

Closing the book on the year of the bear

December 2022

Research Signals

The bulls did not have much to celebrate at the close of the year and ultimately raised their glass to cheer conservative signals from the securities lending market and risk-off trades to round out the month of December (Table 1). In the end, stocks across major regional markets relinquished prior month gains as pressures from aggressive central bank rate hikes to fight inflation and recession fears wrapped up a rough year for global markets. Furthermore, markets will start the new year on negative economic data points such as the December J.P.Morgan Global Manufacturing PMI™ which signaled a continued downturn, with contractions in output and new work across the four largest industrial economies of mainland China, the US, the euro area and Japan.

- US: The top factor performance among both large and small caps was recorded by Short Sentiment factors including Demand Supply Ratio
- Developed Europe: 3-M Revision in FY2 EPS Forecasts turned in the highest performance last month
- Developed Pacific: The risk-off trade captured by 60-Month Beta was prevalent across the region in November
- Emerging markets: Deep Value measures including Forward 12-M EPS-to-Enterprise Value locked in a three-month string of outperformance

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Table 1

Global factor quantile return spread (%) performance snapshot, December 2022

Factor	Factor Group	US Large	US	Developed	Developed	Japan	Emerging
		Cap	Small Cap	Europe	Pacific ex Japan	Standard Cap	Markets
Book-to-Market		-1.29	0.16	1.82	5.80	6.54	3.24
Forward 12-M EPS-to-Enterprise Value	Deep Value	3.28	7.50	-0.73	-5.85	-1.90	2.08
TTM EBITDA-to-Enterprise Value		0.53	7.49	-2.44	-5.05	-2.96	1.92
TTM Free Cash Flow-to-Enterprise Value		2.90	7.17	-1.20	-1.29	-0.10	1.20
Industry Relative Leading 4-QTRs EPS to Price	Relative Value	2.80	10.33	-0.03	-3.13	-0.62	2.21
Industry Relative TTM Dividend Yield		2.74	2.63	0.41	1.29	1.39	1.23
Fixed Assets Turnover Ratio	Management Quality	-0.41	1.49	-1.03	2.48	-1.91	0.26
Inventory Turnover Ratio		-2.50	-2.82	-0.48	1.16	1.36	1.80
Net Operating Asset Turnover		0.17	-1.57	-2.32	-0.54	-3.25	0.04
Change in Accruals to Assets	Earnings Quality	0.09	-2.50	-0.98	-2.06	0.35	0.07
Change in TTM COGS vs. Inventory Level		3.59	6.79	0.98	1.79	0.52	0.72
Change in TTM Sales vs. Accounts Receivable		-2.37	-3.18	-2.35	-0.41	-1.70	0.14
Working Capital Accruals		0.10	1.27	-1.95	-4.15	-0.82	0.09
1-yr Growth in TTM Free Cash Flow	Historical Growth	0.45	1.13	-0.28	-0.12	-1.32	0.15
Reinvestment Rate		-0.73	5.37	-0.78	-8.49	-3.04	0.11
Average Monthly Trading Volume-to-Market Cap	Liquidity, Risk & Size	-7.14	-12.06	-0.49	-0.86	-0.62	0.40
60-Month Beta		6.28	5.05	1.98	15.27	7.51	3.62
Asset Quality Index		0.50	1.31	-1.07	-3.35	-1.59	1.31
Operating Leverage		-0.63	0.98	1.20	-2.94	0.15	0.21
Natural Logarithm of Market Capitalization		-3.34	-6.25	0.95	0.29	3.18	2.05
2-Year Ahead EPS Growth	Earnings Momentum	-3.06	-6.96	3.29	10.08	1.27	3.01
3-M Revision in FY2 EPS Forecasts		1.47	0.79	4.30	-1.94	-0.86	0.83
Real Earnings Surprise		1.56	3.01	-0.74	0.23	-1.36	2.28
24-Month Value at Risk	Price Momentum	5.29	5.49	1.58	-1.56	4.99	1.46
5-day Industry Relative Return		-0.43	-0.06	0.62	-7.59	-2.38	-0.88
Industry-adjusted 12-month Relative Price Strength		1.85	3.59	-0.68	-6.61	-2.27	-1.77
Rational Decay Alpha		5.62	12.36	0.79	-8.19	2.38	0.09
Demand Supply Ratio	Short Sentiment	9.30	12.92	2.50	1.84	-0.05	4.66
Implied Loan Rate		6.08	10.76	0.48	-1.33	1.00	-1.36

Source: IHS Markit

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United States

US Large Cap

US manufacturing sector ended the year with operating conditions deteriorating at the fastest rate since May 2020. The headline PMI posted at 46.2 in December, down from 47.7 in November, stemming from weak client demand which drove faster contractions in output and new orders. In equity markets, the December decline contributed to the worst year for stocks since the 2008 financial crisis.

