

A deeper dive into the value-momentum high sigma event

September 2019

Research Signals

While trading anomalies are rare events, they are of much interest to the investment community given their potentially large impact from both a monetary and risk perspective. For example, in August 2012, we [reviewed](#) abnormal market events including the August 2007 quant crisis along with the May 2010 flash crash. In this report, we take a closer look at the more recent high sigma event that occurred between 5 September and 10 September with respect to the performance of value strategies relative to growth and momentum strategies. This rotation is of further interest in light of our recent [publication](#) investigating value and growth cycles.

- The iShares S&P 500 Value ETF experienced a dramatic spike in performance relative to its growth and momentum counterparts in the week ending 9 September, reaching the distinction of 3- and 4-sigma events, respectively, followed by quick snapbacks the following week
- Extreme factor reversals relative to value were also evident within our factor library, including that of Industry-adjusted 12-month Relative Price Strength (5.7-sigma), 60-Month Beta (4.6-sigma) and the Historical Growth Model (6.1-sigma)
- While some movement in retail and institutional sentiment preceded the 9 September factor reversal, the increased relationship between low beta and high momentum stocks may have been of greater importance given the unexpected increase in interest rates around that same time

High level market overview

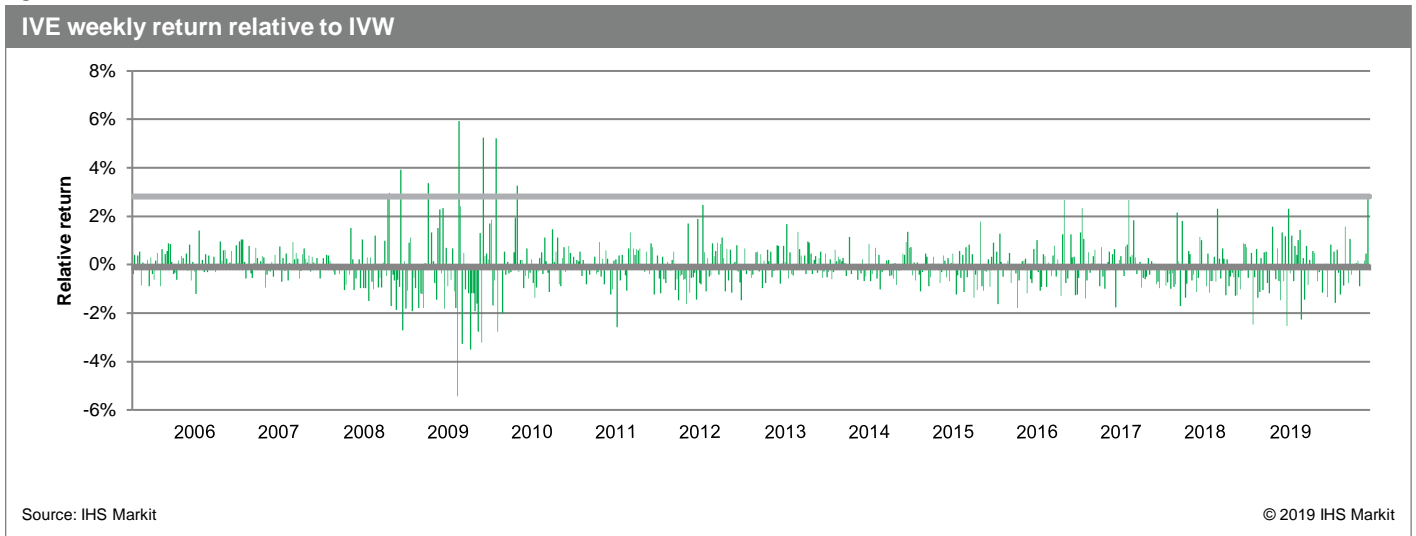
To begin with, we take a look at relative performance of value, growth and momentum strategies in the ETF market (Figure 1). For our analysis, we use the IHS Markit ETF Analytics database to compare weekly returns of the iShares S&P 500 Value ETF (IVE), the iShares S&P 500 Growth ETF (IVW) and the iShares MSCI USA Momentum Factor ETF (MTUM).

First, in comparing value and growth performance (Figure 1), we see that, since 2009, value's outperformance relative to growth during the week of 9 September (2.8%) was the highest since the week of 3 August 2009 (3.3%), though was closely followed by the weeks of 7 November 2016 (2.7%) and 1 February 2016 (2.7%). To put this event in the context of variation from past weekly relative returns, we use a common measure of outlier events known as 3-sigma events. A standard deviation, or sigma, is based on observations from a normal, or bell-shaped, distribution. Statistically, two-thirds of relative returns lie within an interval encompassing one standard deviation around the average. The 9 September event was exactly three times the normal volatility, meeting the threshold of a 3-sigma event which is expected to occur less than 1% of the time, and is thus considered an extreme movement from expectations.

