Drivers of Attrition of Australian Superannuation Funds

Belinda Tracey and Katrina Ellis
The views in this paper reflect the authors’ views and not necessarily the views of APRA.
Motivation -
History of APRA’s superannuation collection

![Graph showing the number of APRA Funds and their value over time.](image-url)
Motivation -
IFSA critique of “Ten Years of Superannuation”

- APRA statistical publication - 2007
  - Ten years of superannuation data

- IFSA critique - 2008
  - Survivorship bias in returns
  - 5 year ROA is only calculated on funds that survive until end date (2006)
Research Questions

- Is there survivorship bias in APRA’s superannuation data?

- What are the characteristics of funds leaving the APRA superannuation database?

- What is driving fund attrition?
  - Competitive market, weaker funds exiting, better funds surviving?
  - Structural effects, changes in legislation?
Survivorship Bias

- Many financial datasets around the world exhibit survivorship bias
- Evaluation of returns based on datasets that only include surviving companies or funds may only be showing the best returns
  - Companies or funds that leave the dataset may have had poor performance leading up to the exit which is not included in the average
  - This may affect inferences about performance predictability
Survivorship Bias

- **US Mutual Funds**
  - Grinblatt and Titman (1989)
  - Bias of \((r - \text{benchmark})\) 1975 to 1985 = 0.1% to 0.4% per year
  - Malkiel (1995)
  - Bias of raw return 1982 to 1994 = 1.4% per year
  - Bias of raw return 1977 to 1988 = 0.8% per year (EW) 0.2% (VW)
  - Carhart (1997) CRSP Survivorship-free Mutual Fund Dataset

- **Myers (2000) US Pension Funds 1979 to 1996**
  - Bias of raw monthly return 0.06%, not significant
Examination of Survivorship Bias

- All funds with annual APRA data between 1996 and 2008
  - Not SAFs, PSTs, EPSSS, ADFs, ERFs
- Ideally, would prefer excess returns (relative to a benchmark) to capture asset allocation differences
- Compare raw returns of ALL FUNDS versus FUNDS ALIVE IN 2008

\[
\text{Fund Return} \quad \text{Ret}_{it} = \frac{\text{Net Earnings}_{it}}{\text{Total Assets}_{i,t-1} + \frac{1}{2} \text{Net Flows}_{it}}
\]

Equal Weighted Return
\[
\text{Ret}^{\text{EW}}_{it} = \frac{1}{N} \text{Ret}_{it}
\]

Value Weighted Return
\[
\text{Ret}^{\text{VW}}_{it} = \frac{\sum_{i=1}^{N} \text{Net Earnings}_{it}}{\sum_{i=1}^{N} \text{Total Assets}_{i,t-1} + \frac{1}{2} \sum_{i=1}^{N} \text{Net Flows}_{it}}
\]
## Examination of Survivorship Bias

<table>
<thead>
<tr>
<th></th>
<th>Surviving Funds</th>
<th>All Funds</th>
<th>Bias</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Equal-weighted</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Funds</td>
<td>7.03%</td>
<td>6.62%</td>
<td>0.41%</td>
</tr>
<tr>
<td>Corporate</td>
<td>7.87%</td>
<td>6.92%</td>
<td>0.95%</td>
</tr>
<tr>
<td>Industry</td>
<td>6.66%</td>
<td>6.31%</td>
<td>0.35%</td>
</tr>
<tr>
<td>Public Sector</td>
<td>8.30%</td>
<td>6.50%</td>
<td>1.80%</td>
</tr>
<tr>
<td>Retail</td>
<td>5.45%</td>
<td>4.82%</td>
<td>0.63%</td>
</tr>
<tr>
<td><strong>Value-weighted</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All Funds</td>
<td>7.57%</td>
<td>7.58%</td>
<td>-0.01%</td>
</tr>
<tr>
<td>Corporate</td>
<td>9.52%</td>
<td>9.10%</td>
<td>0.42%</td>
</tr>
<tr>
<td>Industry</td>
<td>7.98%</td>
<td>7.86%</td>
<td>0.12%</td>
</tr>
<tr>
<td>Public Sector</td>
<td>9.16%</td>
<td>9.11%</td>
<td>0.05%</td>
</tr>
<tr>
<td>Retail</td>
<td>5.94%</td>
<td>6.07%</td>
<td>-0.13%</td>
</tr>
</tbody>
</table>
Survivorship Bias

