

Quantitative Equities

What's up with Momentum?

- Momentum factor performance was strong in 2020
- However, return dispersion between momentum strategies was large
- Style risks embedded in Momentum factor were key drivers

2020 will forever be etched in our memories as the year in which the Covid-19 outbreak affected the lives of many people across the globe. The direct and indirect consequences of the pandemic – the measures taken by governments to curb the spread of the virus, as well as the deployment of massive fiscal and monetary stimulus packages – reverberated across financial markets. Some market segments, often referred to as the “online economy”, emerged as winners, while the “offline economy” was ill-prepared to weather the storm. Generally speaking, the performance of global market indices in 2020 was dominated by the large-cap growth style. Looking through a factor lens, low volatility, small-cap and value stocks tended to lag. But while a lot has already been written about these three styles, much less has been said about another key factor: Momentum. In this note, we look at how it fared last year and dissect the key drivers behind its performance.

Momentum was one of the top-performing factors in 2020, delivering double-digit gains. However, there were also large dispersions in returns between the different approaches typically used to harvest the momentum premium. The traditional price momentum factor rallied the most. But this performance was highly concentrated in a single segment of the market. This approach worked well during the sell-off and the initial recovery phase thereafter, but it suffered in the latter part of the year due to the factor rotation that occurred following the announcement of Pfizer-BioNTech’s vaccine-candidate trial results. Other momentum signals lagged traditional price momentum in the first two stages of the year, but they provided risk reduction in the last phase. Thus, 2020 was not without road bumps, even for well-diversified momentum investors.

Article For professional investors



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Performance of Momentum and other factors: long run and 2020

Factor premiums manifest themselves over long-term horizons. Figure 1 depicts the performance of key equity factors using long-only portfolios over every decade since the 1930s. For this figure, we took into account the low volatility, momentum, quality and value styles as well as the market and small-cap factors, sorting them from best to worst in terms of performance for each decade.

Figure 1 shows that factor premiums were generally positive during each decade. It also shows that factors can underperform the market for periods even as long as 10 years. For example, we recently experienced a challenging period for the value factor as it failed to outperform the market in the 2010s, just like it did in the 1930s.¹ Despite that, even if we go all the way back to the 1930s, we have yet to see a single decade in which the momentum premium has been negative (please note that returns in Figure 1 are gross of transactions costs). In fact, although the momentum factor plummeted in 2009, struck by the sudden and strong market recovery that followed the losses of 2008, it still ended that decade in positive territory.

All in all, no other factor has delivered such consistently positive gross returns over this long sample period, although it is also important to note that momentum has not always been the strongest-performing factor.

Figure 1 | Historical performance of equity factor premiums

1930s	1940s	1950s	1960s	1970s	1980s	1990s	2000s	2010s
Momentum 6.5%	Value 18.9%	Momentum 24.3%	Momentum 17.1%	Value 13.8%	Low-Volatility 22.4%	Momentum 23.6%	Value 7.3%	Momentum 14.3%
Low-Volatility 5.0%	Momentum 17.1%	Value 21.4%	Quality 14.3%	Momentum 12.9%	Value 21.1%	Market 18.0%	Low-Volatility 6.5%	Low-Volatility 14.2%
Small-Caps 4.5%	Small-Caps 15.7%	Small-Caps 18.9%	Small-Caps 13.3%	Small-Caps 10.4%	Momentum 20.9%	Quality 17.8%	Quality 6.5%	Market 13.6%
Market -0.2%	Low-Volatility 11.5%	Low-Volatility 18.5%	Value 13.3%	Quality 10.0%	Quality 18.9%	Value 16.3%	Small-Caps 6.4%	Quality 13.0%
Value -1.0%	Market 9.5%	Market 18.3%	Low-Volatility 10.3%	Low-Volatility 9.5%	Small-Caps 17.2%	Low-Volatility 14.6%	Momentum 4.1%	Small-Caps 12.1%
			Market 8.3%	Market 6.1%	Market 16.8%	Small-Caps 14.5%	Market -0.4%	Value 11.0%

Source: Data library of Professor Kenneth French, Robeco. All factors are long-only portfolios that are invested 50% in big and 50% in small top factor portfolio based on 2x3 size-factor sorts from Professor Kenneth French. The low volatility factor is constructed in the same way, but is obtained from Robeco.com/data. Quality is an equal-weight combination of operating profitability and investment portfolios of Professor Kenneth French. Same runs from January 1930 till December of 2019 for all factors but quality, which starts in July of 1963.