Short Sentiment signals sat at the top of the factor performance list for large caps in December (Table 2). Utilization (9.38%) took the lead, capping a successful year with an average spread of 3.47% (Figure 1). Other strong performers include Product of Beta and Sigma (7.68%) and Std Dev of FY2 EPS Estimates-to-Price (7.19%), while the weakest performers (Table 3) include Implied Volatility (-4.63%), Natural Logarithm of Closing Price (-4.17%) and Yearly TTM Total Sales Growth Rate (-4.09%).

Table 2

US Large Cap top decile return spread factor performance, December 2022		
Factor	Decile spread (%)	Factor group
Utilization	9.38	Short Sentiment
Demand Supply Ratio	9.30	Short Sentiment
Active Utilization	9.19	Short Sentiment
Short Interest Position	8.53	Liquidity, Risk & Size
Short Interest	8.29	Short Sentiment
Product of Beta and Sigma	7.68	Liquidity, Risk & Size
Std Dev of FY2 EPS Estimates-to-Price	7.19	Earnings Momentum
Average Trading Volume in Preceding 6-month	6.98	Price Momentum
60-Day Residual Risk	6.94	Liquidity, Risk & Size
Std Dev of FY1 EPS Estimates-to-Price	6.72	Earnings Momentum
At the Money Call Option Implied Volatility	6.70	Liquidity, Risk & Size
Stock Return Volatility	6.68	Liquidity, Risk & Size
FY2 EPS Forecast Dispersion	6.29	Earnings Momentum
60-Month Beta	6.28	Liquidity, Risk & Size
24-Month Residual Return Variance	6.22	Price Momentum

