

Quantitative vs. Fundamental Equity Investing

Identifying Manager Skill: Are You Just Getting Smart Beta?

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In recent years, the landscape for active equity investors has evolved quite dramatically. While the active equity market has historically been dominated by ‘fundamental/discretionary’ managers, ‘quantitative/systematic’ investing has been a growing force in the market (but remains a minority) — supported by technological improvements and data availability.

In the first part of this series, we compare and contrast the two main approaches in active management for equities, and dispelled some of the common misconceptions that investors have about ‘quantitative investing’. In the second part, we discuss how active quantitative should be measured against smart beta, and whether their higher management fees are justified. In the third part, we look at ways in which active quantitative and fundamental strategies can be complementary.

The line between Active and Passive investing is becoming increasingly blurred with the rapid growth of smart beta products in recent years. While smart beta ‘ideas’ are nothing new, the range of newly available smart beta ‘products’ has radically changed the investing landscape — and yesterday’s alpha (excess returns) is becoming today’s beta (market returns). As part of the continued need to differentiate, active quantitative managers have been busy researching and emphasizing unique features of their investment process while reducing their reliance on generic factors.¹ A good quantitative manager is only able to outperform over the long-term if they can continuously evaluate and incorporate new discoveries into their investment processes. Today, active quantitative managers are using less structured data — often from niche data sources; including news-based analytics, credit-based data and sector-specific data. Active managers may also tilt between different factors as part of their portfolio construction process.

In part 2 of this series, we examine the differences between active quantitative strategies and smart beta. We demonstrate how to use smart beta as secondary benchmarks to critically analyse the performance of an active fund to determine whether it is truly adding value after fees. And in the process, we answer some common questions that investors have, like “Could I not just replicate my active manager’s returns using smart beta products? What are some risks associated with doing that?”

What Truly Differentiates an Active Quantitative Strategy from Comparable Smart Beta Strategies

Within the smart beta space, there is now a broad range of options available — from the first generation alternative weighted indices to the more recent and more sophisticated optimized multi-factor strategies. While not always accurate (since a lot depends on individual fund managers and how they label products), we can broadly place Active Quantitative towards the end of the Smart Beta/Active Quantitative ‘sophistication spectrum’ as shown in Figure 1.

Figure 1
Smart Beta and Active Quantitative ‘Sophistication Spectrum’



Source: State Street Global Advisors.

The first generation of smart beta products (alternative weighted — e.g. RAFI fundamental, equal weighted, value weighted etc) provide exposure to some index level objectives for a particular investment universe. While these are simple and transparent, they also introduce unintended risks (more on this later) into a portfolio. As smart beta evolved we saw the rise of tilted factor strategies which were typically low tracking error and high capacity products (but also suffered from the problem of unintended exposures). In more recent years, we have begun to see more smart beta factor strategies that are constructed based on an ‘optimized’ approach — using a risk model to explicitly target specific factors while controlling for other factor exposures.

While the line between smart beta and active quant continues to shift (and blur), they should remain fundamentally different along several key dimensions — as illustrated in Figure 2.

Figure 2
Key Dimensions of Differences Between Smart Beta and Active Quant

Dimension	Smart Beta	Active Quant
Factors	Commonly accepted academic/practitioner definitions of Factors ²	Proprietary Factors
Factor Horizon	Long-term	Varies (may combine short-term, medium-term and long-term)
Cost	Passive fees (lower)	Active fees (higher)
Transparency	Fully transparent	Semi-transparent (to protect Intellectual Property)
Accountability (for Performance/Objective)	Less accountable	More accountable
Sophistication	Less sophisticated	More sophisticated

Source: State Street Global Advisors. As at 30 September 2019. The information contained above is for illustrative purposes only.

