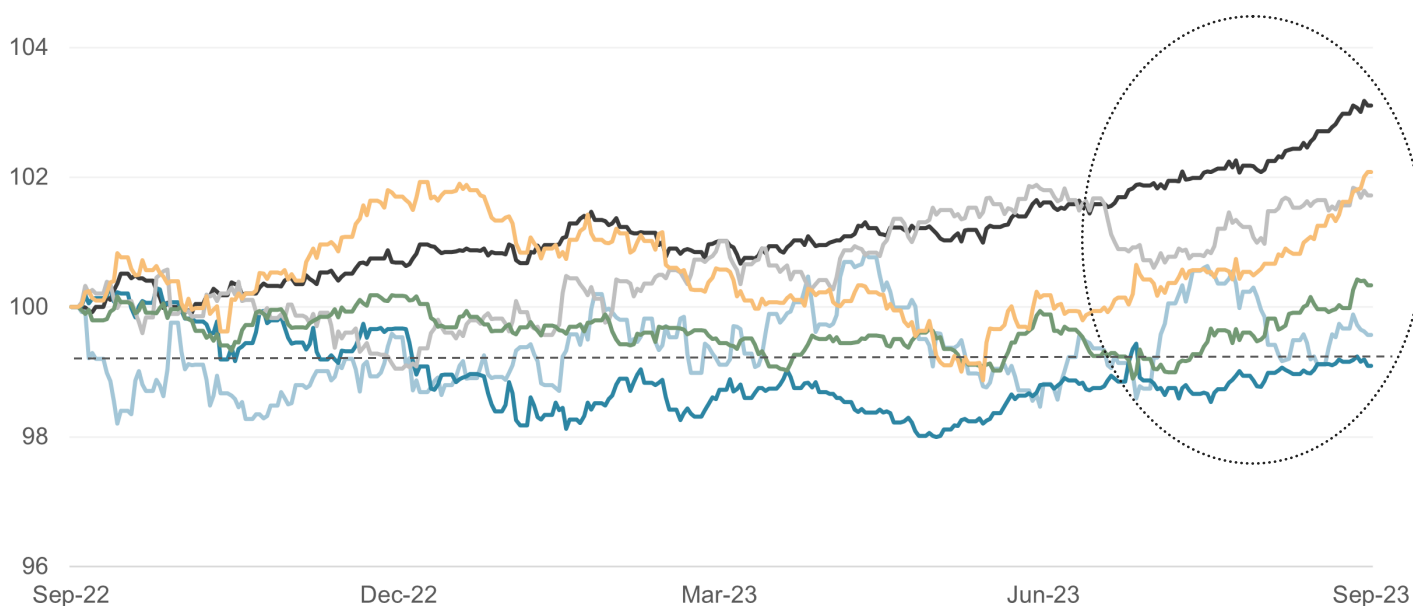
Third Quarter 2023

Key Observations

- Value and Yield fared far better than the broad market and other factors in the Q3 downturn, while the months-long rally in Quality faded. (Small) Size and Low Vol also gained traction. Value reclaimed the 12-month lead from Quality, and only Momentum remains in negative territory for the longer-term span.
- Factor performance in Q2 hinged overwhelmingly on exposures to outperforming Financials and Energy stocks and the collapse in Telecom stocks — buoying Value and Yield and depressing Quality.
- After the Q3 rout, forward P/Es across factors are back below 10-year averages in absolute terms. Despite recent outperformance, Yield, Value and Size still trade at much bigger discounts to the market vs history.
- Quality and Momentum now rank as the most expensive factors, trading in line or slightly above their historical premiums to the market. The Quality/Value premium remains far larger than normal.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell / Refinitiv. All data as of September 30, 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.

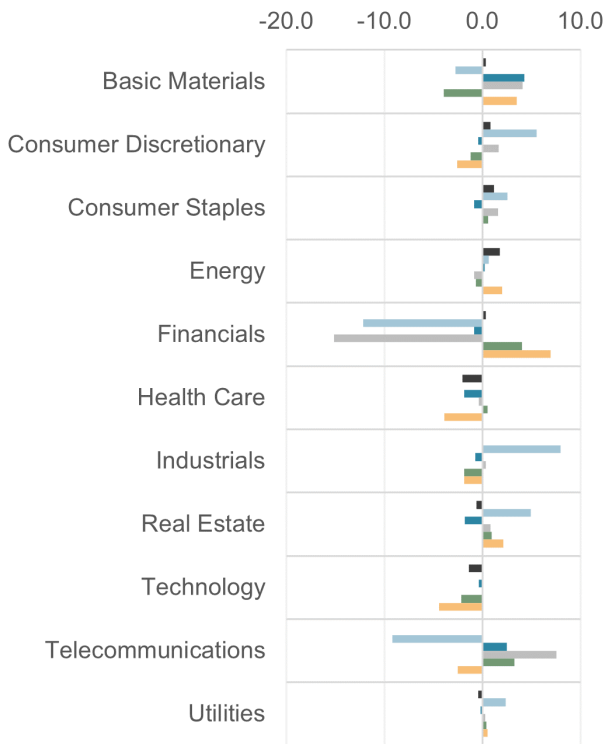
Asia Pac ex Japan Factor Performance & Industry Attribution — Q3 2023

