

Q-Series®

Active vs Passive: What is the Future of Active Management? (part 2 of 2)

Do active managers outperform?

The latest academic research highlights that active institutional fund managers outperformed by 86 bps pa in the United States and by 165 bps pa globally before fees between 2000 and 2012 (fees averaged 49bps and 58bps respectively). Retail mutual fund managers performed less well averaging 1bp pa, after fees over the same period. This implies negative alpha for self-managed capital (both retail and institutional).

When is active management really valuable? And what is sequencing risk?

Sequencing risk is the risk involved in the timing of investment returns. Whilst this doesn't matter for institutions, it does for individuals. Negative investment returns in the 'retirement risk zone' can result in significantly worse retirement portfolio outcomes. **Investing in good active managers helps mitigate sequencing risk.**

What does the future hold for active management?

Correlation risk has diminished recently and we believe there is a significant opportunity for active managers to outperform. Importantly, active managers should focus on areas where there is an opportunity to add value ie in markets and sectors that are less efficient. We can measure this by looking for markets and sectors with high dispersion and low correlation. **We believe that dispersion of returns in aggregate is likely to be higher over the next ten years and consequently, we believe that active managers are likely to perform better in the future than they have in the past.**

Quant vs Fundamental investing... where to from here?

Blending quant with fundamental investing is the holy grail of investing. Sectors that quant does well in are Utilities, Real Estate and Telecoms, whilst IT, Healthcare and Consumer Sectors carry a higher degree of idiosyncratic risk and are better modelled by fundamental investors. Looking at the data by region and sector suggests that active managers have a greater opportunity in Asia, and in the IT and Consumer Discretionary sectors. Our next series of reports will drill down on individual sectors and build out datasets that augment the decision making process within these sectors.

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Executive Summary

The asset management industry has undergone significant change in the last half century. In 1950 if an investor wanted equity exposure they either had to build their own portfolio or they had to buy units in a mutual fund. The economies of scale inherent in pooled investment vehicles made mutual funds a much more attractive option. Mutual funds provided market, style and stock-specific exposures, all rolled into one. In [part 1 of this series](#) we noted that today, not only can an investor obtain diversified equity exposure through index funds and ETFs (market and sector exposures), they also have access to a plethora of investment options offered by index funds, quant funds (factor exposures), ETF strategies and hedge funds (stock-specific exposure and other sources of alpha).

We also showed that investor demand for this proliferation of choice is evidenced by the change in the share of net assets, which shows that since 2000, diversified equity mutual funds have lost share to all other alternatives including: index funds, sector specialist funds, style funds, concentrated portfolios, quant funds, hedge funds and CTAs. ETFs have grown significantly as well. 49% of ETFs are Index ETFs and the remaining 51% represent sector, style or other tilt. In other words, this story is not active moving to passive; it's a movement away from diversified portfolio management to an unbundling of exposures where the key winners are the fund managers that evolve their product offerings.

So whilst Index investing has increased to around 33% of the US market, equity hedge funds have grown significantly as well. Hedge funds now constitute 16% of all invested assets. The question is how far can this unbundling trend go? In order to answer this question we need to understand the following:

1. Do active managers outperform?
2. Are there any risks to being passive?
3. Where are the opportunities for active managers?
4. How do we best exploit these opportunities? Quant vs Fundamental.

Do active managers outperform? The latest academic research by Joseph Gerakos (Gerakos et al, "Asset managers: Institutional performance and smart betas", 2016) contributes significantly to the literature on active management by assessing actively managed institutional accounts and finds that active institutional fund managers outperformed the US market by 86 bps gross (37 bps net) and outperformed global markets ex-US by 165 bps (107 bps net) between 2000 and 2012. Retail mutual fund managers performed less well over this period outperforming by 1bp net of fees (Dr Anna von Reibnitz, "When opportunity knocks", 2015). Of course, the adding-up constraint implies that non-delegated (self-managed) capital (both retail and institutional) generated a negative alpha over this period.

Are there risks to being purely passive? Whilst unbundling of exposures works for institutions which invest across all exposures, there is a significant sequencing risk that emerges for individual investors when considering a retirement portfolio. Sequencing risk is the risk involved in the timing of investment returns. A portfolio suffering significant drawdowns in the 10 years prior to retirement or the 10 years post retirement is likely to end in portfolio ruin. Given that active managers deliver most of their excess returns during periods of high dispersion of returns (typically

The story is not active moving to passive, it's a movement away from diversified portfolio management to an unbundling of exposures

Active institutional fund managers outperformed the US market by 86 bps gross (37 bps net) and outperformed global markets ex-US by 165 bps (107 bps net) between 2000 and 2012

A good active manager can significantly help mitigate against sequencing risk

periods where the market draws down), a good active manager can significantly help mitigate against sequencing risk.

Where are the opportunities for active managers? We have argued that the optimal active to passive mix in any market depends on the level of market efficiency in that market. Passive investments are predicated on the idea that the market their index is tracking is more or less efficient. Active managers improve market efficiency by identifying mispricing opportunities. Put simply, passive needs active to exist. So how do we measure market efficiency to determine which markets are most appropriate for passive strategies and which markets provide the most opportunities for active managers?

[In our last report](#) we showed that the correlation between individual stocks and the dispersion of their returns provides us with useful indicators as to the level of efficiency for different markets. In this report we use these indicators to identify sectors and regions where active managers are most likely to outperform. We also use regression analysis to identify sectors and regions where systematic strategies are likely to do well and sectors and regions where fundamental strategies are likely to do well.

In this report we use these indicators to identify sectors and regions where active managers are most likely to outperform

How do we best exploit the opportunities in the market? Or more succinctly, what is the future of quant and fundamental investing? Clearly blending people and machines will provide the ultimate investment solution, but how to do this? There are a number of approaches to this problem which we are happy to discuss, however in this report we drill down into where quant factors work well, and where they don't, split by both sector and region. The key to success in sectors that are well described by quant factors is to be aware of the factor loadings of any individual stock. In sectors where quant factors don't do well (sectors with a high degree of idiosyncratic risk) we need to utilise more fundamental analysis.

The next series of reports from us will focus in on individual sectors and highlight the key return drivers that we can use to augment quant models and assist fundamental analysts in making decisions.

Do active managers outperform?

Since Jensen (1968) the academic literature has been filled with papers that conclude that active managers generally do not outperform after fees. However, these studies often overlook important points when trying to answer this question.

Firstly, truly exceptional funds are unlikely to report to surveys that monitor the performance of funds. Hence, any study that utilises survey data is subject to a self-reporting bias in the data. Secondly, many funds do not use the broad market index as their benchmark, yet this is often the benchmark used by studies to measure the relative performance of all funds.

