Retail Superannuation Management in Australia: Risk, Cost and Alpha

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ABSTRACT

In this performance evaluation study, two questions are addressed. First, does Australia’s superannuation management industry deliver returns commensurate with the risk taken? Second, what is the relationship between cost (specifically, the management expense ratio) and performance? The answers from this study are as follows: as an industry, managers failed to achieve returns proportionate to the market portfolio for the period 1991 through 1999 on a risk-adjusted basis. The study provides evidence that an inverse relationship between cost and return exists, with funds levying the lowest management expense ratios delivering the highest within sample returns.

JEL Classification: G23; G21; G10.
Keywords: Performance Evaluation; Superannuation Funds; Australia.

1. INTRODUCTION

The efficient and effective transformation of savings into retirement income rests with superannuation fund managers. Apart from the collection, pooling and investment of contributor funds, superannuation funds also facilitate the flow of capital from surplus units to deficit units in modern capitalist economies. In Australia, retail superannuation funds manage around one-third of retirement savings, or AUD 155 billion (APRA 2001), the largest distribution to any single fund-type.

The defining feature of the retail superannuation management industry is its flexibility. This flexibility takes two forms. First, retail funds provide choice in terms of mandates and investment styles. For instance, multi-sector funds engage in asset allocation (e.g. a growth fund, with 70% allocation to growth assets such as shares and property, with 30% in income producing assets). Alternatively, contributors may wish to invest through a specialist single-sector manager providing dedicated asset selection services (e.g. a domestic equities fund, minimum of 80% in domestic shares and a maximum of 20% in domestic fixed interest securities). Second, retail funds provide greater scope for making voluntary contributions (Productivity Commission 2001).

The Productivity Commission (2001) defines retail funds as public offer superannuation funds that members join by purchasing investment units or policies that are sold through intermediaries such as financial planners. The definition is appropriate for this study, with one amendment. The retail fund market includes two sub-sets, funds for individual investors (retail funds), and, funds designed for the professional investors (wholesale funds). The distinction between the two markets can be found by the minimum investment requirement on a per fund basis and cost structure. A typical ‘retail’ fund has a minimum entry amount of

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1 For a complete discussion, see Davis and Steil (2001).

2 As at September 2001, APRA (2001) reports that the top five distribution of funds were as follows: Retail Sector (AUD 155bn); Public Sector (AUD 103bn); Small Funds (AUD 85bn); Corporate (AUD 69bn); and, Industry (44bn).
AUD 2,000 and levies an average annual management expense ratio of around 1.95%. In addition, these funds may charge up to 5% of the contribution as an entry load, with a 3% exit load. This is in contrast to a wholesale fund with an initial investment amount of, say, AUD 250,000 with an annual management expense ratio of 0.75%. In addition, wholesale funds have no entry or exit loads. As the average superannuation balance per member in Australia is AUD 59,400 (APRA 2001), we focus our analysis in this study to the individual investor sub-set of the market. In a complete superannuation choice framework, retail funds for individual investors would be the market most accessible to Australians.

So how has the Australia’s retail superannuation management industry performed in terms of risks taken and costs incurred? Alternatively, from the financial economics perspective, we ask has the industry generated alpha? Warwick (2000) notes that an investment manager is said to generate alpha ($\alpha$) under two conditions. First, alpha is generated if investment returns exceed an appropriate benchmark, if the risk taken to achieve the return is similar to that of the benchmark. Second, alpha is generated if managers’ returns are equivalent to an appropriate benchmark, if the risk taken to achieve the return is less than that of the benchmark.

While previous studies have undertaken superannuation fund performance analyses using risk-based measures (Drew and Stanford 2001a, 2002, 2003) and others have considered the issue of superannuation costs (Bateman 2002, Rice and McEwin 2002), this study links risk and cost to examine quality aspects, or the alpha generation capabilities, of Australia’s retail superannuation management industry. Specifically, we are interested in the following questions: do retail funds deliver returns commensurate with the risks taken?; and, finally, do retail funds that impose higher costs on contributors deliver superior returns?