Value offers ballast in Q3 market rout

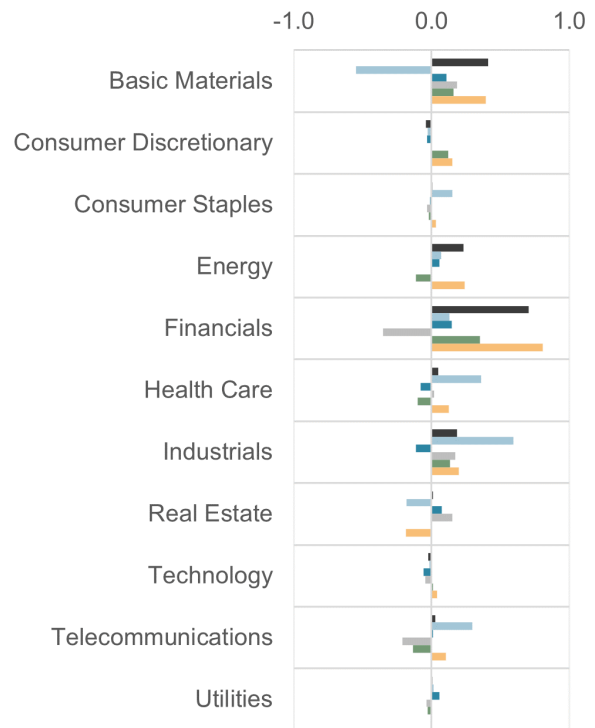
Value added to its yearlong leadership and Yield rebounded strongly in the Q3 slump, owing mostly to overweights in Energy, underweights in Health Care and positive stock selection within Financials and Materials. After its months-long rally, Quality lost ground in Q3, hurt most by its massive underweight in Financials and large exposure to the big selloff in Telecom.

2023 Q3	Relative to Benchmark (TR%)					
FTSE Dev Asia Pacific ex JP	Value	Size	Mom	Quality	Low Vol	Yield
-2.6%	1.4	0.7	0.3	-0.1	0.4	1.8

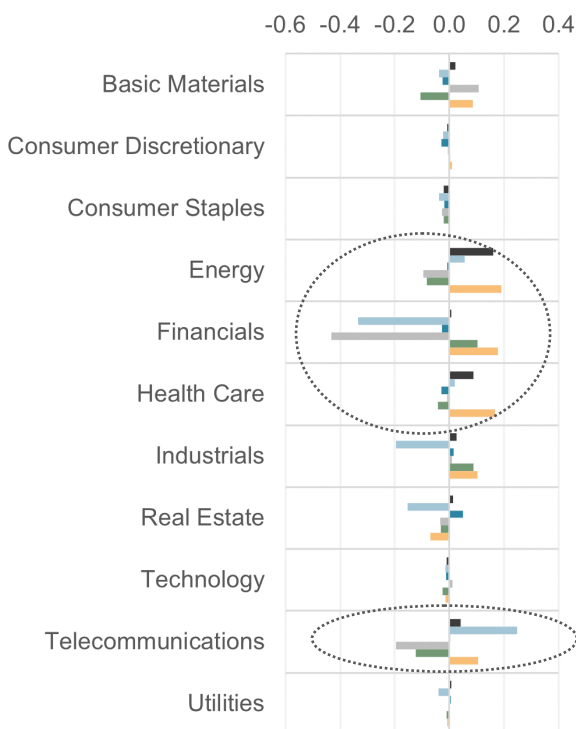
Industry active weights, Q3 2023 average