Moving on to 2020, Figure 2 shows the performance of generic MSCI factor indices relative to the MSCI All Country World Index (MSCI ACWI), for the period from January to November 2020. Equal-weighted, low volatility and value indices failed to deliver positive excess returns, while momentum enjoyed a strong year.² The MSCI ACWI Momentum Index did not only significantly beat the MSCI ACWI, but it also outperformed most of the other factor indices. In other words, momentum definitely had its 'shot of momentum' in 2020.

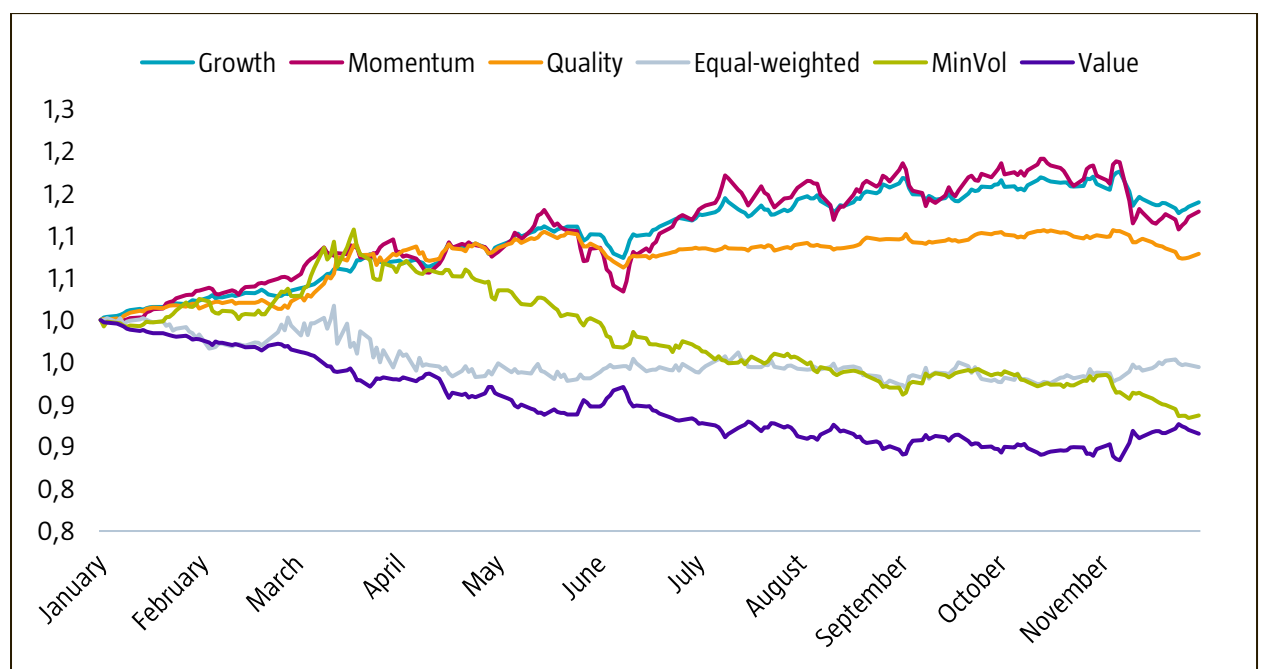
¹ For further insight on the recent underperformance of the value factor, please refer to: Van Vliet, P. and Baltussen, G., August 2020, 'Will value survive its long winter?', Robeco article.

² Equal-weighted index provides exposure to the size (small-cap) factor.

In our view, the momentum factor benefited from its material exposure to mega-cap growth stocks, a point we will discuss in more detail in this paper. Figure 2 shows this very clearly, as we have also included the performance of growth stocks as proxied by the MSCI ACWI Growth Index. That said, we do not consider growth as a (return) factor for equities, as growth stocks do not outperform the market in the long run. If anything, they tend to underperform. Investors should therefore not expect to be rewarded for investing in growth stocks over long periods, unless those same equities also happen to have other favorable factor characteristics, like quality for example.

