portfolio construction forum

The importance of asset allocation in Australia

Michael Furey | Delta Research & Advisory | 02 November 2015 |
1.00 CPD

Between 15 and 30 years ago, there were several studies into the importance of asset allocation. Initially, Brinson, Hood, and Beebower (1986), or BHB as they're commonly referred to, showed that around 94% of the performance variability of 91 US pension funds between 1974 and 1983 was due to the asset allocation decision. The 94% figure was arrived at by using regression analysis and the R-Squared statistic which measures goodness of fit of the regression model. The model was applied to one time period – the whole 1974 to 1983 period – and was a specific interpretation of importance of asset allocation.

This original study was followed up by Brinson, Singer, and Beebower (1991), or BSB, that showed that around 91% of performance variation from US pension plans between 1977 and 1987 could be explained by asset allocation – somewhat confirming the original conclusion of the importance of asset allocation.

Misinterpreted

Unfortunately, both studies will go down in history as amongst the most misinterpreted studies in investment history.[1] This is despite their influence on modern day portfolio construction and particularly within the financial planning industry. Common misinterpretations include:

- Asset allocation explains more than 90% of a portfolio's *returns* – instead of *variability of returns.*
- Asset allocation always explains more than 90% of a portfolio's return variability - in fact, the original 94% result was an average. Many funds had lower results than this including one fund as low as ~75%.
- Active management is not important – in fact, just because asset allocation explains 94% of return variability, it does not mean the 6% of return variability driven by active management from market timing and security selection is insignificant or not important.

Criticism

In addition to misinterpretations of the study, the heavy reliance on asset allocation across the investment industry has frequently come under attack. Most notably, William Jahnke (1997) criticised the rise of fixed asset allocation investing resulting from the BHB study. He concluded, "the unfortunate result for many investors who buy into the fixed-weight asset allocation policy argument will be the failure of their asset allocation and savings program to achieve their financial goals, because they are not forced to evaluate realistic investment return opportunities and their financial planning implications".

Jahnke's criticism, along with the failure of many portfolios over the GFC period, provided impetus for investors to focus more on market timing via dynamic asset allocation with falling acceptance of fixed or strategic asset allocation. Ironically, at the security level, the GFC period saw investors move away from active management, choosing to instead invest significantly into passively managed index funds and ETFs, due to the struggle of active managers to protect capital when markets were dropping.

Nevertheless, thanks to technology, Australian and global investors have access to a wider array of investments, strategies and asset classes. Since the original studies, we have seen the emergence of hedge funds, alternatives, global property, high yield, long/short investing, infrastructure, emerging markets, and many other investment options.

1. OBJECTIVES

This paper provides another update to the original BHB results but with some differences.

- The data examined is recent – more than 20 years after the BSB study; and,
- Data is drawn from the Australian diversified strategies fund universe.

Questions this paper seeks to answer include:

1. Is Asset Allocation still important? Or, has dynamic asset allocation and new asset classes resulted in lower importance or influence of major asset classes?
2. How important is active management? Does the idiosyncratic risk have a large impact on portfolio outcomes?
3. Does the level of asset class importance create greater opportunity for active management success? Does the size of the active bet result in more or less active management success?

These questions address both the importance and influence of both the beta (asset allocation) and alpha (active management from market timing and security selection) decision of many of the major diversified strategies in the Australian market.

2. METHODOLOGY

2.1. Framework

Three major asset class factors are used to present the results of this study following preliminary analysis demonstrating additional asset class factors were not statistically significant.

Linear regression analysis using Equation 1 is performed on a sample of Australian managed funds.

$$\text{Equation 1} = Rp - Rf = \alpha + \beta_1.GERP + \beta_2.AERP + \beta_2.GBRP + \epsilon$$

Where Rp is the monthly return of managed fund; Rf is the monthly return of the Risk-free rate which is Bloomberg Ausbond Bank TR index; and β_1, β_2, and β_2 is the utility of each asset class factor. α is the additional return after adjusting for each of the market risks and ϵ is the error term.

