
REVIEW OF APRA INVESTMENT PERFORMANCE STATISTICS OF THE AUSTRALIAN SUPERANNUATION INDUSTRY

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CONTENT:

OBJECTIVE: _____	1
MOTIVATION: _____	1
REVIEW: _____	1
Table 1: Superannuation Assets and Annual Gross Domestic Product (GDP)	1
Table 2: Ten-year Average Return on Assets and Volatility.....	2
Table 3: Ten-year Average Return on Assets by average account balance.....	3
1. The problem with utilising aggregate data (Return of Total Assets) for measuring performance between fund classifications	4
2. The treatment of management expense fees and the value of net and gross returns	6
Table 4: Expense Rate by Superannuation Segment	7
Table 5: Ten-year Average Gross Return on Assets and Volatility	8
3. Survivorship Bias within the data cohort used by APRA	9
Table 6: Number of Entities	9
4. The calculation of returns using arithmetic means.....	10
Table 7: Arithmetic Mean & Geometric Mean.....	10
5. Diversity of the number of funds within fund classifications.....	12
Table 8: Number of Entities with at least \$100 million in assets	12
6. The difference in investment choices offered within fund classifications.....	13
Table 9: Investment Choice	13
7. Performance measurement of asset allocation of superannuation funds.....	14
Table 10: Asset Allocation of Default Investment Strategy (Entities with at least \$100 million in assets).....	15
8. Miscellaneous	16
CONCLUSION: _____	17
Table 11: Sample Portfolio Performance Presentation (Gross return)	18
Table 12: Sample Portfolio Performance Presentation (Net return).....	19

OBJECTIVE:

The main objective of this report is to review the statistical analysis that APRA provide of the superannuation industry. In particular, this report focuses primarily on the work published by APRA in June 2007 titled “APRA Insight Issue Two, 2007: Celebrating 10 years of superannuation data collection 1996 – 2006”. This report, however, also has direct relevance to material in the quarterly superannuation reports that APRA provide.

MOTIVATION:

IFSA has requested the International Centre for Financial Services (ICFS) to provide an independent and objective view on the reporting processes and interpretation of the results that stem from APRA statistical reports pertaining to the superannuation industry.

REVIEW:

Superannuation assets have grown tremendously over the last decade. On average, the annual geometric growth rate of superannuation assets was 14% while the Gross Domestic Product (GDP) growth rate has grown by 3.6% (refer to Table 1).

Table 1: Superannuation Assets and Annual Gross Domestic Product (GDP)

	1996	2006	Geometric annual growth rate
Superannuation assets (\$b)	245.3	912.0	14.03%
Gross Domestic Product (\$b)	647.7	922.8	3.60%

The information provided in the first three columns is extracted from Table 1 (APRA Insight Issue Two 2007): Superannuation assets. The geometric annual growth rate is calculated by ICFS.

The superannuation industry is one of most important financial drivers of the financial system in Australia. It has accumulated more than \$1 trillion of assets

in Australia and it is the main investor in the Australian financial markets. As such, it is important that analysis of the industry is accurate and meaningful to investors and stakeholders. APRA, as a prudential regulator, is seen by investors as providing such analysis. We would argue that given its unique role within the industry, statistical reports published by APRA would be considered to be more valuable and more accurate than from other sources. As such, the general public do take notice of the reports.

The way in which APRA analyses the superannuation industry is to first segregate it into 4 major fund classifications. That being (i) corporate funds, (ii) public sector funds, (iii) industry funds and (iv) retail funds. From this, the APRA Insight (Issue Two, 2007) gives a strong impression that retail funds performed poorly relative to other superannuation funds over the past decade. On average, retail funds offered the lowest return among the superannuation entities from 1996 to 2006 (refer to Table 2). Public sector funds have the highest return while corporate funds offered the highest return per unit of risk over the last decade (refer to Table 2). The APRA report also clearly indicates that the systematic difference in investment returns for the retail funds cannot be explained by the size of account balance. Regardless of the account balance, retail funds performed poorly against other major superannuation funds (refer to Table 3).