Throughout the year, the MSCI ACWI Momentum Index exhibited a significant overlap with the MSCI ACWI Growth Index and a particularly large allocation to 'big tech'. Indeed, these two indices have material overweight exposures to seven of the ten largest stocks in the MSCI ACWI, namely Apple, Microsoft Corporation, Amazon, Tesla, Taiwan Semiconductor Manufacturing Company, Alibaba Group Holding and Tencent.³ The factor characteristics of the MSCI ACWI Momentum Index show a clear large-cap growth profile. For instance, its P/E and weighted average market cap are more than 50% higher than those of the market. Thus, the returns of the MSCI ACWI Momentum and MSCI ACWI Growth Indices were highly correlated in 2020, given the large overlap between the two. This point is further illustrated by the lockstep moves in the momentum and growth series in Figure 2.⁴

Figure 2 | Performance of MSCI ACWI factor indices versus MSCI ACWI



Source: MSCI, Robeco as at November 2020. Growth is MSCI ACWI Growth Index, Momentum is MSCI ACWI Momentum Index, Quality MSCI ACWI Quality Index, Equal-weighted is MSCI ACWI Equal Weighted Index, MinVol is MSCI ACWI Minimum Volatility (USD optimized) Index, and Value is MSCI ACWI Value Index. All index returns are in USD, gross.

Figure 2 also shows that the strong outperformance of the MSCI ACWI Momentum Index relative to the MSCI ACWI was not smooth over the period. During the first quarter of 2020, markets experienced a continuation of the dominance of the large-cap growth segment over its small-cap value counterpart. The MSCI ACWI Momentum Index benefited from its tilt towards the former.⁵ Then, over the following two quarters, significant stimulus packages were announced, underpinning a recovery in global equity markets, which was driven again by large-cap growth stocks. The MSCI ACWI Momentum Index benefited once more from its strong style tilt towards these outperforming equities.

³ Source: MSCI. Data as of 30 November 2020.

⁴ Based on daily outperformance numbers of MSCI ACWI Momentum and MSCI ACWI Growth relative to MSCI ACWI, the correlation is 84%.

⁵ See e.g. our note: Huij, J., Lansdorp, S., Roscovan, V. and Haesen, D., March 2020, "COVID-19: Large-cap growth beats small-cap value", Robeco performance update.

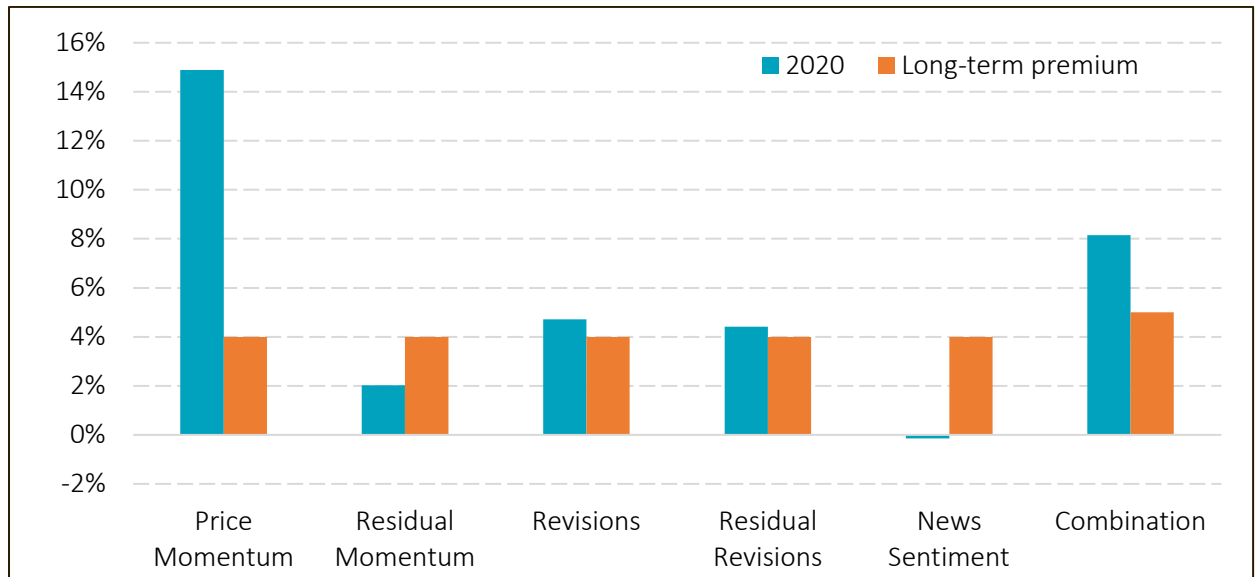
But there were also periods of strong reversals for momentum, characterized by growth stocks retreating. From mid-May until early June, during the first half of September, and – most recently – since 9 November 2020, growth stocks lagged the market, significantly reducing the MSCI ACWI Momentum Index’s year-to-date outperformance during those intervals. In fact, the most evident indication of a value-growth rotation occurred after the announcement of positive phase III clinical trial results for the Pfizer-BioNTech vaccine-candidate against Covid-19. The MSCI ACWI Momentum Index, with its heavy tilt towards large-cap growth equities and underweight exposure to smaller-cap value stocks, was severely affected by the news and the subsequent rally of the value factor.

