White Paper
Active Quantitative Equity (AQE)

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Quantitative vs. Fundamental Equity Investing

Best of Both Worlds

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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. In addition, we look at recent industry trends and discuss what the future may hold for active quantitative management.

Empirical Evidence — Active Fundamental vs. Quantitative

Previous studies comparing active fundamental and quantitative managers have generally shown that the two approaches tend to achieve comparable levels of returns, but that quantitative managers tend to have lower risk. Empirical studies based on eVestment databases have arrived at various other conclusions, including:

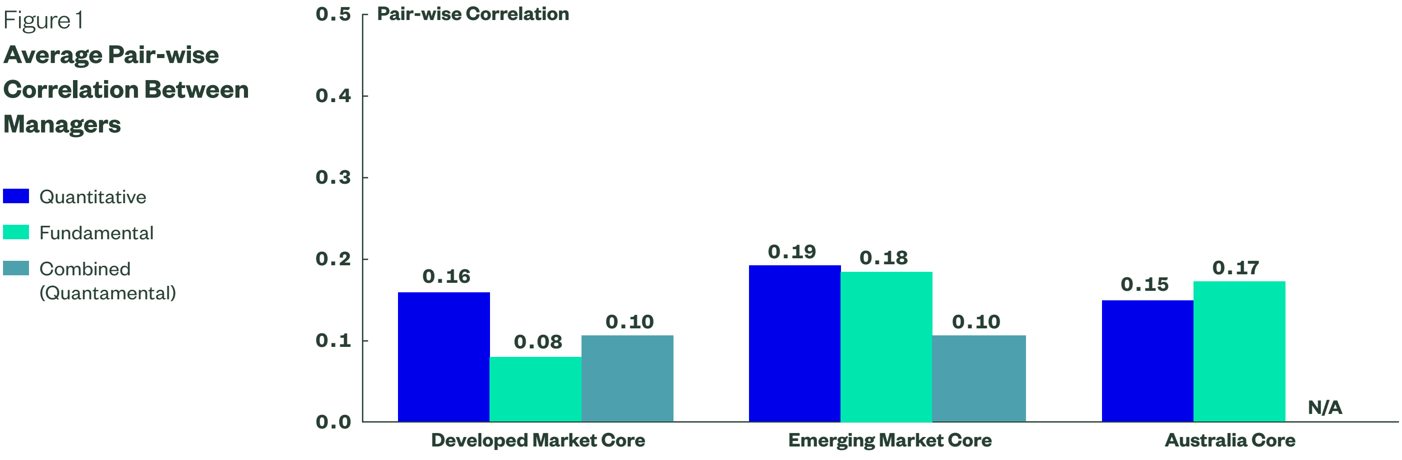
- Average pair-wise correlation between quantitative managers are just as low as those between fundamental managers.[1]
- In the US Large Cap space, both fundamental and quantitative managers exhibit counter-cyclicality in their excess returns (outperform more when market returns are poor). Fundamental managers tend to earn higher returns on average, but at the cost of higher risk. In addition, quantitative managers tend to have more consistent outperformance across market environments.[2]

Using more recent data from eVestment and the Morningstar databases, we look to produce our own findings, with an emphasis on active Australian and Global equity managers.

Myth: "Quants Are All the Same"

One of the common myths about active quantitative investing is the notion that they all tend to be quite similar. However, consistent with findings by Lakonishok (2010), we find that heterogeneity in design among quantitative managers results in quite varied portfolio outcomes. Using available eVestment and Morningstar data for long-only active managers,[3] the average pair-wise correlation of excess returns among quantitative managers is comparable to that among discretionary managers, as shown in Figure 1.[4] Quantitative managers appear to be slightly more correlated in the global developed market (long-only) universe, and slightly less correlated in Australian (long-only) universe. However, the magnitude of the correlation differences are minimal. For consistency and comparability, we have included only 'core strategies' that do have a significant style bias.

