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APRA collects statistics primarily for prudential purposes, but with a substantial ancillary purpose to provide useful data to other government agencies, the reporting industries, and the public. APRA's reputation for conducting high quality collections and producing useful and accurate publications is sound, and in most cases non-contentious.

The major exception to the "non-contentious" point above arises in our superannuation publications, most notably those sections of the publications which reveal relative return differences between funds entrusted to not-for-profit and retail trustees. These publications show, among other things, that at least for the thirteen years of statistics available to APRA, the average retail fund net return has been less than the average net return for other fund types.

The Investment and Financial Services Association (IFSA), which is the main industry association for the insurance companies, banks, and funds managers responsible for retail funds, has from time to time commissioned studies of APRA's statistics. Most recently, IFSA engaged two authors from the International Centre for Financial Services (ICFS) to review some of our superannuation statistics publications. This review was critical of a number of APRA's superannuation statistics publications and methodologies.

The assertions in the ICFS paper, combined with its public release, give rise to the risk that the public and other observers may erroneously conclude that APRA's statistics fall short of our own standards for accuracy and usefulness. Accordingly, I have commissioned this APRA response to the ICFS paper.

In considering the following material, we remind readers of three important points.

First, APRA is a disinterested reporter of the statistical data. The fact that the average retail fund generates lower returns than the average not-for-profit fund is a finding emerging from the data, not from any APRA methodological bias.

Second, APRA is producing statistical publications for the permanent public record, not for immediate commercial use. As discussed in the attached paper, APRA's main focus in the relevant areas of our superannuation publications is to provide information on the long term aggregate investment returns achieved by trustees, not to generate recommendations for individual fund members as to which fund and what investment option they should choose.

Finally, a considerable proportion of the criticism of APRA's superannuation statistics has focused upon our publication of sector level rather than disaggregated fund level data. APRA itself has had access to fund level data for many years, and our statistical and research teams are satisfied that there is nothing in the fund level data which invalidates anything we have published at the aggregate level.

Nevertheless, it is clear that there is public demand for fund level statistical data from APRA. We are currently considering methods by which we can publish such data, and intend to commence a public consultation on this point shortly.

Ross Jones
Deputy Chairman, APRA

A RESPONSE TO *Review of APRA's Investment Performance Statistics of the Australian Superannuation Industry*

September 2008

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Australian Prudential Regulation Authority

Background

In July 2008, Chee Seng Cheong and Professor Ralf Zurbruegg of the International Centre for Financial Services (the "ICFS authors"), which is affiliated with the University of Adelaide, published the above named paper (the "Review"). The paper was commissioned by the Investment and Financial Services Association, an industry association for the banks, insurance companies, and funds managers which are responsible for most of the retail superannuation funds on offer in Australia. The Review critiques APRA's statistical publications, notably the one-off publication entitled *Celebrating Ten Years of Superannuation Data Collection 1996–2006* ("10YoS"), as well as APRA's regular quarterly superannuation publication, which is largely extracted from quarterly returns provided by funds exceeding $50 million in assets.

Purpose

This paper provides a response to the ICFS Review. For that purpose, a copy of the Review is attached for the convenience of the reader.

APRA welcomes analysis and comments upon our superannuation publications, even where this analysis or comment is critical.

The ICFS authors, however, have produced a Review which creates the risk of public misperception of the accuracy and fitness for purpose of APRA's statistical publications.

APRA is issuing this paper to clarify the facts associated with APRA's statistical publications in superannuation.

This paper will follow the points made by the ICFS authors in their Review, and comment where we see the need to correct any potential misperceptions.

The Review in Brief

The Review considers APRA's publications in eight specific areas, then closes with conclusions and recommendations. Before addressing each of these areas, we will provide a quick overview of APRA's statistical publications in the superannuation industry.

APRA's Statistical Collections and Publications in Superannuation

Under the *Financial Sector (Collection of Data) Act 2001*, APRA collects data from regulated entities and a small number of other entities, mainly for prudential purposes but also for other uses. The other uses include, for example, facilitating the formulation of monetary policy by the Reserve Bank of Australia.

APRA's collection cycle for superannuation is as follows:

- Annual audited returns (SRF200 and SRF300 series); and
- Quarterly unaudited returns from superannuation funds with more than $50 million in assets (SRF100 series).

APRA collects these statistics from all prudentially regulated trustees on behalf of the funds under their trusteeship, as well as from a small number of exempt public sector superannuation schemes, which did not opt into prudential supervision due to their sponsorship by an Australian government or agency.

APRA does not collect statistics from self managed superannuation funds, which are administered by the Australian Taxation Office.

APRA's superannuation publications are synchronized to our collections, with quarterly publications typically issued at the end of the quarter following their balance date, and annual publication typically in March, for the previous June data. The lag on the annual publication is due to APRA's requirement for audited financial accounts, which are not available for several months after the end of each financial year.

