

Should auld volatility be forgot

December 2018

Research Signals

Traders rang in the New Year to the tune of “Auld Lang Syne”, as they bid farewell to a rough year for stocks. Regional markets were in harmony with the risk-off trade, as trade wars and slowing economic growth gave global equity investors reason to be concerned. In turn, low beta, low value at risk and short sentiment signals were consistently positive indicators across all our coverage universes (Table 1). The economic outlook for the coming year is set by the common refrain of the J.P.Morgan Global Manufacturing PMI which fell to a 27-month low last month, as international trade flows deteriorated, rates of growth in new orders slowed and business confidence dropped to its lowest level in the series history.

- US: For large caps, 60-Month Beta posted a cumulative spread of 24.5% over the past three months
- Developed Europe: 3-M Revision in FY2 EPS Forecasts returned to its winning ways, reaching its highest spread for the year
- Developed Pacific: 24-Month Value at Risk posted strong performance, particularly in Japanese markets
- Emerging markets: Valuation swung full cycle from a positive to a negative indicator, as displayed by factors such as TTM EBITDA-to-Enterprise Value

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Table 1

Global factor quantile return spread performance snapshot, Dec 2018

Factor	Factor Group	US Large Cap	US Small Cap	Developed Europe	Developed Pacific ex Japan	Japan Standard Cap	Emerging Markets
Book-to-Market		-3.88	-2.11	-1.51	2.60	1.30	-1.36
Forward 12-M EPS-to-Enterprise Value	Deep Value	-0.43	6.81	2.78	1.65	-0.60	-0.62
TTM EBITDA-to-Enterprise Value		-1.67	4.64	2.66	2.86	0.78	-1.41
TTM Free Cash Flow-to-Enterprise Value		0.20	6.49	1.73	0.31	0.80	-0.73
Industry Relative Leading 4-QTRs EPS to Price	Relative Value	-3.79	-1.38	1.17	2.57	-0.96	-1.13
Industry Relative TTM Dividend Yield		1.33	0.45	1.81	1.02	-0.32	-1.05
Fixed Assets Turnover Ratio	Management Quality	-1.78	3.34	-0.32	-3.77	-10.32	0.06
Inventory Turnover Ratio		-2.34	-1.71	-1.08	-2.11	-1.06	0.93
Net Operating Asset Turnover		-0.10	2.21	-0.53	-2.04	-5.59	-0.56
Change in Accruals to Assets	Earnings Quality	0.29	0.19	-0.43	0.11	1.86	-0.34
Change in TTM COGS vs. Inventory Level		2.75	-0.41	0.57	-1.40	2.86	1.15
Change in TTM Sales vs. Accounts Receivable		-1.92	-0.85	0.53	-1.47	0.10	-0.14
Working Capital Accruals		-1.39	0.46	0.20	1.56	-1.73	0.84
1-yr Growth in TTM Free Cash Flow	Historical Growth	0.13	2.05	0.78	-0.01	0.79	0.52
Reinvestment Rate		1.90	5.94	4.55	2.69	-5.84	-0.18
Average Monthly Trading Volume-to-Market Cap	Liquidity, Risk & Size	-4.63	-11.66	-1.03	-4.79	-9.46	-5.80
60-Month Beta		6.85	8.61	5.53	3.59	7.06	3.39
Asset Quality Index		-0.78	-0.82	-1.64	0.59	-0.90	-0.16
Operating Leverage		-0.79	-1.28	0.24	-0.89	-1.18	-0.40
Natural Logarithm of Market Capitalization		-3.54	-7.90	-1.53	-3.59	-4.41	-3.00
2-Year Ahead EPS Growth	Earnings Momentum	-4.42	-3.70	-3.56	-2.14	-1.09	1.03
3-M Revision in FY2 EPS Forecasts		0.22	2.45	2.96	-1.03	-0.10	1.06
Real Earnings Surprise		-0.94	1.05	-0.18	0.57	-0.29	-0.41
24-Month Value at Risk	Price Momentum	5.55	12.47	6.04	4.91	11.15	1.89
5-day Industry Relative Return		1.57	-3.44	1.83	-0.31	5.04	3.02
Industry-adjusted 12-month Relative Price Strength		2.91	4.34	1.50	-1.14	1.66	-0.97
Rational Decay Alpha		1.23	2.38	-0.86	-1.93	-1.83	-0.81
Demand Supply Ratio	Short Sentiment	3.90	8.84	4.74	3.60	4.84	1.47
Implied Loan Rate		1.05	6.38	2.45	2.96	3.91	1.46

Source: IHS Markit

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United States

US Large Cap

US manufacturers saw slower, albeit still solid improvement in business conditions. The December manufacturing PMI registered at a 15-month low of 53.8, down from 55.3 in November. Notably, business confidence fell to the lowest since October 2016, inflationary pressures eased and the pace of new order growth was the weakest since September 2017. Stocks, meanwhile, posted the weakest December return since 1931, capping the biggest annual slide since the financial crisis.