Figure 1
Average Pair-wise Correlation Between Managers



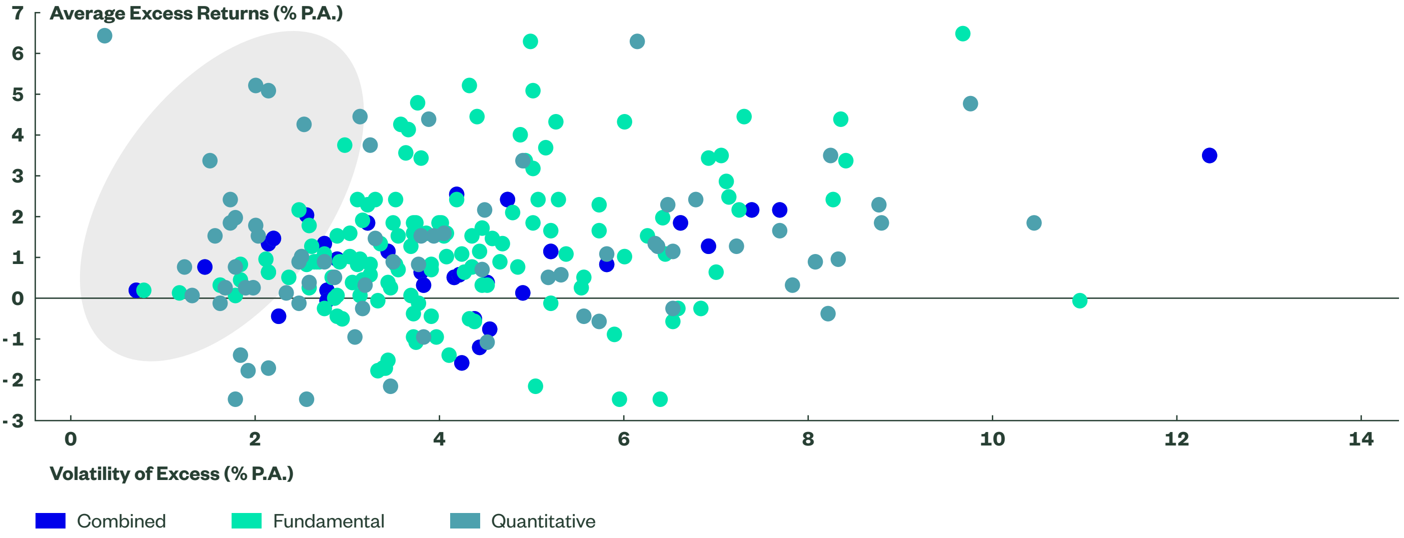
Source: eVestment, Morningstar. As at 30 June 2019.

A Comparison of Performance and Risk

To complement the prior literature, we use the eVestment database to capture the spectrum of active core managers invested across developed world and all-country world universes. Figure 2 shows a risk/return scatter plot for over 240 active managers, divided into 3 groups — Quantitative, Fundamental and Combined (Quantamental), covering the period Jan-2007 to Jun-2019.

Figure 2

Excess Returns vs. Volatility of Excess (Tracking Error) Across Global Core Strategies



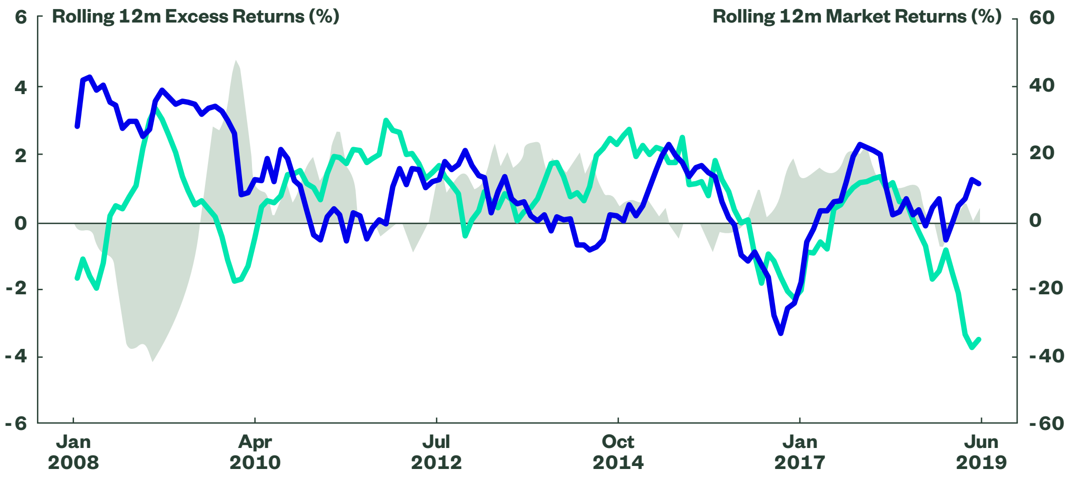
Source: eVestment. As at 30 June 2019.

