

Sources of alternative alpha in 2021

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Research Signals

We recently reviewed **2021 key drivers** of factor performance across the core Research Signals Factor Library. However, we are constantly in search of alternative sources of alpha using both IHS Markit proprietary datasets and other unique data from our partners to extend our factor suite beyond the traditional array of technical and financial statement-based signals. 2021 was a wild year that saw markets set all-time highs, despite the headwinds of speculative mania by retail investors across notable highly shorted stocks, a flurry of SPAC issuance, ongoing waves of COVID-19 and its variants, supply chain disruptions and historically high inflation in the second half. With that backdrop, we now review performance of several alternative factors - institutional ownership and social media sentiment.

- Institutional holding factor performance was especially robust in Emerging EMEA, led by % Hedge Fund Holdings (Count) with a 3.21% average monthly spread, while % Selloffs out of Sold (Count) posted strong results in both the US (2.72%) and Europe (1.76%)
- Using our internally constructed Social Media Indicator, Normalized Volume Adjusted Sentiment Score, stocks at the extreme tails (3 standard deviations) of the factor distribution identified as buy candidates outperformed sell candidates in the US and UK by spreads of 0.105% and 0.089%, respectively, based on average open-to-close returns

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Institutional Ownership

IHS Markit's Equity Point-in-Time Ownership data provides daily insights into global institutional and fund owned security positions, flow of funds and trading activity globally across developed and emerging markets. Ownership is sourced from 13Fs, global mutual funds, daily ETF holdings, annual reports, and major stakeholder exchange announcements for equity securities. We combined our Research Signals team's quantitative research capability with key elements of this proprietary data, specifically looking for factors that are drivers of stock price performance. In total, we **introduced** 17 factors capturing ownership concentration, changes in holdings, institutional and hedge fund holdings and liquidity flow ratios.

For our review of 2021 performance, we report results over the US Total Cap universe in addition to other standard Research Signals developed and emerging markets universes representing 95% of cumulative market cap for each member country subject to minimum market caps of USD 250 million and 100 million, respectively. Table 1 summarizes average monthly quantile spreads across each universe (deciles for developed markets and quintiles for emerging markets) and Figures 1 through 6 highlight time series of cumulative quantile spreads for key factor performers in each region.

Overall, we find that versions of % Selloffs out of Sold based on counts (US Total Cap: 2.72%; Developed Europe: 1.76%) and shares (US Total Cap: 1.76%; Developed Europe: 1.19%) were strong performers on average in both the US and Europe. Furthermore, cumulative decile spreads were in excess of 20% in the US and 15% in Europe. In Developed Pacific, the top performing factors were % Institutional Holdings (average: 1.30%; cumulative: 16.5%), Changes in Active Share Holdings (average: 0.99%; cumulative: 12.4%) and Average % Change in Ownership (average: 0.83%; cumulative 10.4%).

Performance was especially robust in Emerging EMEA, with only two factors posting negative average spreads for the year. % Hedge Fund Holdings based on count and shares exemplify this strong performance with respective average (cumulative) quintile spreads of 3.21% (45.1%) and 1.78% (26.4%). Other top performing factors in emerging markets include count measures of Bought Sold Imbalance (average: 1.13%; cumulative: 14.2%) in Emerging Asia and % Buyins out of Bought (average: 1.05%; cumulative: 12.1%) in Emerging Latin America.

