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The Importance of Asset Allocation in Australia

By Michael Furey

Background

Between fifteen and thirty years ago there were several studies into the importance of asset allocation. Initially, Brinson, Hood, and Beebower (1986), BHB, showed that around 94% of portfolio 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), BSB, who 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, these studies will go down 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 return…
  - …instead of return variability
- Asset Allocation always explains more than 90% of a portfolio's return variability…
  - …the original 94% result was an average. Many funds had lower results than this with one fund as low as ~75%
- Active management is not important…
  - …because asset allocation explains 94% of performance variability, does <u>not</u> mean the 6% of 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

[1] An unpublished study by Nuttall and Nuttall in 1998 showed that out of 50 writers who cited BHB, only 1 interpreted the BHB study correctly.

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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 and dissatisfied investors over the GFC period, provided impetus for investors to focus more on market timing via dynamic asset allocation with less acceptance of the fixed or strategic asset allocation. Ironically, at the security level, the GFC period saw investors move away from active management choosing to invest significantly into passively managed index funds and ETFs…this was due to the struggle of active managers to protect capital when markets were dropping.

Nevertheless, thanks to technology, Australian and global investors have had 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 others.

Objectives

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

- The data examined is recent…more than twenty years after the BSB study, and
- Managed Fund data is drawn from Australian diversified strategies

Questions this paper seeks to answer include…

1. Is Asset Allocation still important?
    a. Or, has the need for dynamic asset allocation, have new asset classes resulted in lower importance or influence of major asset classes?
2. How important is active management?
    a. 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?
    a. 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 from many of the major diversified strategies in the Australian market.

Methodology

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.

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$$R_p - R_f = \alpha + \beta_1.GERP + \beta_2.AERP + \beta_2.GBRP + \varepsilon \qquad \textit{Equation 1}$$

Where R_p is the monthly return of managed fund; R_f is the monthly return of the Risk-free rate which is Bloomberg Ausbond Bank TR index; and β_1, β_2, and β_3 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)

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^2represents the goodness of fit and is 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. With an R2 of 90%, this suggests that 10% (i.e. 100%-90%), of a portfolio's return variability is due to the idiosyncratic risk, or non-market bets, a manager makes.

To determine the skill or value add each manager has provided to each strategy, the α term from Equation 1 is used. If it is positive then there is added value (or potentially skill) after adjusting for market (or asset class) risk; and if α is negative, then there is negative risk-adjusted value add…obviously positive α is desirable.

Data

Australian managed fund data is used sourced from Morningstar Direct. All analyses uses monthly returns from May 2010 to April 2015, inclusive.

Managed funds are drawn from two Morningstar Categories of open-ended (untaxed) funds…

- Balanced – 40-60% invested in growth assets
- 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 the remaining 183 are Growth.

There is a natural survivorship bias from the database, insofar that funds that have closed in the 5 year prior to April 2015, are excluded from the sample.

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There is also a bias resultant from various fee structures of the same 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 as Balanced and the remaining 83 are Growth. Each category also contains 5 index funds…these are excluded for some of the below-mentioned analysis when the primary focus is around the effect of active management.

Data Description

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

Table 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 Mgmt.	**$344.7m**	**$328.9m**
Number in Sample (including index funds)	**46**	**83**

Source: Morningstar Direct

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 sample. Please note, the final sample are not superannuation funds but are open-ended unit trusts.

It is also expected that the largest allocations are Australian-centric, which is 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.

"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 sample.

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It should be noted that this sample does include index solutions from a variety of managers across both categories.

Results

Is Asset Allocation still important?

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

Table 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%

As suggested by the results in the Table 2, there is a positive skew in the results with a very high proportion of funds' having a high R^2 (e.g. the median of 93.6% is higher than the average 89.4%). Chart 1 below shows very few funds have a low level of influence by the 3 asset classes used in the regression model (i.e. Australian shares, Global Shares, and Global Bonds).