Contacts

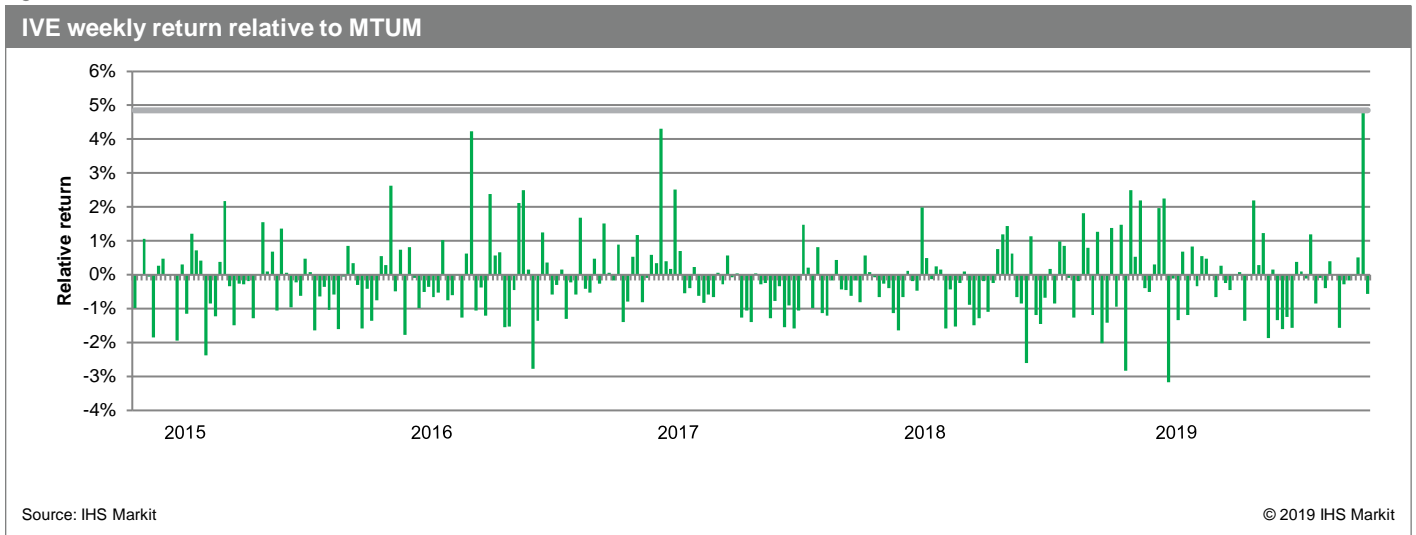
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Figure 1



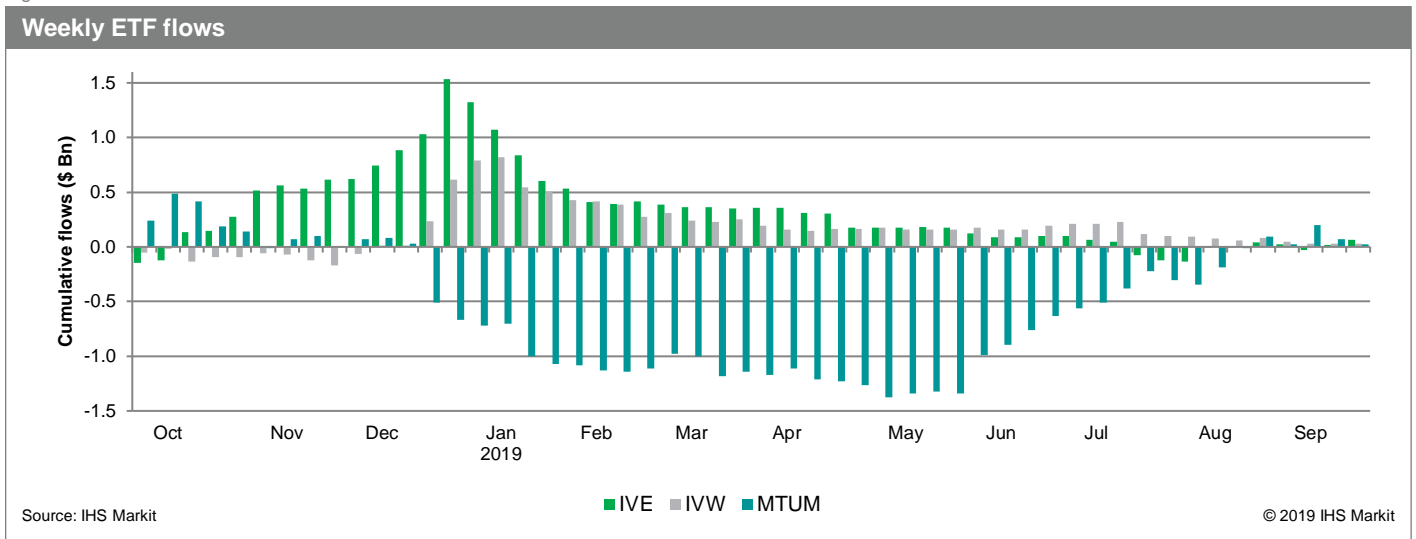
Turning to the momentum strategy (Figure 2), we find a more extreme movement in performance relative to value. Indeed, the 4.9% relative return the week of 9 September was the largest since MTUM went live, exceeding the threshold of a 4-sigma event! However, we note that the data does not span the period of the financial crisis, nor the tech bubble, which were characterized by significant swings in style performance.

Figure 2



We also examine fund flows leading up to 9 September to check for any trading anomalies that may have been specific to these funds among retail investors (Figure 3). For this analysis, we present cumulative weekly flows over the past year into IVE, IVW and MTUM. While we do not observe a large spike in flows affecting outlier behavior in fund performance, we do find a generally positive trend in flows into MTUM since mid-year, whereas IVE and IVW flows have trended downward since the start of the year.

