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# Stand United or Divide and Conquer?

What is the Best Approach to  
Factor Investing?

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**Kamal Gupta, CFA, FRM**

Senior Research Analyst

**Altaf Kassam, CFA**

EMEA Head of Investment Strategy & Research

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# Executive Summary

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Factors such as Value, Size, Momentum, Quality or Volatility are employed to identify stocks with specific characteristics. Such stocks are then used as part of an investment strategy to generate potential returns above a specific benchmark. For instance, stocks that exhibit lower volatility are thought to provide higher risk-adjusted returns to investors. Similarly, Value stocks are understood to be cheaper relative to their intrinsic value. As far as the factor investing process is concerned, single-factor exposure and factor-timing processes are among the most popular approaches. We analyze the pros and cons of both of these approaches and suggest that a multi-factor bottom-up blending process combines the benefits of both and offers the best risk-adjusted returns to investors.

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# Factor Investing

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Factor investing is a style of investing that takes advantage of certain characteristics of securities with the express purpose of driving higher risk-adjusted returns over a market cycle. These characteristics could be macro or fundamental in nature and could include attributes such as Growth, Momentum, Value or Size, among others, which could be used to select securities.

Factors were first employed by equity portfolio analysts to make analyses more tractable. Factor analysis made it possible to decompose the risk and return drivers of equity securities into a smaller set of key factors, such that the dimensionality problem of data, caused by the often vast amounts of variables, could be managed better.

Over time, certain fundamental factors were empirically identified as offering long-term return premia, justified by behavioral and/or risk-based arguments and supported by economic intuition. These factors then became part of portfolio managers' strategic asset allocation (SAA), which is typically the portfolio allocation that is long-term in nature.<sup>1</sup>

Recognizing the cyclical nature of these factors, the next step was to employ such factors as part of the tactical asset allocation (TAA) process as well. TAA typically encompasses temporary portfolio adjustments that seek to take advantage of external dynamics or short-term market anomalies. This process of taking advantage of the cyclicity of factors, known as factor timing, is used to earn alpha, which is the excess return generated above a benchmark.

In the ensuing sections, we highlight the pros and cons of both these approaches in light of their inherent challenges and recommend that investor interests are best served through a multifactor investing process.

No single factor has consistently outperformed the market through history. Over the past two decades, different factors have gained ascendance at varying points in time, based on some combination of market regime, macroeconomic conditions and market cycle. Indeed, over the past five calendar years, five different factors have topped the charts.

The key takeaway here is that the performance of each factor varies over time and that factors differ from each other in terms of frequencies and amplitudes. This also means that while factor returns can show great relative variability in the short-to-medium term, individual factors could outperform a capitalization-weighted index over several business cycles, particularly on a risk-adjusted basis.

Consequently, for investors, sticking with an individual factor over a long period of time may mean a prolonged and unpredictable underperformance of their portfolio.<sup>2</sup> For instance, consider Value, one of the most popular factors — it has underperformed capitalization-weighted index returns in all but three calendar years since 2007 (Figure 1).

Figure 1

**No Single Factor  
Outperforms Consistently**

1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	YTD
45.3	0.7	0.8	-10.1	57.8	28.1	27.8	30.4	19.4	-29.7	44.1	26.1	7.3	17.5	32.4	11.4	5.2	12.7	32.1	-2.0	36.1	33.8	16.5
39.6	-1.8	-5.0	-14.8	56.1	24.3	16.8	20.5	16.2	-33.8	41.1	16.1	4.2	16.1	31.9	8.4	4.1	8.1	28.0	-2.8	33.7	28.3	14.9
32.7	-2.6	-10.5	-15.6	33.1	20.9	15.7	20.1	14.8	-40.2	33.3	14.5	3.8	15.8	29.7	6.5	3.7	7.5	26.0	-5.5	27.7	22.2	13.9
27.0	-10.4	-12.4	-16.0	28.1	20.0	9.5	18.7	9.8	-40.7	32.6	12.0	-5.5	14.3	27.1	6.1	3.1	7.5	22.7	-6.7	27.7	16.0	13.0
24.9	-13.2	-16.8	-16.8	25.4	14.7	9.4	17.2	9.0	-41.1	30.0	11.8	-5.5	14.1	26.7	4.9	-0.3	4.6	22.4	-8.7	26.2	15.9	11.1
20.2	-19.0	-19.4	-19.9	25.2	12.2	7.7	16.2	5.5	-41.9	16.4	10.7	-9.1	13.0	26.7	4.0	-0.9	4.2	22.2	-13.9	23.2	2.6	7.3
8.1	-25.7	-20.9	-19.9	21.4	10.9	5.5	15.1	0.8	-43.0	14.2	8.6	-11.6	8.1	18.6	1.9	-3.3	2.8	17.3	-13.9	19.0	-4.0	7.1