Volatility-based measures dominated the factor performance leaderboard in the US Large Cap universe for a third month in December (Table 2), with repeat appearances by measures such as 60-Day Residual Risk (7.14%), 24-Month Residual Return Variance (6.45%) and Product of Beta and Sigma (7.55%) which moved to the top position in December. The latter, which is a measure of a stock's systematic and total risk, saw a cumulative spread of 27.4% over the last three months of 2018 (Figure 1), compared with -3.7% in the remainder of the year. Yield Curve Slope Sensitivity (-8.37%) was the weakest performing factor for the month (Table 3), followed by short and long term price reversal metrics represented by 2-Month Active Return (-5.83%) and 36-Month Sharpe Ratio (-5.17%), respectively.

Table 2

US Large Cap top decile return spread factor performance, Dec 2018

Factor	Decile spread (%)	Factor group
Product of Beta and Sigma	7.55	Liquidity, Risk & Size
60-Day Residual Risk	7.14	Liquidity, Risk & Size
60-Month Beta	6.85	Liquidity, Risk & Size
Short Loan Concentration	6.82	Short Sentiment
CV of Prior 90-Day Closing Prices	6.51	Price Momentum
24-Month Residual Return Variance	6.45	Price Momentum
1-Month Realized Stock Return Volatility	6.34	Liquidity, Risk & Size
Latin America Sales Exposure	6.24	Macro
Short Interest Position	6.10	Liquidity, Risk & Size
At the Money Put Option Implied Volatility	6.09	Liquidity, Risk & Size
At the Money Call Option Implied Volatility	6.02	Liquidity, Risk & Size
20-Day Volume Volatility to Price Volatility	5.63	Liquidity, Risk & Size
52-Week High	5.62	Price Momentum
Short Interest	5.60	Short Sentiment
24-Month Value at Risk	5.55	Price Momentum

