Deloitte Access Economics

Persistence in Superannuation Fund Returns

Industry Super Network

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Deloitte.

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Dear Sacha:

Persistence in superannuation fund returns

Please find attached the revised version of our short report on the persistence of the returns of superannuation funds. This version takes into account your comments on the ordering of the presentation of the estimates of persistence and the discussion of raw and risk-adjusted returns.

Yours sincerely,

Andrew A. Weiss
Director
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Executive Summary

Deloitte Access Economics was engaged by the Industry Super Network to undertake an analysis of the persistence of super fund returns, including undertaking the necessary literature review on the estimation of the degree of persistence in superannuation fund returns, formulating a simple approach to the estimation of persistence in returns and calculating those estimates.

The analysis investigates persistence by asking whether being ranked in the highest, middle or lowest third of funds in the APRA performance data in 2004-2007 is correlated with the ranking in 2008-2011. The analysis finds such a correlation, which is evidence of persistence in returns. For all 172 multi-asset class funds with complete data in the APRA league table, the estimated persistence is statistically significant with a 95% confidence level. For the 91 funds with over $1 billion in assets, the result is significant at a 99% confidence level. Profit orientation of funds is a likely source of the estimated persistence.

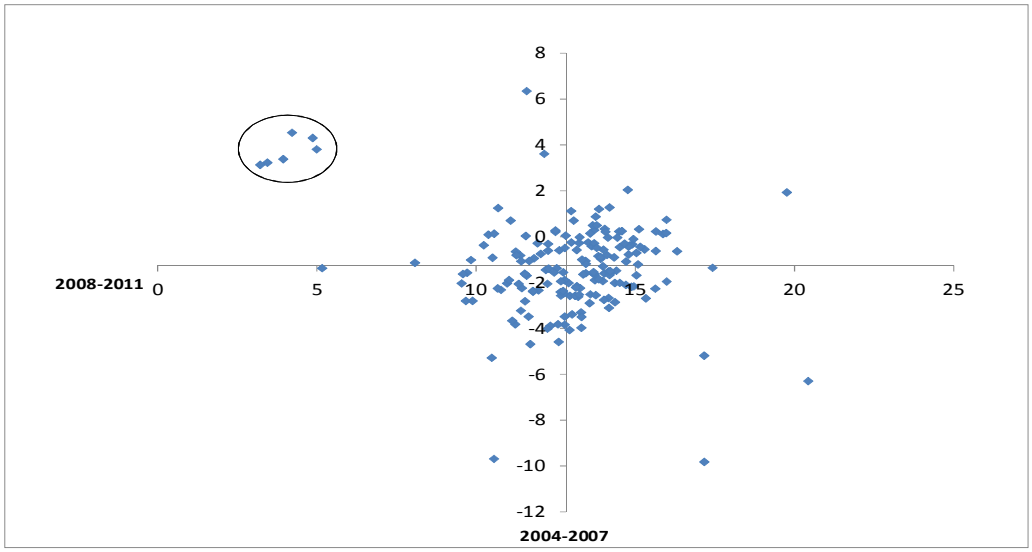
Estimates of persistence

Annual data on superannuation fund-level financial performance was obtained from the APRA web page. Data is available for eight years, 2004-2011, and the annual rate of return variable in the data is defined as net earnings after tax as a percentage of cash flow adjusted net assets.

Following APRA (2009), we apply a simple analysis of the predictability of superannuation funds returns – we compare performance based on raw returns across the two four-year periods 2004-2007 and 2008-2011.

Complete data is available for 178 funds and the following chart shows the average annual rates of return in the two periods (centred at the average returns across the funds).

Average annual rates of return, 2004-2007 versus 2008-2011



Source: Deloitte Access Economics, using APRA data.

All returns were positive in the first period, but a substantial number were negative in the second period. There are six funds with steady returns across the two four-year periods, and also within each four-year period. The funds appear to be a distinct sub-population within the 178 funds and we refer to them as 'low risk funds'. Some of the statistics below are calculated with and without those funds.