Table 2: Ten-year Average Return on Assets and Volatility

	Average return	Volatility (annual)	Return / risk
Corporate	7.8%	6.6%	1.18
Industry	6.7%	6.2%	1.08
Public Sector	8.0%	7.2%	1.11
Retail	5.3%	5.5%	0.96

The information provided in the first three columns is extracted from Table 8 (APRA Insight Issue Two 2007): Ten-year average return on assets and volatility. The return/risk ratio is calculated by ICFS.

Table 3: Ten-year Average Return on Assets by average account balance

Account balance	Corporate	Industry	Public Sector	Retail
\$ 5k < \$ 10k	NA	6.0%	NA	3.5%
\$10k < \$ 25k	NA	6.9%	7.9%	4.8%
\$25k < \$100k	7.5%	8.4%	8.1%	6.2%
At least \$100k	8.2%	8.5%	7.8%	6.1%

All information is extracted from Table 10 (APRA Insight Issue Two 2007): Return on assets by average account balance.

From the above analysis, we have identified several issues in the APRA Insight report (Issue Two 2007) that we believe need to be addressed when reporting superannuation performance statistics, and the value plus interpretation of these statistics for the public at large. These issues are also directly relevant to the quarterly performance reports which APRA also provide on the superannuation industry.

1. The problem with utilising aggregate data (Return of Total Assets) for measuring performance between fund classifications
2. The treatment of management expense fees and the value of *net* and *gross* returns
3. Survivorship Bias within the data cohort used by APRA
4. The calculation of returns using arithmetic means
5. Diversity of fund types within fund classifications
6. The difference in investment choices offered within fund classifications
7. Performance measurement of asset allocation of superannuation funds
8. Miscellaneous

We discuss each of these issues in more depth in the rest of this report.

1. The problem with utilising aggregate data (Return of Total Assets) for measuring performance between fund classifications

(A) Value of the Statistics to the End User

The *return of total assets*, as an evaluation tool of superannuation fund performance, is not the most precise measure and can lead to misleading interpretations of the results. First, it should be highlighted that aggregation of superannuation fund performance will not reflect the true performance of any particular fund that a member may have joined. Within each fund provider, there will be a selection of investment choices the member can make. The return of total asset measure is merely an aggregation of a large group of fund managers' performances within a fund classification, and it is not the real return experienced by any member of superannuation funds. The real return of superannuation portfolios depends on the fund type (investment choice) selected by a member. If the intention of the reports is to give a general view on the performance of funds that a superannuation contributor might have invested in, we would argue it is better to provide aggregate statistics on the performance of fund types (investment choices) for at least the most common fund types; such as (i) capital stable / guarantee, (ii) balanced, and (iii) growth portfolios. However, this would require the development and industry wide adherence to set definitions.

(B) Mis-Representation of Fund Classification Performance

The return of total asset for each individual superannuation fund is driven by the proportion of money under management under each fund type selected by the fund members. If the majority of the members selected the capital guarantee portfolio (low risk, low return portfolio), the return of total assets for the superannuation fund will be lower than other superannuation funds where its members may have chosen higher growth portfolios (higher risk, higher return). For example, there is some anecdotal evidence that the age cohort of members that have money in industry funds are of a younger age than those members

that have money under management in retail funds. If this is the case, it is likely that industry super funds will have more capital placed in higher return/risk investment choices than the retail counterpart. If this is the case, aggregate performance figures based on fund classification would naturally show higher returns for industry funds. This will not be due to the funds providing better investment opportunities, but simply that more members have chosen higher growth portfolios.

Hence, rather than reporting the return of total assets, the performance of each fund type (investment choice) may be a better option. One could still provide a breakdown of returns on a fund classification basis, but within each classification show average returns for the most popular investment choices. This way it would be possible to provide a more meaningful statistic for the public to view in terms of their own super performance as it relates to their investment choice, but also a comparable statistic across fund classifications.