Source: IHS Markit

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Figure 1

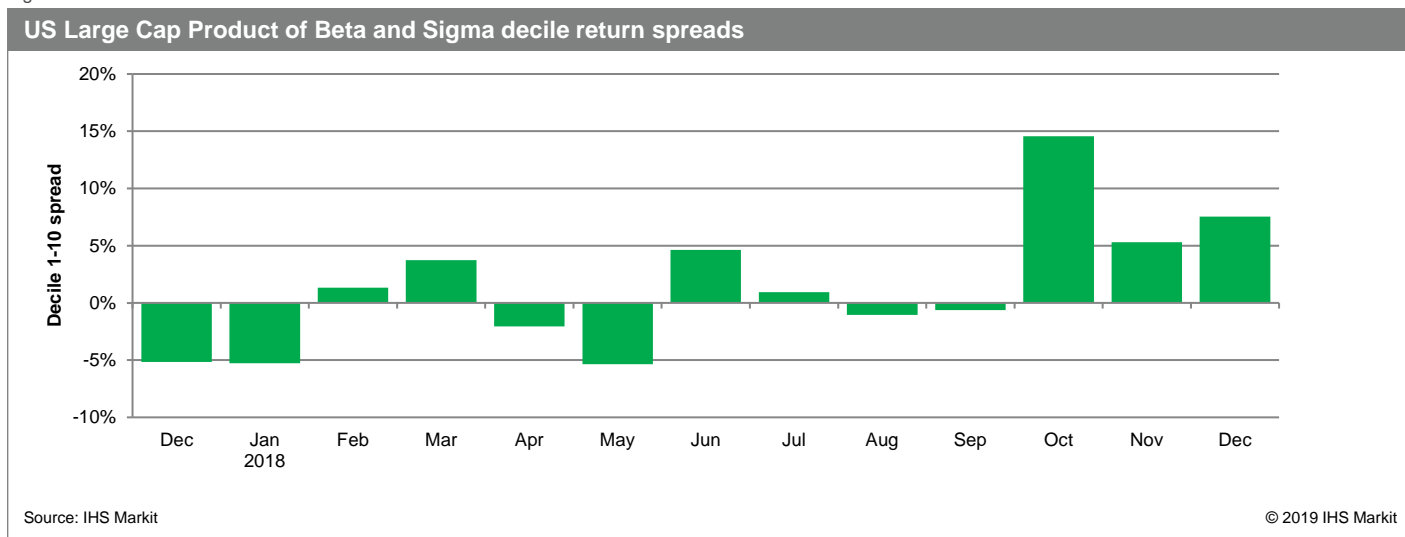


Table 3

Factor	Decile spread (%)	Factor group
Yield Curve Slope Sensitivity	-8.37	Macro
2-Month Active Return	-5.83	Price Momentum
3-Month Active Return	-5.37	Price Momentum
Leading 12 Month Book Yield	-5.21	Deep Value
36-Month Sharpe Ratio	-5.17	Price Momentum
60-Month Alpha	-5.01	Price Momentum
Time Weighted Book Yield	-4.92	Deep Value
Average Monthly Trading Volume-to-Market Cap	-4.63	Liquidity, Risk & Size
Sortino Ratio	-4.62	Price Momentum
5-yr Relative Leading 12-Month Earnings Yield	-4.61	Relative Value

Source: IHS Markit © 2019 IHS Markit

US Small Cap

Small caps faced similar exposures as with large caps among top (Table 4) and bottom (Table 5) performing factors in December. For example, outperforming factors included 24-Month Value at Risk (12.47%) and Product of Beta and Sigma (11.48%), while 60-Month Alpha (-12.27%) and 3-Month Active Return (-10.25%) underperformed. Of particular note, however, is the appearance of 52-Week High at the top of the leaderboard, driven by a solid double-digit spread (15.62%), reaching levels not seen since September 2015. Based on this measure (Figure 2), stocks trading nearest their annual high (decile 1) far outpaced those trading furthest from their high (decile 10) with an average return of -7.4% compared with -23.0%.

Table 4

US Small Cap top decile return spread factor performance, Dec 2018		
Factor	Decile spread (%)	Factor group
52-Week High	15.62	Price Momentum
Distress Measure	14.02	Liquidity, Risk & Size
24-Month Value at Risk	12.47	Price Momentum
Std Dev of FY2 EPS Estimates-to-Price	12.11	Earnings Momentum
Market Cap per Analyst	12.02	Liquidity, Risk & Size
CV of Prior 90-Day Closing Prices	11.67	Price Momentum
Product of Beta and Sigma	11.48	Liquidity, Risk & Size
1-Month Stock Return Interquartile Range	11.14	Liquidity, Risk & Size
20-Day Volume Volatility to Price Volatility	11.11	Liquidity, Risk & Size
24-Month Residual Return Variance	10.88	Price Momentum
60-Day Residual Risk	10.67	Liquidity, Risk & Size
Utilization	10.27	Short Sentiment
1-Month Realized Stock Return Volatility	10.08	Liquidity, Risk & Size
At the Money Call Option Implied Volatility	10.00	Liquidity, Risk & Size
26-Week Relative Price Strength	9.98	Price Momentum

Source: IHS Markit

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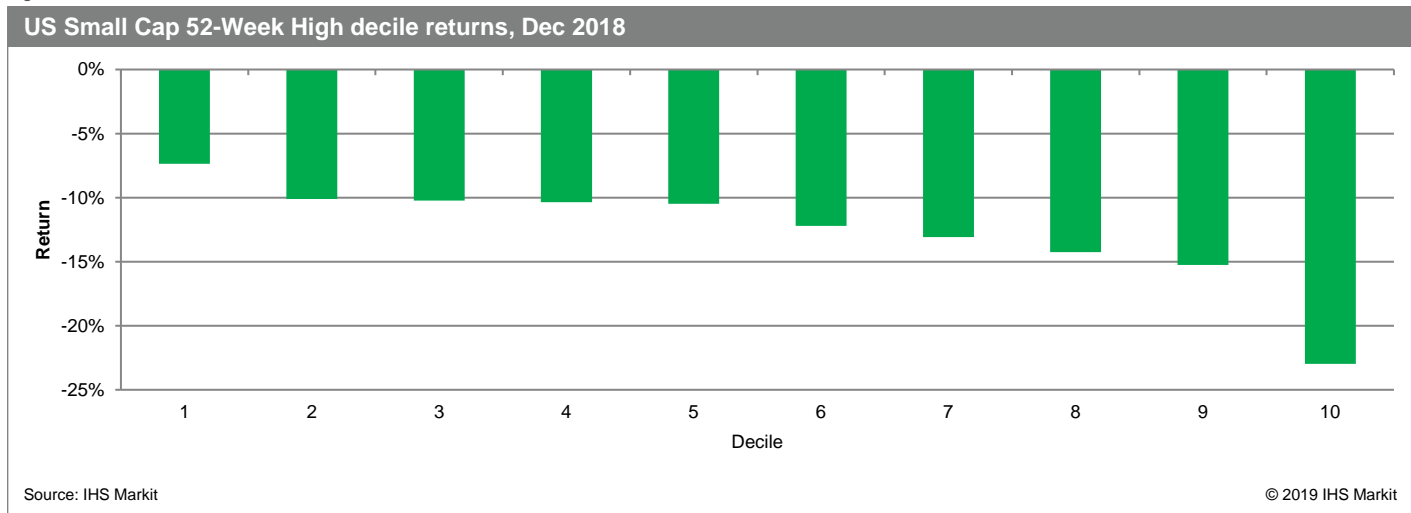
Table 5