Standard measures of correlation may be influenced by the outliers – the six low risk funds as well as the other outliers. An alternative approach is to divide the funds into tertiles of returns (bottom 1/3, middle 1/3 and top 1/3), and compare rankings across the two periods. That gives the results in the following table.

Transition matrix for tertiles (2004-2007 to 2008-2011)

		2008-2011			
		T3	**T2**	**T1**	**Total**
2004-2007	**T3**	25	21	12	58
	T2	19	16	23	58
	T1	14	20	22	56
	total	58	57	57	172

Note: T1 = bottom 1/3 of funds, T2 = middle 1/3 of funds, T3 = top 1/3 of funds. Source: Deloitte Access Economics, using APRA data.

The larger values of the (T1, T1) and (T3, T3) elements and smaller values in the (T1, T3) and (T3, T1) elements suggest persistence of returns.

Kendall's τ_b (tau-b) correlation coefficient is a nonparametric measure of association based on ranks. The statistic can be used to test the hypothesis that the two quantities – the returns in the two periods in this case – are statistically independent. Independence means no persistence and non-zero correlation can be associated with persistence.

The following table shows the values of the statistic in the sample and a variety of splits of the data. In the first row, the Kendall τ_b correlation for the tertiles is given by 0.16 with a p-value of 0.02 – the statistic is significant at the 5% level. Row 2 shows the results for large funds, defined as those with net assets at the end of 2011 of over $1 billion (and which represent over 96% of the total assets). Across large funds, the τ_b correlation (0.38) is larger than for all funds and again suggests persistence in returns.

Kendall's τ_b statistics

		Kendall's τ_b	p-value	Number of funds
All funds				
1	tertiles, excl 6 low risk funds	0.16	0.02	172
Large funds (net assets > $1b)				
2	tertiles	0.38	0.00	91
For profit				
3	tertiles, excl 6 low risk funds	-0.16	0.20	60
Not for profit				
4	tertiles	0.03	0.70	112

Source: Deloitte Access Economics, using APRA data.

Rows 3 and 4 show the results by profit orientation (retail = 'for profit' and corporate /industry = 'not for profit'). The results use the tertiles defined from the entire sample. The negative τ_b correlation for the for profit funds (row 3) suggests negative persistence in returns, while the very small τ_b correlation for the not for profit funds indicates no persistence (row 4).

The overall results are not replicated when funds are first sorted by profit-orientation. This appears to be because the not for profit funds achieve higher average returns in both periods. When the two fund types are combined, the higher average returns among the not for profit funds translates into the persistence of returns.

Similar results are obtained using returns rather than the tertile rankings.

Survivorship bias is a potential issue for interpreting the results. But a comparison of the annual average rates of return for the 178 funds in the sample versus those not in the sample (and for which returns data is available) suggests that this is not the case.

Raw and risk-adjusted returns

Risk is important as investors are generally risk-averse. However, risk is hard to quantify and is often conflated with volatility in short-term returns, as in the Sharpe 'reward to variability ratio'.

The approach taken here utilises the geometric average of raw returns over multi-year periods. While not allowing for short-term risk, the advantages of this approach for the analysis of superannuation returns include that:

- It is not reliant on an industry benchmark, which, in the case of a multi-asset class investment such as superannuation, requires arbitrary assumptions to be made about benchmark asset allocation.
- The analysis is based on data which is available and comprehensible to consumers.

Alternative approaches involving the calculation of risk-adjusted returns are discussed in Section 3.

Deloitte Access Economics

24 June 2012

1 Introduction

Deloitte Access Economics was engaged by the Industry Super Network to undertake an analysis of the persistence of super fund returns, including:

- Undertaking the necessary literature review on the estimation of the degree of persistence in superannuation fund returns.
- Formulating an approach to the estimation of persistence in returns. That approach takes into account, *inter alia*:
  - The statistical treatment of the data
  - The treatment of outliers
  - The use of raw returns versus risk-adjusted returns
  - The treatment of survivorship bias

Section 2 of the report presents the estimates of persistence. Section 3 uses a selected review of the literature to give background and context, focussing on the use of raw and risk-adjusted returns.