Unlike smart beta strategies, where the end investor typically assumes more accountability in achieving objectives, an active quantitative manager is much more in the 'pilot's seat' when it comes to achieving their stated objectives. If a smart beta product underperforms, the investors can usually draw a clear link between underperformance and the well-known factor premia that have also underperformed. By contrast, an active quantitative manager must further justify why they continue to invest in proprietary factors or signals that haven't worked.

Part of being 'accountable' requires active quantitative managers to identify factors/signals that are more unique, to use factors differently for different types of stocks, or to change the weight of those factors depending on market environments. In short, true-to-label active quantitative strategies should show a higher level of sophistication along multiple dimensions compared to conventional smart beta strategies.

Important points of differentiation should include:

- 1 Use of proprietary factors** Perhaps the most obvious differentiator for an active quantitative strategy is the use of proprietary factors vs commonly accepted (academic or practitioner) factors. Industry standard smart beta strategies offer exposure to long-term factors such as value, growth, quality and low volatility, or some passive combination of these. Active quantitative strategies typically include much more sophisticated factors/signals, and these may be short, medium or long-term in nature. A shorter term signal derived from conference calls using natural language processing, or a longer term valuation signal based on same store sales growth for retail stocks are examples of this increased sophistication. Significant amounts of proprietary research is required to develop and refine these, and active quantitative managers are generally not able to provide complete transparency in order to protect their Intellectual Property.
- 2 Portfolio construction and rebalancing** The way smart beta portfolios are built is usually straightforward and transparent. In a smart beta Value fund, for example, it can be as simple as calculating historical valuation ratios (P/E, P/B and P/CF) for all the stocks in the S&P 500, picking the top quarter, and combining them through a formula driven weighting scheme. Rebalancing generally happens on a predetermined schedule (e.g. quarterly or semi-annually). By contrast, true active quantitative strategies have much more refined portfolio construction methodologies; requiring deep knowledge of how different factors/signals work together in the strategy. In order to build optimal portfolios and mitigate unwanted risks, risk models with explicit parameters and constraints are used. Rebalancing also doesn't always happen on a predetermined schedule; an active quantitative manager may use shorter term signals or unique trading strategies to maximize their ability to achieve excess returns.
- 3 Alternative data sources** Thanks to technological progress and availability of data, some active quantitative managers are utilizing a host of alternative data sources to capture non-traditional sources of alpha (excess returns). These sources range from web scraping, satellite data to earnings call transcripts. Well-resourced managers are now able to harness the exponential growth of computational power, through areas like machine learning and text recognition. When it comes to analyzing earnings call transcripts, for example, technology now allow us to analyze the tone, context and complexity of languages used by management. This analysis can then be applied systematically to generate alpha signals that complement other measures of company sentiment and quality.
- 4 Dynamic Factor timing or tilting** An active quantitative strategy may employ complex factor timing/tilting methodologies within their stock selection models. Although there continues to be ongoing debate about the efficacy of factor timing in the investment community, our experience as an active quantitative manager has shown that some level of factor tilting is beneficial to a well-diversified core strategy. Factor timing/tilting can be achieved in a variety of ways; such as using valuation or top-down macro signals.

Be Smart About Smart Beta

One of the key reasons behind smart beta's recent growth has been their lower fee structure. Many investors have been attracted to the notion of getting proven, transparent 'factor' exposure at near passive fees. While they are generally cheaper (particularly at the simplest end of the spectrum), investors need to be smart about how they use smart beta to achieve their overall portfolio objectives.

For example, you've built a portfolio of managers that you're happy with, but at the aggregate level you realize the portfolio has too much contrarian value exposure at a time when the market seems to have the potential to continue its rally. In this case, you can tactically (and cheaply) buy a growth or momentum ETF as a completion strategy without going through another round of intensive manager search. In this instance, smart beta would be an effective way to act on your shorter-term investment convictions.