- There is less survivorship bias than found previously in US mutual fund samples

- APRA calculations of cumulative returns are only marginally affected by using surviving funds

- Bias is not large enough to provide explanation for difference in returns by fund type
Legislative Changes

- **1999 Amendment transferring SMSFs (less than 5 members) to ATO**
  - Small corporate funds (less than 10 members) have vanished
    - 950 in 1996 to 12 existing today
  - APRA transferred many of these funds to ATO
    - Uncontactable funds (2004)
  - The attrition of these funds has not been a fund decision, they have been forcibly removed and performance was not a consideration in their removal.
  - Many did not report regularly to APRA, resulting in incomplete data for analysing performance.

- **Licensing (2004 - 2006)**
- **Financial Services Reform Act 2001**
Fund Attrition

1996: Corporate (n=3742), Industry (n=207), Public Sector (n=72), Retail (n=527)
2008: Corporate (n=227), Industry (n=66), Public Sector (n=13), Retail (n=141)
Characteristics of Fund Attrition

- Fund size - larger funds have better economies of scale
- Performance - better performing funds can attract more members (could hold for retail funds over whole sample, other funds only post-choice legislation)
- Expenses - trustees may decide that compliance costs and operational cost/inefficiency are a burden and chose to exit
- Fund structure - defined benefit funds are no longer favoured by superannuation providers

- As these variables are not stationary over time, standardise each variable each year
- Use variables from year prior to exit year
- Prob(survive in year t) = f(expenses, performance, size, structure in year t-1)
### Logistic Regression Results

<table>
<thead>
<tr>
<th></th>
<th>All Funds</th>
<th>Corporate</th>
<th>Industry</th>
<th>Public Sector</th>
<th>Retail</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Intercept</strong></td>
<td>3.388***</td>
<td>3.113***</td>
<td>4.835***</td>
<td>2.601***</td>
<td>3.601***</td>
</tr>
<tr>
<td><strong>Standardised Return (t-1)</strong></td>
<td>-0.049**</td>
<td>-0.051**</td>
<td>0.042</td>
<td>-0.090</td>
<td>-0.056</td>
</tr>
<tr>
<td><strong>Scaled Net Flows (t-1)</strong></td>
<td>0.137***</td>
<td>0.090***</td>
<td>0.260**</td>
<td>0.149</td>
<td>0.180***</td>
</tr>
<tr>
<td><strong>Standardised Size (t-1)</strong></td>
<td>0.515***</td>
<td>0.287***</td>
<td>1.206***</td>
<td>1.086***</td>
<td>0.943***</td>
</tr>
<tr>
<td><strong>Expense Ratio (t-1)</strong></td>
<td>-0.084***</td>
<td>-0.121***</td>
<td>0.308**</td>
<td>-0.051</td>
<td>-0.072</td>
</tr>
<tr>
<td><strong>Defined Benefit Dummy</strong></td>
<td>-0.240***</td>
<td>-0.176***</td>
<td>0.821</td>
<td>-0.385</td>
<td>-0.218</td>
</tr>
</tbody>
</table>

Note: updated from printed version
The logit models the odds of the fund surviving as a function of the specified variables. A negative coefficient implies that a higher value for the variable increases the chance of fund disappearance. Coefficients for the logit model are estimated via maximum likelihood. Year dummy variables included. ***,** indicate significance at the 1%, 5% level.
Characteristics of Fund Attrition

- Exiting corporate funds
  - Have higher performance: forced removal rather than market driven
  - Have higher fees: lack of economies of scale
  - Defined benefit funds more likely to exit

- Exiting funds have not had poorer performance (consistent with lack of survivorship bias)
  - Captive members in superannuation system
  - Lack of efficiency?
  - Lack of active switching despite choice?

- Larger funds and funds with larger inflows have survived
  - Capable of complying with more regulatory burden?
  - Economies of scale?
Conclusion

• Survivorship bias is not large in APRA superannuation funds
• Massive attrition of funds over the last decade
• Corporate funds - funds with few members shifted to ATO
• Exit rates are lower since licensing - more stable set of APRA funds going forward?
• Attrition hasn’t been driven by market efficiency
  - Barriers: no portability, and inertia even with portability
  - Poorly performing funds aren’t necessarily weeded out by attrition
• Larger funds have economies of scale
  - Better investment opportunities
  - Compliance burden more manageable
  - Still too small?
Questions