2 Estimates of persistence

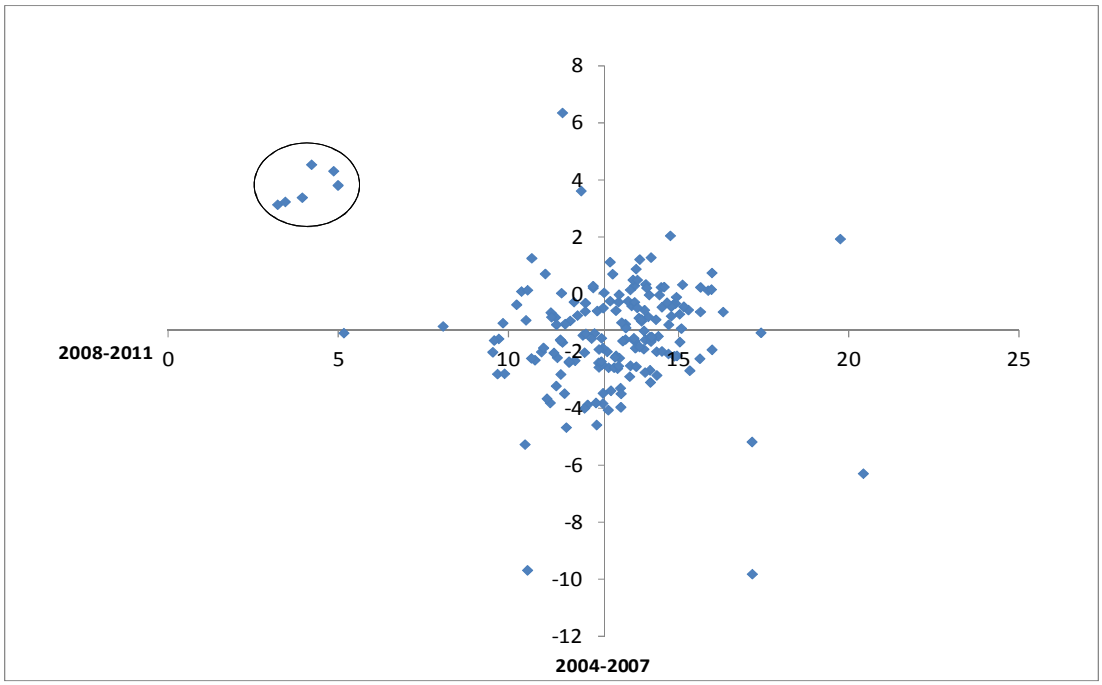
Annual data on superannuation fund-level financial performance was obtained from the APRA web page. Data is available for eight years, 2004-2011, and the rate of return variable in the data is defined as

$$\text{ROR} = \frac{\text{Net earning after tax}}{\text{Cash flow adjusted net assets}}$$

Following APRA (2009), we apply a simple analysis of the predictability of superannuation funds returns – we compare performance based on raw returns across the two four-year periods 2004-2007 and 2008-2011. Section 3 of the report discusses the use of raw and risk-adjusted returns.

Complete data is available for 178 funds (excluding eligible rollover funds), and Figure 2.1 plots the rates of return in the two periods (centred at the average returns across the funds). Multi-year returns are calculated using geometric means. All returns were positive in the first period, but a substantial number were negative in the second period.

Figure 2.1: Average annual rates of return, 2004-2007 versus 2008-2011



Source: Deloitte Access Economics, using APRA data.

There are six funds with steady returns across the two four-year periods, and also within each four-year period.[1] The funds appear to be a distinct sub-population within the 178

[1] The funds are Newcastle Permanent Superannuation Plan, Macquarie ADF Superannuation Fund, Challenger Retirement Fund, Greater Rollover and Allocated Pension Fund, BT Superannuation Savings Fund and The State Bank Supersafe Approved Deposit Fund. The standard deviations of their returns across the eight years are very

funds and we refer to them a 'low risk funds'. Some of the statistics below are calculated with and without those funds.

Standard measures of correlation using the data in Figure 2.1 may be influenced by the outliers, the six low risk funds as well as the other outliers.