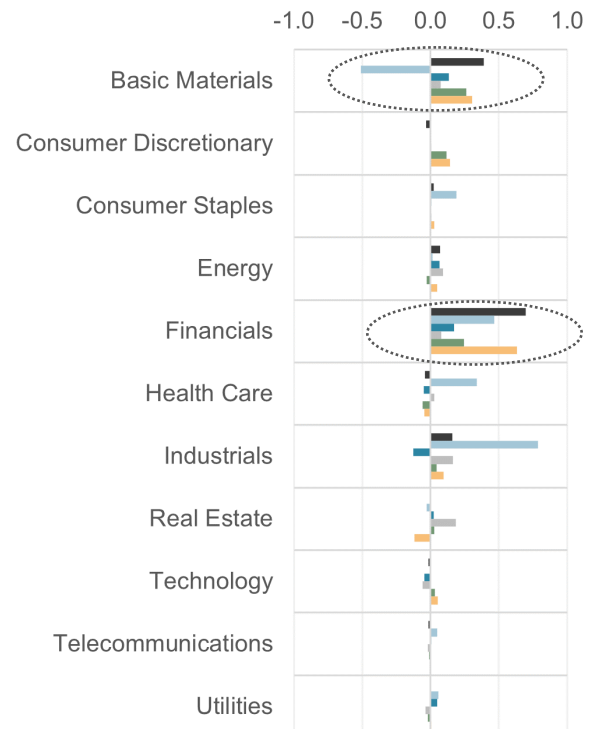
Total industry effects, Q3 2023



Industry allocation effects, Q3 2023



Selection effect within industry, Q3 2023

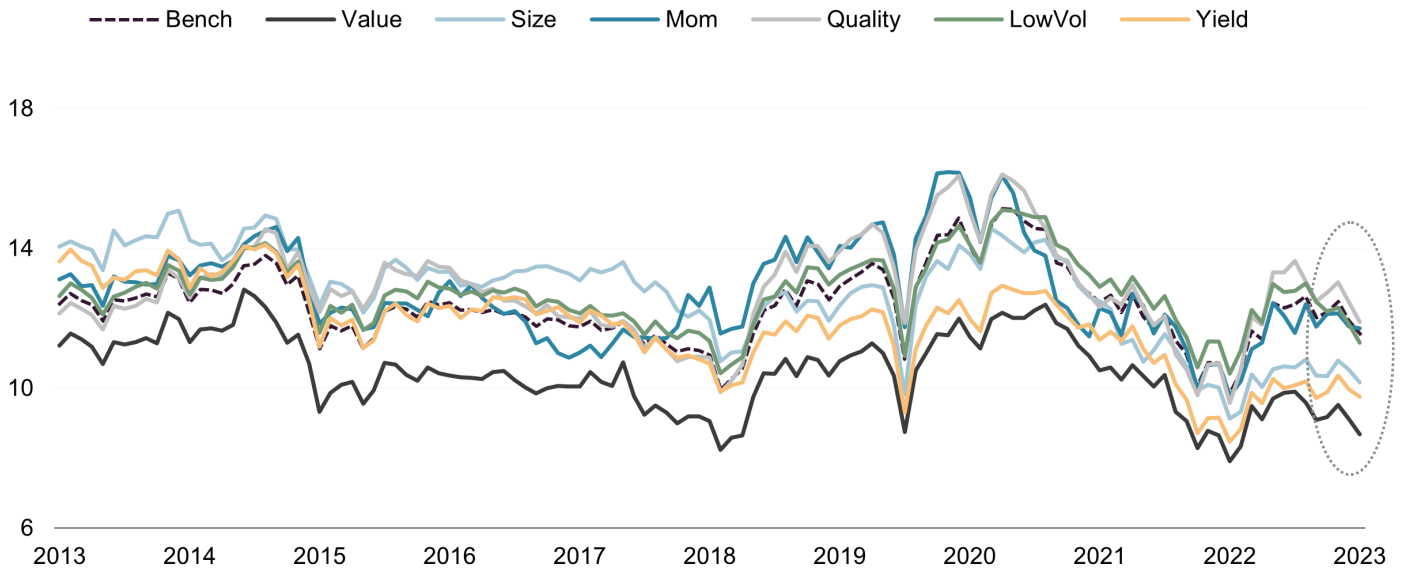


Source: FTSE Russell / Refinitiv. All data as of September 30, 2023. Results shown for regional factor returns represent hypothetical, historical performance, at Tilt 1, based on FTSE Global Equity Index Series and the FTSE Global Factor Index Series. Industry results based on Industry Classification 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.

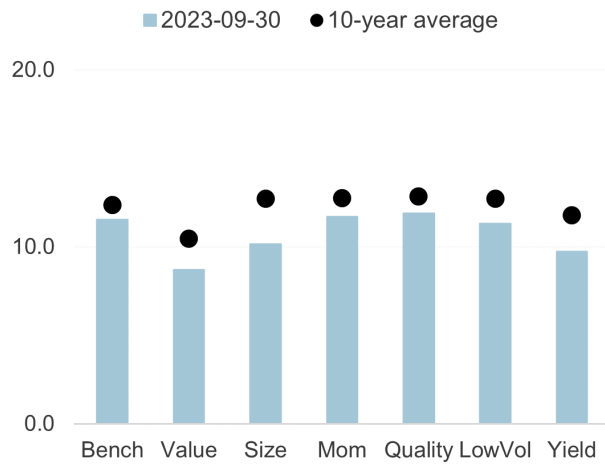
Asia Pacific ex Japan Factor Valuations

Forward P/E's fell across factors in the Q3 rout, leaving all at discounts to their 10-year averages in absolute terms. Size, Value and Yield now stand at significantly deeper discounts to the benchmark and other factors versus history. Quality and Momentum rank as the most expensive, trading in line or slightly above long-term averages relative to the market. The Quality/Value premium, at 3.2 points, remains well above its long-term average spread of 2.3 points.

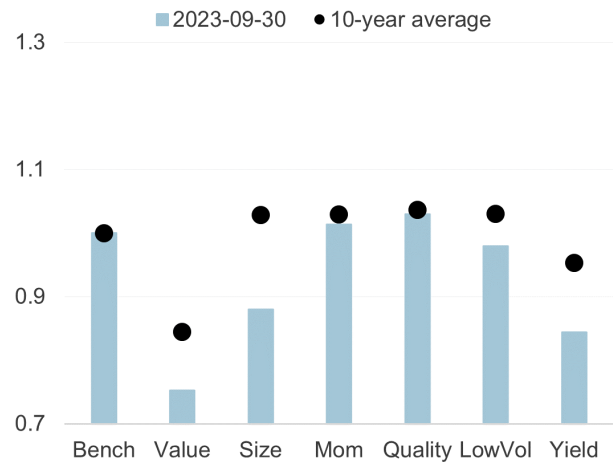
FTSE Asia Pacific ex Japan – Absolute 12M forward P/E's



Current Absolute 12M forward P/E's vs history



Current Relative 12M forward P/E's vs history



Source: FTSE Russell / Refinitiv. All data as of September 30, 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