Source: IHS Markit

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Figure 1

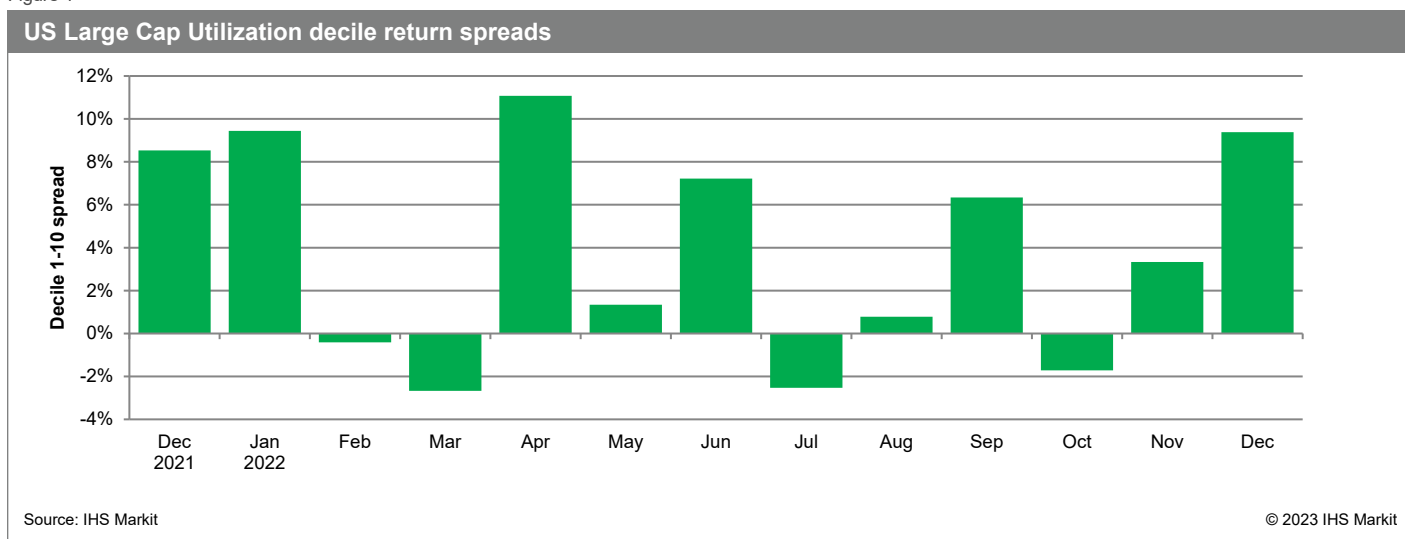


Table 3

US Large Cap bottom decile return spread factor performance, December 2022

Factor	Decile spread (%)	Factor group
Average Monthly Trading Volume-to-Market Cap	-7.14	Liquidity, Risk & Size
Cash-to-Price	-5.93	Deep Value
Cash to Enterprise Value	-5.70	Deep Value
Implied Volatility	-4.63	Liquidity, Risk & Size
Industrial Production Sensitivity	-4.29	Macro
Natural Logarithm of Closing Price	-4.17	Liquidity, Risk & Size
1-Year Growth of Quarterly Regular Dividend	-4.12	Historical Growth
Yearly TTM Total Sales Growth Rate	-4.09	Historical Growth
Standardized Unexpected Cash Flow	-3.74	Earnings Momentum
2-Year Ahead Regular Dividend growth	-3.46	Dividend Forecast

Source: IHS Markit © 2023 IHS Markit

US Small Cap

Short Sentiment signals were also key performing signals among small caps in December (Table 4), led by Utilization (14.06%). Price Momentum metrics followed closely behind, as represented by Rational Decay Alpha (12.36%). On the other hand, factors which trailed for the month (Table 5) include Implied Volatility (-8.11%), marking its second consecutive month on the list and extending its string of underperformance to a four-month period (Figure 2).

Table 4

US Small Cap top decile return spread factor performance, December 2022		
Factor	Decile spread (%)	Factor group
Utilization	14.06	Short Sentiment
Demand Supply Ratio	12.92	Short Sentiment
Rational Decay Alpha	12.36	Price Momentum
Short Interest	11.95	Short Sentiment
Fama-French Momentum	11.86	Price Momentum
4-52 Week Price Oscillator	11.07	Price Momentum
52-Week High	10.96	Price Momentum
Active Utilization	10.76	Short Sentiment
Implied Loan Rate	10.76	Short Sentiment
26-Week Relative Price Strength	10.46	Price Momentum
12-Month Active Return with 1-month Lag	10.41	Price Momentum
Industry Relative Leading 4-QTRs EPS to Price	10.33	Relative Value
50-200 Day Stock Price Ratio	10.32	Price Momentum
2-Year Trough Gross Margin	10.23	Management Quality
At the Money Call Option Implied Volatility	10.19	Liquidity, Risk & Size