■ World  
 ■ Growth  
 ■ Volatility  
 ■ Momentum  
 ■ Quality  
 ■ Size  
 ■ Value

Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance**. Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

Given the challenges of sticking with a single factor, investors might be tempted to rotate into favorable factors in search of the best possible returns. However, while seemingly intuitive, factor timing is a notoriously challenging and expensive affair.<sup>3</sup> This is because, oftentimes, factor-timing strategies are highly sensitive to certain top-performing periods, which means a few missteps could drastically jeopardize portfolio returns.

# Single-Factor Approach — Pros and Cons

As mentioned before, factors tend to outperform capitalization-weighted benchmarks over long periods of time. For this reason, they are considered as key drivers of risk and return in equity portfolios.

We examined the performance of the five “classic” premium factors viz., Volatility, Momentum, Quality, Size and Value as well as Growth, which is generally not considered as a premium factor, over several business cycles. Growth was added to the group in the context of the factor coming into sharp focus recently given its strong performance.

The factors considered in our sample all individually outperformed the capitalization-weighted benchmark over a period of 23 years either in terms of return or in terms of return and risk (Figure 2).

Figure 2  
**Single Factors Typically  
Outperform Over  
Long Term**

<b>December 1998– June 2021</b>	<b>World</b>	<b>Growth</b>	<b>Volatility</b>	<b>Momentum</b>	<b>Quality</b>	<b>Size</b>	<b>Value</b>
Annualized Return	6.30	6.80	6.90	9.00	8.20	10.00	8.60
Annualized Standard Deviation	17.40	18.60	12.10	17.90	15.60	20.80	20.00
Return/Risk	0.36	0.36	0.57	0.50	0.52	0.48	0.43
Maximum Drawdown in a Quarter	-49.00	-56.50	-39.90	-49.70	-40.40	-52.50	-53.30

Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.**

Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

To be sure, a two-decade long holding period is likely too long a period for many investors to wait for a single factor to outperform. Taking this into account, we calculated the historical success rate for each individual factor over a range of holding periods to estimate the necessary holding period required for each single factor to outperform the market (Figure 3).