In addition to APRA's regular publications, in 2007 APRA issued a one-off publication entitled *Celebrating Ten Years of Superannuation Data Collection 1996–2006*. As the title indicates, this publication provided a ten year statistical synopsis of the Australian superannuation industry, which was extracted from the previous decade's APRA and predecessor agency annual collections.

Superannuation publication fitness for purpose

APRA's superannuation publications serve many purposes, such as providing a record of the industry's growth or reduction over time, and changes in the composition of the industry. These purposes are neither contentious nor the subject of the ICFS Review, so we will not explore them any further here. The publication sections which are subject to the Review's critique concern reported fund returns by aggregate fund groups.

Under the *Superannuation Industry (Supervision) Act 1993* ("SIS"), trustees are required to meet the Sole Purpose Test (SIS section 62) which provides that superannuation is meant to primarily provide retirement benefits to members. Under SIS section 52, moreover, trustees are required to act in the members' best interest, and they are further required to construct a strategy (including an investment strategy) for the entire fund. Section 52 further specifies that it is allowable, though not required, for trustees to accept directions from members on the member's investment allocations. This facility is commonly called "investment choice", to distinguish this decision from "fund choice", which is the right most Australian superannuation fund members possess to move their fund balances and/or new contributions from one fund to another.

The Sole Purpose Test and the trustee's Section 52 duties under SIS strongly suggest that a trustee should operate a superannuation fund in a manner which is aimed at delivering good long term returns to members, with return aspirations constrained by the need to manage investment and purchasing power risk over the longer term. In this context, examining realized fund returns over time allows an observer to draw an inference about a trustee's ability to construct and execute a strategy which is in the members' best interest.

Accordingly, APRA considers longer term fund returns a highly relevant though not definitive indicator of superannuation trustee performance in designing and delivering an investment strategy which is in the members' best interest.

Specific issues arising from the ICFS Review

Utilising aggregate data to measure fund performance—value of statistics to the end user

APRA uses net (of all costs and taxes) return on assets (ROA) as the primary means to define superannuation fund investment return. In APRA's current publications, APRA reports ROA by fund type, which for this discussion breaks into four categories: corporate, public sector, and industry funds, which are collectively sometimes called "not-for-profit" funds; and retail funds. In APRA's internal work, we also examine data at the individual fund and trustee level, but to date we have not made this data publicly available.

The ICFS authors assert (page 4) that

- "Return of total assets...is not the most precise measure and can lead to misleading interpretations of the results.";
- "...aggregation of superannuation performance will not reflect the true performance of any particular fund that a member may have joined.";
- "The return of total asset measure is merely an aggregation of a large group of fund managers' performances within a fund classification, and is not the real return by any member of superannuation funds.";
- "The real return of superannuation portfolios depends on the fund type (investment choice) selected by a member."

APRA's publication of ROA material is in fact the most precise measure of realized returns at the aggregate fund level. APRA considers that fund net ROAs are the best starting point from which to assess trustee performance. As noted later in this paper, many other considerations also come into play.

The ICFS authors' assertion that the APRA published data does not report the outcome for any particular member is correct, but APRA does not claim that the published data represents particular member outcomes. Our aggregate reports have never been presented as a report of specific member outcomes.

In this section, the ICFS authors suggest that member selection and fund manager performance, rather than any trustee decision, determines the return outcome for a fund. The argument that members and fund managers, rather than trustees, are responsible for fund returns, is at best incomplete, on at least two counts. First, trustee decisions have a large impact upon taxes and costs, independent of member and fund manager decisions, and these costs are substantial in the context of the member's eventual retirement benefit. Second and more fundamentally, the fact that trustees may allow member investment choice, and the fact that trustees are allowed to outsource fund management to third parties, does not relieve trustees of their SIS duties to operate their funds and construct strategies which are in the members' best interests.

Having said this, the 10YoS publication makes clear that not only does the average retail fund under-perform the average not-for-profit fund, the great majority of retail funds earn less than the great majority of not-for-profit funds. This is best seen in Figure 12.4 of the 10YoS publication, which is reproduced below. This table indicates that a retail fund ranking at the top ten per cent of returns among retail funds, on a dollar weighted basis, would rank around the bottom ten per cent of corporate or public sector funds, and just over the bottom 50 per cent of industry funds, for the 1996 to 2006 study period.