In summary, the generic momentum factor was a strong performer overall in 2020, and its embedded large-cap growth style tilt played a key role in its performance.

Performance dispersion across Momentum signals was large...

Having dissected the performance of generic momentum strategies, we believe it is also important to assess how the different momentum strategies fared in 2020. The results are illustrated in Figure 3, where the blue bars depict the 2020 portfolio returns of various momentum signals relative to their long-term expectations.⁶ These portfolios were made of the top 20% of the highest-ranked stocks on the individual and combined (equal-weighted) momentum signals. The portfolios were also rebalanced on a monthly basis for this exercise. The chart shows that the price momentum factor had an outstanding year, exceeding not only its own long-term average, but also outperforming all the other momentum signals. Even the portfolio based on the combined signal, which has the highest long-term expected return, lagged significantly behind price momentum in 2020.

Figure 3 | 2020 and long-term performance of Momentum signals in excess of the market



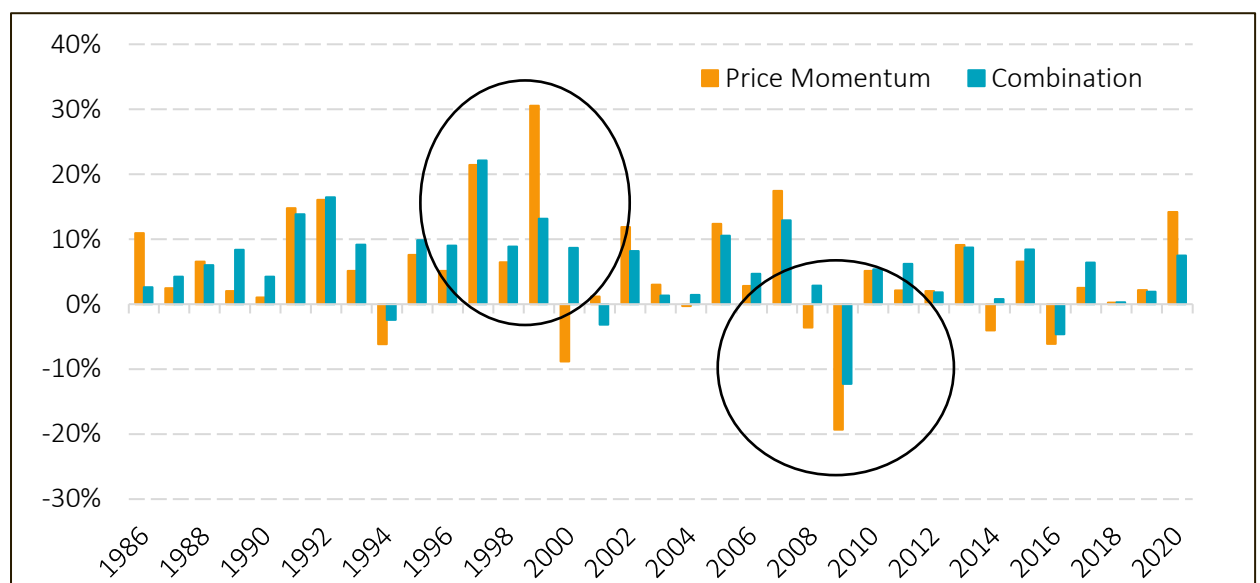
Source: Robeco, FactSet as at November 2020. Figure shows annualized average returns of portfolios constructed based on price momentum, residual momentum, analyst revisions, residual analyst revisions and news sentiment. The investment universe consists of constituents of the MSCI ACWI augmented with large and liquid constituents of the FTSE World Developed, the S&P Broad Market, and the IFC Investable Emerging Markets Index. Portfolios are constructed by investing in securities ranked in the top 20% of the respective signal and they are rebalanced monthly. Combination portfolio is based on the combined ranked where the signals are equal-weighted. Long-term average returns based on the 1986-2020 sample period (2001-2020 for news sentiment).