US Small Cap bottom decile return spread factor performance, Dec 2018		
Factor	Decile spread (%)	Factor group
60-Month Alpha	-12.27	Price Momentum
36-Month Active Return with 1-Month Lag	-12.06	Price Momentum
Average Monthly Trading Volume-to-Market Cap	-11.66	Liquidity, Risk & Size
60-Month Active Return with 1-Month Lag	-10.88	Price Momentum
Natural Logarithm of Closing Price	-10.73	Liquidity, Risk & Size
Natural Logarithm of Closing Price (USD)	-10.73	Liquidity, Risk & Size
3-Month Active Return	-10.25	Price Momentum
Sortino Ratio	-9.85	Price Momentum
36-Month Sharpe Ratio	-9.75	Price Momentum
2-Month Active Return	-9.54	Price Momentum

Source: IHS Markit

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Figure 2



Source: IHS Markit

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Europe

The slowdown in eurozone manufacturing growth, seen throughout much of 2018, extended into December, with the PMI posting at 51.4, the lowest reading since February 2016 and down from 51.8 in November. Once again, the ‘big four’ economies – Germany, Spain, France and Italy – posted the lowest readings. Continued worries over global trade, ongoing political uncertainties and tightening financial conditions all weighed on confidence, sentiments that also pushed European equities to a third month of negative returns, closing out the year with the worst performance in a decade.

While the risk-off trade also remained dominant in European markets in December (Table 6), as captured by the lead factor, 1-Month Realized Stock Return Volatility (7.59%), Management Quality signals also took on more of a lead role. For example, Net Profit Margin recorded a solid spread of 6.86%, a level not seen since all the way back to December 2002. At the opposite end of the spectrum, factors which lagged for the month (Table 7) include Yield Curve Slope Sensitivity (-5.04%), North America Sales Exposure (-4.57%) and 36-Month Active Return with 1-Month Lag (-3.35%).

Table 6

Developed Europe top decile return spread factor performance, Dec 2018

Factor	Decile spread (%)	Factor group
1-Month Realized Stock Return Volatility	7.59	Liquidity, Risk & Size
1-Month Stock Return Interquartile Range	7.32	Liquidity, Risk & Size
Product of Beta and Sigma	7.07	Liquidity, Risk & Size
Net Profit Margin	6.86	Management Quality
Distress Measure	6.45	Liquidity, Risk & Size
60-Day Residual Risk	6.34	Liquidity, Risk & Size
Operating Cash Flow Ratio	6.31	Liquidity, Risk & Size
CV of Prior 90-Day Closing Prices	6.28	Price Momentum
24-Month Value at Risk	6.04	Price Momentum
20-Day Volume Volatility to Price Volatility	5.92	Liquidity, Risk & Size
Net Income per Employee	5.71	Management Quality
NOPAT Margin	5.58	Management Quality
Operating Profit Margin	5.55	Management Quality
60-Month Beta	5.53	Liquidity, Risk & Size
Profitability Ratio	5.17	Management Quality