Table 1

Regional factor average monthly quantile spreads (%), 2021						
Factor	US Total Cap	Developed Europe	Developed Pacific	Emerging Asia	Emerging EMEA	Emerging Latin America
Top 5 Ownership Concentration	1.52	0.24	0.68	0.11	0.83	-0.17
Top 10 Ownership Concentration	1.75	0.18	0.52	-0.40	0.42	-0.05
Changes in Active Share Holdings	-2.16	-0.61	0.99	-0.20	2.02	-1.64
Average % Change in Ownership	-0.54	-0.84	0.83	0.66	0.17	-1.51
% Institutional Holdings	1.06	-0.26	1.30	-0.32	0.20	-1.76
Bought Sold Imbalance (Shares)	-0.96	-0.10	-0.75	0.42	0.34	-0.10
Bought Sold Imbalance (Count)	-2.34	-0.32	0.26	1.13	0.01	-0.08
Buyin Selloff Imbalance (Shares)	-0.66	0.38	-0.10	0.09	0.59	0.56
Buyin Selloff Imbalance (Count)	-0.68	0.43	0.35	0.84	0.49	0.96
% Buyins out of Bought (Shares)	-0.84	-0.33	-0.34	-0.25	-0.14	0.57
% Buyins out of Bought (Count)	-2.44	-0.99	0.15	-0.44	-0.03	1.05
% Selloffs out of Sold (Shares)	1.76	1.19	0.30	-0.29	0.43	0.98
% Selloffs out of Sold (Count)	2.72	1.76	0.71	0.52	0.95	0.81
% Hedge Fund Holdings (Shares)	-0.99	-1.07	0.47	-1.99	1.78	-1.44
% Hedge Fund Holdings (Count)	-1.38	-1.07	0.79	-2.70	3.21	-1.89
Liquidity Flow (Shares)	-1.09	0.31	0.13	1.02	1.37	0.96
Liquidity Flow (Count)	1.08	0.59	0.15	0.53	1.22	-1.02