Figure 3



Next we delve into the securities lending market to search for unusual trading activity that may have carried over to equity markets, based on underperformance of factors that disfavor highly shorted stocks (as we will detail). For this study, we use factors that drive our [Short Squeeze Model](#). The model uses transaction-level capital constraint factors sourced from the IHS Markit Securities Finance dataset and event indicators to predict squeezes within the universe of highly shorted companies. We focus on one such factor, Out-of-the-money Percent, which is calculated as the sum of shares for short positions that are experiencing losses based on their PnL divided by the total shorted quantity. Thus, the highest ranked stocks are those that are furthest out-of-the-money (and most susceptible for a squeeze).

We present recent daily return spreads for Out-of-the-money Percent (Figure 4), where we form deciles within the group of highly shorted stocks and take the spread between the equal-weighted average of the top (D1) and bottom (D10) deciles. No unusual performance is detected in the weeks leading up to September; however, a string of negative spreads occurred in the first half of the month, with 9 September the weakest observation. In fact, closer inspection of decile returns on that day (Figure 5) suggests fairly systematic trading across this indicator given the mostly monotonic distribution across deciles. The interpretation is that stocks for which short sellers were in-the-money the most outperformed the most, perhaps suggesting that short sellers took profits or unwound positions, adding volatility to equity markets.

Figure 4

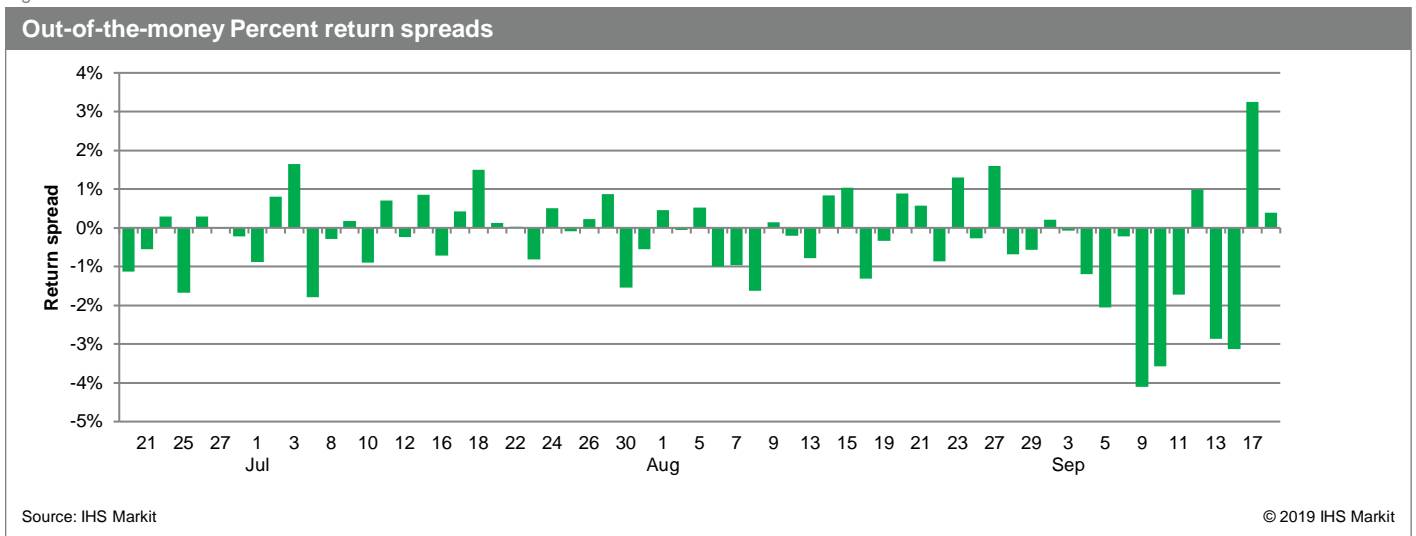
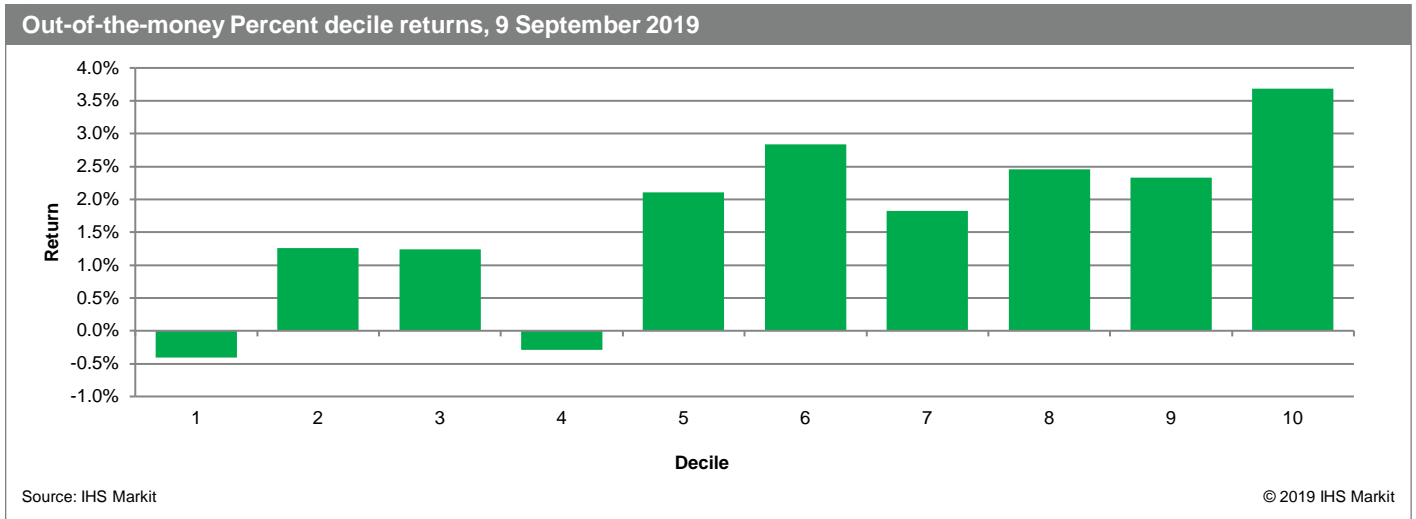