Source: IHS Markit

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Figure 3

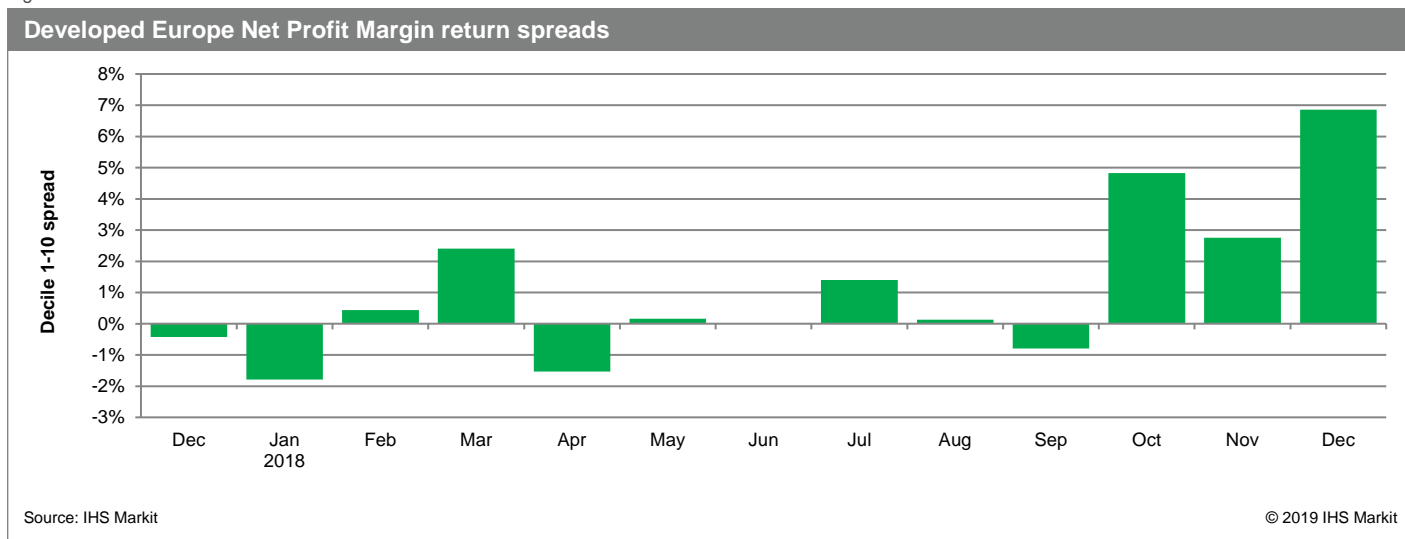


Table 7

Factor	Decile spread (%)	Factor group
Yield Curve Slope Sensitivity	-5.04	Macro
North America Sales Exposure	-4.57	Macro
Accounting Accruals	-3.61	Earnings Quality
2-Year Ahead EPS Growth	-3.56	Earnings Momentum
Slope of 5-yr TTM EPS Trend Line	-3.38	Historical Growth
36-Month Active Return with 1-Month Lag	-3.35	Price Momentum
2-Year Ahead EPS Growth Percentage Change	-3.06	Earnings Momentum
3-yr Compound Annual ROIC Growth	-3.05	Historical Growth
Cash-to-Price	-2.96	Deep Value
5-yr Relative TTM Sales-to-Price	-2.81	Relative Value

Source: IHS Markit © 2019 IHS Markit

Asia-Pacific

Manufacturing sector growth diverged between the two largest Asian economies of Japan and China. In Japan, the PMI rose to 52.6 in December from 52.2 in November, with acceleration in new order growth despite exports declining amid reports of sluggish sales to Europe and China. While only slight, PMI data in China fell below the neutral 50.0 level in December, registering at 49.7, down from 50.2 in November, as total new orders fell marginally. Equity markets in both countries fell double-digits in 2018, marking their worst year since 2008.

Volatility-based trades were also positive signals in developed Pacific markets in December. Outside of Japan, 60-Day Residual Risk (6.18%) was the top performing factor (Table 8), with signal content particularly focused at the tails (Figure 4), where average returns for the lowest risk (decile 1) names actually breached positive territory. Signals which underperformed for the month (Table 9) include those exposed to foreign sales (e.g., North America Sales Exposure: -4.38%) and small caps (Natural Logarithm of Market Capitalization: -3.59%).

In Japan, the top performing factor in December (Table 10) was Stock Return Volatility (12.90%), posting a standout spread (Figure 5) which has not been outmatched since October 2008. Interestingly, a handful of measures capturing strong corporate fundamentals were among the bottom performing factors for the month (Table 11), such as Fixed Assets Turnover Ratio (-10.32%), TTM Capital Expenditures-to-Sales (-6.87%), Dividend Coverage Ratio (-5.93%) and Reinvestment Rate (-5.84%).