Source: IHS Markit

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Figure 1

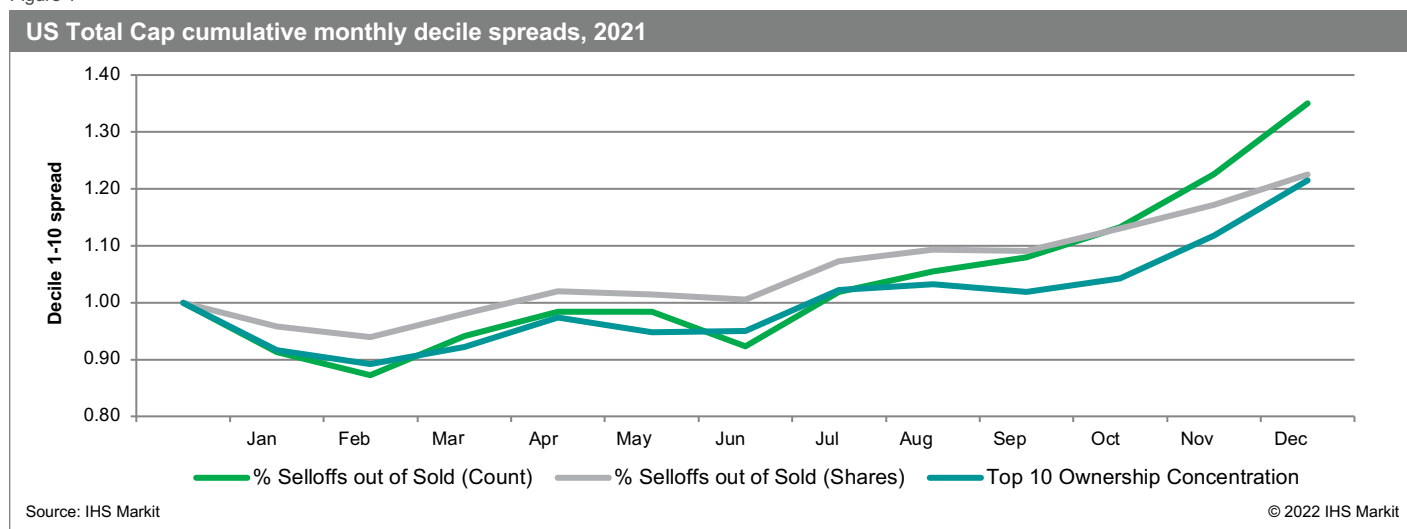


Figure 2

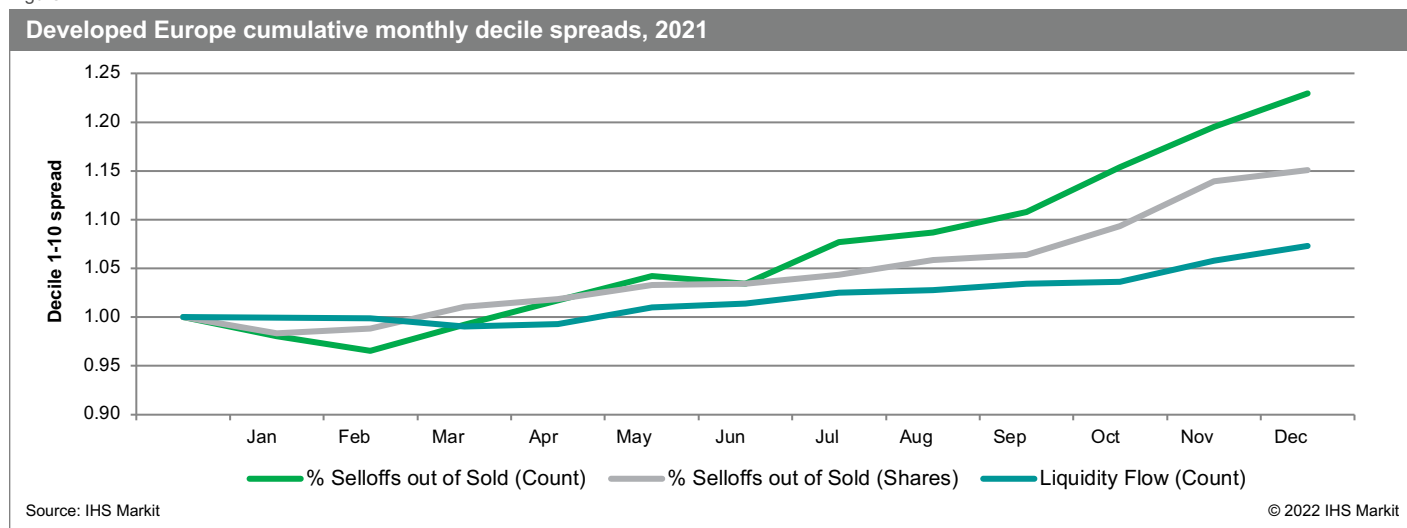


Figure 3

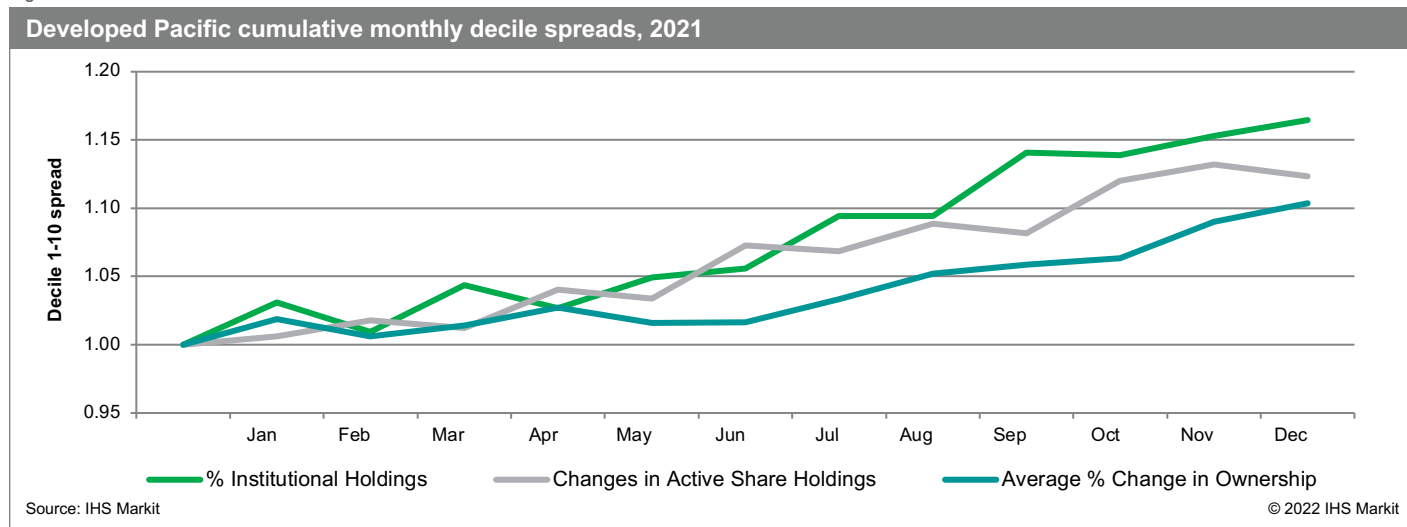


Figure 4

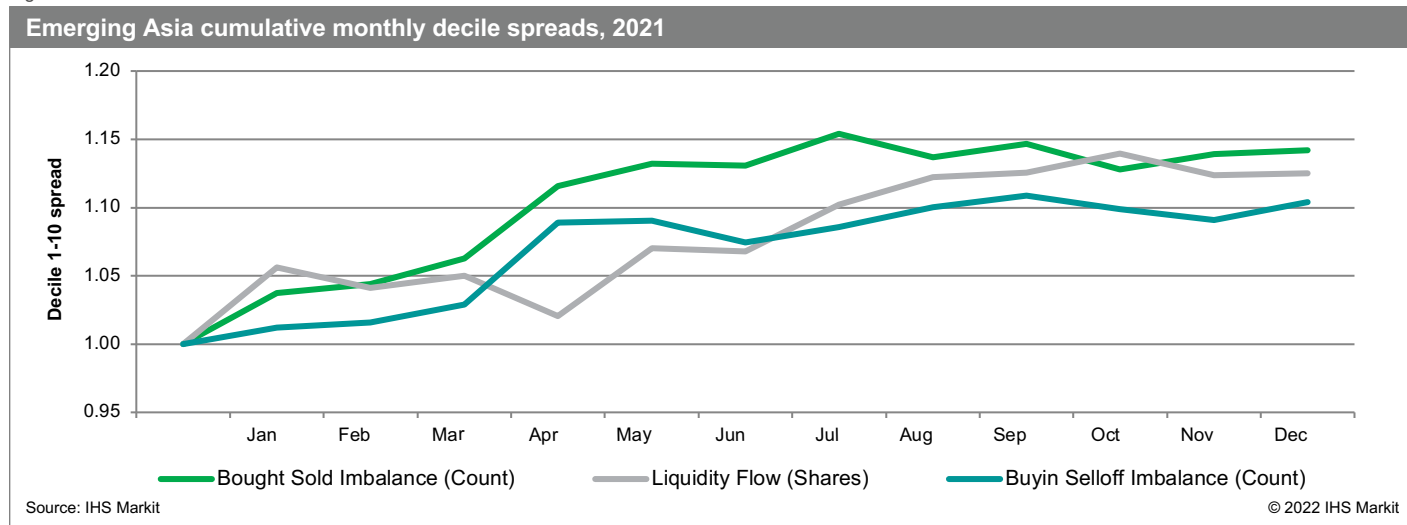


Figure 5

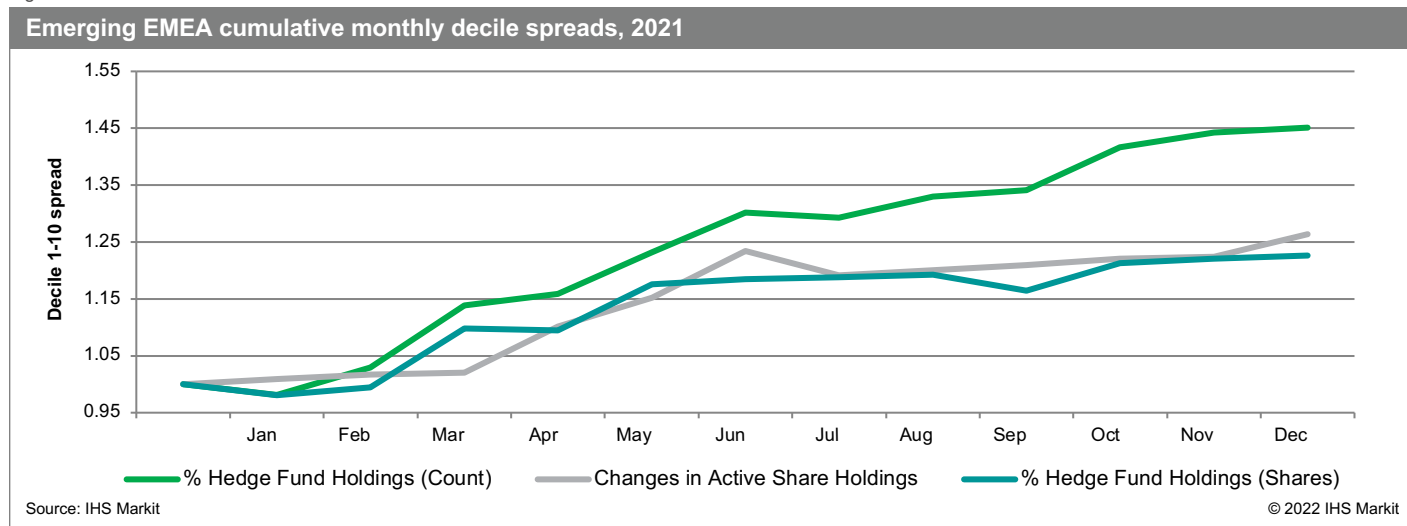
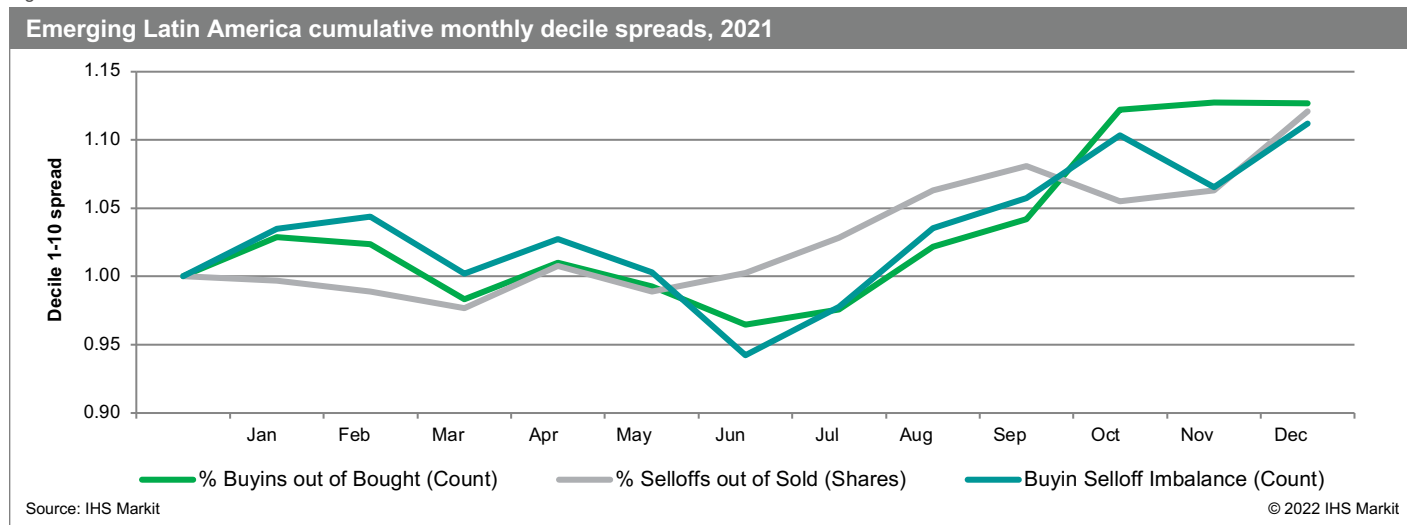


Figure 6



Social Media Indicators

With its vast access to public sentiment, the information content in tweets on the Twitter social networking website have been used to research public mood on many subjects including investments. Social Market Analytics, Inc. (SMA) analyzes social media data streams to estimate market sentiment at the stock level. More specifically, metrics are estimated from analysis of Twitter message stream that are converted into actionable indicators in their family of measures called S-Factors™, designed to capture the signature of financial market sentiment. With our partnership with SMA, we **introduced** 22 Social Media Indicators for US stocks, which we later **expanded** to the UK market, covering broad categories of tweet sentiment, tweet volume, relative value, changing sentiment and dispersion to capture timely information gleaned from Twitter posts.