Thirdly and most importantly, there are several types of investors that Jensen (1968) and others include in the extremely broad category of active investors. Within this category there are different types of professional managers and there are also retail investors. As we shall see not all active investors are equal.

Gerakos, Linnainmaa and Morse (2016) provide an excellent contribution to the active versus passive debate and to the asset management literature in general. In their paper they distinguish between delegated institutional funds (includes asset manager funds and institutional mutual funds), non-delegated institutional funds and retail mutual funds.

Using a comprehensive global data set, they document the performance of asset manager funds, which they define as active, strategy-specific investment vehicles set up by asset managers. They note that their findings imply that "the literature on active management overlooks almost half of actively managed capital" (p6).

Overall, Gerakos et al find that asset managers earn positive alphas at the expense of non-delegated institutional and individual investors. Specifically, for funds across all asset classes, asset manager funds earned an annualised gross alpha of 131 basis points implying that everyone else had a gross alpha of -53 basis points. For equities, asset manager funds earned an annualised gross alpha of 86 basis points in the US market (37 bps net) and outperformed global markets ex-US by 165 bps (107 bps net) between 2000 and 2012. Retail mutual fund managers performed less well over this period outperforming by 1bp net of fees (Von Reibnitz et al 2016). Of course, the adding-up constraint implies that non-delegated retail capital and non-delegated institutional capital generated a negative alpha over this period.

Not all active investors are equal

For equities, asset manager funds earned an annualised gross alpha of 86 basis points in the US market (37 bps net) and outperformed global markets ex-US by 165 bps (107 bps net) between 2000 and 2012

Definitions:

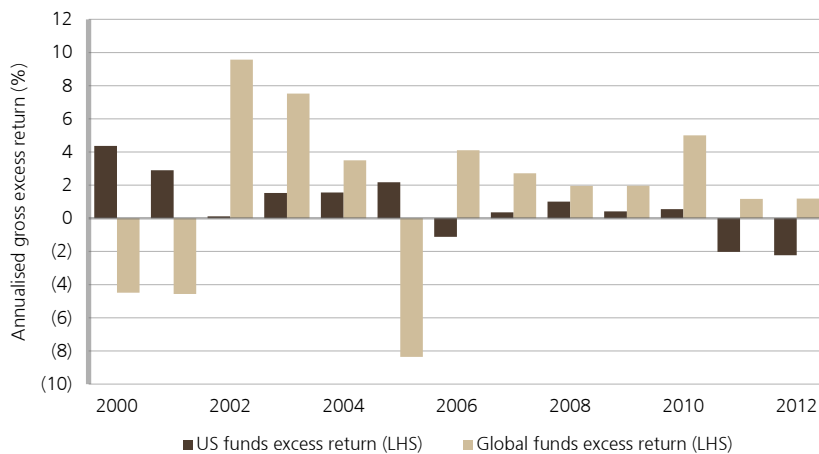
Institutional capital

- Non-delegated In-house funds
- Delegated Asset manager funds & Institutional mutual funds

Retail capital

- Non-delegated Self-managed / Individual investors
- Delegated Retail mutual funds

Figure 1: Asset Manager Funds: Equity funds excess returns



Source: Gerakos, Linnainmaa, Morse (2016), UBS

As a result, institutions with skill in active manager selection should invest in active managers as they are likely to outperform over most time periods. However, in reconciling research by Lewellen (2011) (who argued that institutions as a whole closely mimic the market portfolio) with Gerakos (2016) (who found that asset manager funds outperform net of fees), we conclude that non-delegated institutional capital has likely achieved a negative gross alpha. As a consequence, it stands to reason that non-delegated institutional capital would be better off being deployed in factor portfolios to obtain their within-asset class exposures.

Institutions with skill in active manager selection should invest in active managers as they are likely to outperform. However, non-delegated institutional capital would be better off being deployed in factor portfolios.

Data note: whilst the Gerakos et al study only covers a limited period (2000 to 2012) this period includes both the Tech Wreck (2000-2003) as well as the Bull market cycle 2003-2007, the Global Financial Crisis (2007-2009), and the subsequent recovery (2009-2012). It also covers (on average) \$18 trillion of assets under management, across 22,289 asset manager funds across 3,272 asset manager firms. Thus, whilst the sample is reasonably short in duration, it represents the most in-depth study on asset manager funds to date.

Why do retail investors underperform?

Academic evidence suggests that retail investors underperform the market on average. In a study of households and investors with discount brokerage accounts Barber and Odean (2000) found that the average retail investor returned 16.4%, over a period when the market returned 17.9%. This return drops to 11.4% for retail investors that have high turnover rates on their portfolio. The authors reason that overconfidence is a key driver of the high trade levels. They document that on average retail investors' turnover their portfolios at around 75% (one way) per annum.

A note on turnover

There is a common misconception that turnover is negative for performance. Pastor et al, 2003 and 2017, investigates fund turnover and next month's benchmark-adjusted performance and finds a statistically strong and positive relationship for active funds and negative and statistically insignificant relationship for passive funds. This effectively means that active managers that trade more when there is more mispricing manage to generate alpha. Conversely, passive (or unskilled!) managers that trade excessively generally underperform.

As a consequence, high turnover is not by definition bad for performance. A mix of (a) investment horizon and (b) the "breadth" of investable opportunities (which is clearly time-varying) should theoretically determine the amount of turnover. Please see our latest [Academic Research Monitor](#) for more detail.

Evidence of these behavioural faults is seen in the retention rate data for equity, fixed income and asset allocation mutual funds, which suggests that investors lack the patience and long-term vision to leave their portfolio positions alone. Retail investors systematically mistime the market by frequently moving into mutual funds at their highs and out of mutual funds at their lows, a phenomenon known as the 'Behaviour Gap', and typically measured as the difference between time weighted and asset weighted returns.

How big is the Behaviour Gap?

There are various estimates depending on asset class chosen and the period studied. Suffice to say, it is a significant proportion of the overall benchmark return with estimates ranging from 1.08% to 7.8%. Perhaps the most relevant study for equity investors is that of Friesen and Sapp (2007) who estimated it at 1.56% pa.

Figure 2: Estimates of the Behaviour Gap

Author	Period	Behaviour Gap	Study
Nesbitt (1995)	1984 - 1994	1.08%	17 categories of stock & bond mutual funds
Sapp and Friesen (2007)	1997 - 2004	1.56%	7,125 stock mutual funds
Dichev (2007)	1926 - 2002	1.30%	NYSE/AMEX (1926-2002)
Dichev (2007)	1973 - 2002	5.30%	NASDAQ (1973-2002)
Dichev (2011)	1980 - 2008	4.1% - 7.8%	Hedge funds, funds of funds, commodity trading advisors

Source: Jason Zweig (2017)

Whilst the Behaviour Gap is concerning with respect to equity mutual funds, what is more concerning is the Behaviour Gap with respect to ETFs. Nadig (2016) estimates that the Behaviour Gap on the S&P 500 ETF to be approximately 5%. In other words, from 2011 to September 2016 investors in the S&P 500 ETF underperformed the Index by around 5% per annum.