Smart Beta Products are Not Always "Smart" by Default

Notwithstanding the recent evolution in 'optimized' smart beta offerings, more traditional smart beta strategies can often introduce unintended risks into your portfolio. For example, if you invest in a momentum ETF, you may end up with an outsized exposure to a particular industry or sector that performed well in the past year. In accepting a smart beta momentum exposure, you may also be accepting high sector risk or stock specific risk. Other risks may include (but are not limited to) unintended style exposures, outsized interest rate sensitivity, market sensitivity, liquidity and leverage issues etc. To mitigate these unintended risks, we advocate investors to be more explicit about targeting factor exposures in a risk-aware way (e.g. by using an optimized smart beta offering). For investors who are thinking of taking on a more 'active' role in portfolio management by tactically allocating to smart beta strategies, a thorough understanding of the nuances of portfolio construction and alpha/risk drivers is important.

Some important considerations before you jump into smart beta products:

What investment problems am I trying to solve?

Can my active manager show that they are able to provide better performance and risk management than simple factor tilts after fees?

Am I willing to take on the increased level of accountability for performance and risks of my portfolios?

What gives me conviction in my chosen smart beta factor bets?

Am I using smart beta as a short-term tactical allocation or a longer-term exposure?

What are the key limitations of my chosen smart beta strategies?

What unintended risks am I introducing into the portfolio?

Identifying Skill — Yesterday's Alpha is Today's Beta

Consider using smart beta as secondary performance benchmarks One way to examine whether your active manager is truly adding value (after fees) is to use an appropriate smart beta benchmark as an additional reference point. This can come in the form of secondary performance benchmarks or 'policy benchmarks' that form part of a broader asset allocation framework. Indeed, we are starting to see more institutional investors incorporate multi-factor indexes into their global policy benchmarks.

To utilize secondary performance benchmarks, you will first need to identify what 'factors' or 'styles' most closely resemble your active manager(s). Note this can be challenging, given thousands of available factor indices and the fact that some managers may not want to be associated with a style label. Nonetheless, smart beta benchmarks can still provide insights on how much value your manager(s) are adding on top of well-known investment factors. Further, it helps to answer questions like "Is my active manager a closet indexer?" or "Can I replicate my current manager's alpha (excess returns) and beta (market returns) using smart beta products at a lower cost?". If you identify that your active manager is delivering its "alpha" simply through factor tilts that can be easily and cost effectively replicated and managed, then you may be better off with some mix of smart beta and the market index instead.

Example of using smart beta as secondary performance benchmark A well-rounded set of historical performance analysis is beyond the scope of this article. But as a first step we demonstrate the use of simple correlation and regression analysis to benchmark an active strategy against comparable smart beta counterparts. For illustrative purposes, we have used our own State Street Global Equity Fund as the 'active strategy' and selected an optimized, multi-factor smart beta index as a secondary benchmark. Without going into too much detail, the objective of our active strategy is to achieve superior risk-adjusted returns using an active quantitative process. It targets a higher level of total return than the market cap index at a lower level of total volatility (i.e. maximizing Sharpe ratio) over the long-term. Figure 3 outlines the key characteristic of the MSCI Multi-Factor benchmark compared to our active strategy, both can be considered as relatively 'style neutral'.

Fund's Performance Benchmark (Standard Market Cap) MSCI World ex Australia Index (AUD) ("MSCI World") as the market-cap benchmark. State Street Global Equity Fund aims to outperform the MSCI World ex Australia Index over a full market cycle (5–7 years) with a lower level of volatility than the benchmark.

Secondary Performance Benchmark (Smart Beta) MSCI World ex Australia Diversified Multi-Factor Index (AUD). ("MSCI Multi-Factor") This is an optimized smart beta index launched in early 2015 that includes four generic 'smart beta' factors covering Value, Momentum, Quality and Size. Control of 'total risk' is not a feature of the index design but the index does control for 'active risk' (benchmark relative risk).