Figure 4 shows the calendar-year returns of price momentum and an equal-weighted combination of momentum signals based on a historical sample. The graph reveals that a combined approach typically delivers higher average returns, and,

⁶ The long-term historical premiums for the five momentum signals are of similar magnitude. Because the signals are not perfectly correlated, the combination results in a stronger and more robust return than any single measure.

importantly, also provides a much smoother ride compared to the traditional price momentum factor. The most notable performance gaps took place around significant momentum peaks (e.g. height of dot-com bubble) and momentum drawdowns (e.g. such as 2009). Apart from the diversification benefits derived from combining different momentum signals, the risk reduction observed stemmed from avoiding large style bets, that typically accompany traditional price momentum. These bets are, on average, unrewarded, and nearly half of the total volatility associated with traditional price momentum strategies can be attributed to them.⁷

Figure 4 | Calendar-year returns of Price Momentum and a combination of five Momentum signals



Source: Robeco, FactSet as at November 2020. Figure shows calendar-year returns of portfolios constructed based on price momentum and a combination of price momentum, residual momentum, analyst revisions, residual analyst revisions and news sentiment. The investment universe consists of constituents of the MSCI ACWI augmented with large and liquid constituents of the FTSE World Developed, the S&P Broad Market, and the IFC Investable Emerging Markets Index. Portfolios are constructed by investing in securities ranked in the top 20% of the respective signal and they are reformed monthly.

...and Momentum had a bumpy ride

As mentioned, the momentum factor navigated an uneven performance path in 2020. Zooming in on its monthly performance, as shown in Figure 5, we can see that traditional price momentum performed well in absolute terms and also relative to other momentum signals in the first half of 2020. This period corresponds to the initial pandemic-instigated market sell-off and subsequent recovery.

Importantly, the global stock market rout that occurred in February and March of 2020 was not driven by typical economic cycles, but instead by a pandemic which resulted in lockdowns across the world. This market environment resulting from exceptional circumstances clearly supported the price momentum factor, as it had pronounced tilts towards large-cap and growth stocks, heading into the Covid-19 crisis. This was a legacy of the productive styles of 2019. As we mentioned, these tilts benefited price momentum in 2020, but such implicit style bets are typically not rewarded in the long term, highlighting some of the pitfalls of the factor.⁸ In fact, we can even think of other highly unlikely circumstances (e.g. cyber security failures or government-imposed regulations) that would have led to value outperforming growth, resulting in disappointing performance for the price momentum factor. In our view, these elements plead for a diversified approach to the momentum factor as it would be less sensitive to the dynamic tilts that price momentum can adopt to other factors. Short-term shocks