An alternative approach is to divide the funds into tertiles of returns (bottom 1/3, middle 1/3 and top 1/3), and compare rankings across the two periods. That gives the results in Table 2.2. For example, the 12 in the (T3, T1) element means that 12 funds were in the top 1/3 of returns in 2004-2007 and then were in the bottom 1/3 of funds in 2008-2011.

Table 2.2: Transition matrix for tertiles (2004-2007 to 2008-2011)

		2008-2011			
		T3	**T2**	**T1**	**Total**
2004-2007	**T3**	25	21	12	58
	T2	19	16	23	58
	T1	14	20	22	56
	Total	58	57	57	172

Note: T1 = bottom 1/3 of funds, T2 = middle 1/3 of funds, T3 = top 1/3 of funds. Source: Deloitte Access Economics, using APRA data.

The larger values of the (T1, T1) and (T3, T3) elements and smaller values in the (T1, T3) and (T3, T1) elements suggests persistence of returns.

Kendall's τ_b (tau-b) correlation coefficient is a nonparametric measure of association based on the number of concordances and discordances in paired observations. Here, the pairs are each fund's returns in the two four-year periods. Concordance occurs when paired observations vary together, and discordance occurs when paired observations vary differently. Kendall's τ_b is a measure of rank correlation and is calculated from the number of interchanges of the first variable, and corrects for tied pairs.

The τ_b statistic can be used to test the hypothesis that the two quantities – the returns in the two periods in this case – are statistically independent. Independence means no persistence and as in APRA (2009) we can associate correlation with persistence.[2]

Table 2.3 shows the values of the statistic in the sample and a variety of splits of the data. In the first row, the Kendall τ_b correlation for the tertiles is given by 0.12 with a p-value of 0.06 – the statistic is significant at the 10% level. Removing the six low risk funds gives the results in the third row – the Kendall τ_b correlation for the tertiles of the 172 funds is 0.16 with a p-value of 0.02. That is, the test implies that the hypothesis of independence – no persistence – should be rejected (at the 5% level). Applying the test to the returns themselves gives similar results (rows 2 and 4).

low, less than 100 basis points. That compares with a minimum of over 400 basis points for the other funds. Presumably, their assets are mostly cash.

[2] See, for example, Agresti (1984) for details on Kendall's τ_b.

Table 2.3: Kendall's τ_b statistics

		Kendall's τ_b	p-value	Number of funds
All funds				
1	tertiles	0.12	0.06	178
2	returns	0.06	0.23	178
3	tertiles, excl 6 low risk funds	0.16	0.02	172
4	returns, excl 6 low risk funds	0.13	0.01	172
Large funds (net assets > $1b)				
5	tertiles	0.38	0.00	91
6	returns	0.24	0.00	91

Source: Deloitte Access Economics, using APRA data.

Rows 5 and 6 show the results for large funds, defined as those with net assets at the end of 2011 of over $1 billion. Ninety one of the 178 funds have assets over $1 billion, and they represent over 96% of the total assets ($652 billion out of $676 billion). By this definition of size, all six of the low risk funds are small (assets less than $1 billion).

From rows 5 and 6, across large funds, there is evidence of persistence in returns over the two periods. A possible reason for the results – not properly accounting for other factors – is discussed in the next section.

Results by fund type

Table 2.4 shows the results by fund type (retail = 'for profit' and corporate/industry = 'not for profit'). The results for the tertiles use the tertiles defined from the entire sample.[3]

Table 2.4: Kendall's τ_b statistics by fund type

		Kendall's τ_b	p-value	Number of funds
For profit				
1	tertiles, excl 6 funds	-0.16	0.20	60
2	returns, excl 6 funds	-0.16	0.07	60
Not for profit				
3	tertiles	0.03	0.70	112
4	returns	0.04	0.54	112
Large, For profit				
5	tertiles	0.02	0.90	34
6	returns	-0.13	0.27	34
Large, Not for profit				
7	tertiles	0.18	0.12	57
8	returns	0.14	0.13	57

Source: Deloitte Access Economics, using APRA data.

[3] In other words, the cut-offs for assigning tertiles are those from the entire sample.