Chart 1 – Distribution of R2 for Equation 1…excluding index funds

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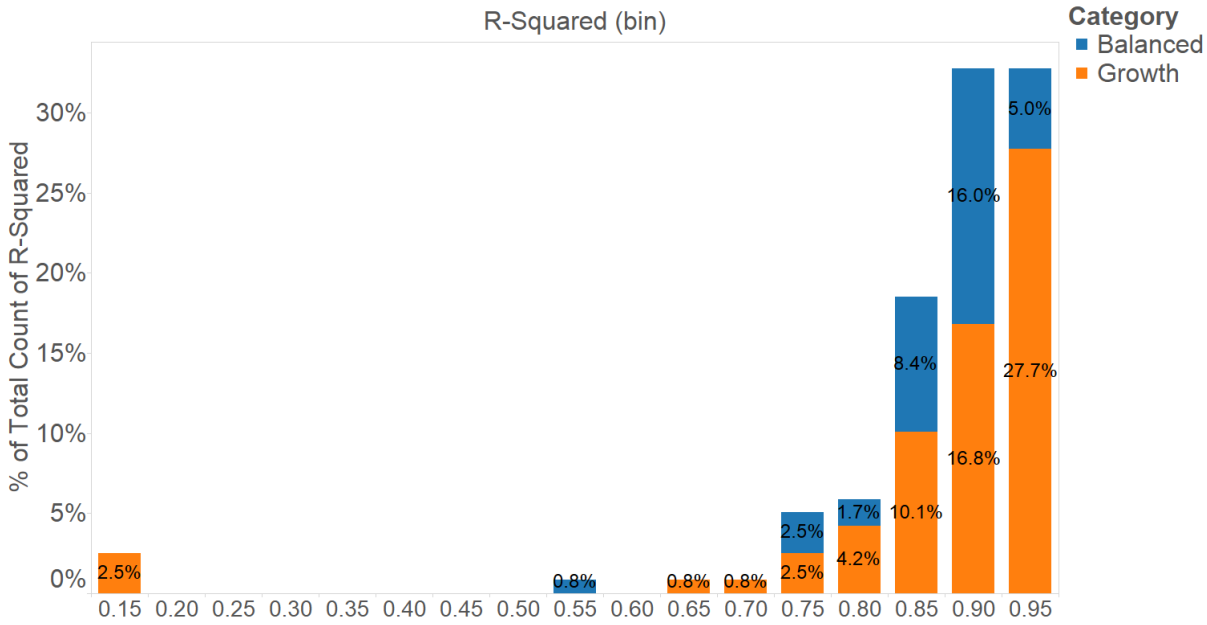

The handful of managed funds with a low level of performance variability explainability (i.e. R2 less than 0.75) do have investment strategies that are different from the other funds in the sample and different from investment strategies typically expected from Balanced or Growth investments. For example, 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.

A few of these lower R^2 investments, whilst still invested, have closed and are returning assets to their 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 any 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 performance variability determines importance, then like 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.

How important is Active Management?

By simple induction, if we use the regression statistic R^2 then clearly active management is less important than asset allocation amongst the sample of active managers. This is because if more than 90% of performance variability is explained by asset allocation then less than 10% of performance variability is explained by active management from market timing and security selection. However, importance of active management does not end using this definition as there may be significant variability in the actual returns created from active management.

So now, our analysis moves from explaining performance variability to the actual point to point performance alone, after adjusting for market risks...i.e. the analysis of α (Alpha).

Table 3 – Average Annualised Alpha, by Management Type

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

Table 3 shows the Average Alpha is -0.43%pa across all 129 managed funds, both active and index funds. Whilst the average Alpha is higher for Balanced compared to Growth, and Index funds have a higher average Alpha than Actively managed funds, none of these differences are in the slightest bit statistically significant.

This lack of difference is also supported by the additional average Alpha of 0.23%pa for index funds over active funds compound over the 5 tested years amounts to only a gross excess Alpha of 1.16%. On face value, whilst every bit counts, it does not appear to be a large performance difference between active and index management…so some may say if there is little average difference then active management is not important?

Chart 2 shows the distribution of Alpha results and presents a very different picture. The sample has delivered a wide array of results and the range is from the lowest Alpha of -5.87% to the highest Alpha 3.03%pa. This difference, of 8.9%pa, compounded over 5 years produces additional risk-adjusted return of 53%...which is clearly significant risk-adjusted performance difference in what is a relatively short period of time.

So when choosing active managers, based on the Australian sample, the range of performance outcomes can be very different so 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.