Figure 3  
**Single Factors May Take a Decade or Longer to Reliably Outperform**

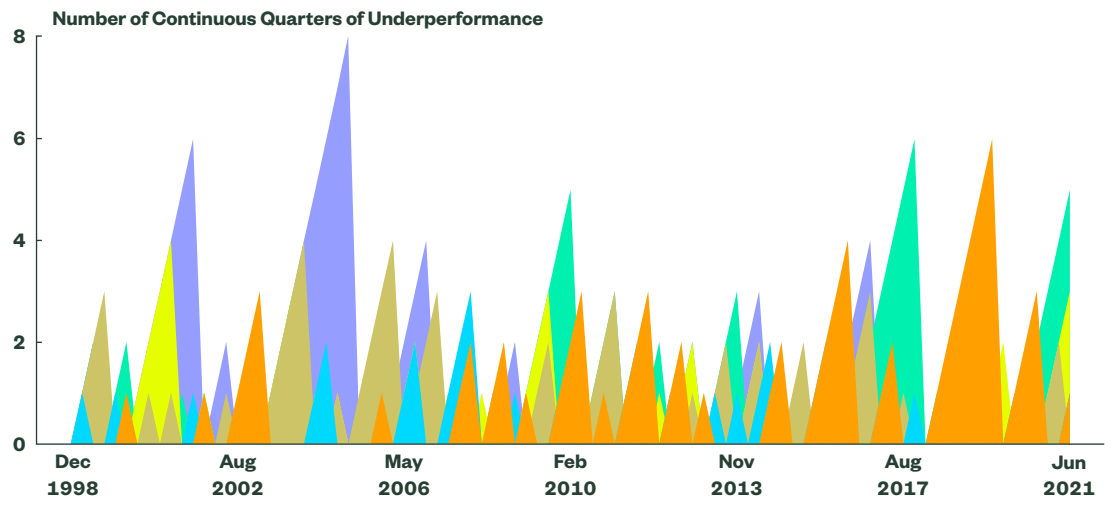
December 1998–June 2021	Rolling 1-Year (%)	Rolling 2-Year (%)	Rolling 3-Year (%)	Rolling 5-Year (%)	Rolling 10-Year (%)	Rolling 15-Year (%)	Rolling 20-Year (%)
Growth	60	59	67	69	71	71	45
Volatility	51	59	67	70	94	94	100
Momentum	64	80	82	93	100	100	100
Quality	61	67	78	77	100	100	100
Size	68	71	76	82	90	100	100
Value	55	60	57	54	57	74	100

Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; outperformance is defined as a performance that is better than that of the MSCI World Index; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.** Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

What we see here is that historical success rates have varied a great deal by factor and that it may take up to 10 years or longer for factors to reliably realize their premia. The crucial element to consider here is the fact that this path to outperformance is not a straight line but is dotted with continuous quarters of underperformance that investors would have to brave (Figure 4).

Figure 4  
**Path to Outperformance Riddled With Continuous Subpar Quarters**

- Growth
- Volatility
- Momentum
- Quality
- Size
- Value

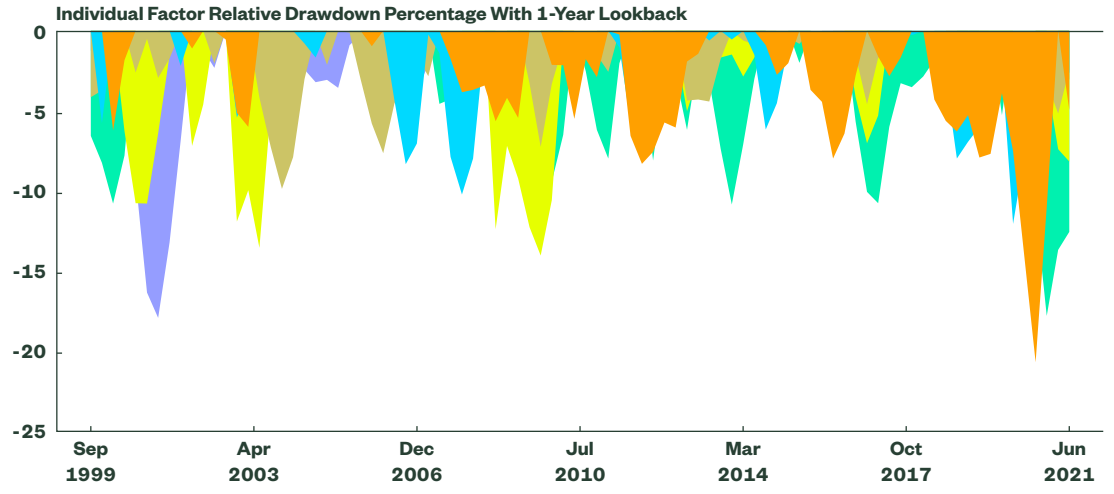


Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; underperformance is defined as a performance that is poorer than that of the MSCI World Index; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.** Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

This, of course, reveals that no factor is immune to periods of underperformance, but most importantly, these periods of underperformance can also be severe relative to benchmark returns. Indeed, the resulting underperformance can test the resolve of the most determined investors, which puts into perspective the (im)practicality of adopting the “single-factor buy-and-hold” approach as a viable investment strategy (Figure 5).