The three independent factors used in the regression model are:

- Global Equity Risk Premium (GERP): MSCI World GR (AUD) – Bloomberg Ausbond Bank TR (AUD)
- Australian Equity Risk Premium (AERP): S&P/ASX 200 TR – MSCI World GR (AUD)
- Global Bond Risk Premium (GBRP): Barclays Global Aggregate TR (Hedged AUD) – Bloomberg Ausbond Bank TR (AUD)

2.2. Definitions

The coefficient of determination for the above regression equation, R^2, is the statistic used that describes the quantity of portfolio return variability is explained by the asset allocation policy decision – as discussed previously R^2 represents the goodness of fit and was the primary statistic used by BHB. In the original BHB study, the R^2 of their results was greater than 90%.

If R^2 describes how much performance variability is explain by the asset allocation policy, then $1- R^2$ describes the proportion that is due to the active decisions such as market timing or security selection bets that differ from the various asset class benchmarks. $1- R^2$ is used as a proxy to describe the level of idiosyncratic risk. An R^2 of 90% suggests that 10% (i.e. 100% less 90%) of a portfolio's return variability is due to the idiosyncratic risk (or non-market bets) a manager takes.

To determine the skill or value add of each manager to each strategy, the α term from Equation 1 is used. If positive, then there is added value (potentially skill) after adjusting for market (or asset class) risk. If negative, then there is negative risk-adjusted value add. Obviously, positive α is desirable.

2.3. Data

Australian managed fund data is used (sourced from Morningstar Direct). The analysis uses monthly returns from May 2010 to April 2015, inclusive. The managed funds examined are drawn from two Morningstar categories of open-ended (untaxed) funds - Balanced (40-60% invested in growth assets) and Growth (60-80% invested in Growth assets). The Morningstar Direct database yielded a total of 265 managed funds, of which 82 are categorised as Balanced and 183 as Growth.

It should be noted that there is a survivorship bias in the data sample, insofar as funds that have closed in the five years prior to April 2015 are excluded. There is also a bias resultant from various fee structures of a strategy. To remove this bias, analysis is also undertaken using the lowest cost, or wholesale version, of each strategy.

This reduced the total managed funds analysed to 129 funds of which 46 are categorised by Morningstar as Balanced and the remaining 83 as Growth. Each category also contains 5 index funds. These are excluded for some of the analysis below, when the primary focus is around the effect of active management.

2.4. Data description

Figure 1 shows the average asset allocation for each category of diversified funds.

Figure 1: Sample Data (Averages)

Asset class	Balanced funds	Growth funds
Asset allocation		
Cash	14.5%	9.2%
Australian bonds	17.8%	11.8%
Global bonds	12.3%	7.3%
Defensive Assets	***44.6%***	***28.3%***
Property	5.3%	7.7%
Australian Equity	22.9%	31.7%

Global Equity	21.4%	26.3%
Other	5.8%	6.0%
Risky Assets	*55.4%*	*71.7%*
Indirect cost ratio	**1.41%**	**1.67%**
Net assets under management	**$344.7m**	**$328.9m**
Number in sample (incl index funds)	**46**	**83**

Source: Morningstar Direct data. Analysis by Delta Research & Advisory

Prior to the introduction of MySuper, most default superannuation funds in Australia had growth allocations in the vicinity of 70% so it is somewhat unsurprising that there are more growth funds than balanced funds in the final data sample. Please note, the final data sample are open-ended unit trusts, not superannuation funds.

It is also to be expected that the largest allocations are Australian-centric, evidenced by the highest defensive allocations to Australian bonds over Global bonds and similarly with risky assets, where there is a higher allocation to Australian equities over Global Equities. The Property allocation is a combination of A-REITs, Global REITs, and Direct Property so combines listed and unlisted exposures across Australian and Global markets. Across the sample this only has a small 7% allocation. The "Other" asset class may include infrastructure, commodities, or non-traditional strategies such as hedge funds and also has a small allocation of 6% across the full data sample. It should be noted that the data sample does include index solutions from a variety of managers across both categories.