Consistent with previous findings by McQuiston et al. (2017), our data suggests that the median fundamental manager exhibit marginally higher level of excess returns before fees (1.0% p.a. vs 0.8% p.a.) but also higher levels of active risk (3.8 p.a. vs 3.3% p.a.). In addition, we find there to be more quantitative strategies producing higher levels of excess returns at the lower end of the active risk spectrum.

We also analysed data from developed market, emerging market and Australian core strategies to see how performance has varied over time for quantitative strategies and fundamental strategies. Our results suggest differences in excess returns tend to be time-period dependent and do not favour one style of investing versus the other. This is illustrated in Figure 3(a), 3(b) and 3(c), where we plot rolling 12m excess returns of the median quant manager against the median fundamental manager over time.

Figure 3a
Rolling 12 Months Excess Returns of the Median Quantitative Manager vs. Median Fundamental Manager
Median Manager, Developed Market Core, Large-Cap, Long Only

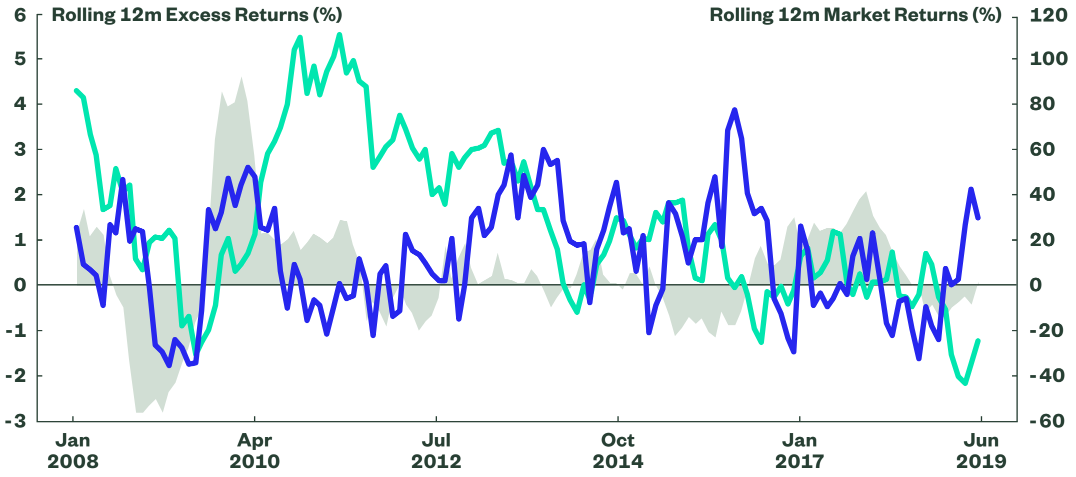
🟦 Fundamental (LHS)
🟩 Quantitative (LHS)
⬜ Market Returns (RHS)



Source: eVestment, FactSet, MSCI. As at: 30 June 2019.

Figure 3b
Rolling 12 Months Excess Returns of the Median Quantitative Manager vs. Median Fundamental Manager
Median Manager, Emerging Market, Large-Cap, Long Only