Figure 5

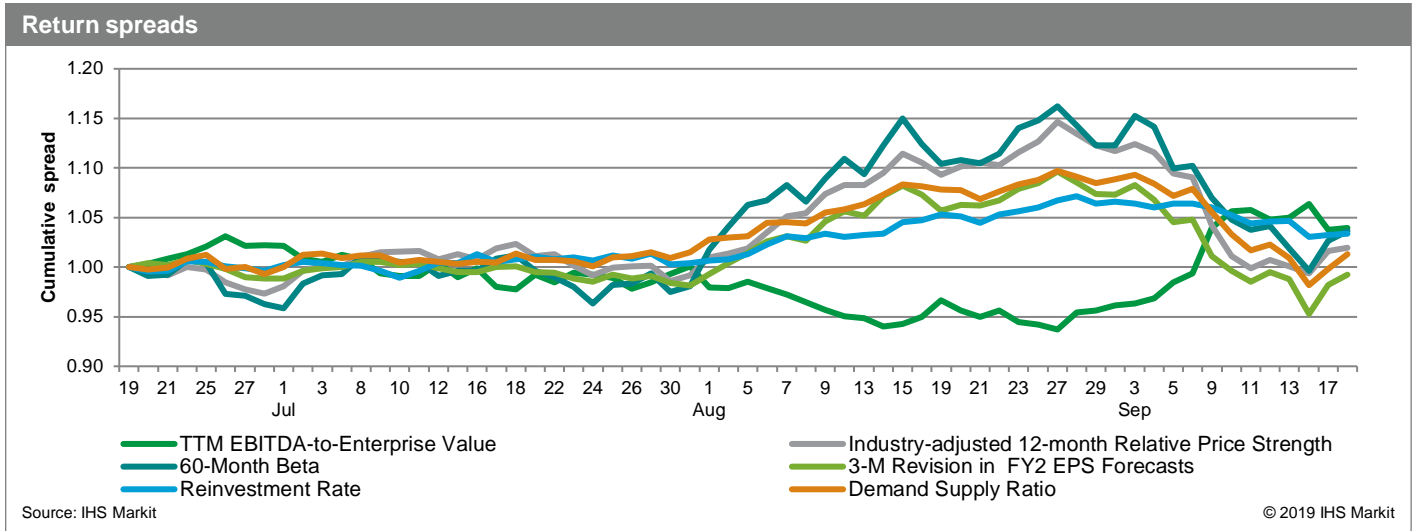


Style model and factor returns

This leads us next to evaluating style model and factor performance around 9 September relative to historical daily trends. For this investigation, we review a representative group of factors spanning major style groups from our 400+ US factor library in addition to our style models – Deep Value, Relative Value, Earnings Momentum, Price Momentum and Value Momentum. Performance is based on daily return spreads across our US Large Cap universe, which consists of approximately 1000 of the largest cap names.

To represent the pure value strategy, we focus on TTM EBITDA-to-Enterprise Value from our Deep Value style group. We first compare its recent time series of cumulative spreads to other momentum, volatility, growth and short sentiment signals, namely Industry-adjusted 12-month Relative Price Strength, 60-Month Beta, 3-M Revision in FY2 EPS Forecasts, Reinvestment Rate and Demand Supply Ratio (Figure 6). Through the end of July, all of the factors traded in a cyclical pattern within a fairly narrow range. Things changed in August, when the value strategy consistently underperformed the other strategies. Then, September opened up with what first looked like a simple reversion to the mean, before the especially sharp factor reversal on 9 September.

Figure 6



Based on these observations, we next evaluate TTM EBITDA-to-Enterprise Value’s performance versus the remaining factors and models on 9 September compared with the standard deviation of daily relative spreads since 2000. In Figure 7 we summarize the sigma level reached on that date for relative spreads of key factors and models of interest and in Figures 8 and 9 we trace the recent relative spreads of the factors and models, respectively.

The outperformance of TTM EBITDA-to-Enterprise Value relative to Demand Supply Ratio on 9 September was the highest level observed, marking a 6.5-sigma event for this Short Sentiment signal measuring the amount of stock borrowed relative to the lendable inventory. Not surprisingly, Industry-adjusted 12-month Relative Price Strength (5.7-sigma), a Price Momentum metric, followed closely behind, along with another factor of interest, 60-Month Beta (4.6-sigma). However, the time series charts demonstrate that, for each factor, the relative spreads quickly came off of these extreme levels.