3. RESULTS

3.1. Is asset allocation still important?

Using the BHB definition, the answer is yes. While the underlying benchmarks are different, albeit appropriate for Australian managed fund data, the results show that around 90% of the performance variability of the Australian diversified fund set can be explained by asset allocation policy.

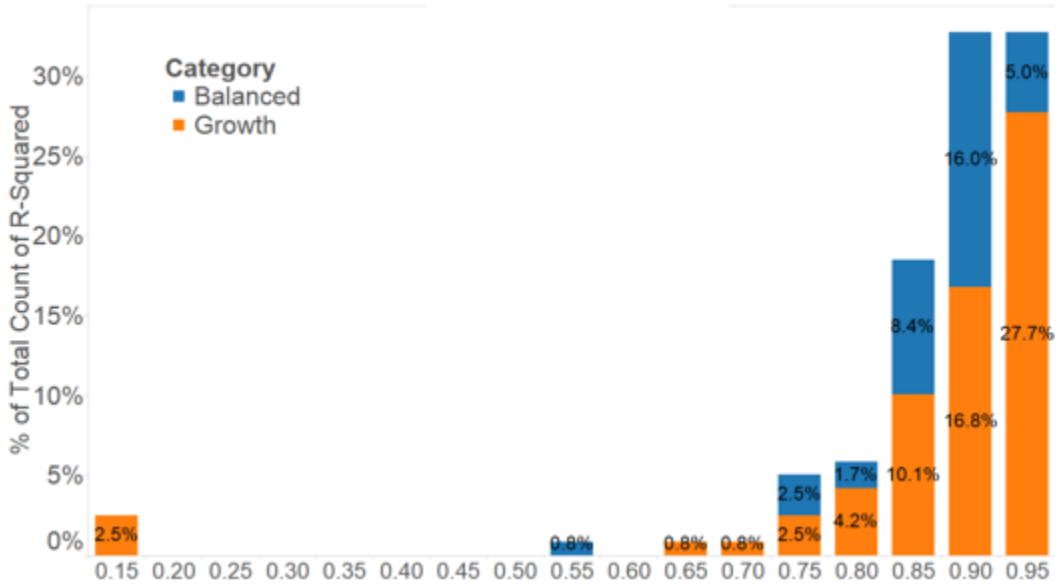
Figure 2: Regressions R^2 for Equation 1 (excluding index funds)

Regression R^2	Balanced Funds (n=41)	Growth Funds (n=78)	Combined Total (n=119)
Average	**90.0%**	**89.1%**	**89.4%**
Minimum	56.2%	18.2%	18.2%
5th Percentile	79.8%	70.6%	75.2%
25th Percentile	87.1%	89.5%	88.8%
Median	**92.8%**	**94.4%**	**93.6%**
75th Percentile	94.6%	95.9%	95.6%
95th Percentile	96.7%	97.0%	97.0%
Maximum	97.8%	97.7%	97.8%

Source: Morningstar Direct data. Analysis by Delta Research & Advisory

As suggested by the results in the Figure 2, there is a positive skew in the results whereby a very high proportion of funds have a high R^2 (e.g. the median at 93.6% is higher than the average 89.4%). Figure 3 shows that very few funds exhibit a low level of influence from the three asset classes used in the regression model (i.e. Australian shares, Global Shares, and Global Bonds).

Figure 3: Distribution of R^2 for Equation 1 (excluding index funds)



Source: Delta Research & Advisory

The handful of managed funds with a low level of performance variability "explainability" (i.e. R^2 less than 0.75) have investment strategies that are different from the other funds in the data sample and different from strategies typically expected in Balanced or Growth investments. For example, they have either higher allocations to the Alternative asset class, which includes a high proportion of hedge fund strategies, commodities, and/or high exposures to credit or high yield securities.