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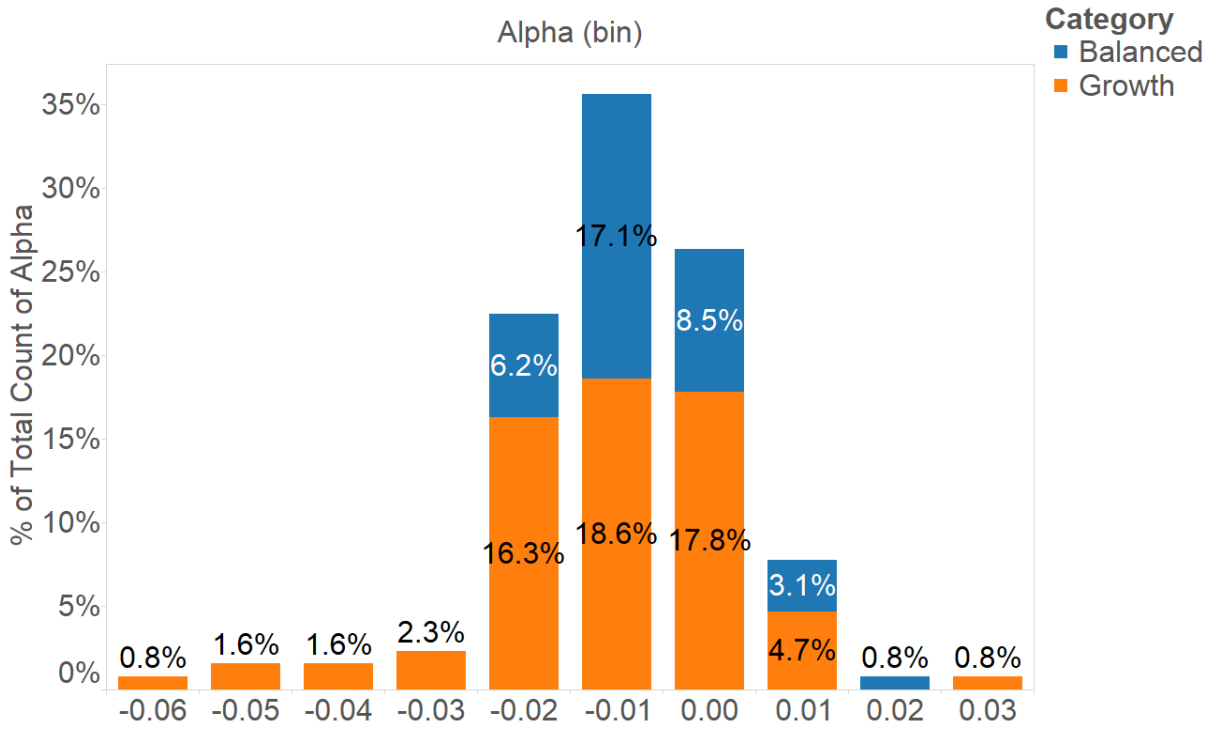
Chart 2 – Distribution of Annualised Alpha for all Funds, including index and actively managed funds



Does Asset Allocation importance influence size of Alpha?

So if we assume both the asset allocation and active management components of the investment decision both carry importance, is there a relationship between the levels 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 $1\text{-}R^2$. In other words, it is the risk undertaken that is not benchmark or asset class related.

Chart 3 shows a scatter plot between Alpha and R^2 for the total sample of active funds and includes a linear trend line (plus confidence bands). The direction of the line suggests that there may be a relationship, but not the relationship many might expect, as it suggests the lower the level of active bets or idiosyncratic risk (or higher the level of R^2), the higher the Alpha...which is not a strong advertisement for active management.

Chart 3 – Scatter Plot between R2 and Alpha (Active Funds only)