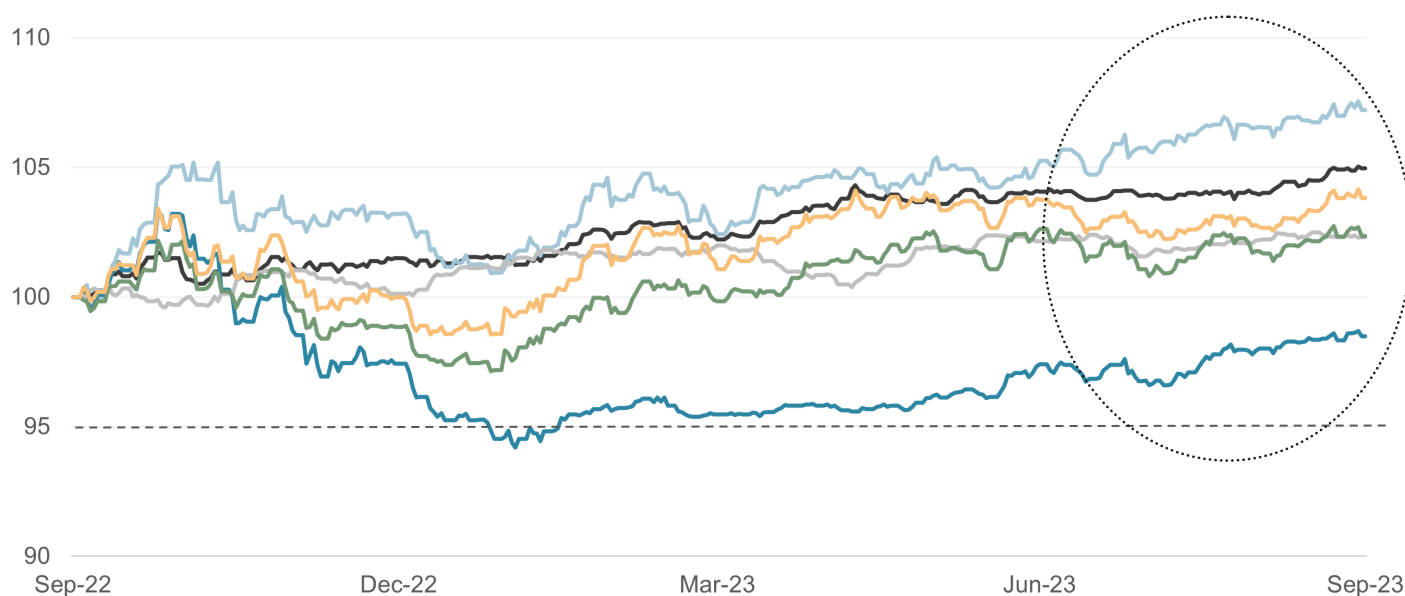
Third Quarter 2023

Key Observations

- (Small) Size advanced its long-running lead in the lackluster Q3 market backdrop, with Value coming in a close second. Low Vol was the sole underperformer. All EM factors outperformed for the 12 months, led by Size.
- Factor performances swung mostly on exposures to the selloff in Tech stocks and outperforming Financials stocks — helping Size and Value and hurting Quality. Value got an extra boost from its big overweight and positive selection effects in Energy.
- Forward P/Es across EM factors held steady in Q3, with most remaining at or close to 10-year averages in both absolute and relative terms.
- Value and Yield remain the cheapest factors, trading at slightly bigger-than-normal discounts to the market, while the Quality premium remains in line with historical averages versus the benchmark and Value.



Factor returns relative to benchmark (rebased)



Source: FTSE Russell / Refinitiv. All data as of September 30, 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.

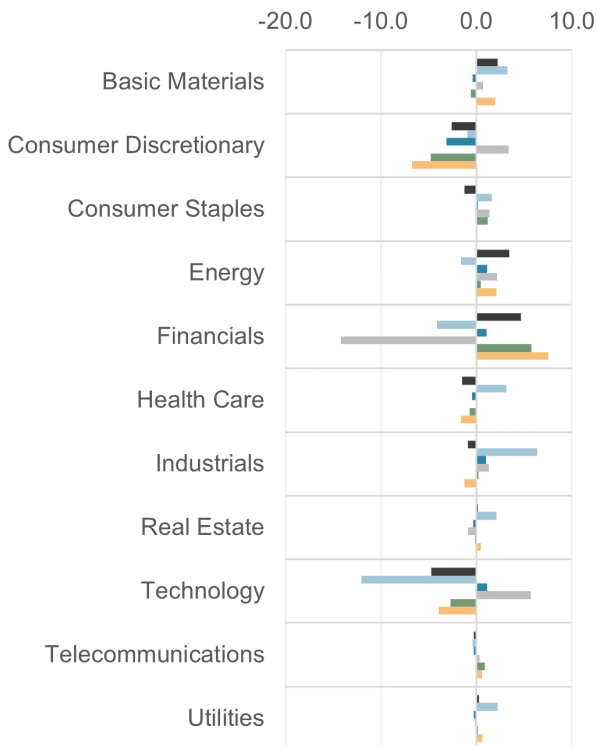
Emerging Markets Factor Performance & Industry Attribution — Q3 2023