A few of these lower R^2 investments, while still invested, are closed and are returning assets to investors. Obviously, this sell-down of assets would result in less focus on purchasing assets, probably reduced emphasis on rebalancing, and may have changed the focus away from an asset allocation approach towards liquidity management and, perhaps, market timing factors focused on the sale. These reasons are speculative with respect to the lower R^2 and more analysis is required for any conclusive evidence for their lower performance variability explanation.

Either way, if explaining portfolio return variability determines importance, then just as it was 30 years ago when BHB examined 91 US Pension funds, the analysis of 119 Australian diversified managed funds are similar with asset allocation (using Australian Shares, Global Shares, and Global Bonds) being important determinants.

3.2. How important is active management?

By simple induction, if we look at the regression statistic R^2 then clearly active management is less important than asset allocation in explaining the variability of returns amongst the sample of active managers. This is because if more than 90% of return variability is explained by asset allocation then less than 10% can be explained by active management (market timing and security selection). However, the importance of active management does not end using this definition as there may be significant variability in the ACTUAL returns achieved through active management.

Hence, this analysis now moves from explaining return variability to the actual point-to-point returns alone, after adjusting for market risks – that is, analysis of α (Alpha).

Figure 4: Alpha by management type

Category		Active Funds	Index Funds	All
Balanced funds	Avg. Alpha	-0.22%pa	-0.13%	**-0.21%**
	Std. dev. of Alpha	1.01%pa	0.40%	**0.96%**
	Number of funds	41	5	**46**
Growth funds	Avg. Alpha	-0.57%pa	-0.31%	**-0.56%**
	Std. dev. of Alpha	1.43%pa	0.94%	**1.40%**
	Number of funds	78	5	**83**
All	**Avg. Alpha**	**-0.45%pa**	**-0.22%**	**-0.43%**
	Std. dev. of Alpha	**1.31%pa**	**0.69%**	**1.27%**
	Number of funds	**119**	**10**	**129**

Source: Morningstar Direct data. Analysis by Delta Research & Advisory

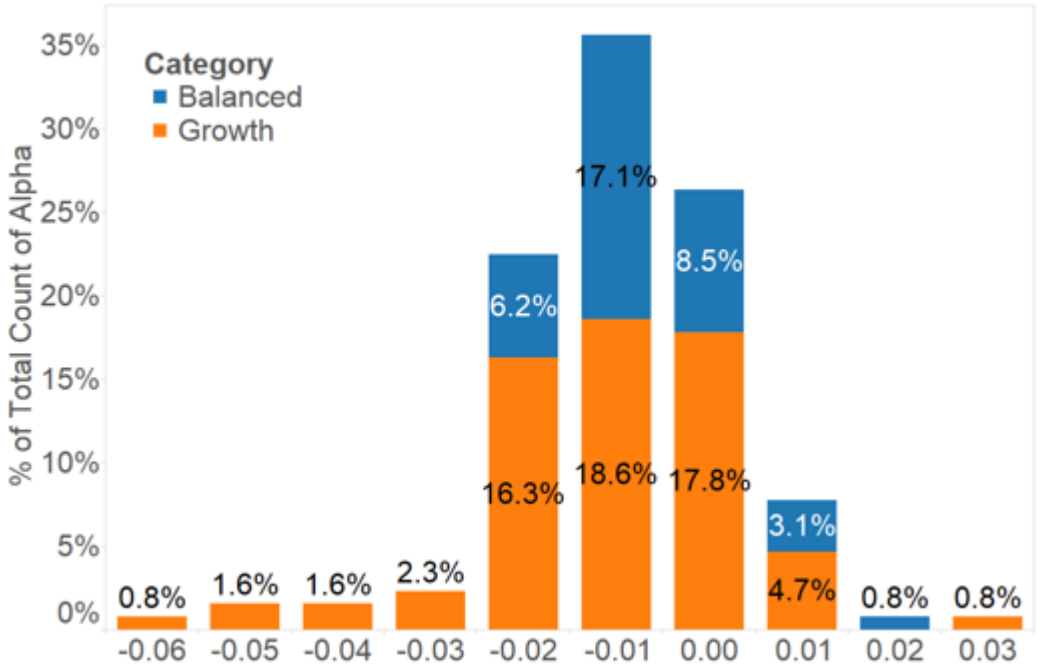
Figure 4 shows that average Alpha across all 129 managed funds, both active and index funds, is -0.43% per annum. While the average Alpha is higher for Balanced compared to Growth funds, and Index funds have a higher average Alpha than Actively managed funds, none of these differences are statistically significant.