Figure 3

Key Fund Characteristics of the State Street Global Equity Fund vs A Secondary Smart Beta Benchmark

	State Street Global Equity Fund (AUD)	MSCI World ex AU Diversified Multiple-Factor Index
Objective	To outperform the MSCI World ex Australia Index over a full market cycle (5-7 years) with a lower level of volatility than the benchmark (MSCI World ex AU). This is achieved through a proprietary stock selection model and custom portfolio construction	Aims to maximise exposure to 4 style factors — Value, Momentum, Low Size and Quality, while maintaining a total risk profile similar to that of the parent index (MSCI World ex AU)
Investment Style	Active Quantitative/Systematic	Smart Beta Multi-Factor Index
Alpha Model	Actively managed using proprietary alpha model. 50+ proprietary factors can be broadly classified as Value, Quality, Sentiment and Dynamic based	Passively managed, no alpha factor model; Barra Equity Risk Model is used to optimize the portfolio
Risk Model	Axioma	Barra
Investment Universe	Global developed market equities excluding Australia (Large & Mid Caps) — within the MSCI World ex Australia Index	Global developed market equities excluding Australia (Large & Mid Caps) — within the MSCI World ex Australia Index
Key Risk Parameters*	Maximum security weight of 2% Country +/- 10% relative to index Absolute Sector < 25%, Industry < 25% Soft penalty on size deviations	Maximum security weight — Lower of: parent index weight + 2% or 10x parent index weight Country weight of +/- 5% relative to index (capped at 3x relative to the parent index, if weight in parent < 2.5%) Sector/Industry weights +/- 5% relative to parent index
Expected Turnover p.a. (one way)**	50–80% p.a.	Maximum 40% p.a.
Other Parameters	Dynamic Strategic Hedging [^] overlay to manage currency exposures Optimised for AUD base currency Long-only	No active currency management program Exposure to non-targeted style factors (as defined by Barra) such as volatility, growth and liquidity to be +/-0.25 standard deviations relative to parent index Long-only

Source: MSCI, State Street Global Advisors. As at 30 September 2019. The information contained above is for illustrative purposes only.

* The above targets are estimates based on certain assumptions and analysis made by SSGA. These targets and estimates do not form part of the Product Disclosure Statement (PDS) of the Funds and are subject to change at any time. There is no guarantee that the estimates will be achieved.

** One way turnover is estimated based on the lower of buys or sells as a percentage of NAV.

[^] We manage currency risk using SSGA's Dynamic Strategic Hedging programme ("DSH"). Rather than choosing the Fund to be unhedged or fully hedged, we adjust the hedge ratio for each currency in the portfolio according to our medium to long term assessment of that currency's economic value relative to the Australian dollar.

For completeness, we extend our analysis by including MSCI's single factor smart beta indices. We have chosen indices that reflect 5 widely recognised factor premia, preferring tilted construction as this generates consistent, and hence broadly comparable, returns.

- MSCI World Momentum Tilt Index ("Momentum")
- MSCI World Quality Tilt Index ("Quality")
- MSCI World Size Tilt Index ("Size")
- MSCI World Value Weighted Index ("Value")
- MSCI World Volatility Tilt Index ("Low Volatility")

Figure 4 shows the correlation matrix of excess returns since inception of the fund (Jan-2014 to Jun-2019). We can identify some positive correlations to Quality, Momentum and Low Volatility, consistent with expectations since they broadly reflect the basic building blocks of the fund's proprietary factors. The negative correlation to Value is partly due to the strong negative correlation that Value has had with most other factors during the time period.