Source: IHS Markit

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Figure 2

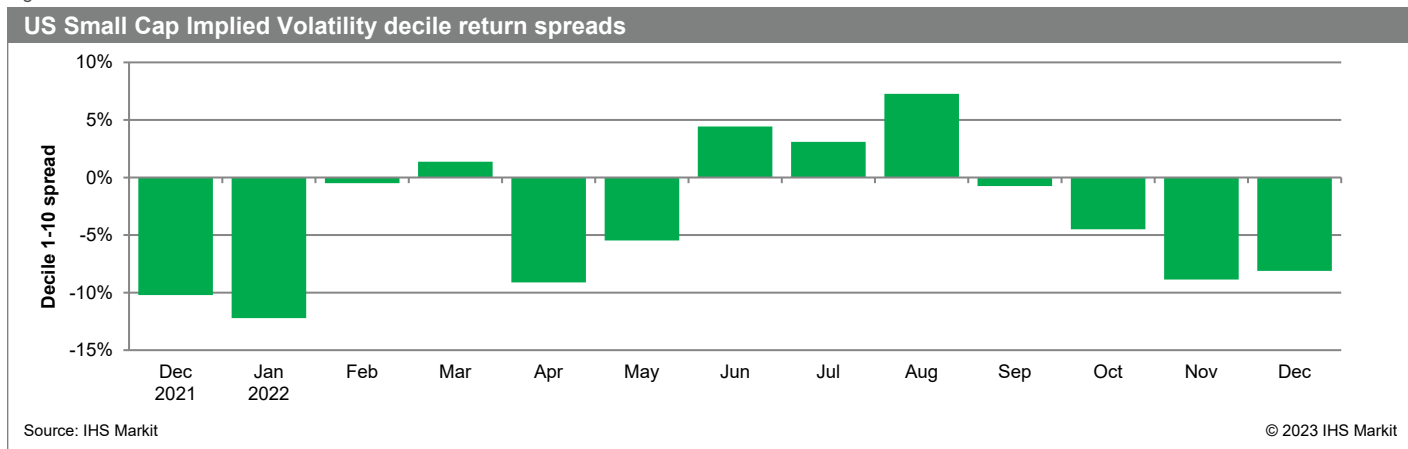


Table 5

US Small Cap bottom decile return spread factor performance, December 2022		
Factor	Decile spread (%)	Factor group
Average Monthly Trading Volume-to-Market Cap	-12.06	Liquidity, Risk & Size
Natural Logarithm of Closing Price	-11.82	Liquidity, Risk & Size
Aggregate Gamma	-8.21	Liquidity, Risk & Size
Implied Volatility	-8.11	Liquidity, Risk & Size
3-Month Active Return	-7.72	Price Momentum
2-Year Ahead EPS Growth	-6.96	Earnings Momentum
Advertising Intensity	-6.63	Management Quality
Current Liabilities-to-Price	-6.62	Liquidity, Risk & Size
Natural Logarithm of Market Capitalization	-6.25	Liquidity, Risk & Size
On Loan Value Concentration	-5.97	Short Sentiment

Source: IHS Markit

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Europe

The downturn in the eurozone manufacturing sector continued to ease in December, with the PMI posting at 47.8, up from 47.1 in December, on softening inflationary pressures and more stable supply-chain conditions. All the monitored eurozone nations once again recorded readings in contraction territory, though with easing downturns with just one exception from Greece. In equity markets, stocks snapped a two-month winning streak, finishing the year with the largest annual decline since 2018.

Several Earnings Momentum metrics were among the top performing factors in Developed Europe in December (Table 6). 3-M Revision in FY2 EPS Forecasts (4.30%) resided at the uppermost extreme, with a 7.09 percentage point month-on-month bounce in performance (Figure 3). Valuation measures also outperformed, including Price-to-Total Assets (3.36%) and 36-Month Active Return with 1-Month Lag (2.50%), a long-term price reversal measure. At the opposite end of the spectrum, factors which underperformed last month (Table 7) include several measures of growth such as 3-yr Compound Annual Sales Growth (-2.93%).

Table 6

Developed Europe top decile return spread factor performance, December 2022

Factor	Decile spread (%)	Factor group
3-M Revision in FY2 EPS Forecasts	4.30	Earnings Momentum
1-Month Stock Return Interquartile Range	3.81	Liquidity, Risk & Size
Reciprocal of Dividend Yield-adjusted PEG	3.45	Earnings Momentum
Price-to-Total Assets	3.36	Deep Value
2-Year Ahead EPS Growth	3.29	Earnings Momentum
Tobin q	3.17	Liquidity, Risk & Size
Utilization	3.03	Short Sentiment
1-Month Realized Stock Return Volatility	2.95	Liquidity, Risk & Size
20-Day Volume Volatility to Price Volatility	2.68	Liquidity, Risk & Size
Inverse of PEG Ratio	2.55	Earnings Momentum
36-Month Active Return with 1-Month Lag	2.50	Price Momentum
Demand Supply Ratio	2.50	Short Sentiment
Leading 12 Month Book Yield	2.47	Deep Value
Price-to-Book Return-on-Equity Combination	2.46	Deep Value
24-Month Residual Return Variance	2.42	Price Momentum