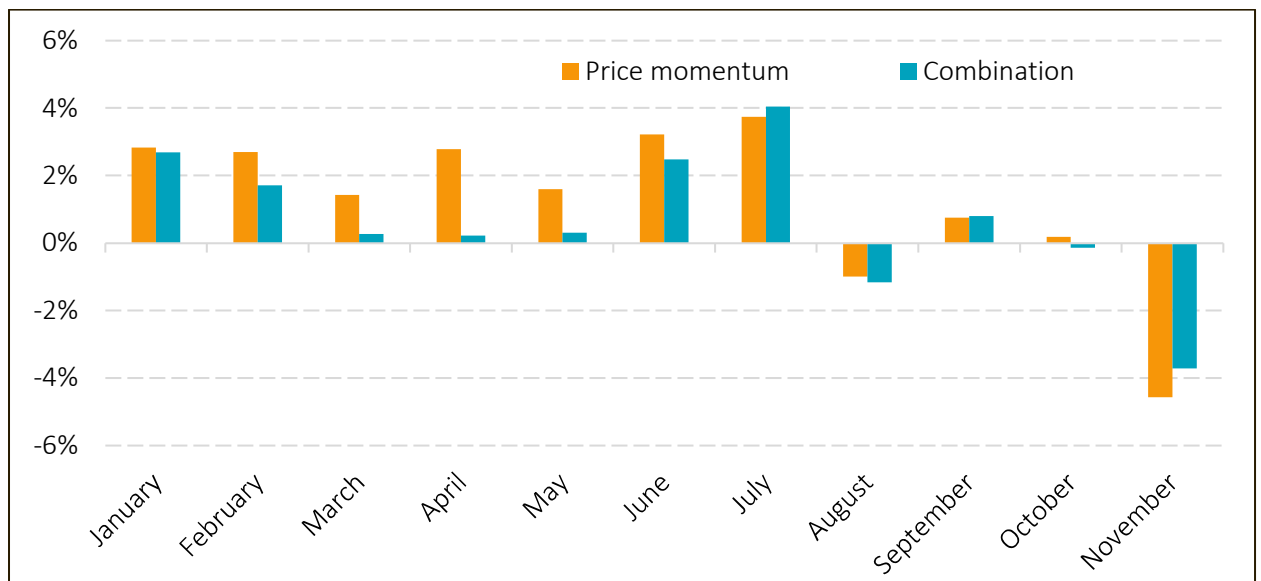
⁷ See amongst others: Blitz, D.C., Huij, J. and Martens, M., 2011, "Residual Momentum", *Journal of Empirical Finance*.

⁸ See: Vidojevic, M. and Hanauer, X. M., 2020 "Residual momentum and style reversals: long-term and recent experience," Robeco article.

can, however, lead to the relative underperformance of residual momentum versus traditional price momentum, as we have recently witnessed.

In fact, the month of November illustrated the vulnerability of traditional price momentum when it comes to style reversals. The announcement of encouraging results for Pfizer-BioNTech’s vaccine-candidate triggered a factor rotation in the market, with the previously underperforming value and small-cap factors gaining, while growth and large-cap stocks lagged. This led to a pullback in the price momentum factor, which was partly cushioned in the diversified basket by the relatively good performance of residual momentum.