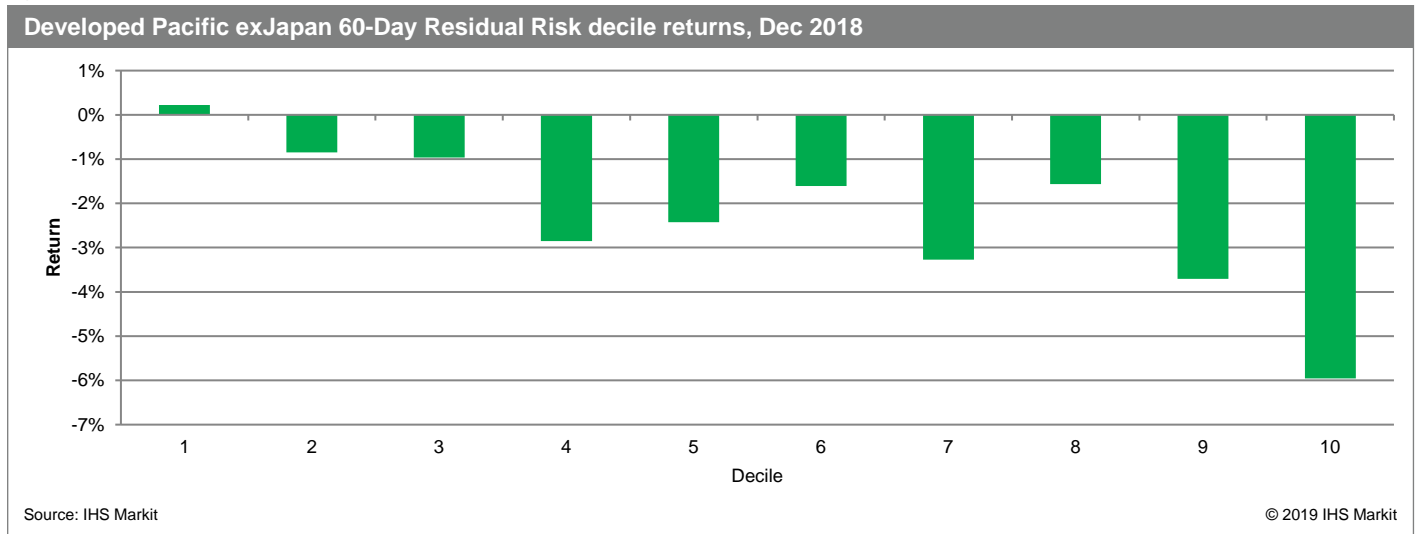
Table 8

Developed Pacific exJapan top decile return spread factor performance, Dec 2018		
Factor	Decile spread (%)	Factor group
60-Day Residual Risk	6.18	Liquidity, Risk & Size
Short Interest	5.67	Short Sentiment
Distress Measure	5.49	Liquidity, Risk & Size
24-Month Residual Return Variance	5.31	Price Momentum
CV of Prior 90-Day Closing Prices	5.18	Price Momentum
52-Week High	5.13	Price Momentum
Short Loan Concentration	5.13	Short Sentiment
1-Month Realized Stock Return Volatility	4.93	Liquidity, Risk & Size
24-Month Value at Risk	4.91	Price Momentum
Utilization	4.85	Short Sentiment
Stock Return Volatility	4.80	Liquidity, Risk & Size
Long-term Debt-to-Equity	4.71	Liquidity, Risk & Size
Regression Error of 60-Month CAPM	4.31	Liquidity, Risk & Size
TTM EBITDA-to-Price	4.19	Deep Value
Year-over-Year Change in EBITDA-to-Debt	4.10	Liquidity, Risk & Size

Source: IHS Markit

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Figure 4



Source: IHS Markit

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Table 9

Developed Pacific exJapan bottom decile return spread factor performance, Dec 2018		
Factor	Decile spread (%)	Factor group
Average Monthly Trading Volume-to-Market Cap	-4.79	Liquidity, Risk & Size
On Loan Value Concentration	-4.49	Short Sentiment
North America Sales Exposure	-4.38	Macro
Latin America Sales Exposure	-3.93	Macro
Yearly Change In Gross Profit Margin	-3.82	Management Quality
Fixed Assets Turnover Ratio	-3.77	Management Quality
Natural Logarithm of Market Capitalization	-3.59	Liquidity, Risk & Size
2-Year Ahead EPS Growth Percentage Change	-3.57	Earnings Momentum
2-Month Active Return	-3.27	Price Momentum
Net Debt to EBITDA	-3.15	Management Quality