When is active management really valuable?

...and what is Sequencing Risk?

So far we have assessed the performance of different types of market participants focussing on the components within the broad category of active investors. We have concluded that asset manager funds defined by Gerakos et al. (2016) as active, strategy-specific investment vehicles set up by asset managers earned a positive alpha after fees on average over (2000-2012). However, retail mutual funds only added 1bp per annum after fees over that period, so why would you invest in one?

The answer is: active managers deliver their alpha during periods of high dispersion of returns. This occurs during market downturns. As a result, active managers protect investors from drawdowns in the market. Drawdowns matter most in the period just before or just after retirement. Understanding why the timing of drawdowns matters means understanding 'sequencing risk'.

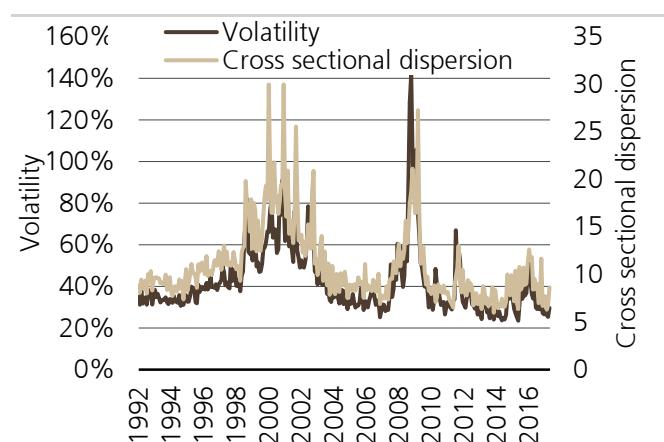
What is sequencing risk? Sequencing risk is the risk that a portfolio will encounter poor returns at the wrong time. The effect of sequencing risk is more pronounced toward the end of a long investment horizon when a portfolio is large and may result in insufficient wealth to satisfy retirement goals. This is typically thought of as a drawdown in the 'Retirement Risk Zone' (the 10 years prior to retirement or the 10 years post retirement) which is likely to end in portfolio ruin.

As illustrated in figure 3 below, return dispersion is higher when stock market volatility is high ie when there are stock market downturns. The fact that active managers outperform when return dispersion is high (figure 4) leads to an important observation for investors who are invested with an active manager: specifically, these investors should be better protected during market downturns and should therefore experience less sequencing risk than a passive investor.

Sequencing Risk is the risk that a portfolio will encounter poor returns at the wrong time

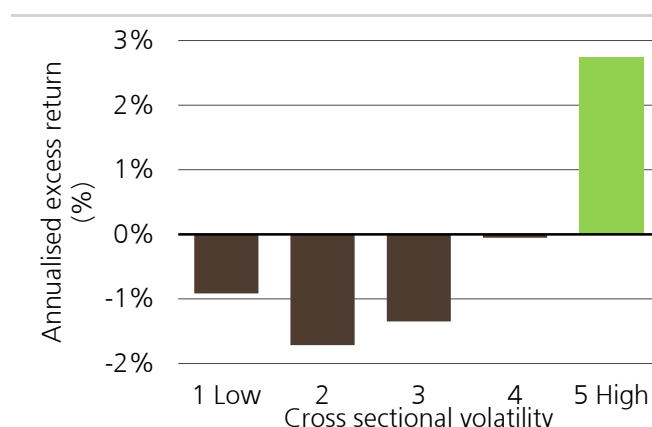
Investors in actively managed funds are likely to be better protected during market downturns and should therefore experience less sequencing risk than a passive investor

Figure 3: Volatility and dispersion of returns (World)



Source: UBS Quantitative Database, Factset

Figure 4: Cross sectional volatility and excess returns to active management



Source: Dr Anna von Reibnitz (ANU), Factset, UBS Quant

Quantifying Sequencing Risk

To quantify this observation we calculated some statistics using the after-fee returns of US asset manager funds and the after-fee returns of an S&P500 index fund. Figure 5 shows the performance statistics based on the distribution of annual returns after-fees for US asset manager funds as reported by Gerakos et al (2016) and an S&P 500 index fund from 2000 to 2012. For our S&P 500 index fund we used the returns of the SPY ETF Trust.

Figure 5: Performance comparison (annual returns)

Statistic	US Asset manager funds	S&P 500 Index fund
Annualised arithmetic return	4.2%	3.2%
Annualised standard deviation	18.7%	19.2%
Sharpe ratio	0.23	0.17
Annualised downside deviation	12.0%	12.8%
Sortino ratio	0.35	0.33
% of time active/passive outperformed passive/active	76.9%	23.1%

Source: Gerakos et al (2016), Factset, UBS

We can see that US asset manager funds have outperformed the SPY after-fees with lower volatility but what's more interesting is the lower downside risk provided by these active managers. The Sortino ratio, which uses the standard deviation of returns below a hurdle rate (we use 0%), is higher as a result¹.

Asset manager funds have provided better downside protection. Therefore the portfolios that they managed were less likely to have experienced unfavourable returns at an inopportune time (at the end of the investment horizon or when withdrawals need to be made).

The sequence of returns plays a critical role in investment outcomes for long horizon investors (Basu, Doran and Drew, 2012). Arithmetic returns do not capture the impact of compounding whilst geometric returns do. When there is volatility in the sequence of returns, the arithmetic return will overstate the return the investor achieves. Sequencing risk can be described by the magnitude of this overstatement.

Figure 6: Sequencing risk comparison

	US Asset manager funds	S&P 500 Index fund
Annualised arithmetic return	4.2%	3.2%
Annualised geometric return	2.5%	1.3%
Sequencing risk drag	1.7%	1.9%

Source: Gerakos et al (2016), Factset, UBS

Figure 6 shows asset manager funds have outperformed by more on a geometric return basis and they have experienced less sequencing risk drag than the index. We have shown that active manager funds that receive large institutional mandates have experienced less sequencing risk historically but what about retail mutual funds?

¹ Investors in this instance are sponsors like pension funds who delegate to asset manager funds and not retail. Retail investors are the ultimate beneficiaries, however.

Retail mutual funds

Figure 7 shows performance statistics based on the distribution of monthly returns after-fees from for US retail mutual funds and the same S&P 500 index fund as above from 1972 to 2015 separated by R^2 quintile, where quintile 5 is the most active mutual funds (ie those with the lowest R^2)².