EM Size extends winning streak amid muted Q3 factor performances

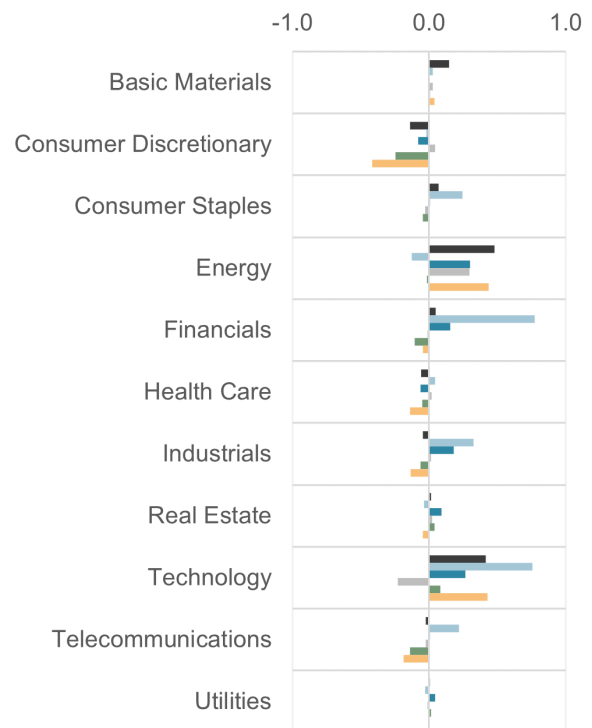
Size ranked as the best performer in Q3, followed by Value, both extending their long-running winning streaks. Only Low Vol lagged. Size benefited most from its large underweight and positive selection in Tech, as well as a bias for smaller players within Financials. Value was helped by its overweight and additive selection effects in Energy, and its Tech underweight.

2023 Q3	Relative to Benchmark (TR %)					
FTSE Emerging	Value	Size	Mom	Quality	Low Vol	Yield
-0.1%	0.9	1.9	1.1	0.2	-0.2	0.0

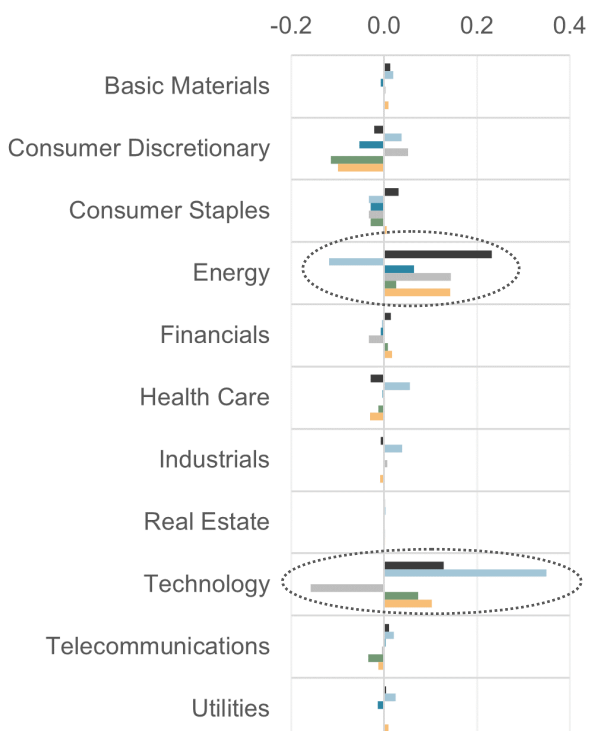
Industry active weights, Q3 2023 average