The results indicate that:

- There is negative τ_b persistence in returns to the for profit funds (rows 1 and 2), but almost zero τ_b persistence among the not for profit funds (rows 3 and 4). None of the τ_b correlations are statistically significant (at the 5% level).
- There is no evidence of persistence in returns for the large, for profit funds (rows 5 and 6), and evidence of low positive persistence among the large, not for profit funds (rows 7 and 8).

There is an apparent discrepancy in the overall results in Table 2.3, where the correlations are positive and generally statistically significant, and the results by fund type in Table 2.4, where the correlations are negative or close to zero. One possible explanation for that is that the not for profit funds achieve higher average returns in both periods.

Table 2.5 shows the average returns by fund type across the two periods. The average annual returns are large, not for profit funds, for example, are 1.78 (= 13.98 – 12.20) percentage points higher in the first period and 1.37 (= -0.78 + 2.15) percentage points higher in the second period.

When the two fund types are combined, the higher average returns among the not for profit funds translates into the positive estimate of persistence of returns.[4]

Table 2.5: Average annual returns by fund type and size

Fund type	2004-2007	2008-2011
For profit	11.33	-1.68
For profit, excl 6 funds	12.06	-2.22
For profit, large	12.20	-2.15
Not for profit	13.73	-1.01
Not for profit, large	13.98	-0.78

Source: Deloitte Access Economics, using APRA data.

Cummings (2012) as well as other work by APRA have noted that returns over this period are higher for not for profit funds. That applies to both raw and risk-adjusted returns. Sy and Liu (2009) give tertiles of risk-adjusted returns but do not apply the test based on Kendall's τ_b.

Survivorship

Performance studies potentially face 'survivorship bias'. That bias arises because some funds disappear during the period being studied – they may close or merge, or data on them may become unavailable. To the extent that being a survivor depends on past performance, using data based on surviving funds may bias upwards the true average performance of the managed fund industry.

[4] As an experiment, we added 1.78 to the return of each large, for profit fund in the first period, and 1.37 in the second period (so that the new means are the same, by fund type). The Kendall τ_b statistic for the new returns fell to 0.03, indicating no correlation/persistence.

The potential effects on persistence are less clear. If the funds that disappear are those with consistent poor performances, then persistence may be underestimated by survivorship bias. Alternatively, if the funds that disappear are more likely to be in the subset of funds that took risks (and for which the risks failed), such that the remaining funds are the ones that 'won their bets', then persistence may be overestimated due to survivorship. The first source of bias is usually emphasised.

In the period 2004-2011, the number of funds in the APRA data falls from 1245 to 289, implying that survivorship is a potential influence on the results (as is selection bias with respect to the 178 funds with returns in all years).

As a simple test for survivorship bias, we compare the annual average rates of return for the 178 funds in the sample versus those not in the sample (and for which returns data is available). Table 2.6 below shows that there is little difference across the two groups of funds in average returns in the first four years, suggesting that survivorship bias may not be a major factor in the results.

Table 2.6: Average annual rates of return and survivorship

	2004	2005	2006	2007	2008	2009	2010	2011
Average ROR								
Not in sample	11.7	11.7	12.9	12.8	-10.5	-5.3	6.3	5.6
In sample	11.9	11.7	13.5	14.3	-7.8	-11.0	8.2	7.2
Number of funds								
Not in sample	467	340	216	181	150	126	94	39
In sample	178	178	178	178	178	178	178	178

Note: In sample means in the sample of 178 funds with rate of return data in all eight years. Values are simple averages across funds. Source: Deloitte Access Economics, using APRA data.

3 Raw and risk-adjusted returns

This section contains a short discussion of the use of raw and risk-adjusted returns, to provide additional context for the estimates in the previous section.

Adjusting for risk

Risk is important – agents are assumed to like higher expected returns but dislike risk (*i.e.*, they are risk-averse).

Most analyses of persistence in investment performance are based on risk-adjusted measures of performance. The argument is that because returns and risks are positively correlated, a manager may improve a portfolio's return simply by aggressively investing in more risky assets. But investors prefer less risk (other things being equal) and so will want to be compensated for additional risk. The measure of return should take that compensation into account.