Among the style models, Historical Growth experienced the largest swing in relative spread, with its underperformance marking a 6.1-sigma event, followed by Earnings Momentum (4.3-sigma). We also draw attention to the Price Momentum Model (3.6-sigma) which posted a more modest relative spread compared with Industry-adjusted 12-month Relative Price Strength (5.7-sigma), a pure momentum measure, demonstrating the benefits of the model’s multi-factor construction combining price changes with several risk factors.

Figure 7

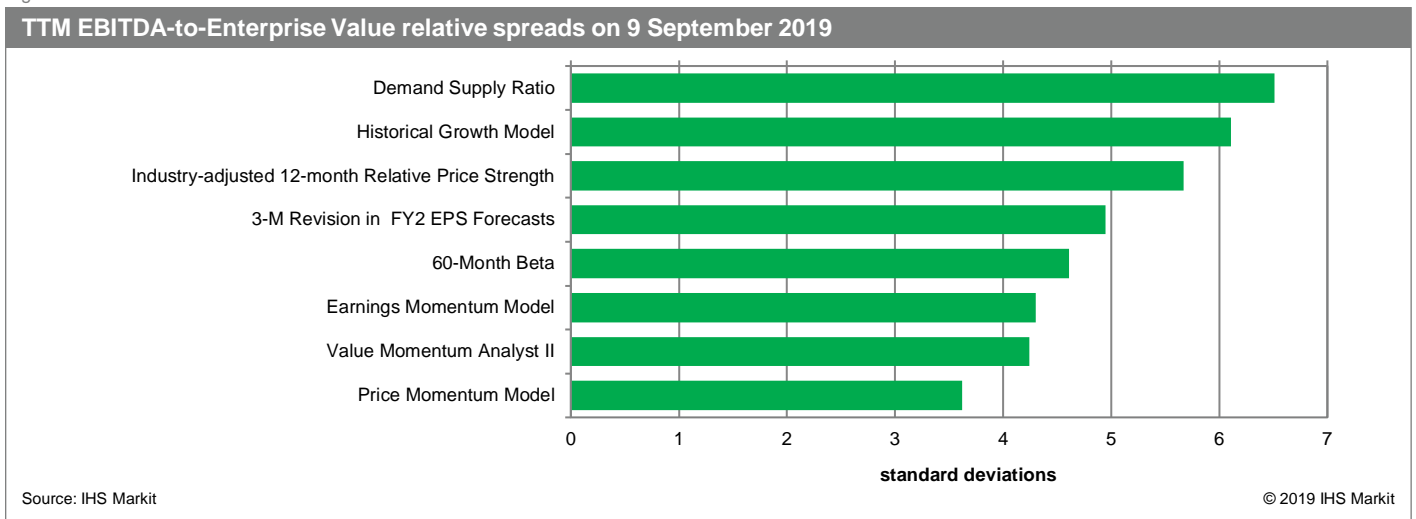


Figure 8

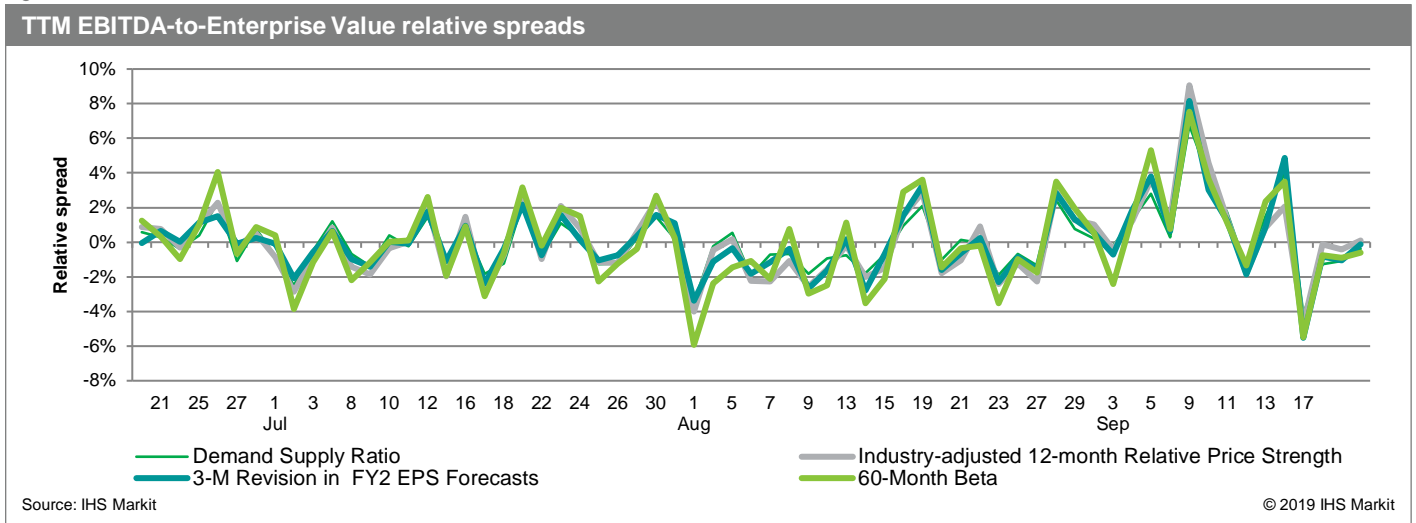