Figure 7: Performance comparison

Statistic	US retail mutual funds by R^2 (Q5 is most active)					Passive
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	S&P 500 Index Fund
Annualised return	9.8%	10.2%	10.6%	11.0%	12.1%	10.8%
Annualised std dev	15.9%	16.2%	16.2%	16.2%	15.8%	15.2%
Sharpe ratio	0.62	0.63	0.66	0.68	0.77	0.71
Annualised downside deviation	10.3%	10.5%	10.5%	10.6%	10.2%	9.7%
Sortino ratio	0.95	0.97	1.0	1.0	1.2	1.1
% of time outperformed passive	41%	46%	48%	50%	52%	

Source: von Reibnitz (2016), Factset, UBS Quant

As shown by von Reibnitz (2016), the most active US retail mutual funds have outperformed the SPY after-fees. We find that these active managers have slightly higher volatility and downside deviation (volatility for returns below a 0% hurdle rate) than the SPY. The Sortino ratio for the most active managers is higher than for the SPY.

Figure 8 compares US retail mutual funds and the SPY using the difference between the arithmetic and geometric returns as an indication of sequencing risk.

Figure 8: Sequencing risk comparison

	US retail mutual funds by R^2 (Q5 is most active)					Passive
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	S&P 500 Index Fund
Annualised return	9.8%	10.2%	10.6%	11.0%	12.1%	10.8%
Annualised geometric return	8.9%	9.2%	9.7%	10.1%	11.4%	10.1%
Sequencing risk drag	0.93%	0.95%	0.91%	0.89%	0.71%	0.72%

Source: von Reibnitz (2016), Factset, UBS Quant

The results are not as impressive for retail mutual funds. The sequencing risk drag for the most active retail mutual funds has been about the same as for the SPY (it is actually 1 basis point lower). However, a slight improvement in sequencing risk is indicative that a retail mutual fund could have made a substantial difference for an individual investor depending on the sequence of returns they experienced as we shall see.

So far we have only confined our analysis to a single sequence of returns for the active funds and index fund discussed. To overcome this limitation we have

² R^2 represents the proportion of the variation in a fund's return that can be explained by variation in the benchmark factors of the performance model (such as CAPM). Consequently, the lower the R^2 , the more a fund deviates from benchmark factors and, as a result, the more active is the fund. Activeness is termed "selectivity" by Amihud and Goyenko (2013)

generated a distribution of return sequences and an accompanying distribution of wealth outcomes using the same bootstrapping methodology outlined in [Dynamic Asset Allocation](#).

Our investor is the same as in our prior report except that she is only invested for 10 years before she retires and withdraws her money; a situation similar to the one in which the Baby Boomer generation finds itself now. 9 outlines the profile of the hypothetical investor used for our study.

Figure 9: The hypothetical investor

Input	Value
Age	55
Age at retirement	65
Investment horizon	10 years (120 months)
Starting salary	\$182,242
Salary growth rate	4%
Contribution rate	9.5%
Return target	7%
Starting balance	N/A

Source: UBS

Note that the salary growth rate, contribution rate and return target are annual rates. The starting salary is the salary of someone whose salary has grown from \$55,000 at 4% per annum for 30 years (since they were 25). The starting balance is not applicable because we are interested only in whether a given strategy will improve on the terminal wealth resulting from a 7% per annum (the return target) over the last 10 years before retirement. Figure 10 shows the tail risk statistics that can be calculated using the distribution of 10,000 simulated wealth outcomes.

Figure 10: Tail risk comparison

	Quintile 5	S&P 500 Index Fund
Probability of shortfall	36%	43%
Magnitude of shortfall	\$22,731	\$28,358
Expected tail value	\$30,774	\$27,377

Source: UBS.

For the probability of shortfall and magnitude of shortfall we have used the amount of money the investor would have had if they received an annual 7% return for the remaining 10 years of their investment horizon.

We can see that by investing with the most active retail mutual funds the investor would have fallen short 36% of the time compared to 43% of the time had they invested in the index fund. To put this into dollar terms we turn our attention to the magnitude of shortfall. Had the investor fallen short of the target with an active manager they would have done so by about \$23,000 (about 11% of the money they invested over the investment horizon). Had the investor fallen short of the target with the index fund they would have done so by about \$28,000 (about 13% of the money they invested over the investment horizon).

Finally, as shown by the expected tail value, if the investor were unlucky to find themselves in the worst 5% of wealth outcomes they would have more money, on average, if they were invested with the most active managers than if they were invested in the index. Specifically, they would have had about \$4,000 (\$31,000 - \$27,000) or 15% more.

The bootstrap simulations have the same statistical properties as the original return series from which they were constructed. Active managers mitigate sequencing risk because they outperform during volatile times. The return series for the most active managers is more favourable from an individual investor's perspective because it exhibits higher risk adjusted returns (higher Sharpe and Sortino ratio) than the broad market index.

Ultimately good active managers at retail mutual funds can make a big difference to the final dollar value in the accounts of the individuals who invest in them.

In conclusion: Prior to the advent of ETFs the economies of scale inherent in mutual funds made them a much more attractive option compared to building a broadly diversified portfolio. There has been much criticism levied against mutual funds. Specifically, most studies show that, in aggregate, they do not beat the market after fees. However, it is important to realise that their increased size (the result of inflows from investors who saw the merit in pooled investment vehicles) made their market-like performance inevitable. In the words of Benjamin Graham (1972) these studies "in no way invalidate the usefulness of the investment funds as a financial institution." (p377). He argued that mutual funds allowed the public to obtain market-like results and noted that individuals who make their own investment decisions fail to do as well as the funds.

We agree with Graham and would add that the most active retail mutual funds serve a valuable purpose not only by outperforming a comparable index fund after-fees but also by mitigating sequencing risk.

So, what next for the active management industry? We've been posed a number of questions since we wrote our first report on active vs passive, in the next section we aim to answer:

How are active managers likely to perform in the future?

Where are the opportunities for active managers to outperform?

Quantitative or fundamental, who will win?

How do we blend quantitative techniques with fundamental investing?

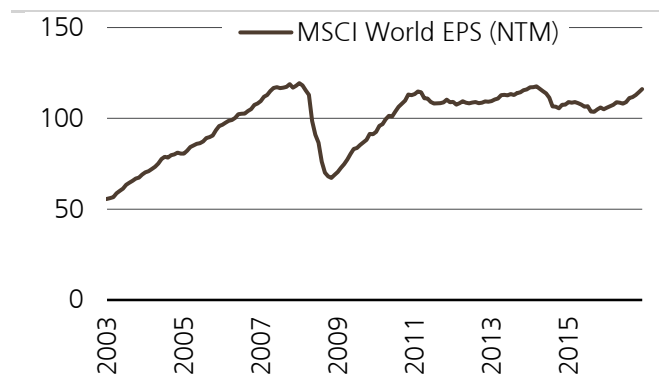
The Future of Active Management

From a theoretical perspective, investors should be active if return dispersion is high and pairwise correlation amongst stocks is low. In this environment active managers are likely to outperform (see [Active vs Passive: How will the world of investing evolve? \(Part 1\)](#)).