Source: IHS Markit

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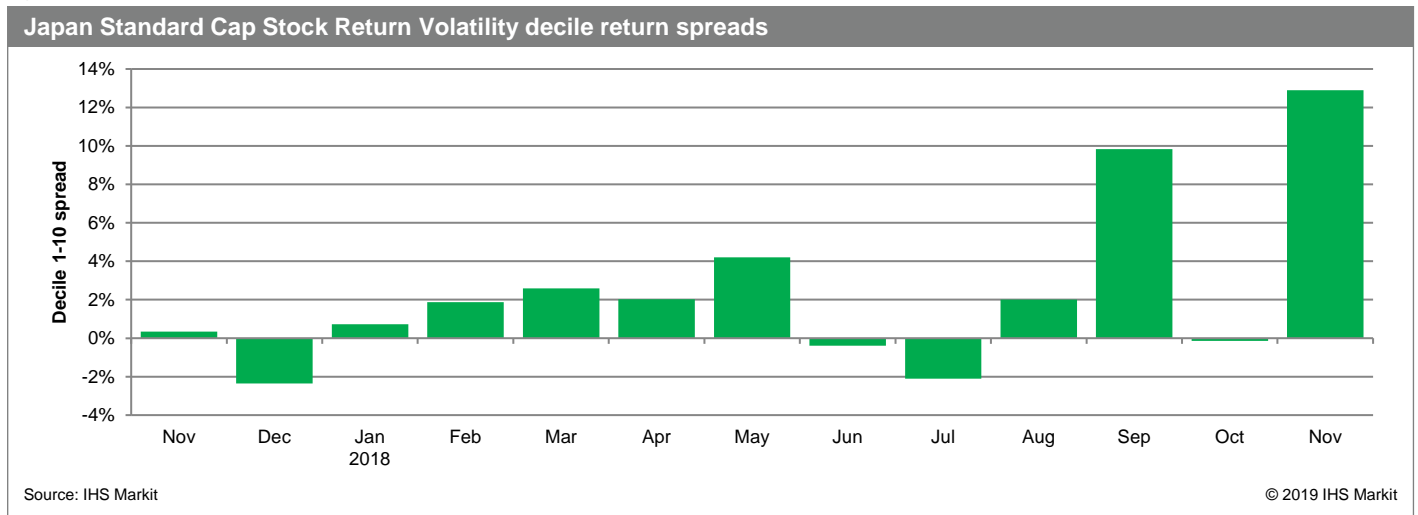
Table 10

Japan Standard Cap top decile return spread factor performance, Dec 2018		
Factor	Decile spread (%)	Factor group
Stock Return Volatility	12.90	Liquidity, Risk & Size
Regression Error of 60-Month CAPM	12.72	Liquidity, Risk & Size
1-Month Stock Return Interquartile Range	11.76	Liquidity, Risk & Size
24-Month Residual Return Variance	11.40	Price Momentum
Distress Measure	11.28	Liquidity, Risk & Size
24-Month Value at Risk	11.15	Price Momentum
Product of Beta and Sigma	10.88	Liquidity, Risk & Size
60-Day Residual Risk	10.86	Liquidity, Risk & Size
1-Month Realized Stock Return Volatility	10.20	Liquidity, Risk & Size
52-Week High	9.83	Price Momentum
CV of Prior 90-Day Closing Prices	9.48	Price Momentum
20-Day Volume Volatility to Price Volatility	8.09	Liquidity, Risk & Size
Short Loan Concentration	7.40	Short Sentiment
SG&A Expenses-to-Sales	7.07	Management Quality
Average Trading Volume in Preceding 6-month	7.06	Price Momentum

Source: IHS Markit

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Figure 5



Source: IHS Markit

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Table 11

Japan Standard Cap bottom decile return spread factor performance, Dec 2018		
Factor	Decile spread (%)	Factor group
Fixed Assets Turnover Ratio	-10.32	Management Quality
Average Monthly Trading Volume-to-Market Cap	-9.46	Liquidity, Risk & Size
Attention Span Ratio	-7.25	Management Quality
Natural Logarithm of Closing Price	-7.14	Liquidity, Risk & Size
Natural Logarithm of Closing Price (USD)	-7.14	Liquidity, Risk & Size
TTM Capital Expenditures-to-Sales	-6.87	Management Quality
Operating Liability Leverage	-6.65	Management Quality
TTM Gross Profit to Assets	-6.16	Management Quality
Dividend Coverage Ratio	-5.93	Liquidity, Risk & Size
Reinvestment Rate	-5.84	Historical Growth

Source: IHS Markit

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Emerging Markets

We conclude with a review of top (Table 12) and bottom (Table 13) performing factors in emerging markets in December. 60-Month Beta (3.39%) was the top performing factor with a mostly monotonic return distribution across quintiles, indicative of systematic trading based on this signal (Figure 6). On the other hand, Deep Value measures swung from the leaderboard the prior month to the laggard board in December. Among the weakest performing signals were Price-to-Book Return-on-Equity Combination (-2.64%) and Time Weighted EBITDA/EV (-2.37%).