2. The treatment of management expense fees and the value of net and gross returns

Retail Funds do tend to have higher expense ratios. There is a general framework which retail funds tend to operate in that can explain the higher fee basis. Importantly, and relative to the other fund classifications, retail funds generally offer a myriad of extra services to their members in the form of financial planning services and more sophisticated investment products that are tailored to specific clients' investment needs.

It is not within the scope and objective of this report to discuss whether financing planning services add value to retail fund members, or that all the investment choices offered to clients are necessary. What is clear, however, is that dependent on an individual's personal circumstances, seeking professional advice can be very necessary. As a simple example, it is very likely better for a young client to be paying a higher MER for a fund investment choice that is appropriate to the investment horizon and risk aversion of the individual, than picking an inappropriate fund type. If this implies paying an extra 1% commission on a growth fund that earns 2-3% more than a capital stable fund over a 20-year tenure, the client would still be better off.

The question then becomes how do you value the advice that financial planners provide to members/clients? We believe this is a separate issue from what APRA wishes to focus on, that being fund performance. However, the two are linked, particularly if focus is made on *net returns* for funds.

One simple method to separate the issue is to provide two sets of statistics. Following on the discussion in (1) one possibility is to provide performance results gross and net of expenses. The *gross* figure will provide a measure of true fund manager performance – the skills of the fund manager to earn high returns. The *net* figure will provide a measure of the returns for a certain type of fund by its members. This will allow the users of the statistics to examine

fund manager performance separate from issues surrounding the charge of fees and the benefit of extra services that may be provided by particular funds.

Table 4 provides an overview of the expense rate for each classification of the superannuation industry. On average, public sector funds have the lowest expense rate over the last 6 years while retail funds have the highest expense rate than other superannuation funds. Much of the difference can be put down to the difference in structure of the various funds in different classifications.

Table 4: Expense Rate by Superannuation Segment

	Expense Rate (%) 2002	Expense Rate (%) 2004	Expense Rate (%) 2006	Average
Corporate	0.86	0.75	0.78	0.80
Industry	1.23	1.18	1.13	1.18
Public Sector	0.63	0.66	0.70	0.66
Retail – Personal Superannuation	2.41	2.30	2.12	2.28
Retail – Post Retirement	2.02	2.04	1.79	1.95
Retail (average)	2.22	2.17	1.96	2.11

The information provided in the first four columns is extracted from the Superannuation Fees Report (Market Segment Analysis). This report is prepared by Rice Warner Actuaries Pty Ltd. Rice Warner reports are available from the IFSA website: www.ifsa.com.au

To ensure a fair comparison of superannuation fund performances across different segments, we have estimated gross returns for each superannuation fund (refer to Table 5). The estimated expense rates are based upon reports prepared by Warner Actuaries Pty Ltd. (refer to Table 4). Even though retail funds have the lowest gross return among the four major classifications, they have the highest gross return per unit of risk over the last decade. This implies that retail funds' portfolio managers have actually performed the best when measuring pure performance over the level of risk exposure they maintained. On the other hand, public sector funds performed poorly against other funds despite it having the lowest expense rate (refer to Table 5). As can be demonstrated from the table, gross returns per unit of risk can provide a very

different perspective of superannuation funds' performance across different fund classifications.

Table 5: Ten-year Average Gross Return on Assets and Volatility

	Average return (net)	Average expense rate	Average return (gross)[#]	Volatility (annual)	Average return (gross) / risk
Corporate	7.8%	0.80%	8.60%	6.60%	1.30
Industry	6.7%	1.18%	7.88%	6.20%	1.27
Public Sector	8.0%	0.66%	8.66%	7.20%	1.20
Retail	5.3%	2.11%	7.41%	5.50%	1.35

The average return (net) and volatility are extracted from Table 8 (APRA Insight Issue Two 2007): Ten-year average return on assets and volatility. The average return (gross) and gross return/risk ratio are calculated by ICFS.