Figure 4

Correlation of Excess Annualized Returns

Since Inception 1/31/14–6/30/19

	State Street Global Equity Fund	MSCI Multi-Factor	Momentum	Quality	Size	Value	Low Volatility	Naïve Equal Weighted ⁴
State Street Global Equity Fund	1.00	0.12	0.21	0.22	0.29	-0.21	0.54	0.62
MSCI Multi-Factor	0.12	1.00	0.14	0.16	0.33	-0.07	-0.19	0.12
Momentum	0.21	0.14	1.00	0.41	-0.28	-0.77	0.12	0.17
Quality	0.22	0.16	0.41	1.00	-0.32	-0.65	0.44	0.24
Size	0.29	0.33	-0.28	-0.32	1.00	0.42	-0.27	0.39
Value	-0.21	-0.07	-0.77	-0.65	0.42	1.00	-0.31	0.10
Low Volatility	0.54	-0.19	0.12	0.44	-0.27	-0.31	1.00	0.59
Naïve Equal Weighted	0.62	0.12	0.17	0.24	0.39	0.10	0.59	1.00

Source: MSCI, FactSet, State Street Global Advisors.

Past performance is not a reliable indicator of future performance.

State Street Global Equity Fund returns are provided on a net of fees basis. Net returns are calculated using end-of-month exit prices, assume the reinvestment of distributions, are post management and transaction costs, and make no allowance for tax.

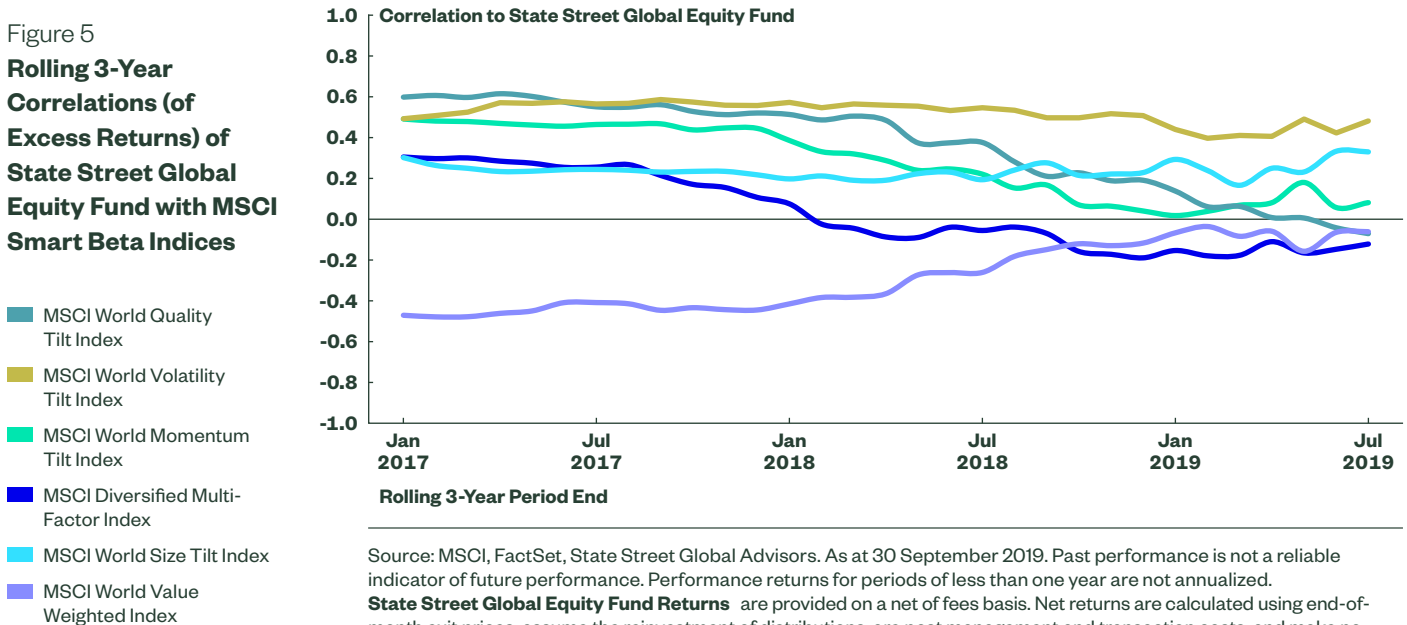
Index Returns are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect capital gains and losses, income, and the reinvestment of dividends.