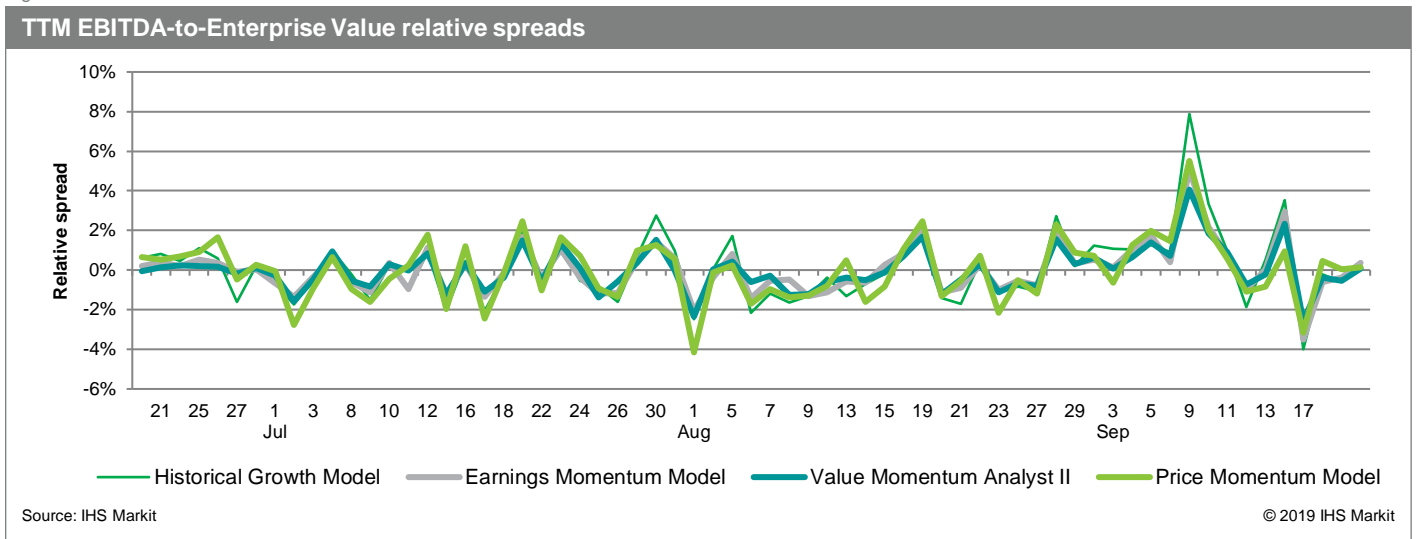


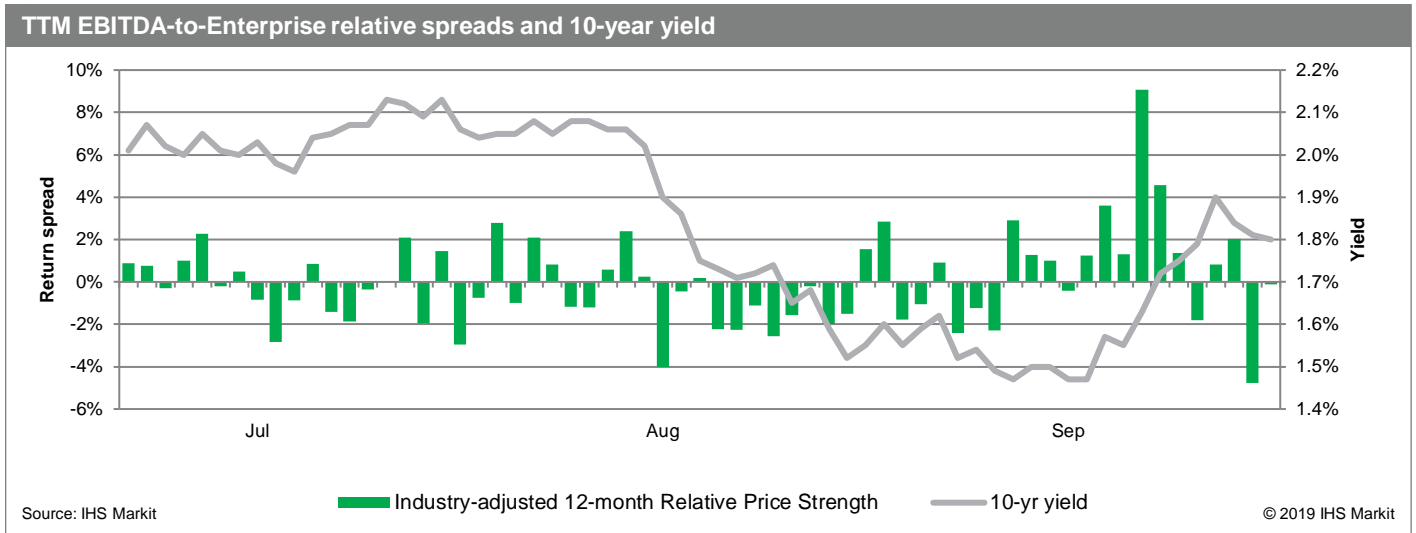
Figure 9



More details on Momentum

We focus further on the relative performance between TTM EBITDA-to-Enterprise Value and Industry-adjusted 12-month Relative Price Strength. With respect to interest rates, at the same time that 10-year US Treasury yields began to decline in late July (Figure 10), momentum tended to outperform value. However, rates bottomed in early September, with an 8.7% increase over the one-week period ending 9 September, perhaps acting as impetus to the momentum factor’s 5.7-sigma event given its recent increase in correlation with interest rates.