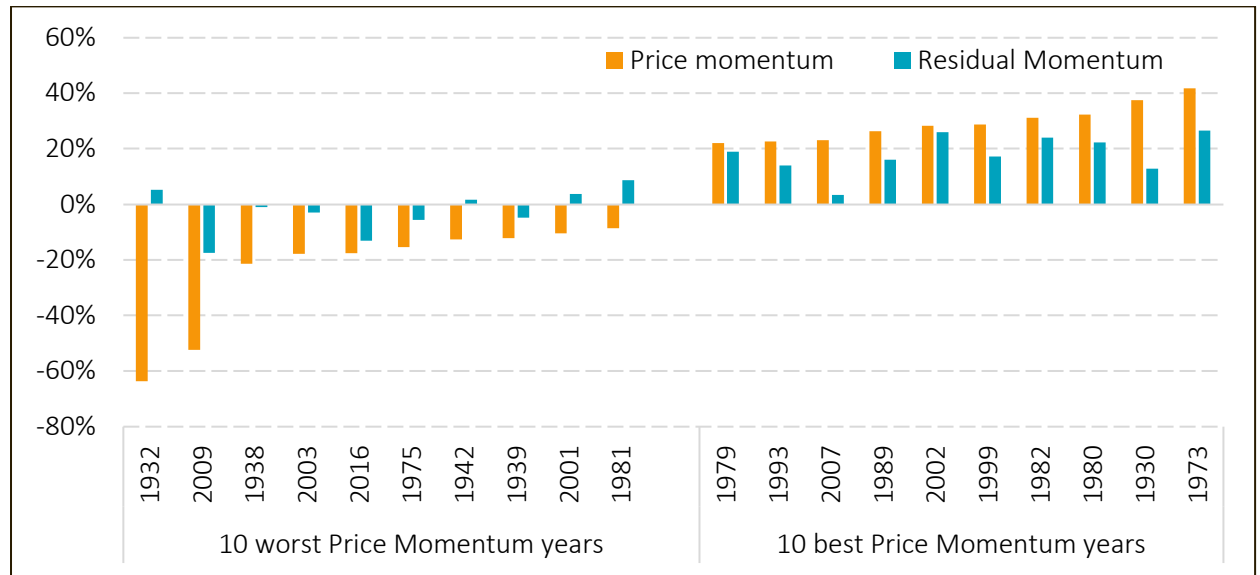
Figure 5 | Momentum returns in 2020



Source: Robeco, FactSet as at November 2020. Figure shows returns of portfolios constructed based on price momentum and a combination of price momentum, residual momentum, analyst revisions, residual analyst revisions and news sentiment. The investment universe consists of constituents of the MSCI ACWI augmented with large and liquid constituents of the FTSE World Developed, the S&P Broad Market, and the IFC Investable Emerging Markets Index. Portfolios are constructed by investing in securities ranked in the top 20% of the respective signal and they are reformed monthly.

These patterns of high peaks, but also deep troughs, for traditional price momentum are consistent with what we have seen in the past. For instance, Figure 6 shows that these patterns also hold in the long-term sample of US stocks (based on the CRSP database) dating back to the 1920s. Given the limited availability of the more novel momentum signals, such as revisions and news sentiment, we have focused only on traditional price and residual momentum for our analysis. In Figure 6, we illustrate the returns of the latter two momentum signals in the 10 best (excluding 2020) and the 10 worst years for price momentum. What we can observe is that residual momentum lagged in the strong price momentum years and vice versa. When investigating these two extremes of momentum returns, we found asymmetric behavior. While residual momentum outperformed price momentum on average by 20.6% in the worst price momentum years, it also lagged price momentum by a smaller quantum (11.2%) in the best price momentum years.

Figure 6 | Backtested returns of the two Momentum signals in the 10 best and worst years for Price Momentum



Source: Data library of Professor Kenneth French, Robeco. The residual and price momentum factors are constructed in the same way, following the methodology of Professor Kenneth French. The price momentum factor is the WML factor of Professor Kenneth French; the residual momentum factor is constructed by Robeco.

So, under which circumstances does price momentum perform well and when does it typically struggle? Generally speaking, trending markets without clear reversals in other factors (styles) – such as value, size or the market – are often beneficial for price momentum. On the other hand, reverting markets (including reverting styles) can be a tough terrain for momentum investors. A momentum approach that reduces these style tilts should therefore smoothen its performance over time.