2. SAMPLE

In answering these questions, we investigate a sample of funds undertaking specialist asset selection in domestic equities. Australia, like most other OECD nations, has a home-bias in the equities asset class, with the domestic equities accounting for 44% of fund holdings compared to its international proportion of global market capitalisation at around 1.5% (APRA 2001). Given the long-term investment horizon of retirement savings, the performance of domestic equities is the central driver for wealth creation.

Morningstar Research Pty Ltd, an independent measurement service in Australia, provided monthly return observations (net of management fees, excluding entry and exit loads) for every retail superannuation fund classified as ‘Retail superannuation fund Australian equity – general’, from January 1991 through December 1999. The sample of 148 funds is complete in the sense that it contains all of the funds with no missing data and was maintained by the same independent data collection agency throughout the period.

The sample contains 3 distinct cohorts exist within the retail classification: open-end, closed-end and non-surviving. The retail open-end cohort consists of superannuation funds that are structured to accept investments from individuals. These funds are pooled and invested by a fund manager in a portfolio of general Australian equities. A typical retail fund requires a minimum initial investment of AUD 2,000, with minimum monthly contributions of AUD 100. Retail open-end funds allow investors to buy and sell at a unit price based on the appraised value of total assets. Investors can leave and enter at any time and assets may be continually added to the fund. A total of 68 retail open-end funds are investigated in this study.

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3 For analysis of the performance of wholesale superannuation funds, see Drew, Stanford and Veeraraghavan (2002).
6 APRA (2001) report that overseas assets accounted for 20% of total asset allocation. Given that it is not unreasonable to assume that the majority of international assets are also exposed to equities, one could propose that around 60% of Australia’s retirement savings are allocated to equities.
7 For further discussion on manager return comparisons, see Pinnuck (1999).
Closed end retail funds no longer accept new investors or new investments from existing unitholders. These are usually difficult funds for investors to exit owing to a lack of liquidity in the fund's underlying investments. However, due to the fund being closed-end in nature, it permits the manager to be largely unaffected by the impact of large capital inflows from superannuation investors. This provides the manager with a degree of certainty regarding the assets under management. Despite the issues relating to exiting such funds, retail superannuation investors are large users of these closed-end products. A total of 67 retail closed-end funds are examined in this study.

The retail non-surviving cohort is comprised of retail funds that were finalised (merged or terminated) during the sample period. The decision to finalise a fund is typically made by the trustee on commercial grounds (such as the pool of assets under management is no longer large enough to warrant the continuation of the fund). The inclusion of the non-surviving cohort largely mitigates the methodological flaw of survivorship bias for the study (Malkiel 1995, Drew and Stanford 2001b). A total of 13 retail funds were terminated over the sample period.

The key data advantage of the sample is that the structure of the asset allocation is known. To be classified by Morningstar as a ‘Retail superannuation fund Australian equity – general’ the fund must hold a minimum of 80% of portfolio assets in general Australian equities, with a maximum of 20% of portfolio assets in domestic fixed interest securities. Therefore, this study can select factors to adjust for risk that do not suffer from the defects of asset coverage. We return to this issue in the following section.

**Table I**

**Monthly Risk-Unadjusted Returns of ‘Retail Superannuation Funds, Australian Equity – General’: January 1991 to December 1999**

The returns in the table are reported on a monthly basis. Unconditional returns are denoted as EW (equally weighted) being the simple arithmetic average of all fund returns. The buy-and-hold 100 (20) index is the monthly return recorded on the ASX Top 100 (20) accumulation index over the sample period.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>EW Mean return</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open-end</td>
<td>1.1493</td>
</tr>
<tr>
<td>Closed-end</td>
<td>1.0341</td>
</tr>
<tr>
<td>Finalised</td>
<td>1.0582</td>
</tr>
<tr>
<td><strong>All funds</strong></td>
<td><strong>1.0980</strong></td>
</tr>
<tr>
<td>Buy-and-hold 100</td>
<td>1.3156</td>
</tr>
<tr>
<td>Buy-and-hold 20</td>
<td>1.3878</td>
</tr>
</tbody>
</table>