Source: IHS Markit

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Figure 3

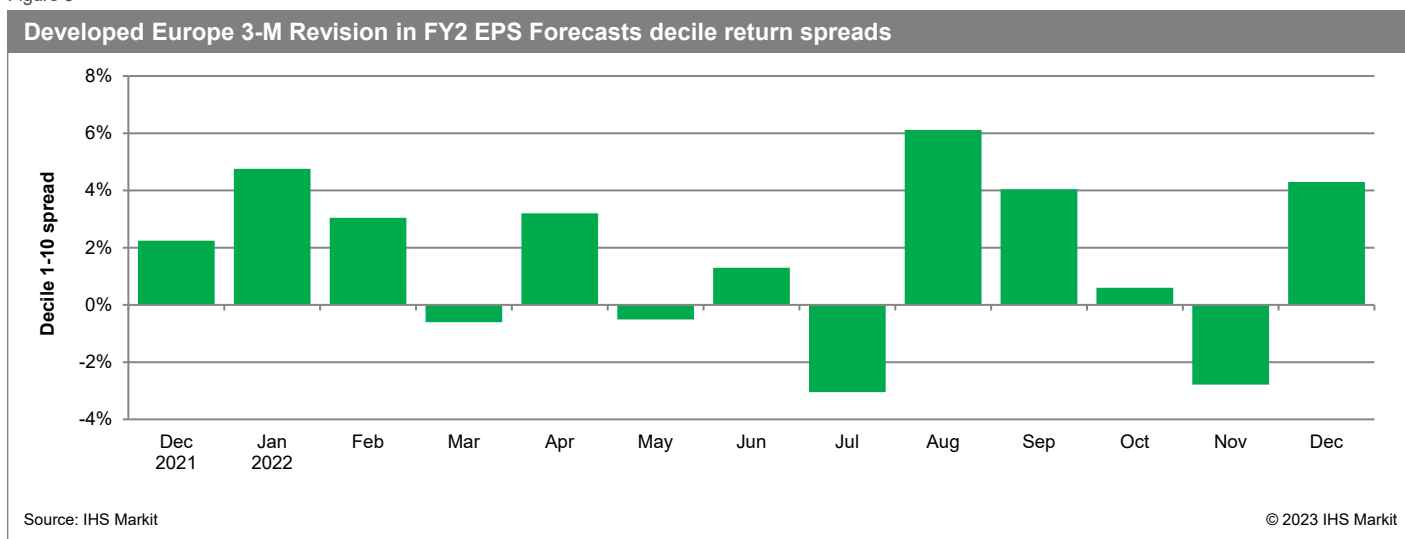


Table 7

Developed Europe bottom decile return spread factor performance, December 2022

Factor	Decile spread (%)	Factor group
3-yr Compound Annual Sales Growth	-2.93	Historical Growth
Housing Starts Sensitivity	-2.81	Macro
EBITDA-to-Debt	-2.78	Liquidity, Risk & Size
1-yr Chg in Assets-adj TTM Oper Cash Flow	-2.66	Historical Growth
Asia-Pacific Sales Exposure	-2.46	Macro
Unexpected Change in Accounts Receivable	-2.45	Earnings Quality
TTM EBITDA-to-Enterprise Value	-2.44	Deep Value
1-yr Change in Asset Turnover Ratio	-2.41	Historical Growth
Short Concentration Ratio	-2.40	Short Sentiment
Change in TTM Sales vs. Accounts Receivable	-2.35	Earnings Quality

Source: IHS Markit © 2023 IHS Markit

Asia-Pacific

Manufacturing operating conditions in the two largest Asian economies of China and Japan remained in contraction territory in December. In Japan, the PMI edged lower to 48.9, from 49.0 in November, as output and new orders contracted. In China, the manufacturing PMI signaled a further slight contraction, registering at 49.0 in December, from 49.4 in November, as total new orders fell at a quicker pace. Stocks in both nations declined in December, with Japan suffering steeper losses for the month, while maintaining a milder decline for the year.

In developed markets outside Japan, risk measures and long-term price reversal metrics were among the top performing factors in December (Table 8), represented by factors such as 36-Month Active Return with 1-Month Lag (16.67%) and 60-Month Beta (15.27%), respectively. The weakest performing factors for the month (Table 9) included several medium-term Price Momentum measures, topped by 24-Month Active Return with 1-Month Lag (-15.94%) which had a combined two-month spread of -35.02% (Figure 4).

In Japan, risk measures also outperformed, sitting alongside Deep Value on the list of outperforming factors in December (Table 10). Price-to-Total Assets (9.39%) topped the list, while 60-Month Beta (7.51%) traversed to the leaderboard (Figure 5) after two months on the laggard board (Table 11) which is now occupied by a handful of Management Quality measures such as Return on Assets (-7.57%) and Profitability Ratio (-6.84%).