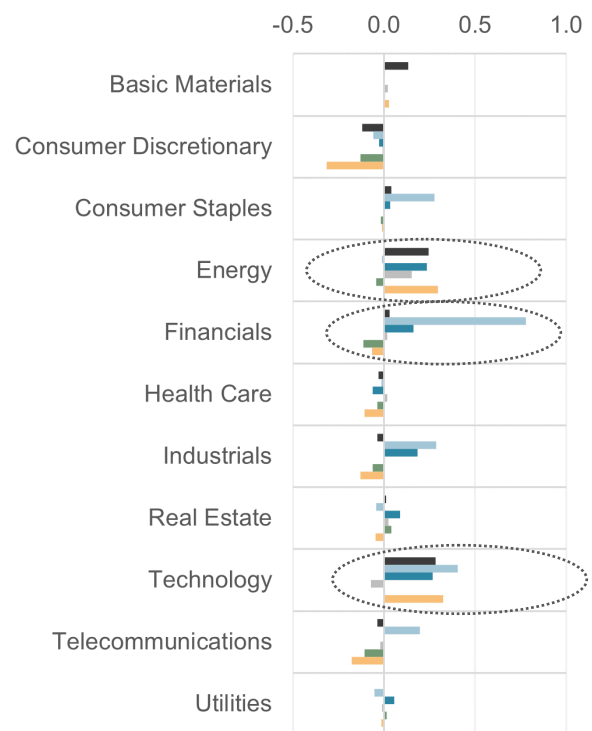
Total industry effects, Q3 2023



Industry allocation effects, Q3 2023



Selection effect within industry, Q3 2023

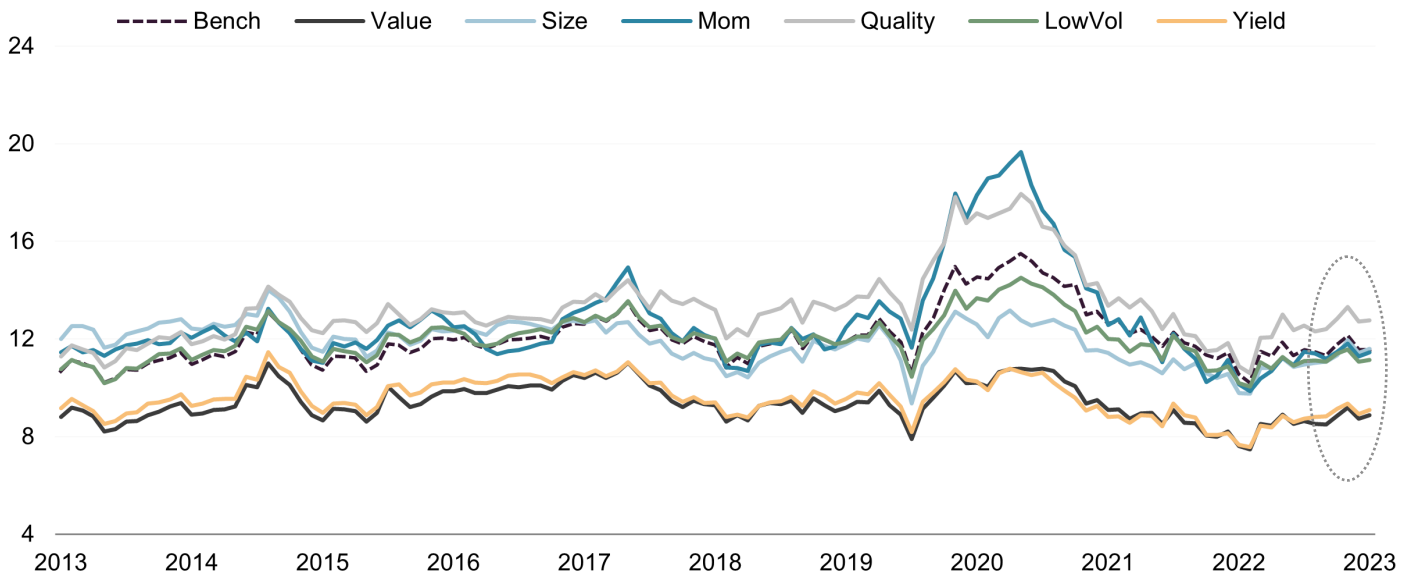


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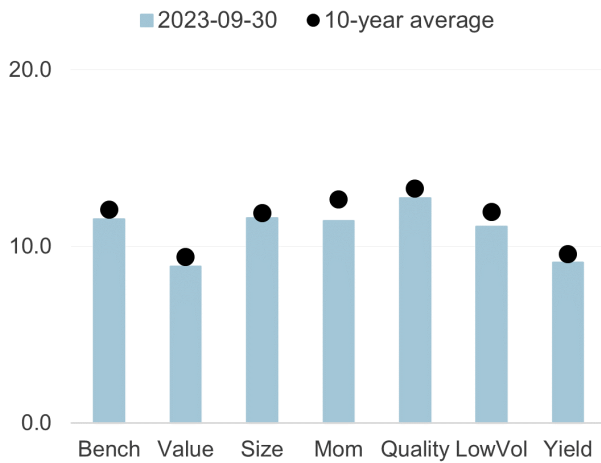
Emerging Markets Factor Valuations

Forward P/Es held steady across EM factors in Q3, but most ended 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, trading at premiums roughly in line with long-term averages relative both to the market (at 1.1) and to Value (at nearly 4 points). Following recent gains, Size now trades in line with the market, slightly higher than normal.

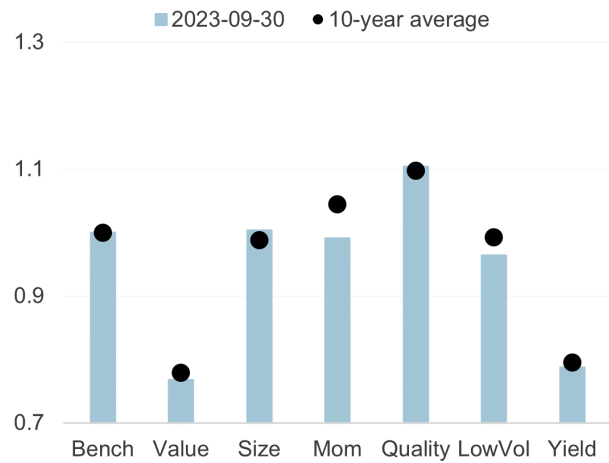
FTSE Emerging – Absolute 12M forward P/Es