This lack of difference is also supported by the fact that the additional average Alpha of 0.23% per annum for index funds over active funds compounds over the five years tested to a gross excess Alpha of just 1.16%. On face value, while every bit counts, it does not appear to be a large performance difference between active and index management – so some may ask, if there is little average difference then is active management important?

Figure 5 below shows the distribution of Alpha and presents a very different picture. The fund sample delivered a wide array of alpha over time, from the lowest Alpha of -5.87% per annum to the highest at 3.03% per annum. This range of 8.9% per annum, compounded over five years, produces additional risk-adjusted return of 53% – which is clearly a significant risk-adjusted return difference in what is a relatively short period of time.

When looking at active managers, based on this Australian diversified fund sample, the range of return outcomes can be very different. Any suggestion that active management is not important can potentially be dismissed on a pure performance basis. The costs of choosing a poor active manager over a good active manager can be very high.

Figure 5: Distribution of annualised Alpha for all funds (incl index and actively managed funds)



Source: Delta Research & Advisory

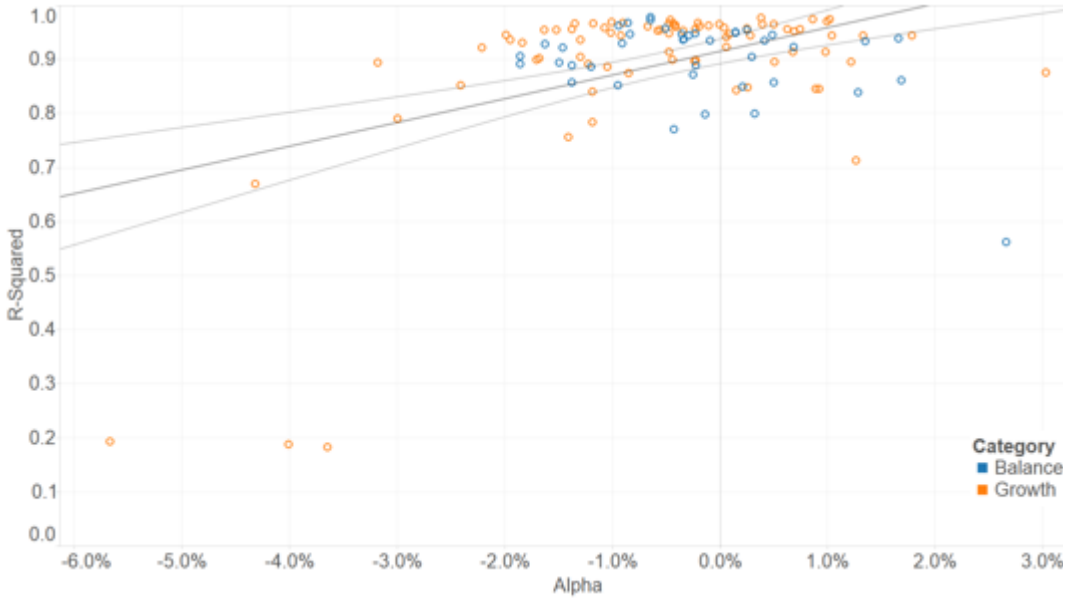
3.3. Does asset allocation importance influence size of Alpha?

If we assume that both the asset allocation and active management components of the investment decision carry importance, is there a relationship between the level of idiosyncratic risk applied by the manager and the size of the subsequent value add, or Alpha?