Figure 5  
**Single-Factor Underperformance Could Be Steep Relative to Benchmark**

- Growth
- Volatility
- Momentum
- Quality
- Size
- Value



Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; quarterly net total returns of MSCI style indices were used to calculate performance drawdowns; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.**  
 Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.



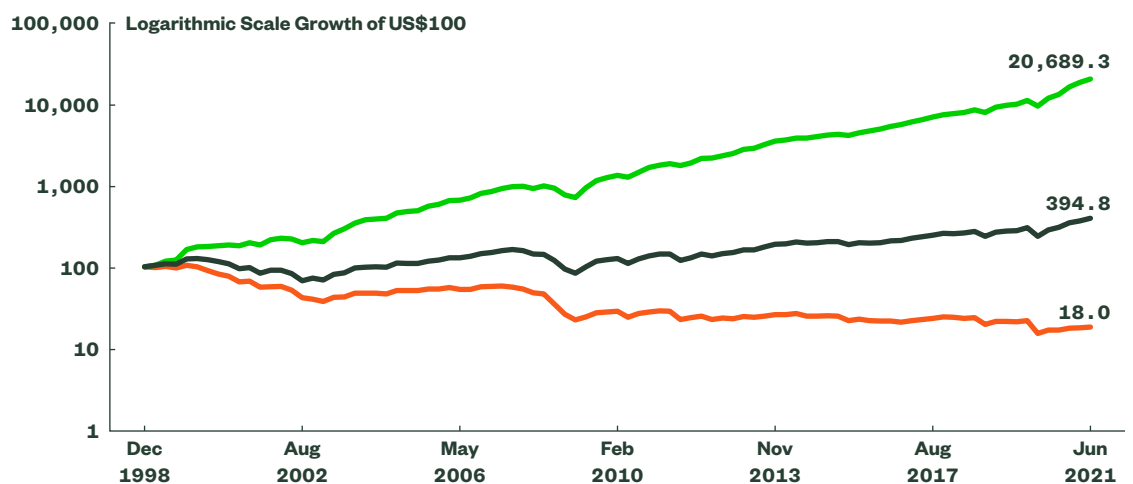
# Factor-Timing Approach — Pros and Cons

In theory, factor timing is the answer to the challenges that are inherent in single-factor investing. A perfect factor-timing strategy with quarterly rebalancing between the major MSCI factor indices would have compounded €100 invested in end-December 1998 to over €20,000 by end-June 2021.

The annualized return of this strategy would be 26.7% versus just 6.3% for the capitalization-weighted benchmark. As mentioned before, this promise is not without its perils: the worst factor-timing strategy reduced €100 to €18, a painful -7.3% annualized return over the same period (Figure 6).

Figure 6  
**Factor Timing Punctuated by Promises and Perils**

- Capitalization-Weighted Benchmark
- Worst Timing
- Best Timing



Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.** Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

Where do investors need to place themselves on the spectrum of best to worst factor timers to make this timing strategy worthwhile? Our calculations show that a successful factor-timing strategy needs a prediction accuracy between 50% to 60% to outperform an equal-weighted factor allocation.<sup>4</sup> While this accuracy may appear only marginally better than the result of a random coin flip, such low prediction accuracy would require a high tracking error to generate meaningful alpha as suggested by the Fundamental Law of Active Management (FLAM) developed by Richard Grinold and Ronald Kahn.<sup>5</sup>