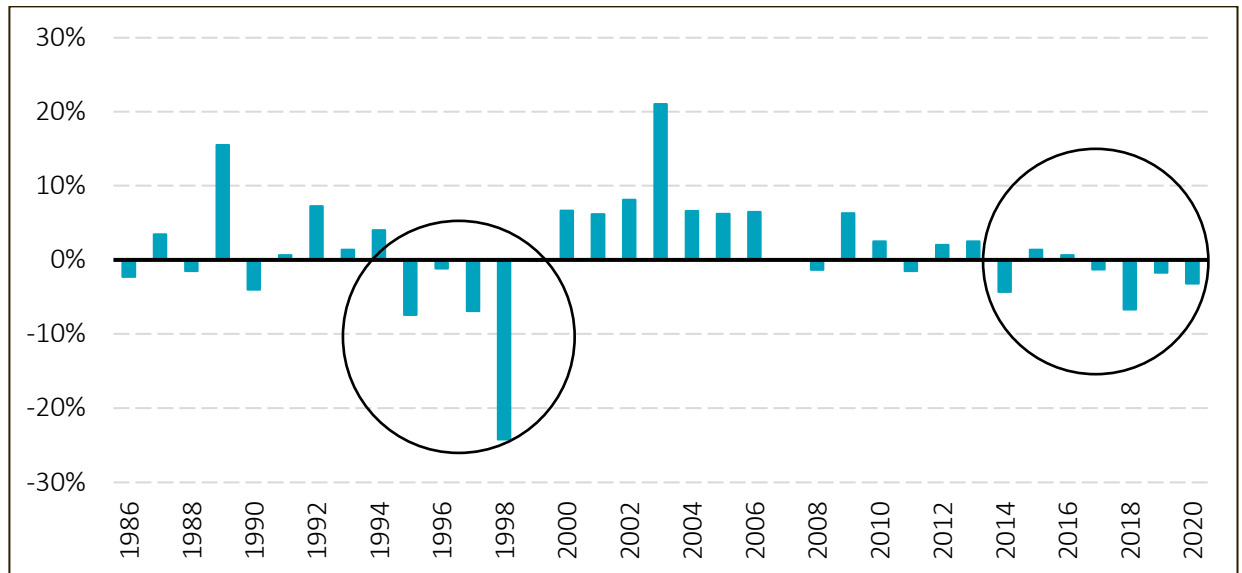
Portfolio construction details also matter

Portfolio construction parameters are another source of significant return dispersion between different momentum approaches. Most notably is the allocation to mega and large-cap stocks versus smaller-cap counterparts. Several studies show that momentum is stronger in mid- to smaller-cap equities. The efficacy of the factor is reinforced by tilting it towards smaller stocks.⁹ Figure 7 shows the calendar-year excess returns of an equal-weighted portfolio sorted on price momentum, against a market-cap weighted strategy sorted on the same variable. Over the long term, we can see that the equal-weighted approach has outperformed the market-cap weighted version by nearly 1% per annum, although the calendar-year return spreads do exhibit a volatile pattern.

That said, over the last four years, and in the run-up to the dot-com bubble, market-cap weighted momentum outperformed its equal-weighted peer as large-cap equities fared much better than their mid- and small-cap counterparts over this period. This pattern also materialized during most of 2020, as large-cap stocks generally performed better from the advent of the Covid-19 pandemic up until the Pfizer-BioNTech vaccine-candidate results announcement in November.

⁹ More generally, factor premiums manifest themselves more strongly in the mid- and small-cap segments of the market. We discuss these insights in our paper: Blitz, D.C., Lansdorp, S., Roscovan, V. and Vidojevic, M., 2019 "Factor strategies need breadth", Robeco article. Available upon request.

Figure 7 | Calendar-year return spread between equal and market-cap weighted Price Momentum-based portfolios



Source: Robeco, FactSet as at November 2020. Figure shows the calendar-year return spread between equal and a market-cap weighted portfolios sorted on price momentum. The investment universe consists of constituents of the MSCI ACWI augmented with large and liquid constituents of the FTSE World Developed, the S&P Broad Market, and the IFC Investable Emerging Markets Index. Portfolios are constructed by investing in securities ranked in the top 20% of the price momentum signal and they are reformed monthly.

Conclusion

Momentum had its ‘shot of momentum’ in 2020, with traditional price momentum delivering particularly strong gains in our view. But the ride was a bumpy one, and we saw large return dispersions between different momentum approaches. The factor’s tilt to large-cap growth stocks was the key driver of its performance and of the wide return differences seen between varying momentum signals. We saw that the more concentrated their exposure to the large-cap growth segment of the market was, the better the momentum strategies fared.

But these results also warrant a word of caution in our view. Momentum can, at times, be exposed to significant style and concentration risks. Its current exposure to large-cap growth stocks that trade at lofty valuations is a good example. We believe that a well-diversified portfolio approach across momentum signals is of crucial importance as it avoids concentrated positions, thereby mitigating those risks.

Momentum has historically rewarded investors handsomely over the long term, but it has also been a relatively risky factor. So, in our view, combining momentum with other factors has been and continues to be an effective way to improve long-term investment outcomes. Such choices can result in headwinds at times. But we believe that being cognizant of momentum’s properties, and taking them into account when designing a momentum or a multi-factor strategy, leads to better performance in the long term.

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