Current Absolute 12M forward P/Es vs history

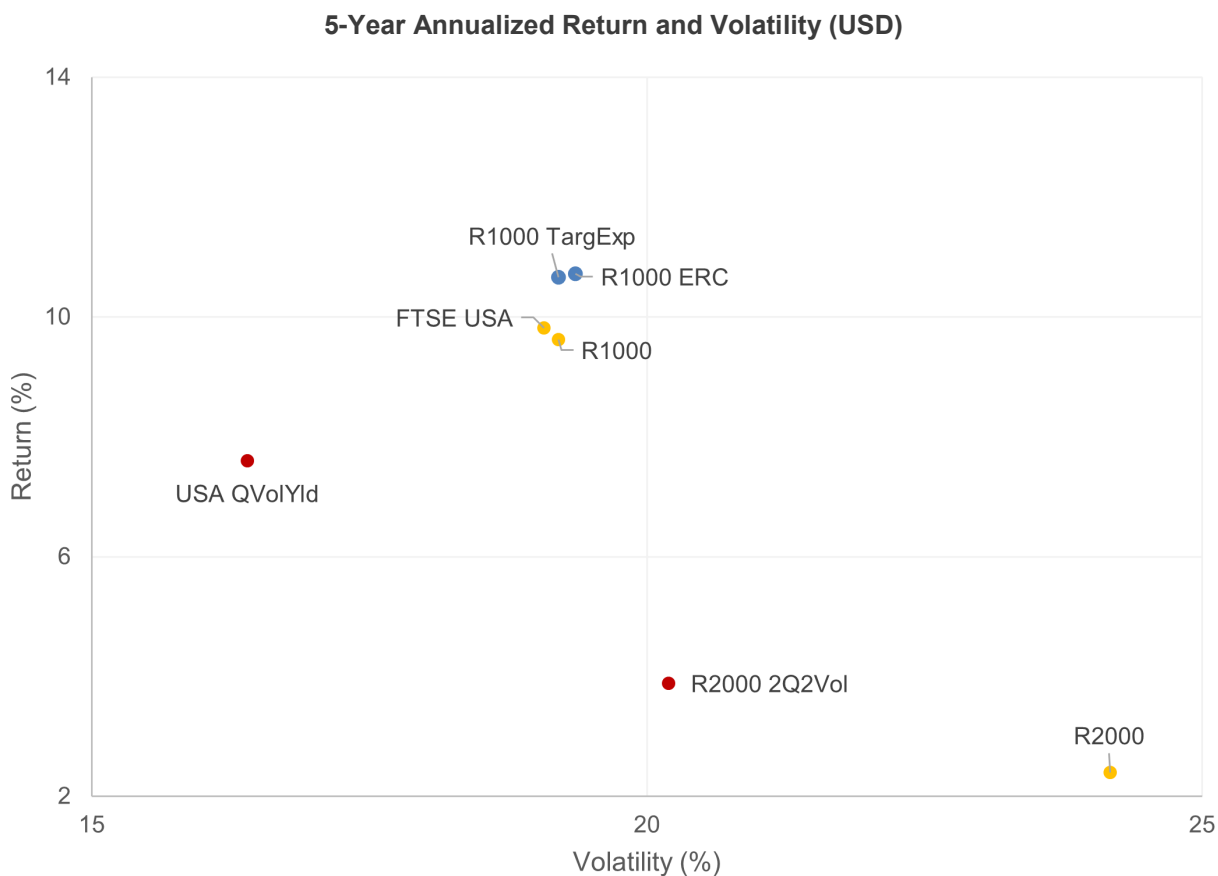


Current Relative 12M forward P/Es vs history



Source: FTSE Russell / Refinitiv. All data as of September 30, 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



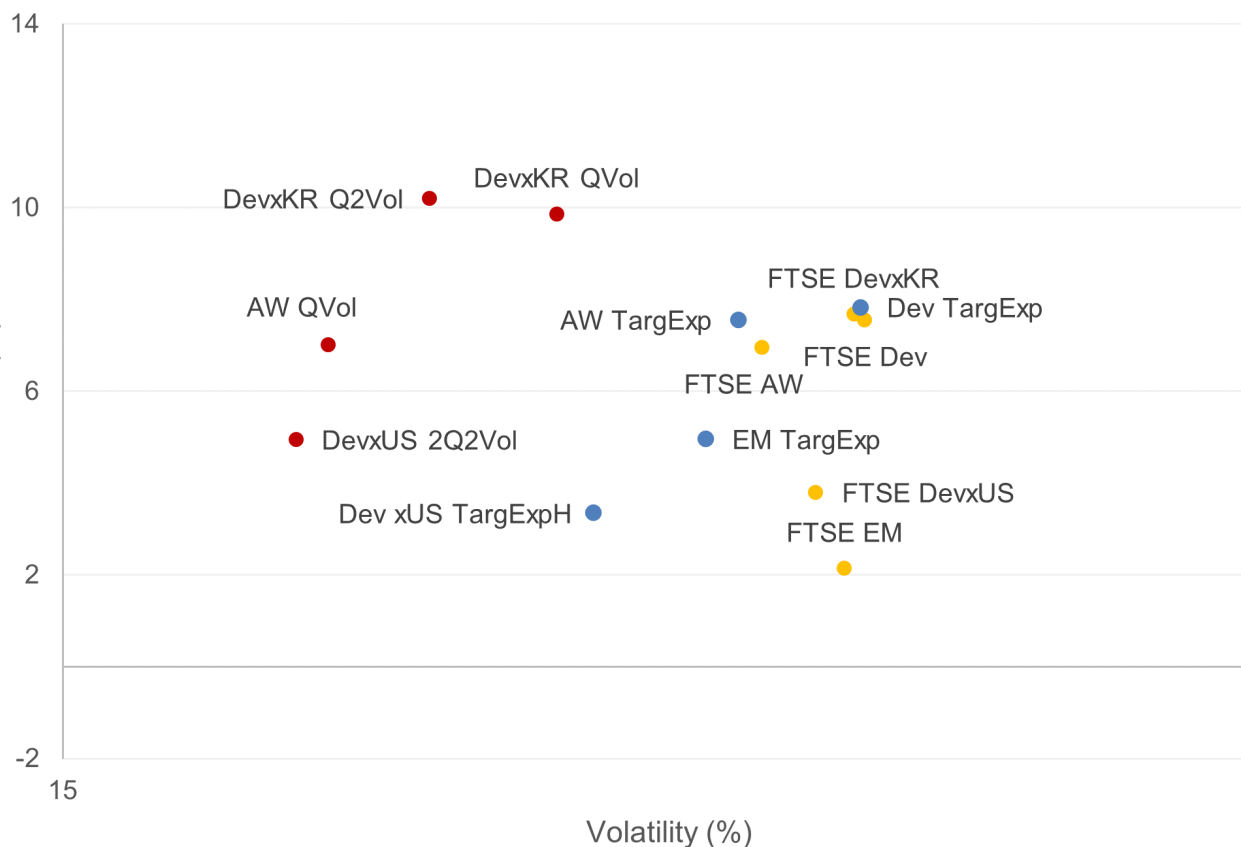
Annualized Returns and Volatility (USD %)