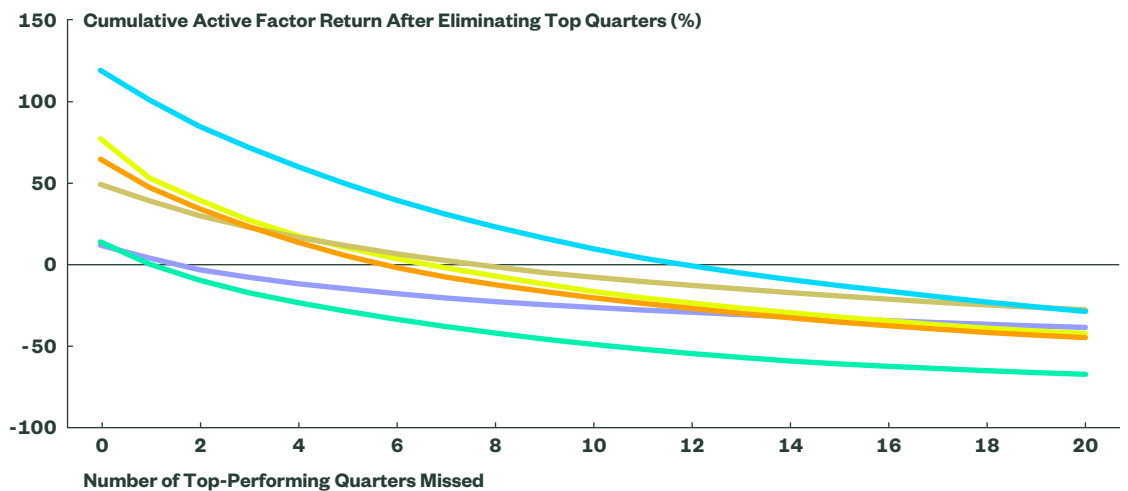
As stated in the equation below, FLAM asserts that the Information Ratio (IR), which is the ratio of benchmark-relative excess performance to tracking error, is approximately proportional to the product of the Information Coefficient (IC), which is a measure of the manager's forecasting skill or prediction accuracy, and the square root of the Breadth (BR), which is used to measure the number of independent forecasts.

$$\text{Equation: } IR \approx IC \times \sqrt{BR}$$

Given the high success rates of individual factors, using factors in a timing strategy has the advantage of increasing IC, but this comes at the expense of reducing Breadth. Remember at this point that the initial motivation for factor analysis was this sort of Breadth reduction to address the dimensionality problem. Given the constraint on Breadth, a high IR, or risk-adjusted performance, is hard to achieve without near-perfect predictive power or higher relative risk.

As we have shown, high prediction accuracy may not be easily possible given the time-varying relationship between factor premia and external indicators. Additionally, the distribution of factor performance is far from uniform, which means that factor outperformance can be squeezed into just a few periods. The implication is that missing any of these key periods could adversely affect the factor-timing strategy (Figure 7).

Figure 7  
Factor Performance  
Sensitive to Top-  
Performing Quarters



Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.** Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

Missing the best 7 out of the 90 quarters of factor outperformance in our sample negated the alpha from the factor rotation process across all factors except for Size, which had four more quarters left to end up below water. In principle, a factor-timing strategy aims to benefit from exceptional periods, but in this process, the strategy exposes investors to greater risk. Add turnover costs to this greater risk exposure, and the risk-return trade-off may appear unappetizing to investors.

# United We Stand: Multifactor Approach

It is clear from the above illustrations that although factors in general offer meaningful alpha generation capabilities, single-factor as well as factor-timing strategies are fraught with risks that may dissuade even a seasoned investor from adopting such strategies. On the one hand, a simple and relatively inexpensive approach of sticking with a single factor may turn out to be ineffective owing to the unrealistic time periods involved in achieving outperformance. On the other, a seemingly rewarding factor-timing strategy could turn challenging due to the high accuracy and turnover requirements.

Is there a way out of this predicament where investors could reap the benefits of factor investing without having to choose between the options of single-factor or factor-timing strategies? To put it differently, as far as investors are concerned, the question should not be whether to employ factors as such but how to employ them successfully by avoiding the risks inherent in both single-factor and factor-timing strategies.

One solution to this predicament, in our view, is to diversify across a variety of factors taking into consideration their less-than-perfect correlations. Take the Momentum factor for instance, which exhibits a moderately positive correlation with Volatility and Quality but negative correlation with Size and Value (Figure 8). By blending these factors, which are less than perfectly correlated, it should be possible to improve the risk-return profile from a single-factor strategy, which could in turn cushion the impact of drawdowns.