What happened from 2010 through to today?

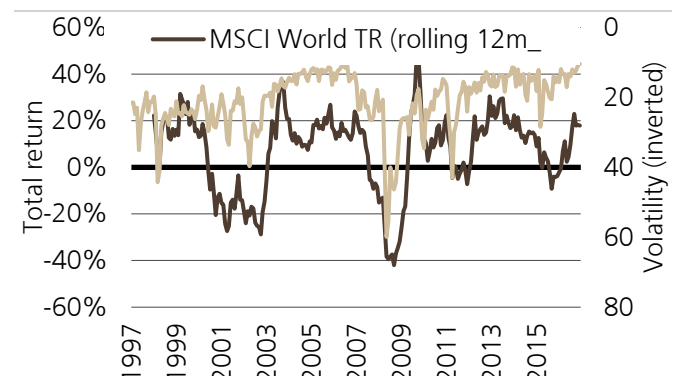
A scenario where Central Banks hold policy rates artificially low for an extended period may result in significant asset price inflation with low dispersion and high correlation (high correlation as returns will be driven by a common factor. In this case, cash rates). This has largely been the environment we've witnessed over the past seven years. From 2010 to today, MSCI World earnings growth rates in USD have been largely flat. In a world of lower growth we expect return distributions to shift to the left and flatten out. In other words, we expect lower returns and higher volatility. Instead, we've experienced 11% pa returns and 11.5% realised volatility with reasonably low dispersion of returns from 2010 to May 2017.

Figure 11: MSCI World earnings growth



Source: Factset, UBS Quant

Figure 12: MSCI Rolling 12m returns and volatility

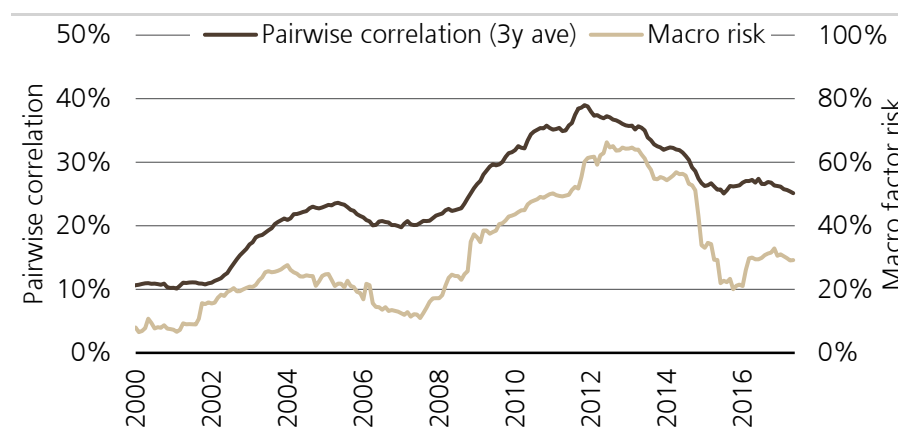


Source: Factset, UBS Quant

At the same time, we've witnessed high levels of correlation. We note that it is macro factor risk that drives correlation. However, as talk of policy normalisation has increased, correlation has fallen back to levels not seen since the Global Financial Crisis (averaging 17% so far in 2017). This is good news for active managers.

Correlation has fallen significantly... this is good news for active managers.

Figure 13: Macro factor risk and pairwise correlation (3y)



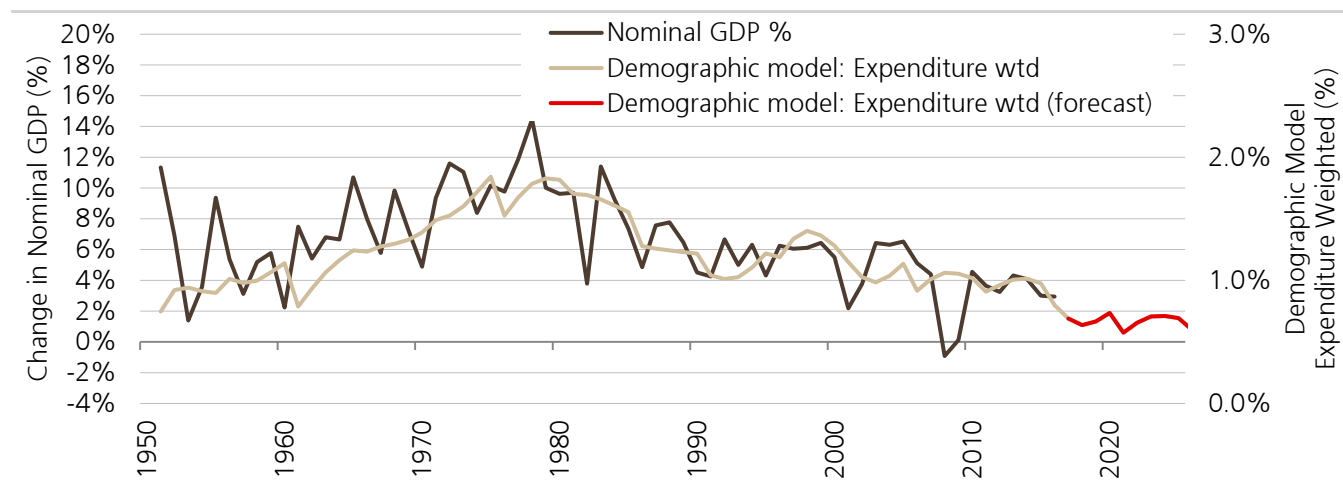
Source: Factset, UBS Quant. Footnote: Macro factor risk is calculated as a pooled regression of macro factors against MSCI World 2000- 2017

What do we expect in terms of growth over the next ten years?

Based on our work on demographics (see [How will demographics shape investing for the next 10 years?](#)) we believe that we have entered into a world of structurally low growth driven by the retirement of the Baby-Boomers and are likely to be there for the next ten years. In the long run stock market growth must reflect economic growth. In a world of low growth, and with policy rates (and bond yields) normalising, we are likely to witness lower benchmark returns and higher volatility.