Tucker, Becker, Isimbabi and Ogden (1994) argue that the most egregious error committed during any assessment of manager performance is conducting a comparison of fund returns without consideration of differential fund risk levels. Further, Tucker *et al.*, (1994) observe that while academics have been aware of the need to account for differential risk for more than 30 years, practitioners and investors often persist in ignoring this critical issue. Therefore, we do place great emphasis on the results presented in Table I, giving preference to the risk-adjusted estimates provided in Section 3.
3. RISK-BASED PERFORMANCE

This study uses two different measures of risk-adjusted performance:

(1) The excess return from the Capital Asset Pricing Model (CAPM) or single index model; and,

(2) The excess return from a Multifactor model.

The respective approaches take the form:

\[ R_i - R_f = \alpha_i + \beta_{it}(R_m - R_f) + \epsilon_i \]  \[ R_i - R_f = \alpha_i + \beta_{it}(R_m - R_f) + \beta_{si}(R_s - R_f) + \beta_{gt}(R_g - R_f) + \beta_{dt}(R_d - R_f) + \epsilon_i \]

where:

- \( \alpha \) and \( \alpha' \) = risk-adjusted excess return on fund \( i \) measured from [1] and [2];
- \( R_f \) = yield on the Reserve Bank of Australia 13-week treasury note in month \( t \);
- \( R_m \) = return on the Australian Stock Exchange Top 100 accumulation index in month \( t \) (market);
- \( R_s - R_f \) = difference in return between a small capitalisation portfolio and a large capitalisation portfolio based on Australian Stock Exchange-Russell Company indices in month \( t \) (size);
- \( R_g - R_f \) = difference in return between a growth and a value portfolio based on Australian Stock Exchange-Russell Company indices in month \( t \) (style);
- \( R_d - R_f \) = difference in return on a bond index that represents Commonwealth, semi-government and corporate bonds across all maturities, based on the Warburg Dillon Reed Composite Bond (All Maturities) accumulation index in month \( t \) (domestic fixed interest factor);
- \( \beta_{si} \) = sensitivity of difference in return on fund \( i \) to portfolio \( k \), where \( k \) can represent the market, size, style or domestic fixed interest factor; and,
- \( \epsilon_{it} \) = random error term in month \( t \).

The size and growth portfolios were constructed from Australian Stock Exchange-Russell Company indices as follows:

(a) the small capitalisation portfolio is the average of the return on the Russell Small Value and Russell Small Growth indices;
(b) the large capitalisation portfolio is the average return on the Russell Value 100 and Russell Growth 100 indices;
(c) the growth portfolio is the average of the Russell Small Growth and Russell Growth 100 indices; and,
(d) the value portfolio is the average of the return on the Russell Small Value and Russell Value 100 indices.

8 The defining feature of the CAPM is that expected returns of an asset must be linearly related to the covariance of its return with the return of the market portfolio. The CAPM provides the theoretical basis for the single-factor measures of performance evaluation developed by Treynor (1965), Sharpe (1965) and Jensen (1968), each of these measures is reported in Drew and Noland (2000). The CAPM is a single-period model. Therefore, for econometric analysis of the model, it is necessary to incorporate an assumption of time series behaviour of returns and estimate the model over time. Following Sharpe (1964) and Linter (1965), it is assumed that returns are independently and identically distributed through time and jointly multivariate normal. Following the tradition of Ippolito (1989), Malkiel (1995) and Gruber (1996) this study employs Jensen’s (1968) interpretation of the CAPM using the single-factor model to evaluate fund manager performance.