Figure 8  
**Correlation Imperfect for  
Active Factor Returns**

December 1998– June 2021 (Quarterly)	Volatility	Momentum	Quality	Size	Value
Volatility	1.00	0.16	0.40	-0.25	-0.12
Momentum	0.16	1.00	0.36	-0.26	-0.23
Quality	0.40	0.36	1.00	-0.57	-0.55
Small	-0.25	-0.26	-0.57	1.00	0.50
Value	-0.12	-0.23	-0.55	0.50	1.00

Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; quarterly net total return series for the indices were used; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance**. Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

The potential diversification benefit of such an approach is shown in Figure 9, where we use the stylized “top-down” approach of a simple equal-weighted combination of factors, rebalanced quarterly. What we see is that this simple approach finds a happy medium in risk and return, leading to strong risk-adjusted outperformance relative to the capitalization-weighted benchmark.

Figure 9  
**Risk-Adjusted Performance of Multifactor Approach**

December 1998–June 2021	World	Multifactor Strategy	Volatility	Momentum	Quality	Size	Value
Annualized Return	6.30	8.80	6.90	9.00	8.20	10.00	8.60
Annualized Standard Deviation	17.40	16.20	12.10	17.90	15.60	20.80	20.00
Return/Risk	0.36	0.54	0.57	0.50	0.52	0.48	0.43
Maximum Drawdown in a Quarter	-49.00	-46.10	-39.90	-49.70	-40.40	-52.50	-53.30

Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.**  
Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

Another advantage of combining multiple factors is a reduction in length of the required holding period to reap the benefits of factor premia. This “top-down” approach achieved outperformance over each holding period versus all other factors (Figure 10).

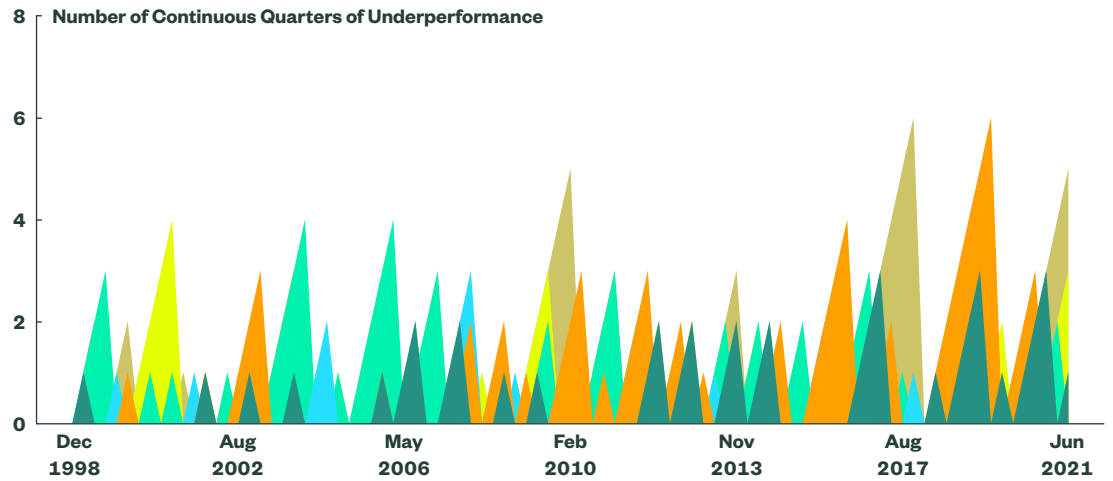
Figure 10  
**Risk-Adjusted Performance of Multifactor Approach Over Varying Periods**

December 1998–June 2021	Rolling 1-Year (%)	Rolling 2-Year (%)	Rolling 3-Year (%)	Rolling 5-Year (%)	Rolling 10-Year (%)	Rolling 15-Year (%)	Rolling 20-Year (%)
Volatility	51	59	67	70	94	94	100
Momentum	64	80	82	93	100	100	100
Quality	61	67	78	77	100	100	100
Size	68	71	76	82	90	100	100
Value	55	60	57	54	57	74	100
Multifactor Strategy	72	88	92	94	100	100	100

Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.**  
Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

As well as improving the “hold-to-maturity” outperformance probability, the multifactor approach also smoothens this journey to eventual outperformance, exposing the investor to shorter average consecutive periods of underperformance (Figure 11).