Table 8

Developed Pacific exJapan top decile return spread factor performance, December 2022		
Factor	Decile spread (%)	Factor group
36-Month Active Return with 1-Month Lag	16.67	Price Momentum
60-Month Beta	15.27	Liquidity, Risk & Size
60-Month Active Return with 1-Month Lag	14.89	Price Momentum
60-Month Alpha	13.47	Price Momentum
60-Month Active Return with 12-Month Lag	12.68	Price Momentum
6-Month Nominal Change in 12-Month Alpha	12.31	Price Momentum
Market Volatility Sensitivity	11.38	Macro
2-Year Ahead EPS Growth	10.08	Earnings Momentum
Product of Beta and Sigma	10.08	Liquidity, Risk & Size
Average Trading Volume in Preceding 6-month	9.99	Price Momentum
1-yr Change in Total Assets	9.70	Historical Growth
Altman Z Score	9.52	Liquidity, Risk & Size
Trading Turnover Ratio	8.72	Liquidity, Risk & Size
3-yr Compound Annual TTM EPS after Extra Items-to-Price Growth Rate	8.65	Historical Growth
Earnings Shortfall	7.41	Earnings Quality

Source: IHS Markit

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Table 9

Developed Pacific exJapan bottom decile return spread factor performance, December 2022		
Factor	Decile spread (%)	Factor group
24-Month Active Return with 1-Month Lag	-15.94	Price Momentum
18-Month Active Return with 1-Month Lag	-14.61	Price Momentum
30-75 Week Stock Price Ratio	-11.83	Price Momentum
1-Month Active Return	-11.28	Price Momentum
3-yr Growth in TTM Earnings per Share	-9.93	Historical Growth
39-Week Return with 4-week Lag	-9.63	Price Momentum
3 Year Change in Gross Profit to Assets	-9.60	Management Quality
3-yr Change in Assets-adj TTM Cash Flow	-9.44	Historical Growth
3-yr Growth in TTM Cash Flow	-9.14	Historical Growth
1-Month Stock Return Interquartile Range	-8.82	Liquidity, Risk & Size

Source: IHS Markit

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Figure 4

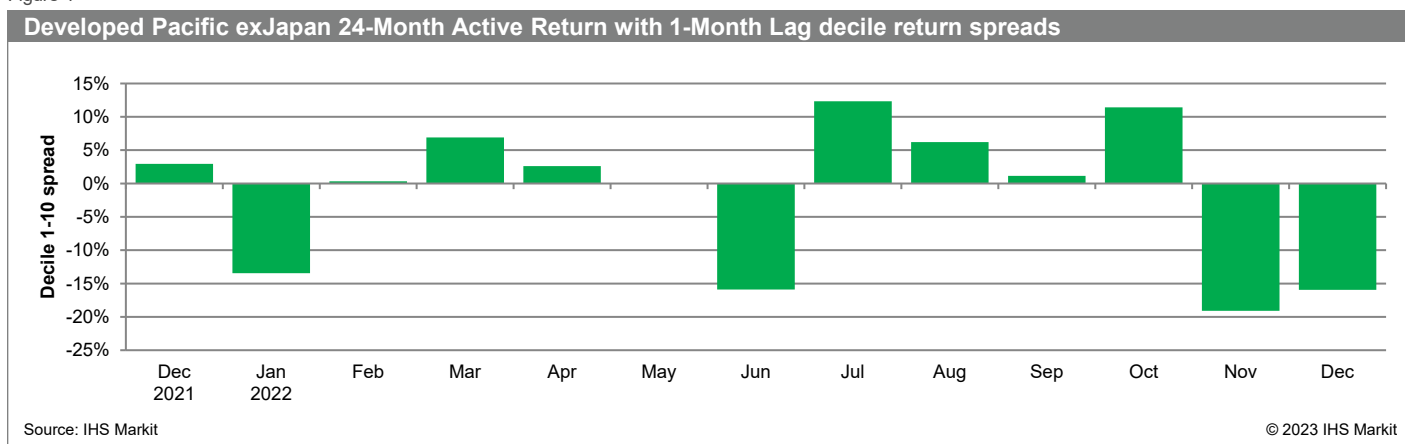


Table 10

Japan Standard Cap top decile return spread factor performance, December 2022

Factor	Decile spread (%)	Factor group
Price-to-Total Assets	9.39	Deep Value
Tobin q	9.08	Liquidity, Risk & Size
Acquisition Multiple	8.48	Deep Value
60-Month Active Return with 12-Month Lag	8.02	Price Momentum
Net Asset Value to Price	7.91	Deep Value
Product of Beta and Sigma	7.64	Liquidity, Risk & Size
60-Month Beta	7.51	Liquidity, Risk & Size
Book Leverage	7.42	Liquidity, Risk & Size
Market Leverage	6.84	Liquidity, Risk & Size
1-Month Realized Stock Return Volatility	6.65	Liquidity, Risk & Size
Natural Logarithm of Total Assets (USD)	6.63	Liquidity, Risk & Size
Book-to-Market	6.54	Deep Value
Leading 12 Month Book Yield	6.11	Deep Value
1-Month Stock Return Interquartile Range	6.04	Liquidity, Risk & Size
Capital Expenditure-to-Total Assets	5.90	Management Quality