We focus our analysis on a Research Signals-specific Social Media Indicator, Normalized Volume Adjusted Sentiment Score, computed as the z-score normalization of the volume-relative sentiment score per indicative tweet over a 20-day period. By adjusting the sentiment score by volume, we add a second step, along with the z-score normalization, to take out the impact of tweet volume on the scoring system. This 2-step process applies a more robust methodology to address the bias in positive sentiment to names with the most tweets.

We report returns over the US Total Cap universe in addition to stocks trading on the London Stock Exchange for constituents with at least 1 tweet on that day. Performance is summarized on daily average open-to-close returns, along with 1-day, 5-day (overlapping periods) and monthly holding periods, with focus on tail performance given the factor's strength in identifying names at the extreme tails of the distribution.

We analyze several strategies for factor performance analytics. First, we detail results at the tails of the underlying factor distribution, for example, with a score ≥ 3 (≤ -3), in other words, a current relative sentiment score of at least 3 (-3) standard deviations away from the normal aggregate sentiment level, indicating positive (negative) sentiment. We also include performance at scores of ± 2 , as the low counts at the more extreme ± 3 tail render the performance summary results susceptible to spurious outcomes, in addition to applying a filter for a minimum S-Volume™ of 3 to adjust the signal for confirmed information content in addressing random effects that may arise from sparse tweets.

Table 2 summarizes results, while Figures 7 and 8 display time series of open-to-close returns for the Score > 3 and < -3 strategies across the US and UK universes, respectively. First, we note the skew to positive sentiment (as observed in our original research) producing a higher number of securities on average for Score > 2 or > 3 than < -2 or < -3 , a nuance to keep in mind when evaluating results.

In the US, we report a positive average open-to-close spread at the ± 3 tail of 0.105%. The spread grew more pronounced in the second half of the year, with cumulative returns of 12.5% for the buy portfolio compared with -14.8% for the sell portfolio to close out the year. At the broader ± 2 tail, results were only slightly weaker with an average spread of 0.074%.

Positive performance persisted to full 1-day returns at the ± 3 tail, with a spread of 0.042%, but decayed out to the 5-day horizon. Interestingly, while a high-turnover signal, in 2021 we observe robust average monthly returns for both Score ≥ 3 (1.443%) and ≤ -3 (-1.439%) resulting in a spread of 2.882%, though this performance did not hold up to the additional check of a minimum S-Volume™ of 3. However, the remaining strategies improved from this filter, including the 5-day holding period results, though we remark on the moderating impact to the number of portfolio constituents.

For the UK open-to-close results, the Score ≥ 3 portfolio (0.058%) outperformed the Score ≤ -3 portfolio (-0.030%), translating to an average spread of 0.089%. However, as with US results, outperformance was more concentrated in the second half of the year, with final year cumulative returns of 15.5% and -9.5%, respectively. Results remained positive at the broader ± 2 tail (average spread: 0.051%), though longer holding period spreads were negative at both tail

strategies. Finally, the tweet volume filter significantly reduced the average number of constituents, but we cautiously note the positive average open-to-close spread at the +/- 2 tail (0.116%).