9 The multifactor approach used to estimate risk-adjusted returns for the retail portfolios is comparable to Gruber (1996) and Zheng (1999), which select factors for the multifactor model that span the major types of securities held by non-specialised equity portfolios. Specifically, this study uses the Fama and French (1992, 1993, 1996) three-factor time series regression with an additional explanatory variable to account for holding in domestic fixed interest securities. Under this approach, OLS regressions are performed to estimate portfolio factor loadings and an unconditional (arithmetic average) alpha term. An important consideration in formulating the research design was the selection of appropriate benchmarks to adjust fund manager performance for risk.

10 The philosophical stance adopted by this study was to select benchmarks that reflect the universe of securities from which fund managers can select from in building a general portfolio of domestic equities. The typical mandate of the fund managers investigated in this study restrict the majority of investment to large capitalisation equities comprising the Australian Stock Exchange (ASX) Top 100 accumulation index. Following the parameters set by the typical trust deed of superannuation funds, the ASX Top 100 accumulation index is used as the key proxy for the market portfolio, with the ASX Top 20 accumulation index used as a confirmatory market proxy. Moreover, if fund managers are attempting to undertake strategic behaviour through investing in small capitalisation equities or implementing a strict investment (value or growth) active asset selection style, these effects are captured by the four-factor model.
The single-factor estimates in Table II provide empirical evidence of the limitations of undertaking a risk-unadjusted analysis. Estimates from the single-factor model illustrate that the average fund in the sample had a beta ($\beta$) of less than one (the industry $\beta$ according to single-factor estimates was in the range of 0.76 to 0.82). Therefore, risk-unadjusted estimates understate performance. Using the CAPM model, the risk-adjusted return achieved by fund managers over the sample is estimated to be in the range of -220 to -304 basis points per annum.

Table II
Monthly Risk-Adjusted Returns using the CAPM Approach: January 1991 to December 1999

Alpha ($\alpha$) is estimated from the time series regression of the excess fund returns on the excess market return: $R_{it} - R_f = \alpha_i + \beta_{it}(R_{mt} - R_f) + \epsilon_i$. The excess market return, $R_{mt} - R_f$, is the difference between the return on the Australian Stock Exchange (ASX) Top 100 Accumulation Index (with the ASX Top 20 Accumulation index used as a confirmatory proxy) and the yield on the Reserve Bank of Australia 13-week treasury note in month $t$. $\beta_i$ is the factor loading on the excess market return independent variable. All $t$-statistics are provided in the brackets and are adjusted for autocorrelation using the Newey-West covariance matrix. Performance measures are in percentage return per month. The $R^2$–adj. for all funds on an EW basis was 0.7605 with a Durbin-Watson statistic of 2.0231.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>CAPM EW Alpha ($\alpha$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open-end</td>
<td>-0.1569 (t = -0.95)</td>
</tr>
<tr>
<td>Closed-end</td>
<td>-0.1740 (t = -1.43)</td>
</tr>
<tr>
<td>Finalised</td>
<td>-0.3826 (t = -1.17)</td>
</tr>
<tr>
<td>All funds</td>
<td><strong>-0.1836</strong> (t = -1.19)</td>
</tr>
</tbody>
</table>

$R_{mt} = \text{ASX Top 100 Accumulation Index}$

<table>
<thead>
<tr>
<th>Cohort</th>
<th>CAPM EW Alpha ($\alpha$)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Open-end</td>
<td>-0.2534 (t = -1.04)</td>
</tr>
<tr>
<td>Closed-end</td>
<td>-0.2324 (t = -1.42)</td>
</tr>
<tr>
<td>Finalised</td>
<td>-0.3590 (t = -1.02)</td>
</tr>
<tr>
<td>All funds</td>
<td><strong>-0.2530</strong> (t = -1.21)</td>
</tr>
</tbody>
</table>

Although the CAPM or single-factor model of Equation [1] permits a preliminary insight into the performance of fund managers, we argue that a multifactor model captures a greater proportion of the real world influences on fund manager returns. An important limitation of the single-index model is its inability to explain the cross-section of expected returns. From the preliminary work of Basu (1977) to the recent anomalous findings of Fama and French (1992, 1993, and 1996) the single-factor model cannot explain the anomalies such as value and size. To address this problem, a multiple-factor asset pricing model for Australia is developed.
pricing technology, specifically, the four-factor model reflecting the Australian experience described in Equation [2].