We are likely to witness lower benchmark returns and higher volatility

Figure 14: Demographic Model: Expenditure Weighted



Source: Haver, Factset, UBS estimates

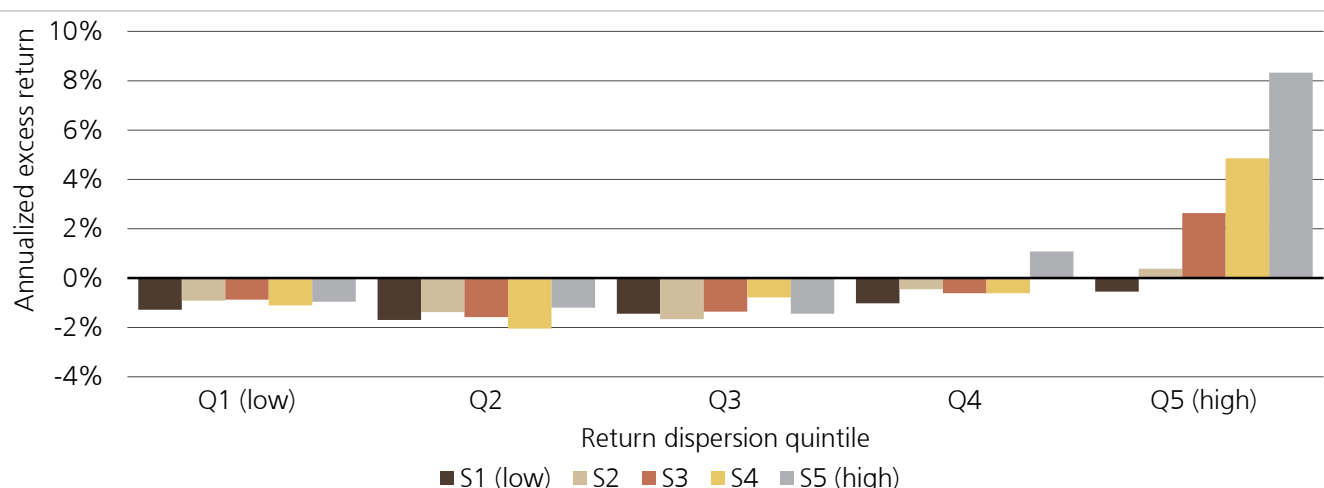
Ultimately, return dispersion is driven primarily by certainty in the underlying earnings of the market, which in turn is a function of the market earnings growth rate. (see ['Why does increasing volatility matter?'](#) Winter et al). So in a world of structurally lower growth, we should also expect a world of higher return dispersion of returns and increases the probability of mispricing effects. In this environment, active managers are likely to outperform.

In a world of structurally lower growth, we should also expect a world of higher return dispersion. In this environment, active managers are likely to outperform

Will all active managers outperform?

In a world where growth rates are expected to be bottom quintile (see figure 13 above), we expect to see the aggregate return dispersion in the top quintile (see figure 14 below). In this environment, the average excess return to active management was 2.6% per annum and the most 'active' active managers (using an R^2 approach ie those managers with the most uncorrelated returns to their benchmark) was 8.3% per annum. Clearly, managers with very high levels of correlation to their benchmark are unlikely to outperform in any environment.

Figure 15: Return dispersion and the excess returns (post fees) of active equity mutual funds



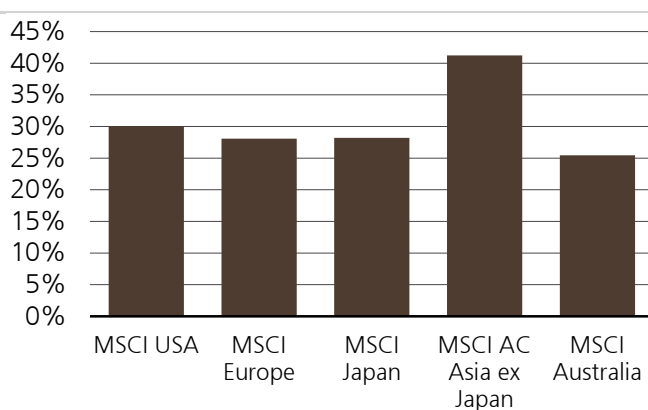
Source: Dr Anna von Reibnitz (ANU), Factset, UBS Quant

Where should active managers focus?

Active managers should focus on areas in which there are opportunities to outperform and where they have a competitive advantage. There are numerous ways to measure the opportunity set in a market or sector (see Lubor Pastor et al, 2003) here we go about it by assessing the dispersion of returns (driving mispricing opportunities) and the correlation of returns (decreasing the breadth of the opportunity set).

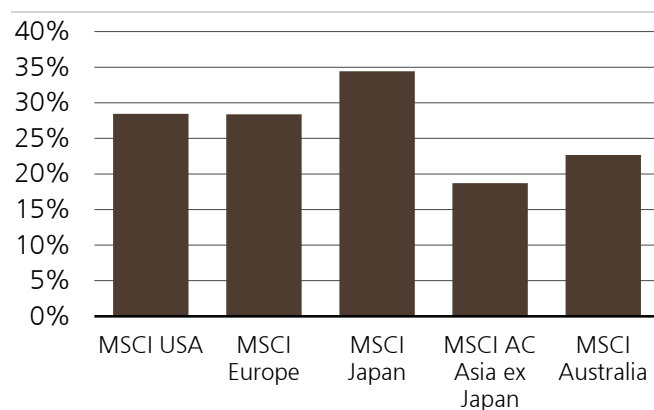
Overall, we find that Asia is the most attractive market for active managers with high levels of dispersion and low levels of correlation. Japan on the other hand is one of the hardest markets with average levels of dispersion but high levels of correlation. For more information on the Japanese market please see [What you need to know about Japanese equities](#). Please contact us if you are interested in more detail splitting the data by both sector and region.

Figure 16: Dispersion of returns



Source: Factset, UBS estimates

Figure 17: Correlation of returns



Source: Factset, UBS estimates

Quant vs Fundamental Investing...

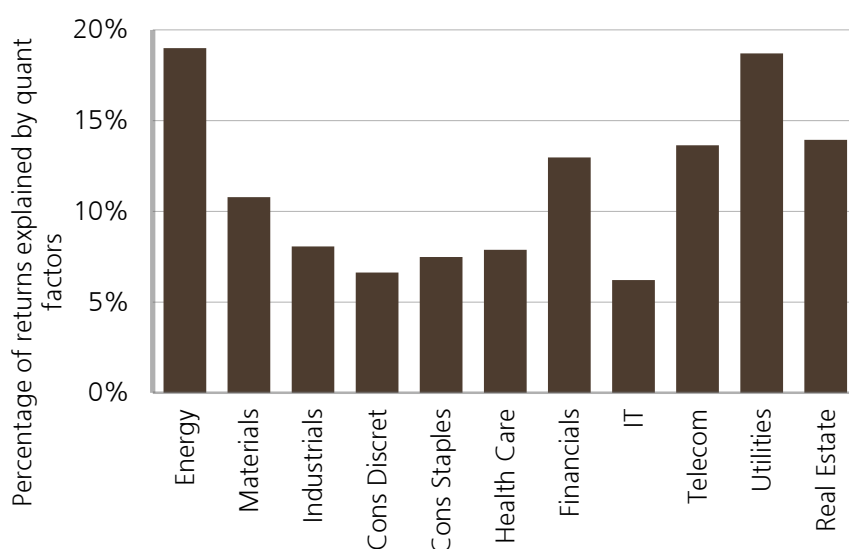
To give a clearer perspective of where active portfolio management works best, we divide active management analysis techniques into two broad categories: quantitative analysis and fundamental analysis.