Label	Index	1-yr return	5-yr return	5-yr volatility
Diversified Indexes				
● R1000 ERC	Russell 1000 Comprehensive Equal Factor Risk Contribution	23.3	10.7	19.4
● R1000 TargExp	Russell 1000 Comprehensive Target Exposure Factor Index	19.0	10.7	19.2
Defensive Indexes				
● R2000 2Q2Vol	Russell 2000 2Qual/2Vol 3% Capped Factor Index	12.4	3.9	20.2
● USA QVolYld	FTSE USA Qual/Vol/Yield Factor Index	11.6	7.6	16.4
Benchmarks				
● FTSE USA	FTSE USA Index	21.8	9.8	19.1
● R1000	Russell 1000® Index	21.2	9.6	19.2
● R2000	Russell 2000® Index	8.9	2.4	24.2

Source: FTSE Russell / Refinitiv. All data as of September 30, 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	23.8	7.6	17.8
● Dev TargExp	FTSE Developed Comprehensive Target Exposure Factor Index	23.7	7.8	18.3
● Dev xUS TargExpH	FTSE Developed ex US Comprehensive High Target Exposure	25.4	3.4	17.2
● EM TargExp	FTSE Emerging Comprehensive Target Exposure Factor Index	19.3	5.0	17.7
Defensive Indexes				
● AW Qvol	FTSE All-World Target Exposure Qual Vol Factor Index	20.2	7.0	16.1
● DevxKR Q2Vol	FTSE Developed ex Korea Qual/2 Vol Factor Index	20.4	10.2	16.5
● DevxKR QVol	FTSE Developed ex Korea Qual/Vol Factor Index	21.0	9.9	17.0
● DevxUS 2Q2Vol	FTSE Developed ex US 2Qual/2Vol 5% Capped Factor Index	24.9	5.0	16.0
Benchmarks				
● FTSE AW	FTSE All-World Index	21.5	7.0	17.9
● FTSE DevxKR	FTSE Developed ex Korea Index	22.7	7.7	18.3
● FTSE DevxUS	FTSE Developed Ex US Index	24.7	3.8	18.1
● FTSE Dev	FTSE Developed Index	22.7	7.6	18.3
● FTSE EM	FTSE Emerging Index	11.1	2.1	18.2

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Important Notes and Information

Note 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.

Information on Factor Index Ground Rules and Construction Methodology

[FTSE Global Factor Index Series Ground Rules v4.4, January 2019](#)

[Factor Exposure Indexes: Index Construction Methodology \(Aug 2014\)](#)

Links to FTSE Russell Factor Research Papers

[The role of diversification return in factor portfolios \(July 2021\)](#)

[Comparing Value factor performance in global equity markets \(June 2021\)](#)

[SI indexes: Top-down targets or bottom-up aesthetics? \(June 2021\)](#)

[Do factors carry information about the economic cycle, part 2 \(Feb 2021\)](#)

[Do factors carry information about the economic cycle, part 1 \(Dec 2020\)](#)

[Russell Growth and Value indexes: the enduring utility of style \(Dec 2020\)](#)

[Inverting factor strategies: No more monkey business \(Sept 2020\)](#)

[Portfolio factor allocation schemes \(March 2020\)](#)

[Target factor exposure investment applications and solutions \(February 2020\)](#)

[Factor investing considerations: questions and answers \(Nov 2019\)](#)

[Size exposure spectrum and factor tilts \(July 2019\)](#)

[Factor behavior through the cycle \(June 2019\)](#)

[Factor valuation considerations \(Feb 2019\)](#)

[Implementation considerations for defensive strategies: A look at three approaches \(Feb 2019\)](#)

[Alternative approaches to multi-factor index construction: Like-for-like comparisons \(Nov 2018\)](#)

[Factor indexes and factor exposure matching: Like-for-like comparisons \(Oct 2018\)](#)

[Multi-factor indexes: The power of tilting \(August 2018\)](#)

[Implementation considerations for factor investing \(Mar 2018\)](#)

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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