**Table III**

**Monthly Risk-Adjusted Returns using the Multifactor Approach: January 1991 to December 1999**

Alpha (α) is estimated from the time series regression of the excess fund returns on the excess market return and the mimicking returns for the size (R_{st} - R_{lt}) , style (R_{gt} - R_{vt}) and bond (R_{dt} - R_{ft}) factors of the form:

\[ R_{it} - R_{ft} = \alpha_i + \beta_{4m}(R_{mt} - R_{ft}) + \beta_{si}(R_{st} - R_{lt}) + \beta_{gi}(R_{gt} - R_{vt}) + \beta_{di}(R_{dt} - R_{ft}) + \epsilon_i. \]

The size factor is the return on the mimicking portfolio for the common size anomaly in stock returns. The style factor is the return on the mimicking portfolio for the common book-to-market equity anomaly in stock returns. Finally, the bond factor is the return on the mimicking portfolio of domestic fixed interest securities to remove the defects of asset coverage. The size, style and bond factors are constructed following the descriptions of Fama and French (1993) and Gruber (1996). \( \beta_k \) is the factor loading on the corresponding independent variable. All t-statistics are provided in the brackets and are adjusted for autocorrelation using the Newey-West covariance matrix. Performance measures are in percentage return per month. The R^2–adj. for all funds on an EW basis was 0.8419 with a Durbin-Watson statistic of 2.014.

<table>
<thead>
<tr>
<th>Cohort</th>
<th>Multifactor EW Alpha (α&lt;sup&gt;4&lt;/sup&gt;)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>R_{mt} = ASX Top 100 Accumulation Index</strong></td>
<td></td>
</tr>
<tr>
<td>Open-end</td>
<td>-0.0280 (t = 0.12)</td>
</tr>
<tr>
<td>Closed-end</td>
<td>-0.0663 (t = -0.65)</td>
</tr>
<tr>
<td>Finalised</td>
<td>-0.2532 (t = -0.83)</td>
</tr>
<tr>
<td><strong>All funds</strong></td>
<td><strong>-0.0384</strong> (t = -0.32)</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th><strong>R_{mt} = ASX Top 20 Accumulation Index</strong></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Open-end</td>
<td>-0.0249 (t = -0.11)</td>
</tr>
<tr>
<td>Closed-end</td>
<td>-0.1034 (t = -0.74)</td>
</tr>
<tr>
<td>Finalised</td>
<td>-0.2273 (t = -0.69)</td>
</tr>
<tr>
<td><strong>All funds</strong></td>
<td><strong>-0.0777</strong> (t = -0.46)</td>
</tr>
</tbody>
</table>

With \( R_{mt} \) equal to the ASX Top 100 accumulation index the multifactor model explains some 84 per cent of the variability of return for the average fund in the sample. This compares favourably with the explanatory power of the single-factor model at 76 per cent. The multifactor estimates suggest that fund managers under-perform the market by a range of -46 to –93 basis points per annum. We place greatest weight on these results, as they incorporate more of the ‘real world’ features facing superannuation fund managers.
4. COST-BASED PERFORMANCE

The ongoing management fees of the funds investigated in this study are charged based on the value of fund units. Typically, the management fee is accrued daily and is payable quarterly in arrears (or upon the full withdrawal of the fund) by the redemption of units. The unconditional management fee of the sample is 1.95 per cent per annum. A further defining feature of the sample of retail funds for individual investors is an entry of up to 5% and an exit load of up to 3%. To test for a relationship between the management fees and fund returns, Table IV sorts fund returns into quartiles, based on management expense ratios.