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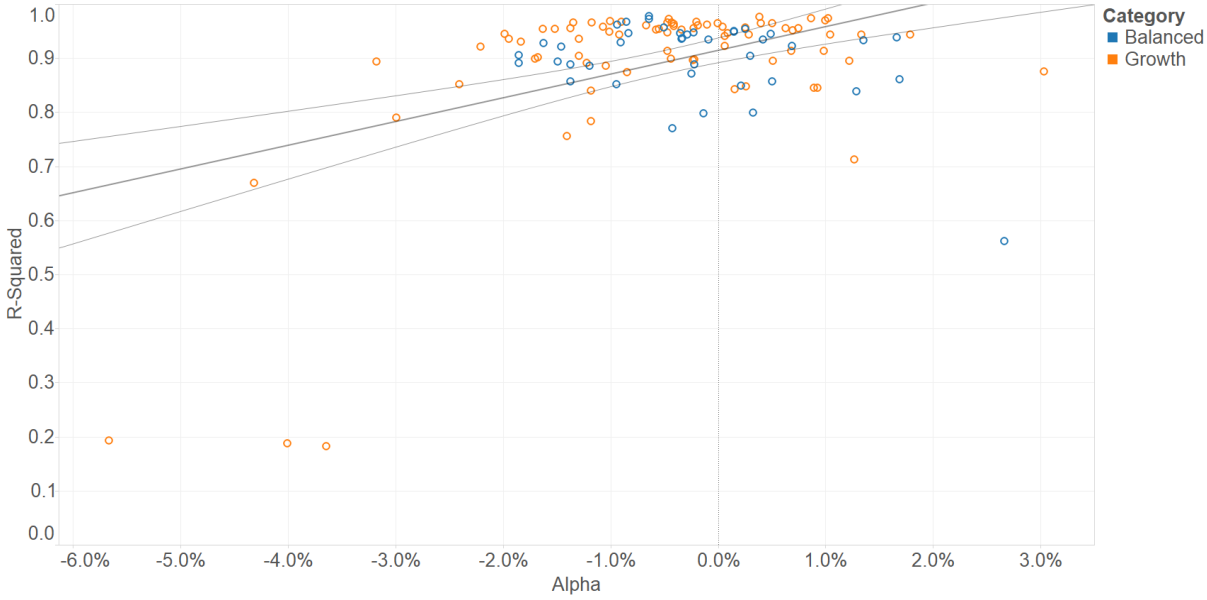

However, the trend line in Chart 3 is influenced by a number of outliers, which just so happen to be the funds with the highest levels of idiosyncratic risk (or lowest R^2)…only 6 managed funds in the sample have an R^2 lower than 0.75, and 4 of these have the lowest Alpha in the sample.

Chart 4 – Scatter Plot between R2 and Alpha (Active Funds only and excluding funds with R^2<0.75)

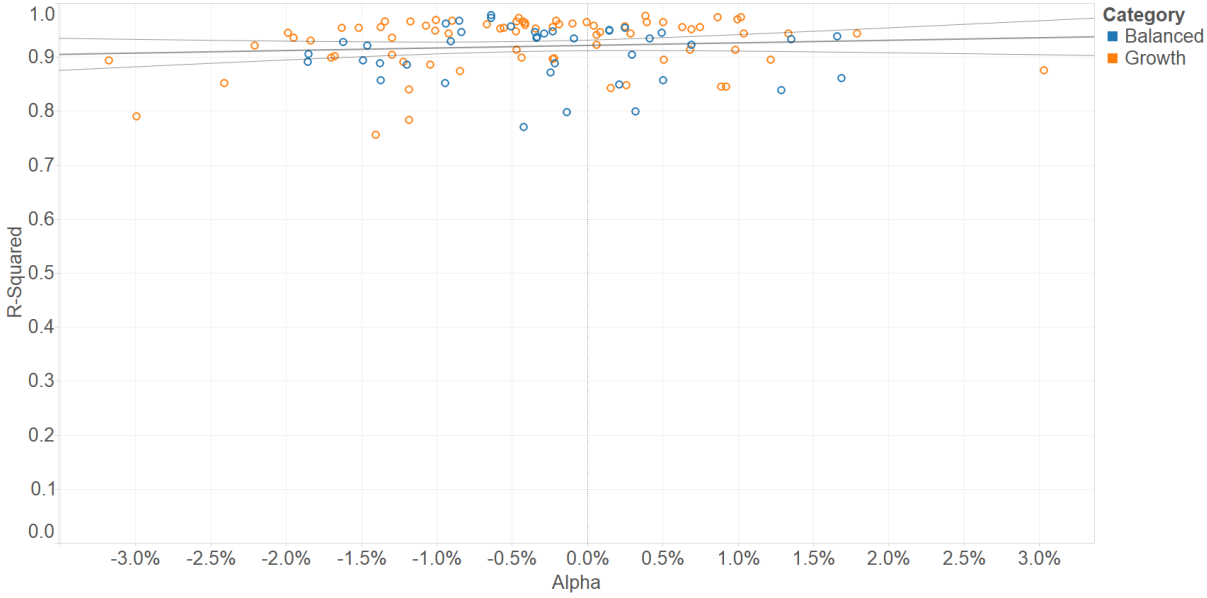

Chart 4 shows an updated trend line after removing these outliers. Whilst it could be argued that these outliers should be included as they are valid funds, their extreme levels of Alpha and R^2 values suggest their results are nothing like the remaining 95% of the sample.