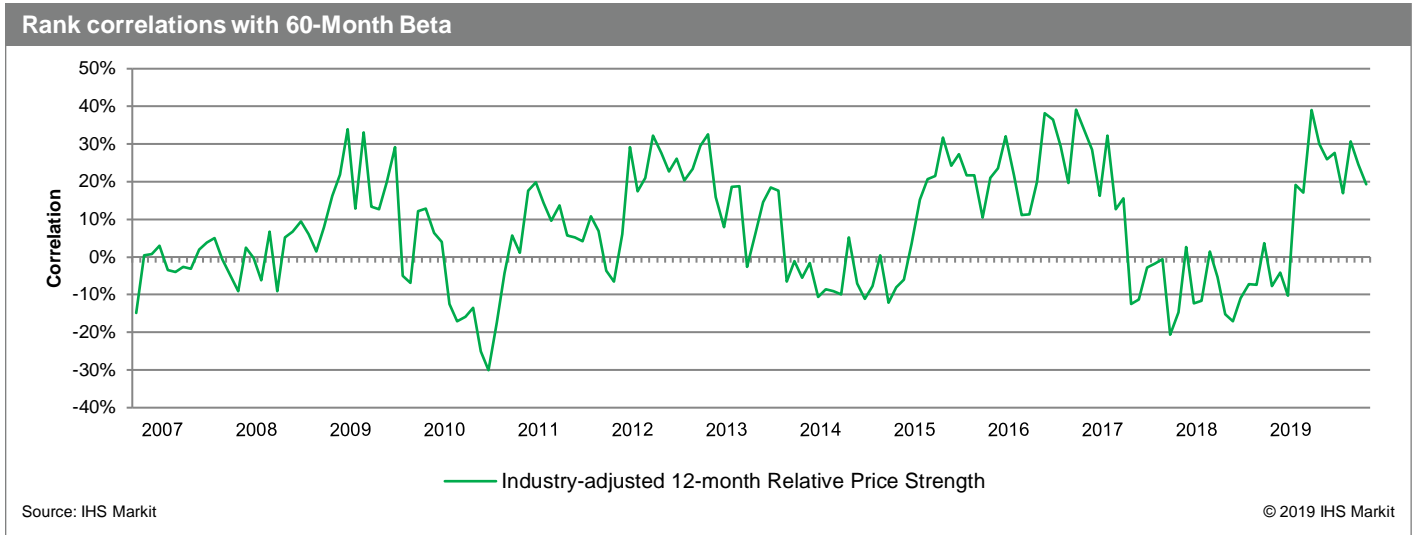
Figure 10



To better understand the relationship between interest rates and momentum’s abnormal price movement, we also present the connection between low volatility and high momentum stocks. For this assessment, we report the correlations in monthly cross-sectional factor ranks between 60-Month Beta (ranked to favor low volatility) and Industry-adjusted 12-month Relative Price Strength (Figure 11). In late 2018, when the risk-off trade dominated the markets, the connection between low beta and high momentum names increased, with the rank correlation residing near the top of its trading range throughout 2019. While the level of this relationship is not unprecedented, what is different

is the coincident unexpected rise in interest rates, lending more credence to the impact of interest rates on investors' positioning in high momentum names.