Table 2

Normalized Volume Adjusted Sentiment Score average returns, 2021										
US						UK				
	Open-to-close (%)	1-day (%)	5-day (%)	1-mo (%)	Count	Open-to-close (%)	1-day (%)	5-day (%)	1-mo (%)	Count
Score >= 2	0.026	0.111	0.423	1.250	166	0.022	0.062	0.165	-0.532	32
Score >= 3	0.051	0.155	0.524	1.443	52	0.058	0.001	0.133	-0.214	17
Score <= -2	-0.048	0.102	0.785	0.306	74	-0.029	0.182	0.512	2.811	14
Score <= -3	-0.054	0.113	0.489	-1.439	21	-0.030	0.221	0.714	2.297	7
Spread 2	0.074	0.009	-0.066	0.944		0.051	-0.120	-0.347	-3.344	
Spread 3	0.105	0.042	-0.261	2.882		0.089	-0.220	-0.582	-2.511	
Tweet volume >=3										
Score >= 2	0.107	0.102	0.352	0.687	38	0.002	0.016	0.180	-2.157	8
Score >= 3	0.082	0.232	0.527	1.387	9	0.066	0.076	0.469	-0.310	3
Score <= -2	-0.064	0.028	0.179	0.101	17	-0.113	0.219	0.463	6.718	4
Score <= -3	-0.176	0.165	0.176	1.789	4	-0.207	0.005	0.367	7.261	1
Spread 2	0.172	0.074	0.172	0.586		0.116	-0.203	-0.283	-8.875	
Spread 3	0.258	0.067	0.350	-0.402		0.273	0.071	0.102	-7.572	

Source: IHS Markit

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Figure 7

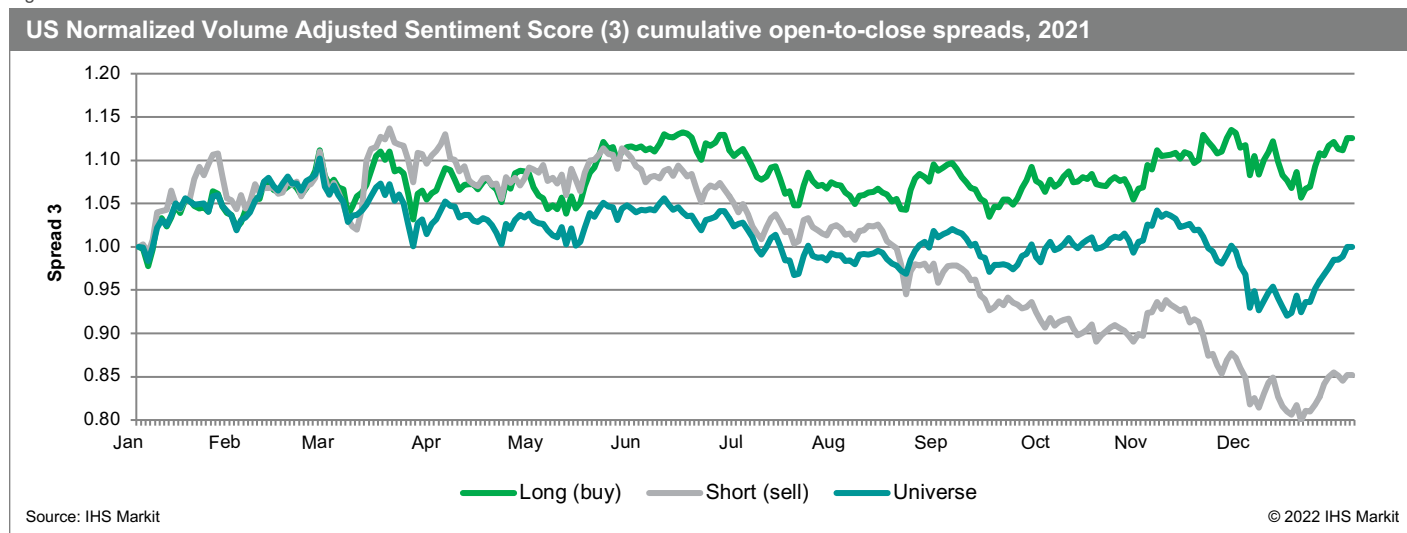
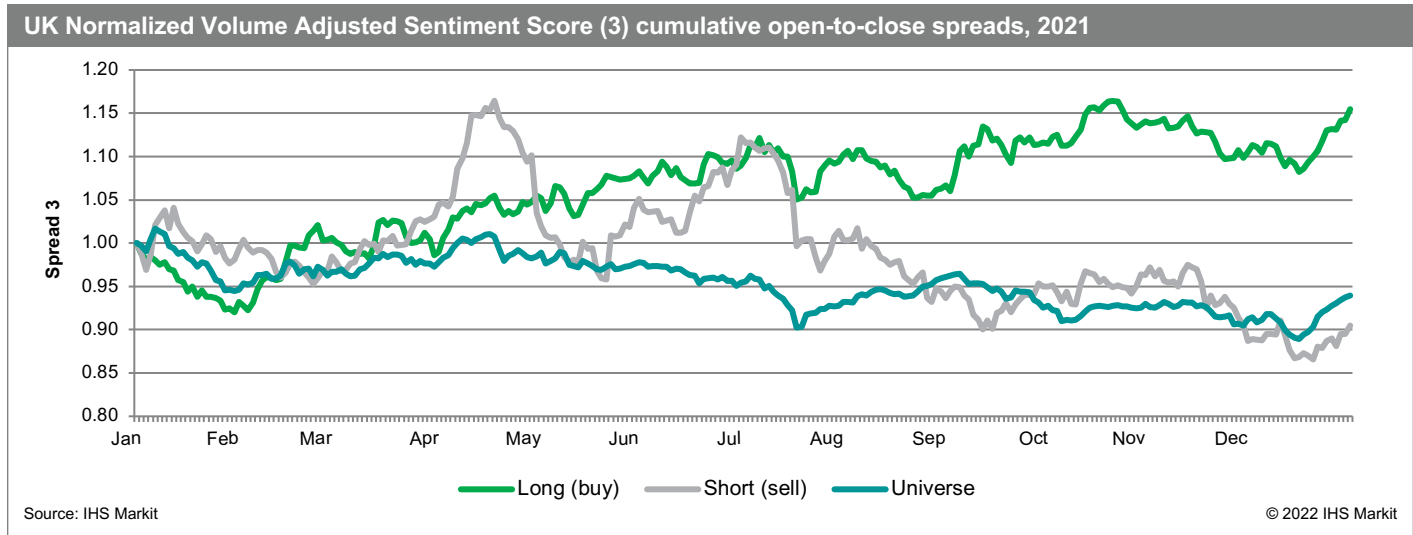