As mentioned above, idiosyncratic risk (related to the bets an active manager makes away from an asset class benchmark) is defined as $1-R^2$. In other words, it is the risk taken that is not benchmark or asset class related.

Figure 6 below shows a scatter plot of Alpha and R^2 for the total sample of active funds and includes a linear trend line (plus confidence bands). The direction of the trend line suggests that there may be a relationship between idiosyncratic risk and Alpha, but not the relationship many might expect. It suggests that the lower the level of active bets (idiosyncratic risk) or the higher the level of R^2, the higher the Alpha – which is not on the surface, a strong advertisement for active management.

Figure 6: R^2 and Alpha (active funds only)

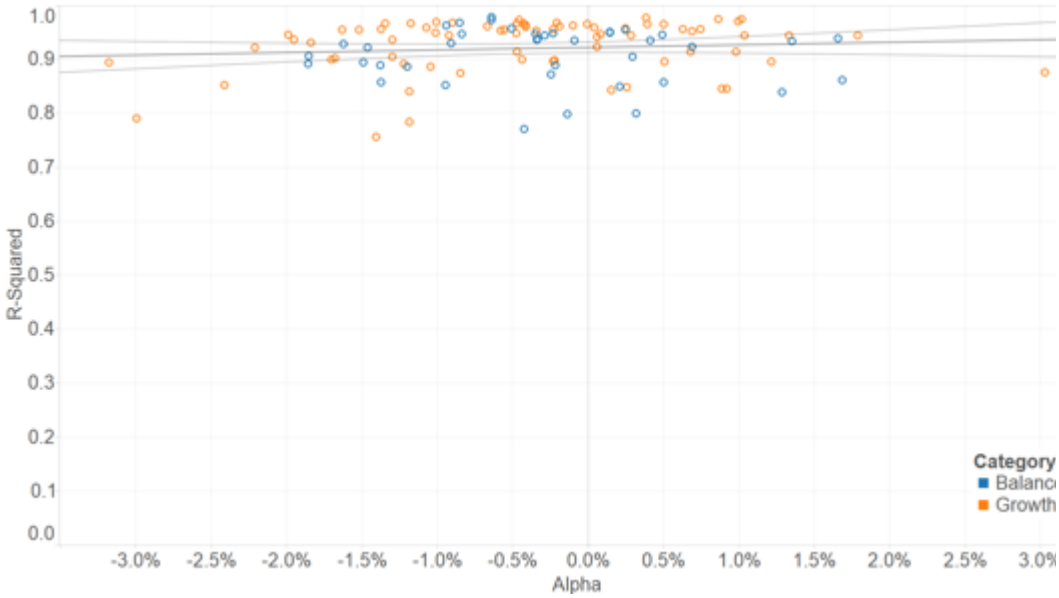


Source: Delta Research & Advisory

However, the trend line in Figure 6 is influenced by a number of outliers, which are the funds with the highest levels of idiosyncratic risk (or lowest R^2). Only six managed funds in the sample have an R^2 lower than 0.75, and four of these have the lowest Alpha in the sample.

Figure 7 below shows an updated trend line after removing these outliers. While it could be argued that these outliers should be included as they are valid funds, their extreme levels of Alpha and R^2 suggest their results are nothing like the remaining 95% of the sample. With the extreme outliers removed, the trend line appears flat – suggesting there is no relationship between idiosyncratic risk and Alpha. While by definition, it is impossible to produce positive Alpha without accepting some level of idiosyncratic risk, obviously a wide range of Alpha possibilities exist.