Table 12

Emerging Markets top quintile return spread factor performance, Dec 2018		
Factor	Decile spread (%)	Factor group
60-Month Beta	3.39	Liquidity, Risk & Size
Housing Starts Sensitivity	3.21	Macro
Product of Beta and Sigma	3.12	Liquidity, Risk & Size
Natural Logarithm of Total Assets	3.10	Liquidity, Risk & Size
20-Day Volume Volatility to Price Volatility	3.07	Liquidity, Risk & Size
5-day Industry Relative Return	3.02	Price Momentum
Average Trading Volume in Preceding 6-month	2.49	Price Momentum
Natural Logarithm of TTM Sales	2.35	Liquidity, Risk & Size
1-Month Stock Return Interquartile Range	2.30	Liquidity, Risk & Size
Market Cap per Analyst	2.10	Liquidity, Risk & Size
Latin America Sales Exposure	2.03	Macro
3-yr Compound Annual Gross Margin Growth	2.00	Historical Growth
24-Month Value at Risk	1.89	Price Momentum
1-Month Realized Stock Return Volatility	1.87	Liquidity, Risk & Size
52-Week High	1.76	Price Momentum

Source: IHS Markit

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Table 13

Emerging Markets bottom quintile return spread factor performance, Dec 2018

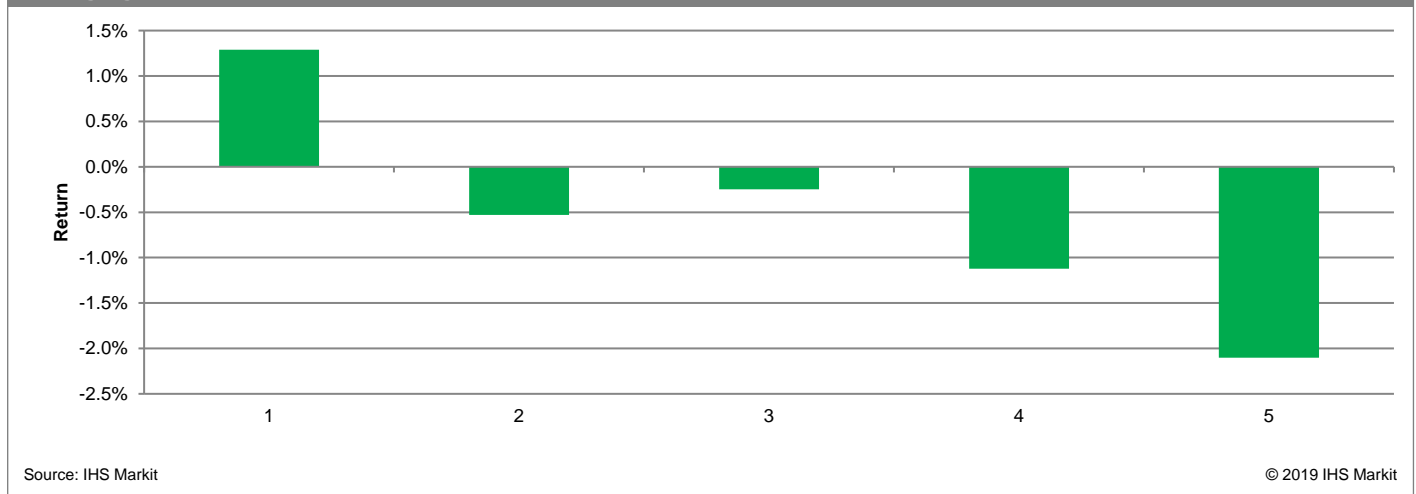
Factor	Decile spread (%)	Factor group
Average Monthly Trading Volume-to-Market Cap	-5.80	Liquidity, Risk & Size
Natural Logarithm of Closing Price	-4.40	Liquidity, Risk & Size
2-Month Active Return	-3.46	Price Momentum
Natural Logarithm of Market Capitalization	-3.00	Liquidity, Risk & Size
Price-to-Book Return-on-Equity Combination	-2.64	Deep Value
24-Month Active Return with 1-Month Lag	-2.38	Price Momentum
Time Weighted EBITDA/ EV	-2.37	Deep Value
Oil Prices Sensitivity	-2.32	Macro
Leading 12 Month EBITDA/ EV	-2.18	Deep Value
Graham Number Fair Value Premium	-2.09	Deep Value

Source: IHS Markit

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Figure 6

Emerging Markets 60-Month Beta quintile returns, Dec 2018



Source: IHS Markit

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