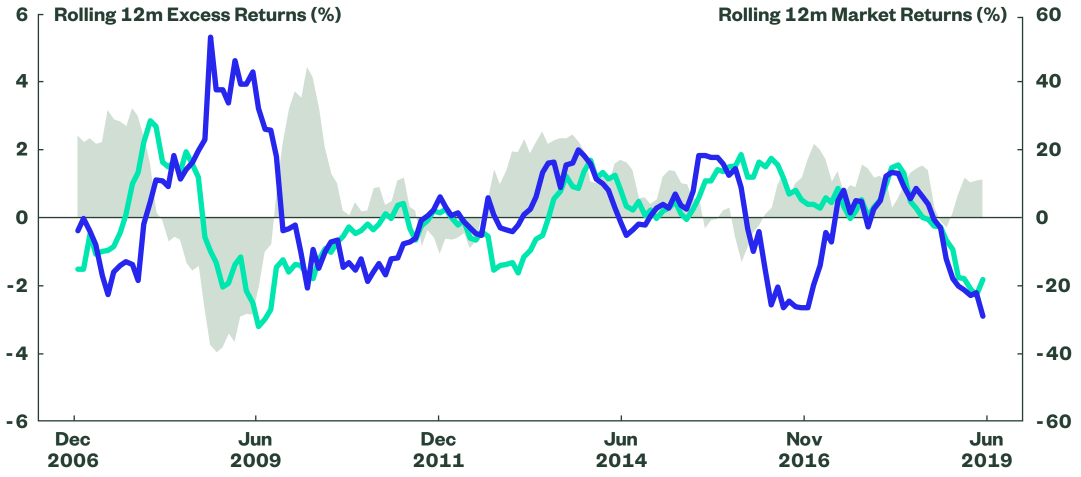
🟦 Fundamental (LHS)
🟩 Quantitative (LHS)
⬜ Market Returns (RHS)



Source: eVestment, FactSet, MSCI. As at: 30 June 2019.

Figure 3c
Rolling 12 Months Excess Returns of the Median Quantitative Manager vs. Median Fundamental Manager
Median Manager Australian Core, Large-Cap, Long Only

🟦 Fundamental (LHS)
🟩 Quantitative (LHS)
⬜ Market Returns (RHS)



Source: Morningstar, FactSet, MSCI. As at: 30 June 2019.

Another interesting observation from Exhibit 3 is the correlation of excess returns between Quantitative vs Fundamental managers over the long-term. While correlation of excess returns can track closely over shorter periods, over the long term correlation remained low enough to provide material diversification benefits. Using available data from 2007, correlation between the median manager within the two groups (Quantitative vs Fundamental) varies between 0.16 and 0.21 depending on universe.

The key takeaway is that both approaches have their merit, and both can be useful in an investor's overall portfolio. But different types of strategies satisfy different objectives, and investors should aim to find clarity around their objectives first. At a broad level, for example, investors with a very long investment horizon who are willing to take higher risk (both absolute and benchmark relative) may choose a concentrated fundamental manager. On the other hand, investors who are more sensitive to risk may want to place a higher weight on quantitative products. Quantitative based portfolios generally take a more explicit approach when it comes to risk management, and typically follow a more scientific approach to diversification across multiple dimensions of risk: e.g. security, industry, country or style exposures.

The Future of Quantitative Investing Is Differentiated Alpha

Up to this point, we have studied the differences between quantitative and fundamental equity managers, and introduced smart beta into the analysis. However, the lines separating quantitative managers from fundamental and smart beta managers are shifting by the day. As smart beta products continue to establish themselves and offer components of traditional active management cheaply, active managers will need to focus on delivering components of active returns that investors can't access through smart beta.

Historical industry trends may provide some insights into how the active investment landscape will evolve over the next 5–10 years. Since the 1960s (when the entire investment management industry was active management), several trends have reshaped the industry, including: the active to passive move (and associated fee compression), objective based investing, smart beta, and more recently, alternative/big data, machine learning and ESG. This evolution resulted in a more mature industry; one that is increasingly transparent and systematic. For quantitative managers, these trends have accelerated their sequence of creative advancements.

One major advancement made in recent years has been a quantitative manager's ability to harness the ballooning of data availability and the growth of computational power. Our perspective on big data is that, 1) 'big' alone is not a sufficient condition for added value — big but not smart can result in spurious relationships. In other words, useful big data should be backed by strong economic rationale such that predictions can be linked to changes in fundamentals. 2) 'big' adds no value if everyone uses it — exclusivity and differentiated datasets should be valued in a world where relevant financial data are increasingly in the public domain. Alternative/big datasets can be publicly available or they can be purchased from providers. The number of self-identified big data firms total in the hundreds worldwide, and at State Street Global Advisors we continue to scour the market to assess the merits of these providers.