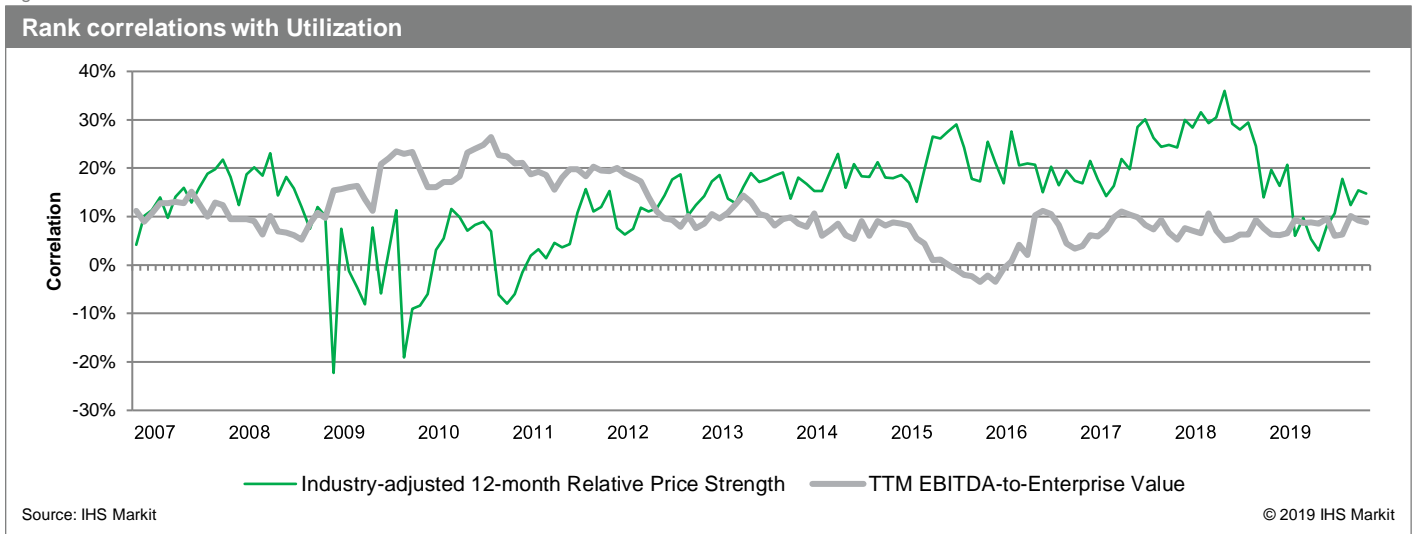
Figure 11



We also look for movement in the securities lending market between value and momentum strategies. First, we examine the level of shorting activity of stocks exposed to TTM EBITDA-to-Enterprise Value and Industry-adjusted 12-month Relative Price Strength. To assess the trend in short selling, we again turn to rank correlations of the two factors with Utilization, a signal in our Short Sentiment suite which gauges the proportion of inventories in lending programs out on loan. Utilization is ranked to favor lower demand to borrow, thus a higher correlation suggests stocks exposed to the respective strategy have lower shorting activity.

The time series of rank correlations are plotted in Figure 12. The results do not expose a change in trend for short selling of stocks based on their exposure to TTM EBITDA-to-Enterprise Value. On the other hand, we observe a slight uptick in the correlation between Utilization and Industry-adjusted 12-month Relative Price Strength since early 2019, a sign of decreased short selling of high momentum stocks. However, we remark that the prior year saw increasing levels of shorting associated with this cohort of stocks, so this phenomenon may in part be simply a reversion to the mean, though the results are consistent with our observations above regarding the Out-of-the-money Percent factor.

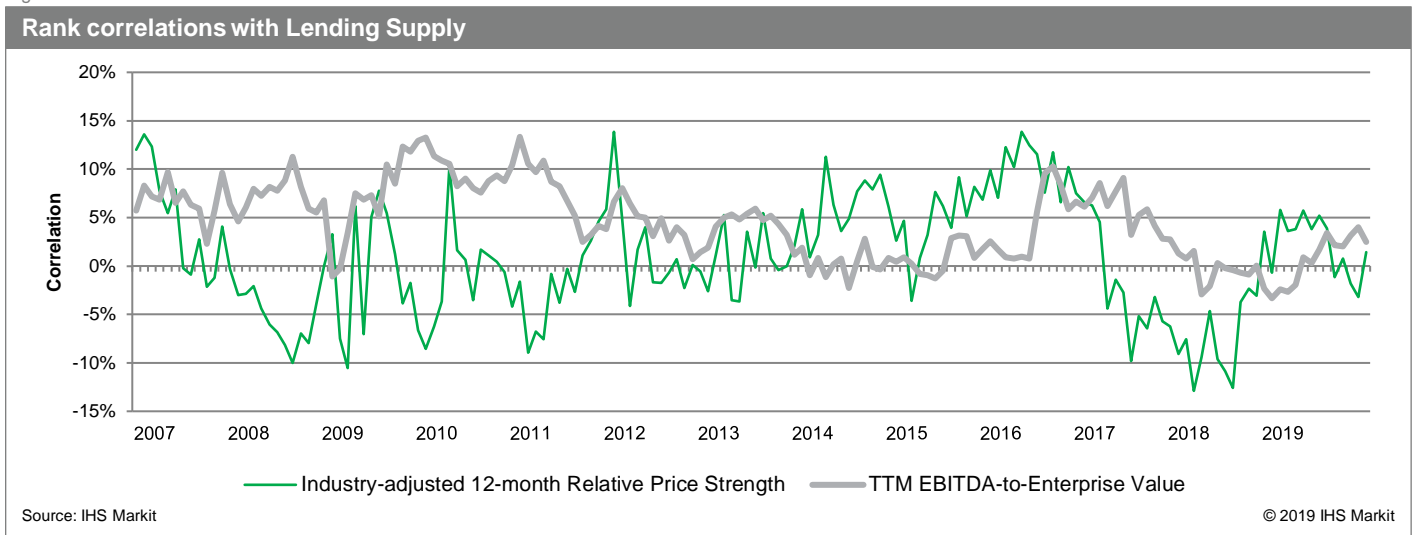
Figure 12



Lastly, we take the pulse of institutional ownership activity in stocks exposed to value and momentum strategies around 9 September (Figure 13). For this investigation, we use our Lending Supply factor, again from the Short Sentiment suite, which measures the total quantity of stock made available by custodians in their lending programs relative to the total shares outstanding. It can be used as a higher frequency proxy of institutional ownership as much of the lendable supply comes from the custodians of pensions and mutual funds.

From late 2016 through late 2018, the rank correlation between Lending Supply and Industry-adjusted 12-month Relative Price Strength was negative, indicating relatively lower institutional ownership of high momentum names. While this relationship reversed and remained positive through early 2019, it again turned negative in recent months followed by an uptick at the beginning of September. However, stocks identified as undervalued according to TTM EBITDA-to-Enterprise Value have seen a fairly consistent positive trend in available supply since late 2018, indicating increased institutional buying associated with the value strategy.

Figure 13



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