Figure 8



Conclusion

Focusing on our growing collection of factors beyond those widely followed across the industry, we review 2021 performance for a representative group of alternative factors constructed using both IHS Markit proprietary datasets and other unique data from our partners.

IHS Markit's Equity Point-in-Time Ownership data provides daily insights into global institutional and fund owned security positions, flow of funds and activity globally across developed and emerging markets. We constructed 17 factors built specifically from holdings and trading activity evaluating ownership concentration, changes in holdings, institutional and hedge fund holdings and liquidity flow ratios.

Versions of % Selloffs out of Sold based on counts and shares posted strong average monthly spreads in both the US (2.72% and 1.76%, respectively) and Europe (1.76% and 1.19%, respectively), while % Institutional Holdings (1.30%) and Changes in Active Share Holdings (0.99%) were top contributors in Developed Pacific. Performance was especially robust in Emerging EMEA, led by % Hedge Fund Holdings based on count (3.21%) and shares (1.78%), while count measures of Bought Sold Imbalance (1.13%) in Emerging Asia and % Buyins out of Bought (1.05%) in Emerging Latin America were key performers in 2021.

Given the ubiquity of social media networks like Twitter, we construct Social Media Indicators that gauge investor outlook on firms by taking advantage of the timely tracking of public sentiment utilizing aggregate tweet data. The factors classify the text content in daily Twitter posts to construct sentiment and volume signals that identify potential buy and sell candidates.

Focusing on our constructed measure of Normalized Volume Adjusted Sentiment Score, the US buy portfolio open-to-close average return (0.051%) outperformed the sell portfolio (-0.054%) with a spread of 0.105% at the +/- 3 tail. In the UK, the Score ≥ 3 portfolio (0.058%) outperformed the Score ≤ -3 portfolio (-0.030%), with a spread of 0.089%. Outcomes were robust to a broader +/- 2 tail (US spread: 0.074%; UK spread: 0.051%) and to an additional check on tweet volumes of at least three (US spread 2: 0.172%; UK spread 2: 0.116%), under the caveat of more limited portfolio sizes.

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