Another area of advancement that is likely to see further growth is the use of Artificial Intelligence (AI) and Machine Learning (ML). While many investors are warmly embracing the AI buzz, we caution that naively applying the newest techniques can be detrimental to a good investment process, and careful design/oversight is paramount. ML operates in a world of set rules and finite outcomes (choices), and can generate a high success rate when signal-to-noise ratio is high. However, financial markets are extremely noisy, which makes for weak signal-to-noise ratio. Stock prices follow Brownian motion with infinite outcomes, and the path to the outcomes is mostly stochastic. So any form of price prediction, whether it involves ML or not, is difficult.

State Street Global Advisor's Active Quantitative Equity team has investigated a number of AI/ML applications to generate excess returns. We find ML to be most useful in certain applications of fundamental analysis, and these can be separated into two broad categories:

1 **Forecasting of Company Fundamentals** Allowing us to model intricate relationships among related variables over time to produce in-house forecasts of a broad set of company fundamentals

2 **Natural Language Processing (NLP)** E.g. using ML to analyse management sentiment within conference calls and financial reports

Such techniques have allowed us to develop expertise in areas that were once inaccessible for quants. For example, one of the mainstays of fundamental stock pickers is the face-to-face management interrogation, which allows analysts to examine body language, evasive speech, tone and so on. We can now use NLP to extract similar information in a much more efficient and unbiased way — applying algorithms to categorise, comprehend and recognise linguistic patterns in vast amounts of management transcripts. This information can then be used to detect management deception, calibrate optimism and monitor sentiment.

The Battlefronts of Innovation In Active Investing

The growth of alternative data has enabled active quantitative managers to step well into the analytical realms that were once dominated by fundamental managers. At the same time, smart beta is also seeing notable increases in sophistication — more complex portfolio optimisation techniques that were once the domain of active quantitative managers have now become more mainstream.[6]

For most institutional investors and for increasing numbers of retail investors, the passive vs active debate is no longer a question of one versus the other, but how much to allocate between passive (whether for market cap weighted beta or some alternative weighted beta) and active (for alpha). As the alpha-beta separation gathers popularity, we expect investors to focus less on the narrow objective of finding managers that can 'beat the market', and more on finding managers that can provide 'pure alpha' and 'diversification via differentiation of processes.'

Pure alpha investing is less about delivering exposures cheaply, and more about finding publicly accessible information the market doesn't yet understand. We believe successful pure alpha investing requires managers to have a competitive edge along 3 key dimensions:

1 **Better Ingredients** Researchers will continue to seek superior data as inputs into their investment process, such as alternative data sources that are insightful and not overused.

2 **Better Recipes** Innovation in security modelling and portfolio construction will be another differentiator for successful managers. Signals need to be harnessed appropriately to be impactful.

3 **Deep Investment Expertise** Quantitative managers that are over-reliant on data science and lack deep domain knowledge will suffer from 'garbage-in, garbage out'. A strong economic and fundamental rationale should be the backbone of any effective quantitative investment process.

In the future, the winning managers will be those who can innovate continuously to capitalise rapid flows of data and information. While deep investment expertise is irreplaceable, it is not enough in the face of increased competition from passive smart beta products. Increased indexing and systematisation of the industry will encourage all active managers, whether fundamental or quantitative, to be better positioned at the intersection of data, technology and human expertise.

Endnotes

[1] Lakonishok, Josef and B. Swaminathan (2010), "Quantitative vs Fundamental", Canadian Investment Review.

[2] McQuiston, Karen, H.Parikh and S.Zhi (2017), "The Impact of Market Conditions on Active Equity Management", PGIM Institutional Advisory & Solutions.

[3] Available data for developed market managers (eVestment): Jan-2010 to Jun-2019; for emerging market managers (eVestment): May-2014 to Jun-2019; for Australian managers (Morningstar): Oct-2009 to Jun-2019.

[4] Pair-wise correlations for developed market and emerging market core managers are based on monthly excess returns gross of fees, in USD. Correlations for Australian core managers are based on excess returns net of fees, in AUD.

[5] Note clear differences in factor definitions are increasingly being blurred, as smart beta and active quant both move up the 'sophistication spectrum'.

[6] See Part II — Are you just getting smart beta?

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- Start with rigor
- Build from breadth
- Invest as stewards
- Invent the future

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