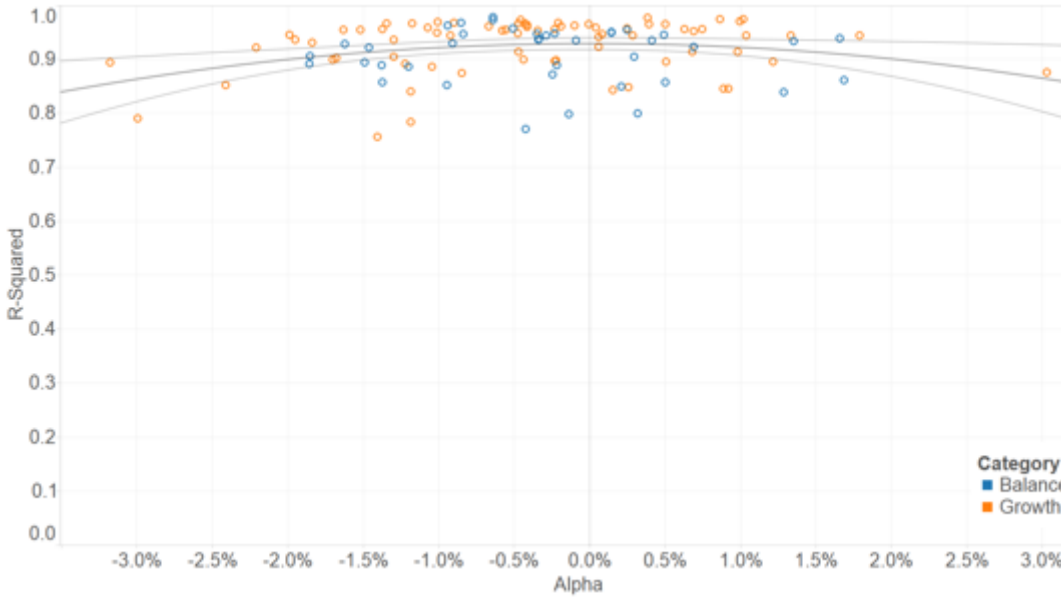
Figure 7: R^2 and Alpha (active funds only and excluding funds with R^2<0.75)



Source: Delta Research & Advisory

Figure 8 provides one final adjustment. It uses the same sample as Figure 7 (i.e. excludes outliers), but changes the trend line from linear to a second order polynomial such that Alpha^2 is considered. This trend line suggests the possibility of a second order relationship between idiosyncratic risk and Alpha – that is, the higher the level of idiosyncratic risk, the higher the level of Alpha^2, which also means that the greater the size of active bets, the greater the level of success or failure of the active bets.

Figure 8: R^2 and Alpha (active funds only and excluding funds with $R^2<0.75$)
Trend line is R^2 vs $Alpha^2$



Source: Delta Research & Advisory

4. CONCLUSION

The original BHB conclusions on the importance of asset allocation policy to the return variability of US pension funds 30 years ago appears to apply to Australian diversified funds today. Although new asset classes and strategies have been introduced and there is an increased interest in market timing through dynamic and tactical asset allocation, the return variability of Australian diversified fund managers – like their US Pension manager peers of 30 years ago – can be largely explained by asset allocation policy.

This does not mean that the remaining 10% of return variability explained by active management decision is not important. While active managers across the Australian Balanced and Growth categories examined, on average, produced negative alpha after accounting for asset allocation, in the five years to the end of April 2015, the most successful manager produced an excess of 53% in gross alpha over the worst alpha-producing manager. The choice of active strategy can result in a wide variety of results after adjusting for risks associated with asset allocation.

Finally, when looking to active managers for positive alpha or excess market-risk adjusted returns, there appears to be little relationship between the level of idiosyncratic risk they take and added value (Alpha). At best, any relationship between these two factors simply suggests that greater the idiosyncratic risk leads to greater Alpha risk. So, while there may be a chance of great success, there is also a high chance of failure.

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ENDNOTES

1. An unpublished study by Nuttall and Nuttall in 1998 showed that out of 50 writers who cited BHB, only one interpreted the BHB study correctly.

Michael Furey is Managing Director of Delta Research & Advisory, which specialises in providing independent, conflict-free investment research and asset consulting services to dealer groups (AFSLs), financial planners, and self-directed investors. He has worked in the financial planning industry since 1999, both in research and financial planning roles.