Table IV
Quartile Cost-Based Performance:
January 1991 to December 1999

Funds were sorted in quartile ranges by annual management expense ratios (MER) and performance reported on an equal-weighted basis. In a typical retail fund, ongoing management fees are charged on a sliding scale based on the value of units. Fees are accrued daily and are payable quarterly in arrears (or upon full withdrawal from the fund) by the redemption of units. All costs incurred in managing the assets of the fund are charged to the fund and are taken into account when calculating unit values. These costs include stamp duty and other statutory charges, brokerage, commission, taxes, costs associated with valuations and costs on the acquisition and disposal of assets, fees associated with the management and maintenance of assets and custodial fees. The average MER for the sample was 1.95% per annum. The market proxy for the results is the ASX Top 100 Accumulation Index.

<table>
<thead>
<tr>
<th>Quartile</th>
<th>Risk-Unadjusted</th>
<th>CAPM α</th>
<th>Multifactor α†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Q1 MER = 1.55%</td>
<td>1.1330</td>
<td>-0.1450</td>
<td>-0.0464</td>
</tr>
<tr>
<td>Q2 MER = 1.66%</td>
<td>1.0618</td>
<td>-0.1752</td>
<td>-0.0584</td>
</tr>
<tr>
<td>Q3 MER = 1.84%</td>
<td>1.1079</td>
<td>-0.1510</td>
<td>-0.0524</td>
</tr>
<tr>
<td>Q4 MER = 2.16%</td>
<td>1.0347</td>
<td>-0.2570</td>
<td>-0.0982</td>
</tr>
</tbody>
</table>

Table III provides no evidence to support the hypothesis that a positive relationship exists between management fees and investment manager returns. Quartile 1, funds that levy the lowest MERs, produced, as a group, the best returns to contributors on both a risk-unadjusted and risk-adjusted basis. This result is in sharp contrast to the performance of Quartile 4 funds, the highest MER group, delivering the most inferior returns to contributors. In short, we cannot find any evidence the contributors who engage high-cost fund managers achieve superior returns.

5. RISK, COST AND ALPHA

The evidence presented in this study raises a number of concerns for superannuation contributors. First, it appears that managers specialising in the provision of domestic stock portfolios for retail investors do not achieve returns commensurate with the systematic risk taken. That is, per unit of beta or market risk, the average fund fails to achieve a rate of return proportionate to that achieved by the market portfolio. This feature is confirmed using both the received CAPM, and the state of the art, multifactor asset pricing model. As risk and return for the industry is in disequilibrium (i.e., too little return for the risk taken), the vertical intercept term alpha (α) is negative.

What drives negative alpha? We argue that downward bias on industry alpha, in this instance, is largely explained by costs. The returns examined in these funds are net of the MER, but exclude the impact of entry and exit loads. In practice, a contribution of $200 per fortnight into an ‘average’ fund investigated in this paper would see an immediate deduction of $10 in the form of a 5% entry load, have an annual management fee of 1.95% of the assets in the fund deducted, and then experience around 50 basis points under-performance against benchmark. If the contributor then decides to change funds, a 3% exit load would then also be imposed. Such costs have the impact of altering risk/return tradeoff of investing in domestic equities to the downside.
The high cost structures of the retail superannuation management industry result in the ultimate erosion of all alpha accretive decisions made by managers. Again, it is important to stress that consideration of the manager return net of MER only that has taken place in this study has resulted in a negative industry alpha. In short, the results presented in this paper would be far worse if imposition of entry and exit loads were included in the analysis.

While this study has focussed on retail funds for individual investors, a recent paper by Drew, Stanford and Veeraraghavan (2002) has considered similar single-sector fund performance from the wholesale market. This analysis suggests that, as an industry, managers can generate zero alpha (and in some cases positive alpha) when charging a management fee of around 0.6 to 0.7% per annum. The economics of zero alpha is that the marginal benefit of the management equates to its marginal cost, the absolute minimum requirement for prudent asset management. However, this wholesale MER is around one-third of the average retail MER. One potential solution to this problem relates to incentives. The next step in the research program is to consider the sort of compensation systems that contributors should implement when remunerating superannuation fund managers. This is an issue we will explore in our next paper.

REFERENCES