But risk can be hard to quantify. The standard deviation of returns is one commonly used measure of risk. The Sharpe Index is a 'reward to variability ratio' given by the ratio of excess return (*i.e.*, return above a risk free investment) to the standard deviation.

The Capital Asset Pricing Model (CAPM)[5] provides a measure of risk that accounts for an asset's correlation with other assets within a larger portfolio. According to this model, the expected return on a risky asset at time t, $E[R_t]$, is equal to the risk-free rate at time t, R_{ft}, plus the asset's risk premium. The latter is equal to the product of the asset's beta (β) and the expected excess return on the market portfolio, $E[R_{mt} - R_{ft}]$:

$$E[R_t] = R_{ft} + \beta\, E[R_{mt} - R_{ft}].$$

The β is a measure of the risky asset's sensitivity to movements in the market risk premium (*i.e.*, in $E[R_{mt} - R_{ft}]$). In that sense, β is a measure of the market risk of the asset.

In this theory, assets with higher betas can expect to earn higher rates of return. The risk is that such assets will also experience more volatile returns. For example, holders of such assets can expect to lose more money whenever the market return ends up being less than the risk-free rate.

Jensen's Alpha[6] extends the CAPM and measures the deviation of a portfolio's return from the equilibrium level from the CAPM:

$$E[R_t] = \alpha + R_{ft} + \beta\, E[R_{mt} - R_{ft}].$$

[5] See, for example, Sharpe (1964).

[6] Jensen (1969).

For ranking purposes, the higher the alpha, the better the performance. A fund beats the market, on a systematic risk adjusted basis, if Jensen's Alpha is greater than zero, and vice versa.

Benchmarking

The CAPM provides the framework for most studies of the persistence in investment performance. For stock portfolios, performance is benchmarked against the market portfolio. But superannuation funds hold assets from a variety of asset classes, making the definition of a benchmark problematic.

Researchers are left to create their own benchmark, which can be industry wide or fund-specific. A fund-specific benchmark would be calculated based on proportional index returns to each of the asset classes held within a portfolio. But a fund-specific benchmark is not possible because that requires whole of fund asset allocation, which is not available. (it was collected by APRA, but only until 2004.)

It should also be noted that this approach shrinks the role of asset allocation in the analysis, whereas that is an important component of the role of the role of the fund trustee.[7]

Benchmarking example

Cummings (2012), for example, computes two benchmarks, representing the investment opportunity sets of superannuation funds in Australia and worldwide.

In the Australian market, the Citigroup Australian Broad Investment-Grade Bond Index in local currency, the S&P ASX 200 Accumulation Index, the Mercer Unlisted Property Funds Index Pre-Tax and the Cambridge Associates Australia Private Equity and Venture Capital Index are used to represent the return on fixed income, common stock, unlisted property and other investments, respectively.

In the world market, the MSCI Total Return Net World ex-Australia Index in local currency is used to represent the return on overseas common stock (in addition to the four domestic indices).

The aggregate value of investments in each asset class by managed funds is sourced from the Australian Bureau of Statistics. The multi-asset class market portfolio indices are formed by using the return series of each asset class, weighted by the asset class's proportion of the aggregate value of all asset classes at the beginning of each quarter.

Quintile rankings based on fund size are used to calculate beta's associated with the multi-asset class market portfolios. This approach allows for the possibility that funds of different sizes have different levels of exposure to market-wide risk. All sample funds are divided into five quintiles based on their net assets of the previous period.

The beta's of these five portfolios to market-wide risk are estimated by using two multi-asset class interpretations of the CAPM:

$$R_{pt} - R_{ft} = \alpha_p + \beta_p (R_{mpt} - R_{ft}) + \text{error}.$$

[7] The trustee typically controls asset allocation more directly than asset selection.

where R_{pt} is the return on one of the five fund-size-sorted superannuation fund portfolios, R_{ft} is the 90-day bank bill interest rate and R_{mpt} is the return on the multi-asset class market portfolio index.