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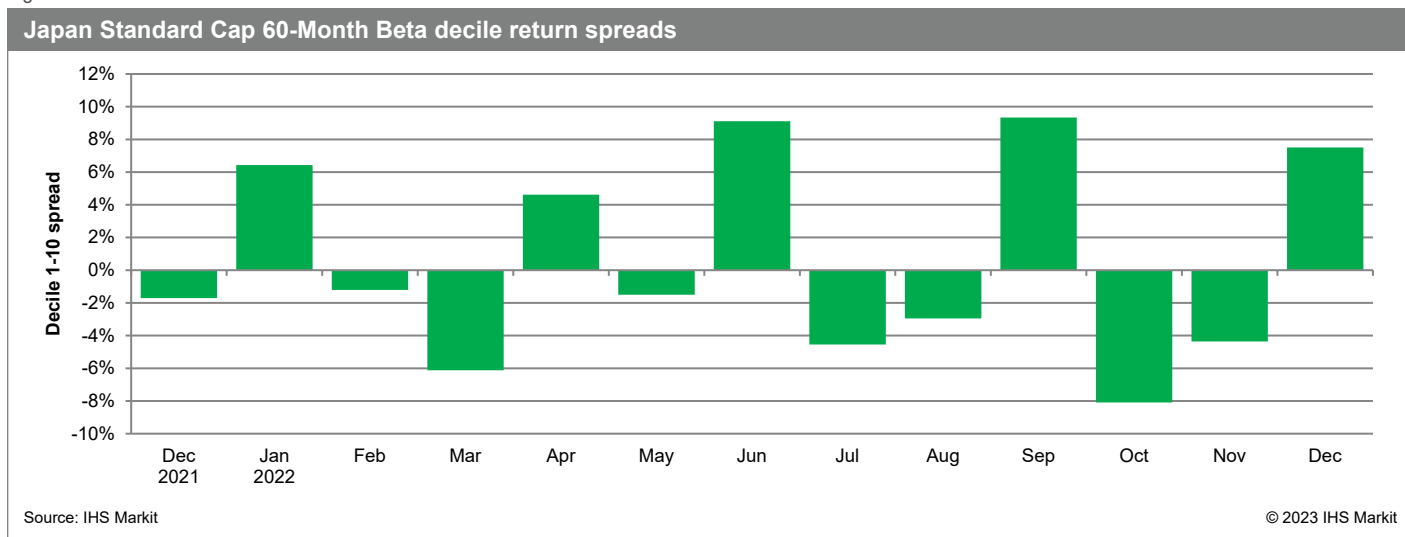
Table 11

Japan Standard Cap bottom decile return spread factor performance, December 2022

Factor	Decile spread (%)	Factor group
Cash Flow Return on Invested Capital	-8.74	Management Quality
Return on Assets	-7.57	Management Quality
Profitability Ratio	-6.84	Management Quality
EBITDA-to-Debt	-6.48	Liquidity, Risk & Size
Return on Invested Capital	-6.24	Management Quality
Cash Flow Leverage	-6.14	Liquidity, Risk & Size
Forward Return on Equity	-6.02	Management Quality
Debt to Market Cap	-5.88	Liquidity, Risk & Size
Number of Analyst Coverage	-5.67	Liquidity, Risk & Size
Cash Earnings Return On Equity	-5.55	Management Quality

Source: IHS Markit © 2023 IHS Markit

Figure 5



Emerging Markets

We round out the report with a review of top (Table 12) and bottom (Table 13) performing factors in emerging markets in December. Medium-term Price Momentum measures were juxtaposed with long-term price reversal metrics such as 60-Month Active Return with 12-Month Lag (4.21%) on the leaderboard. 6-Month Nominal Change in 12-Month Alpha (4.75%) was the most highly rewarded factor, extending its positive trend in performance which has been characterized by positive spreads in all but two months last year (Figure 6). Conversely, factors which underperformed last month include Std Dev of FY2 EPS Estimates-to-Price (-3.66%) and Change in QTR Sales vs Gross Margin (-2.85%).