Naïve Equal Weighted Returns were achieved by mathematically combining the actual performance of each single factor index (Momentum, Quality, Size, Value and Low Volatility) in equal weights (20%). The performance assumes no transaction and rebalancing costs, so actual results would differ.

We should acknowledge that the period (Jan-2014 to Jun-2019) coincides with an extended bull market in global equities, where market volatility has been notably lower than those in past decades and central bank policies have been unusually accommodative. This period has been difficult for the Value factor and active managers with a strong valuation discipline. An active Value manager in your portfolio may have been tempted to deviate away from their chosen style of investing during this time, potentially introducing unintended biases if you are unaware. This is where smart beta performance benchmarks can help us identify 'style drift' (or significant shifts in style).

By looking at rolling correlations through time, Figure 5 shows that our active strategy's correlation with the MSCI Diversified Multi-Factor Index has been decreasing over time and has even become slightly negative. While correlations against most single factor indices have not changed dramatically (which is what we would expect), a key driver of our strategy's falling correlation with the MSCI Multi-Factor Index appears to be our reduced correlation with MSCI Quality. Correlation changes of this magnitude do not surprise us, given ongoing refinement of our 'alpha model' over time and the fact that we incorporate a 'dynamic' element within our stock selection.

Figure 5
Rolling 3-Year Correlations (of Excess Returns) of State Street Global Equity Fund with MSCI Smart Beta Indices



Source: MSCI, FactSet, State Street Global Advisors. As at 30 September 2019. Past performance is not a reliable indicator of future performance. Performance returns for periods of less than one year are not annualized. **State Street Global Equity Fund Returns** are provided on a net of fees basis. Net returns are calculated using end-of-month exit prices, assume the reinvestment of distributions, are post management and transaction costs, and make no allowance for tax. **Index Returns** are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect capital gains and losses, income, and the reinvestment of dividends.

Figure 6 below shows that, since its inception, the State Street Global Equity Fund has achieved a higher level of risk-adjusted return compared to both the market cap benchmark and the smart beta benchmark. Note for compliance reasons, we are using net of fees for our fund vs no management fees for the indices. In reality, investors should also consider current fees charged by major ETF providers, which ranges from 30bps–35bps p.a.³ for global single-factor and multi-factor ETFs.

Figure 6
Summary Statistics — State Street Global Equity Fund (AUD)
 Since Inception
 1/31/14–6/30/19

	MSCI World ex-Australia (AUD)	State Street Global Equity Fund	MSCI World ex-AU Diversified Multi-Factor AUD
Annual Fees	None	98bps	None
Annual Net Excess	–	0.56%	0.09%
Annual Volatility (p.a.)	10.53%	8.36%	10.95%
Sharpe Ratio	0.99	1.31	0.96

Source: MSCI, FactSet, State Street Global Advisors. From 31 January 2014 to 30 June 2019. Past Performance is not a reliable indicator of future performance. **Annualized Excess Return** is the Annualised Return of the Fund or Index less the Annualised Return of the MSCI World ex-Australia Index. It is not possible to invest directly in an index. Calculation for value added returns may show rounding differences. **State Street Global Equity Fund Returns** are provided on a net of fees basis. Net returns are calculated using end-of-month exit prices, assume the reinvestment of distributions, are post management and transaction costs, and make no allowance for tax. **Index Returns** are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect capital gains and losses, income, and the reinvestment of dividends.

In addition to looking at performance and correlation, we use a linear regression analysis to gain further insight into what is really driving our active strategy's excess returns. Using the aforementioned single factor indices, this multiple linear regression attempts to model the relationship between smart beta excess returns (explanatory variables) and our active fund's excess returns (response variable). In other words, **how much of the alpha can be explained by a set of widely recognized smart beta indices?** We illustrate this in Figure 7. Note a higher T-Stat⁵ (and lower P-value) indicates a stronger relationship (vice versa).