The trend line appears flat suggesting there is no relationship between idiosyncratic risk and the size of a fund's Alpha. Whilst, by definition it is impossible to produce positive Alpha without accepting some level of idiosyncratic risk, obviously a wide range of Alpha possibilities exist.

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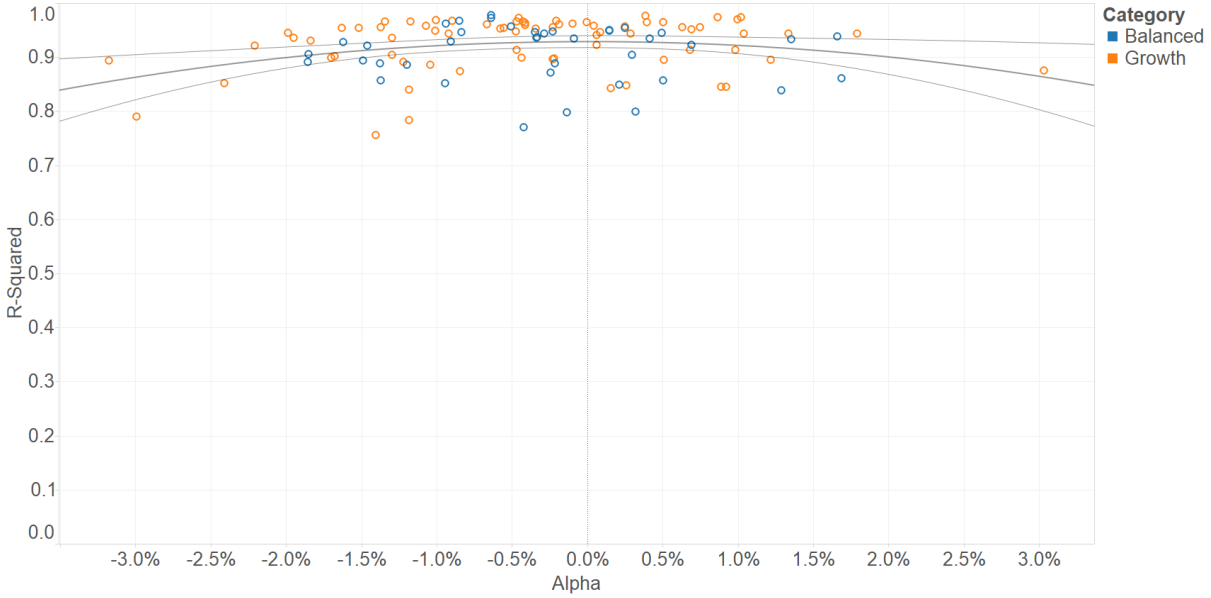
Chart 5, provide one final adjustment. It uses the sample as Chart 4 by excluding outliers, but changes the trend line from linear to a 2nd order polynomial where the Alpha^2 is considered. This trend line suggests the possibility of a second order relationship between idiosyncratic risk and Alpha…i.e. 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 may lead to either greater success or failure.

Chart 4 – Scatter Plot between R2 and Alpha (Active Funds only and excluding funds with R^2<0.75)…Trend line is R^2 vs Alpha^2



Conclusion

It appears the original BHB conclusions of the importance of asset allocation policy continues in Australia today. Whilst there has been new asset classes and strategies introduced and an increased interest in market timing through dynamic and tactical asset allocation, Australian fund managers, like US Pension managers 30 years ago, have around 90% of performance variability that can be explained by asset allocation policy.

This does not mean that the remaining 10% of portfolio performance variability explained by active management decision is not important. Whilst active managers across Australian Balanced and Growth categories, on average, produced negative alpha after accounting for asset allocation, the sample tested shows that in the 5 years to the end of April, 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 at active managers in the hope they will produce positive alpha or excess market-risk adjusted returns, there appears to be little relationship between the level of idiosyncratic risk they accept and their added value (Alpha). At best, any relationship between these two factors simply suggests that the greater the idiosyncratic risk simply leads to greater Alpha risk…so whilst there may be a chance of great success, there is also a chance of high failure.

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