Table 12

Emerging Markets top quintile return spread factor performance, December 2022		
Factor	Decile spread (%)	Factor group
6-Month Nominal Change in 12-Month Alpha	4.75	Price Momentum
6-Month Nominal Change in 18-Month Alpha	4.43	Price Momentum
60-Month Active Return with 12-Month Lag	4.21	Price Momentum
60-Month Active Return with 1-Month Lag	4.00	Price Momentum
Stock Illiquidity	3.97	Liquidity, Risk & Size
36-Month Active Return with 1-Month Lag	3.90	Price Momentum
Time Weighted Earnings Yield	3.83	Deep Value
60-Month Alpha	3.63	Price Momentum
60-Month Beta	3.62	Liquidity, Risk & Size
Slope of 52 Week Price Trend Line	3.54	Price Momentum
Graham Number Fair Value Premium	3.53	Deep Value
Leading 12 Month Book Yield	3.49	Deep Value
1-Year Price Momentum Indicator	3.42	Price Momentum
26-Week Relative Price Strength	3.36	Price Momentum
6-Month Nominal Change in 36-Month Alpha	3.27	Price Momentum

Source: IHS Markit

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Figure 6

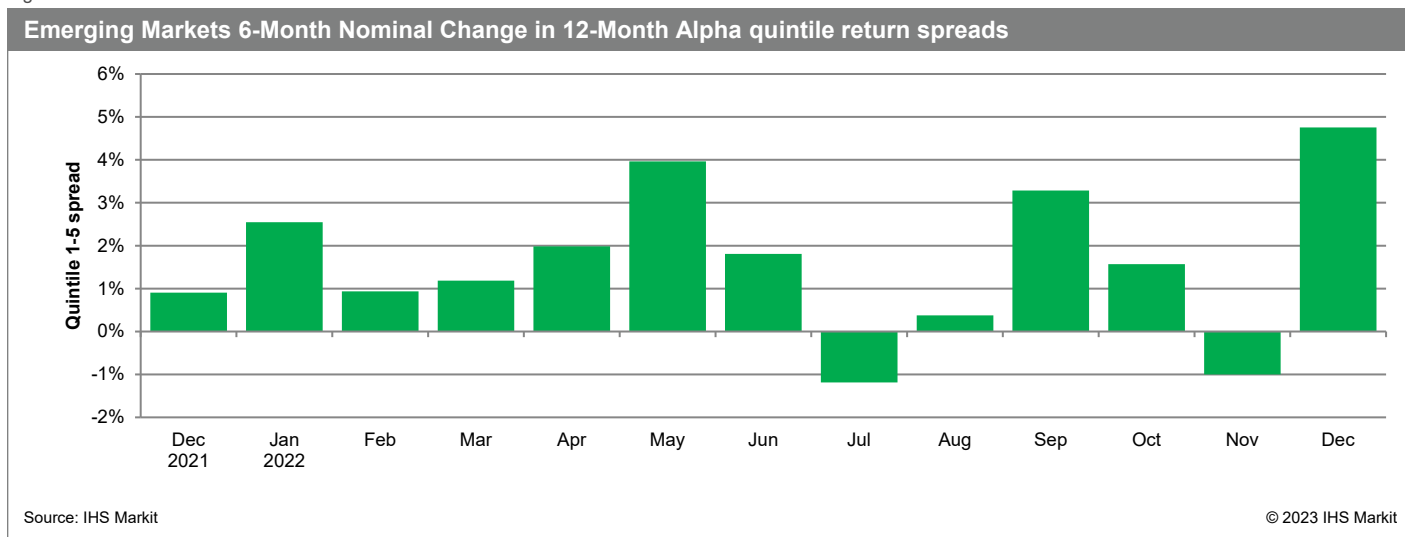


Table 13

Factor	Decile spread (%)	Factor group
Std Dev of FY2 EPS Estimates-to-Price	-3.66	Earnings Momentum
Yield Curve Slope Sensitivity	-2.99	Macro
4-week Industry Relative Return	-2.94	Price Momentum
Change in QTR Sales vs. Gross Margin	-2.85	Earnings Quality
Std Dev of FY1 EPS Estimates-to-Price	-2.74	Earnings Momentum
14 Day Relative Strength Index	-2.71	Price Momentum
3-Month Active Return	-2.64	Price Momentum
Price Above Last 260-day Lowest Trading Price	-2.38	Price Momentum
Average Payable Period	-2.33	Management Quality
Total Coverage	-2.27	Liquidity, Risk & Size

Source: IHS Markit © 2023 IHS Markit

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