The risk-adjusted return for fund *i* is calculated as the difference between the realised fund return and the expected fund return:

$$\alpha_{it} = R_{it} - [R_{ft} + \beta_p (R_{mpt} - R_{ft})].$$

Cummings (2012) does not consider the sensitivity of the results to the definitions of the benchmarks, the categorisation of funds into quintiles and so on.

Consumers

Several authors have discussed the relevance of studies to the situation of consumers. For example, in reviewing managed funds, Allen *et al*. (2003) argue that the following issues will generally be relevant to some degree in selecting an asset mix, product and fund manager:

- Consumers are interested in risk, including the risk of capital loss and the volatility of investment value over time.
- Most consumers would want to hold a fund for several years at least. In the case of equity-based managed funds, they comment that the investment horizon is at least five years. Frequent swapping involves both fees and inconvenience.
- Measures of performance need to be net of transactions costs. An investor is concerned with the dollars that subsequently end up in his pocket, not hypothetical measures.

Giles *et al.* (2002), in discussing UK equity funds, argue that academic studies have often concentrated on the question of abnormal returns (because market efficiency suggests that there should be no persistence in abnormal returns). They argue for the use of raw returns. Along the same lines, Allen *et al.* (2003, p 7) note that "*The first question in any discussion of performance is "can funds add value in the sense of 'beating the market'"?*". Sy and Liu (2009) note that "*Most published research applies a variety of performance measures and regression models to publicly available return data of mostly equity mutual funds to detect any statistical regularity such as persistent correlation of returns to various factors. The general motivation appears to be to find out whether there is empirical evidence to show that professional managers possess investment skills*."

Blake and Timmermann (2003) are critical of focus in Giles *et al.* (2002) on raw returns. Similarly, Allen *et al.* (2003) conclude that returns are only meaningful if adjusted for risk/volatility or comparing "like with like". But they also conclude that "*the risk-adjusted studies involve complicated computer analyses that are only available to research houses and academics. They do not reflect the information available to retail investors via advertisements, league tables or formal offer documents. The risk-adjusted studies therefore measure the potential value of past performance information in the hands of experts, not ordinary consumers.*"

The holding period is particularly relevant for superannuation funds, where the time-frame is often reasonably long, say 20-30 years. Even over much shorter periods than this (such as three to five years), the main goal of investment may be to maximise expected returns in order to maximise retirement income, rather than to constrain short-term volatility. If that

is the case, then raw returns are crucial – over longer periods of time, risk is averaged out and average returns determine the final level of assets available. (Consumers might seek lower risk as retirement approaches.)

The GFC

The GFC falls in the middle of the 2004-2011 period covered by the Australian data on the APRA website and so provides a 'natural experiment' on the role of risk. It is predicted by the CAPM that riskier funds obtain lower returns in such a period, and returns should be less persistent than in a more stable period.

References

Agresti, A. (2010), Analysis of Ordinal Categorical Data, second edition, Wiley, New York.

Allen., D., Brailsford, T., Bird, R. And R. Faff (2003), A Review of the Research on the Past Performance of Managed Funds, report prepared for the Australian Securities and Investment Commission.

APRA (2009), Response to Submissions, Fund level disclosure from APRA superannuation statistics collection.

Blake, D. And A. Timmermann (2003), Performance Persistence in Mutual Funds: An Independent Assessment of the Studies Prepared by Charles River Associates for the Investment Management Association, report prepared for the Financial Services Authority.

Cummings, J.R. (2012), Effect of fund size on the performance of Australian superannuation funds, APRA working paper.

Giles, T., Wilsdon, T. And T. Worboys (2002), Performance persistence in UK equity funds – An empirical analysis, report prepared by Charles River Associates and submitted to Investment Management Association.

Jensen, M. (1969), "The Performance of Mutual Funds in the Period 1945-1964", Journal of Finance, 23(2), 389-416.

Sharpe, W. F. (1964). Capital asset prices: A theory of market equilibrium under conditions of risk, Journal of Finance, 19 (3), 425-442

Sy, W. and K. Liu (2009), Investment performance ranking of superannuation firms, APRA working paper.

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