Figure 11  
**Multifactor Approach Shows Shorter Average Consecutive Underperformance**



Note: Please refer to endnotes for a full description of the MSCI indices used in this figure; underperformance is defined as a performance that is poorer than that of the MSCI World Index; index returns are unmanaged and do not reflect the deduction of any fees or expenses; index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable; **past performance is not a reliable indicator of future performance.**  
 Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

## Top-Down or Bottom-Up?

While the simple equal-weighted scheme that follows a “top-down” approach (i.e., no explicit security selection outside the composition of factors) to combine factors can be seen as effective, historically it has been more than matched by a “bottom-up” approach, followed, for example, by the MSCI World Select 5-Factor ESG Low Carbon Target Index, where securities are selected based on a combination of individual scores by stock across the targeted factors.

Several academic studies have noted the relative superiority of a bottom-up approach versus a top-down one. These studies concluded that by taking into account the interaction between various factors, such an approach can put to use a richer input data set.<sup>6,7,8</sup>

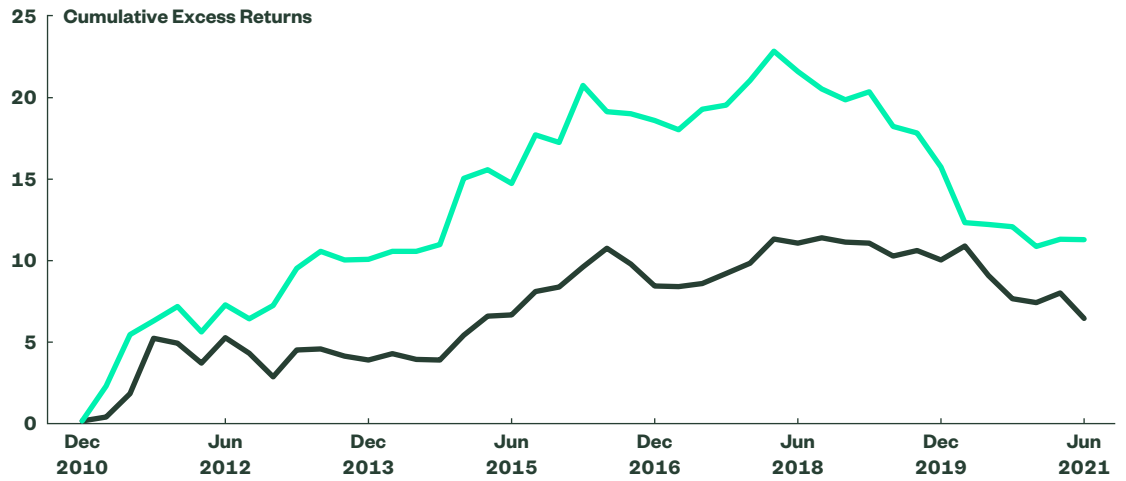
It should be noted that multifactor approach has been relatively ineffective recently as market performance has been concentrated in a select few factors. Regardless, the approach continued to limit instances of consecutive underperformance.

To come back to the point of whether to go with a top-down or bottom-up approach when considering factor investing, it could be said that both top-down and bottom-up approaches have added value when measured against a capitalization-weighted benchmark over the past decade with the bottom-up approach outperforming top-down consistently over the decade (Figure 12).

Figure 12

**Backtested Performance of Top-Down Versus Bottom-Up Approach**

- Equal-Weighted Multifactor Blend (Top Down)
- The MSCI World Select 5-Factor ESG Low Carbon Target Index (Bottom Up)



Note: Quarterly rebalancing was assumed; the MSCI World Select 5-Factor ESG Low Carbon Target Index was inceptioned in September 2018 and results prior to this date were calculated by using available data at the time in accordance with the Index's current methodology. The returns for the equal-weighted multifactor series do not represent those of an index but were achieved by mathematically combining the actual performance data of the five factor indices. The performance assumes no transaction and rebalancing costs, so actual results will differ. The performance data displayed is a hypothetical example for illustrative purposes only and is not indicative of the past or future performance of any SSGA product. Backtested Performance does not represent the results of actual trading but is achieved by means of the retroactive application of a model designed with the benefit of hindsight. Actual performance results could differ substantially, and there is the potential for loss as well as profit. The Backtested Performance may not take into account material economic and market factors that would impact the adviser's actual decision making. The performance reflects management fees, transaction costs and other fees and expenses a client would have to pay, which reduce returns. Index returns are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect all items of income, gain and loss and the reinvestment of dividends and other income as applicable. Source: Bloomberg, State Street Global Advisors, as at 30 June 2021.