Figure 7
ANOVA Table Extract
 Since Inception
 1/31/14–6/30/19⁶

	Coefficients	T-Stat	P-value
Intercept	0.03%	0.23	0.82
MSCI World Quality Tilt	-0.23	-0.39	0.70
MSCI World Value Weighted	-0.14	-0.46	0.65
MSCI World Volatility Tilt	1.55	6.78	0.00
MSCI World Momentum Tilt	0.53	1.75	0.09
MSCI World Size Tilt	1.94	5.92	0.00

Source: MSCI, State Street Global Advisors.

Coefficients (Correlation Coefficient) Correlation looks at how individual securities or asset classes, move relative to one another. Correlation values range between -1 and 1. A correlation between 0 and 1 implies a positive relationship; correlation between -1 and 0 implies a negative relationship; while a correlation of 0 implies no relationship. If two investments (X & Y) are highly correlated they will move in tandem. A correlation of 1 implies that a 3% movement in asset X will be concurrent with a 3% movement in asset Y, indicative of a strong positive relationship between the two, possibly driven by similar impacts.

T-Stat The T-Statistic is used in statistical hypothesis tests to measure the significance/strength of results. It is a calculated number whose value provides an indication of the statistical significance of a relationship — if the T-Stat is greater than the predetermined cut-off, then we can say that the relationship is statistically significant (i.e. reject the null hypothesis).

P-Value The probability statistic that represents the smallest level of significance at which the null hypothesis (the hypothesis that there is no statistically significant relationship) can be rejected. The smaller the p-value, the stronger the evidence for a statistically significant relationship.

Regression results show that smart beta Volatility and Size factors appear to go some way in explaining our active strategy's performance (higher coefficients and T-Stat), while the other factors have a lower explanatory power. The intercept of 0.03% per month (with a t-stat of 0.23) provides an indication of the amount of alpha achieved over and above that explained by the 5 smart beta indices. For compliance reasons, we again emphasize in this analysis we are using net of fees for our fund vs no management fees for the smart beta indices. While a longer history would have been preferred (given how much Momentum and Low Volatility has dominated market returns this period), these results are broadly in-line with our expectations.

Other Considerations

Given a long enough performance history, analysis like the one above should help identify unskilled managers whose fees are outsized vs their value-add. While some active managers may be able to generate longer-term alpha against their own benchmarks, using smart beta indices further raises the bar on active managers to demonstrate their comparative advantage.

Of course, a comprehensive set of historical analysis should also cover areas not touched on in this paper; such as brinson attribution, risk decomposition, tracking error and active share. Active strategies that are labelled 'benchmark unaware', for example, should exhibit relatively higher active share compared to benchmark aware strategies.

Up Next

In this paper, we looked at ways in which to use smart beta strategies to identify truly skilled active managers. This can be done regardless of whether they are quantitative or fundamental based.

As the active landscape continues to evolve, has the average quantitative manager performed better than the average fundamental manager, or vice versa? Which group's returns are riskier? How homogeneous are the managers within each group? We look to answer these questions in the last part of this series by observing the empirical evidence.

Endnotes

- 1 See "What is a factor?" in part I of this series.
- 2 Note clear differences in factor definitions are increasingly being blurred, as smart beta and active quant both move up the 'sophistication spectrum'.
- 3 Based on Vanguard Global Multi-Factor ETF (MER: 0.33% p.a.) and BlackRock iShares Edged MSCI World Multifactor ETF (MER: 0.35% p.a.). Single factor BlackRock iShares UCITS ETFs typically have a MER of 0.30% p.a.
- 4 Index returns are unmanaged and do not reflect the deduction of any fees or expenses. Index returns reflect capital gains and losses, income, and the reinvestment of dividends.
- 5 A T-Stat of 1.96 indicates significant relationship exists with a 95% confidence interval.
- 6 Based on monthly data.

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