Where does Quant work?

We identify the regions and sectors where excess returns are explained most by quant factors using regression analysis. The adjusted R^2 is the percentage of the excess returns described by the quant factors beta, size, value, absolute quality and momentum over the past 36 months. We have used PCA analysis to confirm the results of the regression analysis. The result of the PCA analysis is in the appendix.

The results of the regression analysis showed that the greatest opportunities for investors employing systematic strategies are Energy, Financials, Telecom, Utilities and Real Estate sectors.

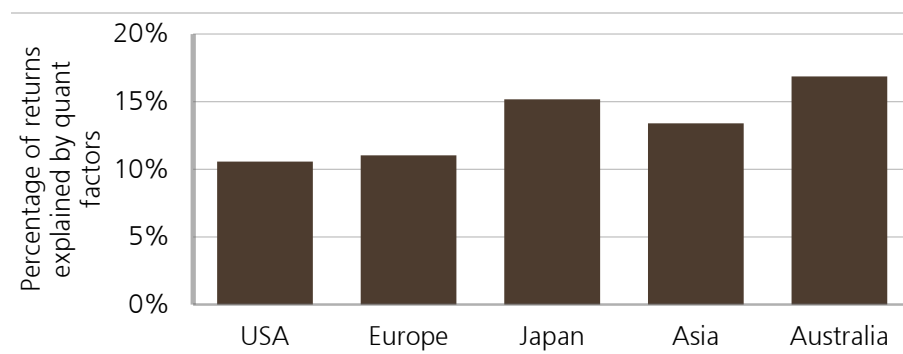
Figure 18: Excess returns described by quant factors



Source: Factset, UBS Quant

Footnote: shows the average adjusted R^2 of stock excess returns on beta, size, value, quality and momentum. 1994 to 2017 rolling 36 months

Figure 19: Average Adjusted R² for quant factor regression by region



Source: UBS

Footnote: shows the average adjusted R² of stock excess returns on beta, size, value, quality and momentum. 1996 to 2017 rolling 36 months

Where do Fundamental analysts have an edge?

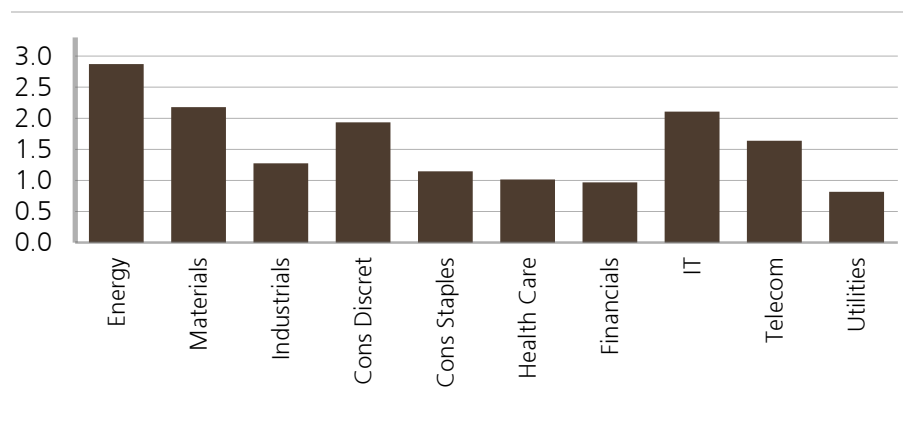
Fundamental analysts have an edge over quantitative analysts in sectors that carry a high degree of idiosyncratic risk. These are sectors that are typically not well defined by quantitative factors. These are sectors such as IT, Consumer Discretionary, Consumer Staples and Healthcare. To complicate matters further, there are certain sectors where we need to be aware of policy risk. These sectors warrant further oversight from fundamental analysts.

Policy risk analysis

Skilled fundamental analysts can gauge policy maker's sentiment in sectors that are highly regulated. Due to the flexibility of their sophisticated models, cash flows of stocks from these sectors are easier to predict using scenario analysis. Fundamental specialists have a distinct advantage in identifying stocks with superior performance in sectors that face the highest scrutiny from regulators.

The global sectors that face the heaviest regulations are Utilities, Financials and Health Care. We confirm this by calculating the sector-wise average 5 year volatility in ROE for MSCI World since 1997. As one might expect, the global sectors that have the lowest volatility in ROE are Utilities, Financials and Health Care.

Figure 20: Volatility of ROE (5 year average, MSCI World)



Source: UBS Quant

Footnote: sector-wise average 5 year volatility in ROE for MSCI World since 1997

Ideas for blending Quant and Fundamental investing

Clearly there are parts of the market that are well explained by quantitative factors, whilst there are others that are not.

In blending quant and fundamental research, we should utilise quantitative factors in sectors where they work well, and utilise fundamental research analysts to ensure the data that the models are loading on are accurate. They also ensure that models aren't overlooking any qualitative data.

However, in areas of the market where quantitative factors explain less of the return, for example in Information Technology, we should utilise our fundamental analysts' industry and company knowledge to navigate the idiosyncratic risk within these sectors.

What are we at UBS Quantitative Research doing?

We have two key initiatives within the Quantitative Research team:

Sector specific alpha models

Firstly, we are in the process of developing a set of sector specific alpha models in conjunction with our fundamental teams to augment the decision making process. The idea is to develop the data and models that our fundamental analysts utilise and generate into a systematic framework. From this we hope to augment our traditional quantitative factors with data that helps explain a greater proportion of returns than traditional factors do.

Data and 'Big Data'

Our Evidence Lab team have done an impressive job of helping analysts answer questions which they previously found unanswerable. In the process of doing so, they have developed a large amount of unique, proprietary data sets. We aim to test these data sets for applicability across the broader market and will report back with the alphas that we find.