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# Conclusion

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Single factors have historically generated excess returns above a capitalization-weighted benchmark over the long term. As far as investors are concerned, we strongly believe that the question should not be about whether to, but how to, undertake a factor-investing approach.

On the one hand, sticking with individual factors leaves an investor hostage to individual factor performances, which can vary widely in frequency and amplitude. Such strategies also suffer from prolonged underperformances and steep drawdowns that investors may find hard to stomach. On the other hand, factor-timing strategies require a great amount of skill and precision to counteract the drag of portfolio turnover.

A multifactor blended approach can combine the benefits of the two without having to face the challenges inherent in either approach. Diversifying factor exposure could not only smooth the investment cyclicalities associated with the excess returns of single factors but also generate alpha in a relatively cost-effective manner. We recommend that investors carefully consider the costs involved along with their ability for risk taking and reliably timing factors before formulating their approaches to factor investing.

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## Endnotes

- 1 Growth is generally not considered as a premium factor unlike factors such as Low Volatility, Momentum, Quality, Small Size and Value. Consequently, the Growth factor is not explicitly incorporated into the multifactor equity strategies or offerings of State Street Global Advisors. As such, we excluded the Growth factor from the "United We Stand: Multifactor Approach" segment, where the performance of our multifactor strategy is analyzed.
- 2 Please note that in this paper World and Benchmark are represented by the MSCI World Net Total Return USD Index, Growth is represented by the MSCI World Growth Net Total Return USD Index, Volatility is represented by the MSCI World Minimum Volatility Net Total Return USD Index, Momentum is represented by the MSCI World Momentum Net Total Return USD Index, Quality is represented by the MSCI World Quality Net Total Return USD Index, Size is represented by the MSCI World Small Cap Net Total Return USD Index and Value is represented by the MSCI World Enhanced Value Net Total Return USD EOD Index.



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- Invest as stewards
- Invent the future

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\*Pensions & Investments Research Center, as of December 31, 2020.

<sup>†</sup>This figure is presented as of June 30, 2021 and includes approximately \$63.59 billion of assets with respect to SPDR products for which State Street Global Advisors Funds Distributors, LLC (SSGA FD) acts solely as the marketing agent. SSGA FD and State Street Global Advisors are affiliated.

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The "value" style of investing emphasizes undervalued companies with characteristics for improved valuations, which may never improve and may actually have lower returns than other styles of investing or the overall stock market.

A "quality" style of investing emphasizes companies with high returns, stable earnings, and low financial leverage. This style of investing is subject to the risk that the past performance of these companies does not continue or that the returns on "quality" equity securities are less than returns on other styles of investing or the overall stock market."

The Fund may emphasize a "growth" style of investing. The market values of growth stocks may be more volatile than other types of investments. The prices of growth stocks tend to reflect future expectations, and when those expectations change or are not met, share

prices generally fall. The returns on "growth" securities may or may not move in tandem with the returns on other styles of investing or the overall stock market.

The Fund may employ a momentum style of investing that emphasizes investing in securities that have had higher recent price performance compared to other securities, which is subject to the risk that these securities may be more volatile and can turn quickly and cause significant variation from other types of investments.

Low volatility funds can exhibit relative low volatility and excess returns compared to the Index over the long term; both portfolio investments and returns may differ from those of the Index. The fund may not experience lower volatility or provide returns in excess of the Index and may provide lower returns in periods of a rapidly rising market. Active stock selection may lead to added risk in exchange for the potential outperformance relative to the Index.

Equity securities may fluctuate in value and can decline significantly in response to the activities of individual companies and general market and economic conditions.

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