[#]Average return (gross) = Average return (net) + Average expense rate

3. Survivorship Bias within the data cohort used by APRA

The number of superannuation entities has diminished significantly over the last decade (refer to Table 6). Failed / merged / dissolved superannuation entities are excluded from performance studies because these entities no longer exist. This will distort the results that APRA reports because, from our understanding, only entities which are successful until the end of the period are included in the APRA reports.

In APRA reports, survivorship bias may have distorted the data and consequently the average performance of funds in each classification. For the largest three segments in the superannuation industry (Industry, Public Sector and Retail), the number of entities in each segment has dropped by more than 50% within a decade (refer to Table 6).

Table 6: Number of Entities

Number of entities	June 1996	June 2006	Geometric annual growth rate
Corporate	4100	555	- 18.1%
Industry	169	81	- 7.1%
Public Sector	93	44	- 7.2%
Retail	372	174	- 7.3%
Total	4734	854	- 15.7%

The information provided in the first three columns is extracted from Table 2 (APRA Insight Issue Two 2007): Share of superannuation. The geometric annual growth rate is calculated by ICFS.

4. The calculation of returns using arithmetic means

Given that we are measuring the investment returns over a long period of time, the arithmetic mean is not the best measurement for fund performance. For example, if a stock price increases from \$10 to \$12 (20%) in the first year, and decreases from \$12 to \$9.6 (-20%) in the following year, the arithmetic mean is 0% despite the current stock price being lower than the initial stock price. The actual return is -4% (refer to Table 7). In most circumstances, the arithmetic mean is biased upward if you are measuring the long-term performance of a fund. The degree of bias depends on the volatility of the rates of return. If the rates of return are the same over the sample period, the arithmetic mean will be equal to the geometric mean.

Table 7: Arithmetic Mean & Geometric Mean

Year	Share price	Return per year
0	\$10.0	
1	\$12.0	+20%
2	\$9.6	-20%
Arithmetic mean = $[(+20\%) + (-20\%)] / 2 = 0\%$		
Geometric mean = $[1+(+20\%)] [1+(-20\%)] - 1 = -4\%$		

The geometric mean, which takes into consideration compounding effects, is a better measurement for the long-term performance of fund managers. For the above scenario, the geometric mean return is -4% over a 2-year period (refer to Table 7). Therefore, we do recommend that when APRA provides performance results it adopts geometric mean calculations in the statistical analysis of the superannuation industry reports, and provide 1-year, 3-year, 5-year and 10-year geometric investment returns. This geometric mean method is recommended in the Performance Presentation Standards (PPS) created by the Chartered Financial Analyst (CFA) Institute. CFA is an international organization, based in the US, with over 95,000 investment practitioners and educators in more than 130 countries. They are the owners of Global Investment Performance

Standards (GIPS). GIPs are a set of ethical principles that establish a standard for the calculation and presentation of past performance. Twenty-one countries have adapted GIPS, including Australia.

5. Diversity of the number of funds within fund classifications

There are vast differences among retail funds in the products and choices they offer. Some retail funds focus on selling post-retirement products while others offer personal superannuation (pre-retirement) products. The level of investment choice by risk level can also vary substantially. It is very difficult to appropriately aggregate all these retail funds' into a single classification if the intention is to use aggregation figures to measure performance.

For entities with at least \$100 million in assets, there were 110 retail funds in Australia at the end of June 2006 (refer to Table 8). Public sector funds got the lowest number of entities in Australia with only 32. The number of entities drops tremendously for corporate funds over the last decade, from 142 to 62 entities at the end of June 2006. Table 8 clearly indicates that retail funds have more entities, with at least \$100 million in assets, than any superannuation fund classification.

Table 8: Number of Entities with at least \$100 million in assets

Number of entities	June 1996	June 2006	Geometric annual growth rate
Corporate	142	69	-7.0%
Industry	65	59	-1.0%
Public Sector	26	32	2.1%
Retail	107	110	0.3%
Total	340	270	-2.3%

The information provided in the first three columns is extracted from Table 9 (APRA Insight Issue Two 2007): Return on assets by size of entity. The geometric annual growth rate is calculated by ICFS.