Bringing it all together

Traditionally, quantitative managers have built factor models. These have evolved significantly post the 2007 Quant Crisis. Today, most quantitative models look quite different to one another. Some start with a factor model and add in a fundamental overlay, others start with a fundamental view on industry momentum and use models to pick stocks within industries. Others build traditional quantitative factor models which load on factors that define a particular investment approach. For example, we have quantitative managers running income funds, where they load on factors that describe good quality income producing companies that have the ability to grow their dividends. Others still, utilise quant factor models, and combine them with machine learning processes and fundamental analyst views in a systematic framework.

Clearly, there are a myriad of ways to combine factors and build a portfolio. If you would like to discuss ways of evolving your current process, please get in touch. Our contact details are on the front page.

Conclusion

There's been an enormous amount of information and indeed mis-information surrounding the funds management industry. Hopefully we've managed to shed some light on the topic and what we consider to be the key debates.

Since 2000, index funds, ETFs, concentrated portfolios, sector specialist funds, country specialist funds, quant funds and indeed hedge funds have grown in share of assets, whilst only diversified mutual funds have lost share. So this is not a debate about 'active vs passive', this is an unbundling of exposures with diversified portfolio managers losing share to almost all other alternatives.

Asset managers earn positive alphas (post fees) at the expense of non-delegated institutional and retail investors. As a result, institutions with skill in active manager selection should invest in active managers as they are likely to outperform over most time periods. However, non-delegated institutional capital has likely achieved a negative gross alpha, and as a consequence, it stands to reason that more non-delegated institutional capital should be deployed in factor portfolios to obtain their within-asset class exposures.

From an individual perspective, sequencing risk is a significant risk that individuals should be aware of during the 'retirement risk zone' (10 years before and 10 years post retirement). During this period drawdowns in the market are likely to have a significant and permanent effect on retirement outcomes. Good active managers (as measured using an R^2 approach) can help mitigate this risk.

As a result of the developed world's demographic headwind we believe that the low growth environment is likely to persist for the next ten years. As a consequence, the dispersion of returns is likely to be higher. At the same time we have observed correlations falling which has increased the breadth to the market. In this environment the opportunity set for active management outperformance is likely to be significantly higher. Below we highlight the regions and sectors where the dispersion of returns has historically been higher and as a consequence it has been easier for active managers to outperform.

Figure 21: Average dispersion of returns across regions and sectors (1996 – 2017)

	Consumer Disc	Consumer Staples	Energy	Financials	Health Care	Industrials	Info Tech	Materials	Real Estate	Telecoms	Utilities
USA	29%	22%	25%	23%	29%	24%	35%	26%	19%	32%	18%
Europe	28%	22%	26%	26%	26%	27%	33%	26%	18%	25%	20%
Japan	28%	22%	21%	27%	23%	26%	30%	25%	24%	27%	15%
Asia	40%	39%	38%	39%	41%	40%	41%	40%	38%	34%	33%
Australia	22%	20%	21%	19%	20%	24%	44%	27%	15%	19%	12%

Source: Factset, UBS Quant

We believe that the future of active management belongs to the asset managers that evolve their process and their client offerings ahead of the pack. To this end, we are working on developing a range of sector specific alpha models as well as alphas from unique proprietary data sources and researching portfolio construction techniques for blending both quant and fundamental processes.

As always, we welcome any feedback. Please contact us if you would like to discuss these ideas further.

We would like to thank Jyothi Sreeram from Cognizant for her assistance in the preparation of this report.

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Appendix

Figure 22: Adjusted R² for quant factor regression (heat map stratified by region)

Index	Energy	Materials	Industrials	Cons Discret	Cons Staples	Health Care	Financials	IT	Telecom	Utilities	Real Estate
DJ Australia	0.25	0.16	0.12	0.11			0.16				0.21
DJ Japan	0.38	0.09	0.08	0.07	0.05	0.12	0.15	0.08		0.29	0.21
DJ Pacific ex AU/NZ/JP	0.07	0.04	0.04	0.03	0.05	0.06	0.07	0.04	0.10	0.09	0.07
DJ USA	0.14	0.12	0.08	0.06	0.12	0.08	0.13	0.05		0.16	0.11
DJ Western Europe	0.12	0.13	0.07	0.06	0.08	0.06	0.14	0.08	0.17	0.20	0.10

Source: UBS

Figure 21 shows the average adjusted R² of stock excess returns on beta, size, value, quality and momentum over the past 36 months using a cross sectional regression. The explanatory power of quant factors is higher in Australia and Japan.

Figure 23: Adjusted R² for quant factor regression (heat map stratified by sector)

Index	Energy	Materials	Industrials	Cons Discret	Cons Staples	Health Care	Financials	IT	Telecom	Utilities	Real Estate
DJ Australia	0.25	0.16	0.12	0.11			0.16				0.21
DJ Japan	0.38	0.09	0.08	0.07	0.05	0.12	0.15	0.08		0.29	0.21
DJ Pacific ex AU/NZ/JP	0.07	0.04	0.04	0.03	0.05	0.06	0.07	0.04	0.10	0.09	0.07
DJ USA	0.14	0.12	0.08	0.06	0.12	0.08	0.13	0.05		0.16	0.11
DJ Western Europe	0.12	0.13	0.07	0.06	0.08	0.06	0.14	0.08	0.17	0.20	0.10

Source: UBS

Figure 22 shows the average adjusted R² of stock excess returns on beta, size, value, quality and momentum over the past 36 months. The explanatory power of quant factors is higher in energy and utilities.

We verify these results using Principal Component Analysis.

Figure 24: Adjusted R² for PCA model (heat map not stratified)

Index	Energy	Materials	Industrials	Cons Discret	Cons Staples	Health Care	Financials	IT	Telecom	Utilities	Real Estate
DJ Australia	0.90	0.77	0.78	0.69			0.85				0.90
DJ Japan		0.61	0.51	0.46	0.57	0.64	0.70	0.52		0.84	0.63
DJ Pacific ex AU/NZ/JP	0.53	0.50	0.47	0.41	0.44	0.51	0.60	0.42	0.57	0.62	0.59
DJ USA	0.80	0.74	0.61	0.51	0.57	0.60	0.75	0.52		0.83	0.75
DJ Western Europe	0.78	0.70	0.54	0.58	0.64	0.58	0.67	0.59	0.75	0.81	0.81

Source: UBS

Note the PCA model uses total returns (not excess returns) as the dependent variable. Whilst we used excess returns for our quant factor regressions.

Valuation Method and Risk Statement

Our quantitative models rely on reported financial statement information, consensus earnings forecasts and stock prices. Errors in these numbers are sometimes impossible to prevent (as when an item is misstated by a company). Also, the models employ historical data to estimate the efficacy of stock selection strategies and the relationships among strategies, which may change in the future. Additionally, unusual company-specific events could overwhelm the systematic influence of the strategies used to rank and score stocks.

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