6. The difference in investment choices offered within fund classifications

Further to (5), retail funds offer more investment choices than any other fund classification. In 2006, retail funds offered on average more than 100 choices, compared to 10 choices for other classifications (refer to Table 9). This would provide members an ability to select an investment choice more closely suited to their personal financial circumstances. These different investment choices would have varied risk exposures and corresponding returns performance. All this will impact on aggregate performance measures if using a total asset return figure. It would lead to the returns being much more sensitive to the proportion of funds under management in the different investment choice plans for retail funds.

Table 9: Investment Choice

<u>Year: 2004</u>	Corporate	Industry	Public Sector	Retail
Number of entities	104	68	33	127
Proportion of entities offering investment choice	55.8%	86.8%	69.7%	82.7%
Average number of investment choices offered per entity*	6	7	5	83
<u>Year: 2005</u>	Corporate	Industry	Public Sector	Retail
Number of entities	89	64	33	118
Proportion of entities offering investment choice	74.2%	89.1%	63.6%	83.1%
Average number of investment choices offered per entity*	6	8	7	88
<u>Year: 2006</u>	Corporate	Industry	Public Sector	Retail
Number of entities	69	59	32	110
Proportion of entities offering investment choice	75.4%	91.5%	71.9%	83.6%
Average number of investment choices offered per entity*	6	9	7	108

All information is extracted from Table 13 (APRA Insight Issue Two 2007): Investment choice

* The average number of investment choices offered per entity refers to those entities that have investment choice.

7. Performance measurement of asset allocation of superannuation funds

There are large differences between asset allocation strategies from retail, corporate, industry and public sector funds. Focusing on the asset allocation of the default strategy provided in the APRA report, retail funds allocate more capital to fixed income markets (fixed interest and cash) than other fund classifications. One of the main reasons retail funds may seem to have lower returns than other fund classifications could simply be due to more capital being placed in fixed income and cash assets than the equity market (refer to Table 10). It would be worthwhile analysing in greater depth the performance of fund managers across different industry classifications by asset allocation. If one is interested in examining performance by fund classification then an alternative method to that highlighted in (1) and (2) would be to compare performance between asset classes from each of the fund classifications. This will provide a good picture of the quality of the asset managers within each fund classification. However, if one also wants to account for the fund manager skill in appropriating various proportions of a portfolio to different assets, we would argue performance statistics presented based on investment choice across fund classifications would still be a better comparison.

Table 10: Asset Allocation of Default Investment Strategy (Entities with at least \$100 million in assets)

<u>Year: 2004</u>	Corporate	Industry	Public Sector	Retail
Australian fixed interest	10.6	11.9	8.3	15.0
International fixed interest	5.4	6.5	6.9	4.4
Cash	5.1	5.5	7.9	9.6
Total	21.1	23.9	23.1	29
<u>Year: 2005</u>	Corporate	Industry	Public Sector	Retail
Australian fixed interest	12.9	10.2	7.6	12.9
International fixed interest	5.9	5.6	8.5	4.4
Cash	3.5	5.3	8.2	14.4
Total	22.3	21.1	24.3	31.7
<u>Year: 2006</u>	Corporate	Industry	Public Sector	Retail
Australian fixed interest	13.5	9.1	6.6	11.5
International fixed interest	6.2	4.6	6.5	4.9
Cash	4.1	5.0	7.6	10.9
Total	23.8	18.7	20.7	27.3

All information is extracted from Table 14 (APRA Insight Issue Two 2007): Asset allocation of the default investment strategy

8. Miscellaneous

(A) Number of observations

It would seem that APRA calculate standard deviations as a measure of volatility using 10 yearly observations. We would argue that this is too a low frequency plus too low a number to appropriately measure risk. We would recommend estimating the value by annualizing quarterly returns (leading to 40 observations over a 10-year period).

(B) Age Cohort

We do not have at this stage evidence to back up this claim, but it has been suggested that the age cohorts who invest in the different fund classifications do vary, with a larger percentage of people closer to retirement investing in retail funds. If this is the case, consideration may need to be made of the fact that these funds would need to be in a position to liquidate assets more readily than in other fund classifications. The need for liquidity can have an impact on fund performance, separate to the fund manager skill in earning higher returns for a given level of risk.

CONCLUSION:

If APRA is interested in providing reliable and meaningful summary statistics on the performance of funds across different fund classifications, it is of paramount importance that recognition is made of the fact that comparisons should be on a like-for-like basis. As a minimum, it is our opinion that this implies fund performance for general investment choices for each fund classification is provided. This will:

- i) provide the public a basis to measure their returns in their own super fund with the industry average and across fund classifications.
- ii) deal with the potential bias resulting from funds in certain fund classifications having more of their total assets under management in more / less risky assets to meet the demands of their members selecting certain types of investment choices.

The aggregate return of total assets measurement achieves neither of these. Fund performance should also be provided for both net and gross of fees, realising that fund manager performance is better to be examined using gross of fees, whereas total cost to the consumer is net of fees.

We also recommend the use of geometric returns and analysing data on a quarterly basis. Table 11 & 12 on the next two pages provide illustrative tables of how statistical results could be presented to deal with the above issues. An addendum will be provided at a later date providing an analysis of the superannuation industry along the lines we have argued to determine the difference of our results to that provided by APRA.

Table 11: Sample Portfolio Performance Presentation (Gross return)

Corporate Funds	Gross Return¹	Risk²	Sharpe ratio³
- general high risk portfolios (growth portfolio)			
- general medium risk portfolios (balanced portfolio)			
- general low risk portfolios (capital stable)			
Public Sector Funds	Gross Return	Risk	Sharpe ratio
- general high risk portfolios (growth portfolio)			
- general medium risk portfolios (balanced portfolio)			
- general low risk portfolios (capital stable)			
Industry Funds	Gross Return	Risk	Sharpe ratio
- general high risk portfolios (growth portfolio)			
- general medium risk portfolios (balanced portfolio)			
- general low risk portfolios (capital stable)			
Retail Funds	Gross Return	Risk	Sharpe ratio
- general high risk portfolios (growth portfolio)			
- general medium risk portfolios (balanced portfolio)			
- general low risk portfolios (capital stable)			

¹ Geometric mean gross returns, calculated on a quarterly basis.

² Standard deviation of rates of return, calculated on a quarterly basis.

³ Excess gross returns per unit of risk.

Investment choices available in each fund are split into three categories based on the proportion of each portfolio's exposure to fixed income and cash relative to domestic equity, real estate and international equity. Only investment choices that naturally fit into the above three categories are considered.

Table 12: Sample Portfolio Performance Presentation (Net return)

Corporate Funds	Net Return¹	Risk²	Sharpe ratio³
- general high risk portfolios (growth portfolio)			
- general medium risk portfolios (balanced portfolio)			
- general low risk portfolios (capital stable)			
Public Sector Funds	Net Return	Risk	Sharpe ratio
- general high risk portfolios (growth portfolio)			
- general medium risk portfolios (balanced portfolio)			
- general low risk portfolios (capital stable)			
Industry Funds	Net Return	Risk	Sharpe ratio
- general high risk portfolios (growth portfolio)			
- general medium risk portfolios (balanced portfolio)			
- general low risk portfolios (capital stable)			
Retail Funds	Net Return	Risk	Sharpe ratio
- general high risk portfolios (growth portfolio)			
- general medium risk portfolios (balanced portfolio)			
- general low risk portfolios (capital stable)			

¹ Geometric mean net returns, calculated on a quarterly basis.

² Standard deviation of rates of return, calculated on a quarterly basis.

³ Excess net returns per unit of risk.

Investment choices available in each fund are split into three categories based on the proportion of each portfolio's exposure to fixed income and cash relative to domestic equity, real estate and international equity. Only investment choices that naturally fit into the above three categories are considered.