Mis-representation of fund classification performance

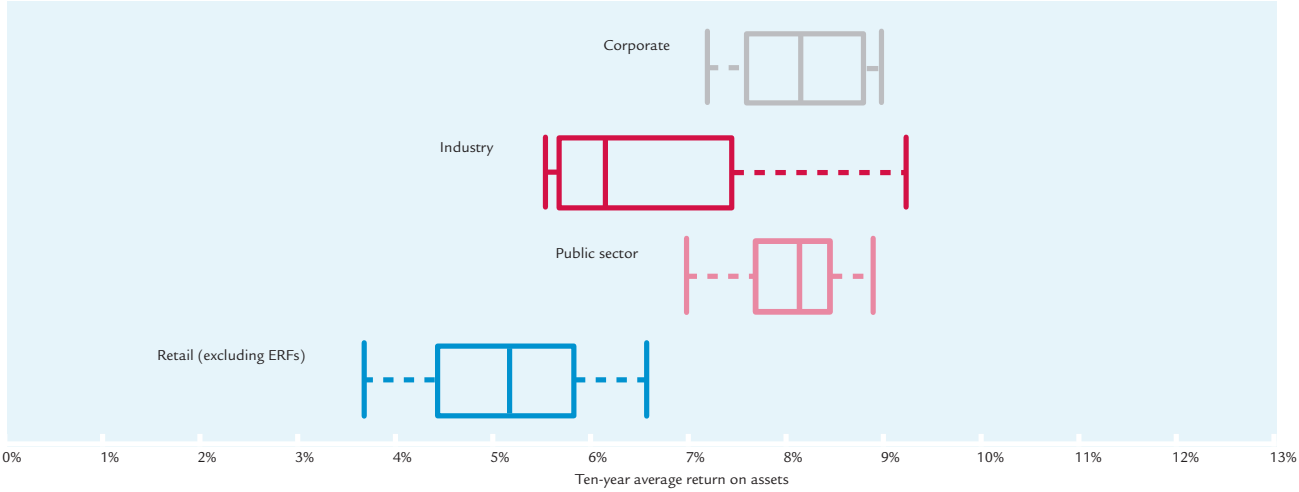
The ICFS authors suggest in this section (pages 4–5) that fund returns are a function of member-chosen investments, which are in turn driven by factors such as member age. The member age issue comes up later in the Review and will be dealt with in more detail at that point.

The ICFS authors suggest that APRA should report on investment style (capital stable, balanced, etc.) rather than at the total fund level. This is an interesting suggestion, and will be the subject of further APRA work for our upcoming review of the statistical collections and publications. In the interim, we observe:

a) Investment style information is already available, albeit on a less comprehensive and not necessarily audited basis, through several private sector superannuation research houses[1].

b) The material produced by these research houses is reasonably consistent with APRA's research findings. Retail fund under-performance does not seem to be explained by gross differences in member investment allocation selections.

Figure 12.4 Asset-weighted box plots of ten-year average return on assets



[1] Refer for example to www.rainmaker.com.au, www.superratings.com.au, www.morningstar.com.au, www.chantwest.com.au. This list is not exhaustive and does not represent APRA's endorsement.

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

The first paragraph in this section (pages 6–8) of the ICFS Review acknowledges that retail funds impose higher expenses upon members, but asserts that "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".

This assertion rather misses the point that under the Sole Purpose Test, offering a "myriad of extra services" does not discharge the Trustee's duty to manage a superannuation fund in a way designed to produce good retirement benefits for members. While it is permissible under SIS for Trustees to offer extra services to members, in limited circumstances, these extra services do not replace the need for trustees to develop and execute a fund strategy which is expected to earn good risk adjusted returns for members.

Moving on to the second paragraph in this section, the ICFS authors assert that it would be better for a fund member to pay high fees and receive a higher return, than to pay low fees and receive a lower return. This is true, as far as it goes, but the more relevant issue is that trustees should strive to generate good net returns to members.

The ICFS authors put the view that gross returns should be measured, and that risk adjusted gross returns are relevant to considerations of trustee performance.

APRA agrees that it would be interesting to know fund gross returns, but as a practical matter we have discovered that such data are extremely difficult to collect. Because trustees outsource much of their fund management, to firms which often outsource through one or more additional providers, a trustee must be able to look through multiple layers of fees and expenses to separate gross and net returns. Our experience has been that trustees are in many cases unprepared and possibly unable to delve deeply enough into their investment arrangements to disentangle gross and net returns.

Net returns are far more important than gross returns. Net return is the figure that directly determines the member's eventual retirement benefit.

The remainder of this section of the Review culminates in Table 5, which is entitled "Ten-Year Average Gross Return on Assets and Volatility". The major conclusion from this table, drawn by the authors of the Review, is that retail funds have the highest average gross return on a risk adjusted basis, and this means that "gross returns per unit of risk can provide a very different perspective of superannuation funds' performance".

However, Table 5 from the Review does not stand up to closer scrutiny.

First, the ICFS authors construct gross returns by adding cost estimates from an actuarial firm expense study to the 10YoS net returns published by APRA. This is not necessarily a statistically appropriate construction. The APRA 10YoS publication covers ten years from 1996 to 2006, for all relevant superannuation funds. The actuarial study used by the ICFS authors extracts figures from a limited number of funds, for the years 2002, 2004, and 2006. These two data series are founded on differing time periods and funds, so adding them together is a dubious proposition.

Second and perhaps more fundamentally, the ICFS authors implicitly define "risk" as "volatility", which is the standard deviation of returns. There is a large assumption included in this definition. "Risk" of investment return is a matter of human perception, and there is a substantial ongoing debate as to which measure or measures best translate between realized or expected investment returns over time, and the risk to be assigned to those returns.

This ongoing debate, however, requires that the competing investment propositions outperform each other at various points in the time period under discussion. If one investment always performs better (worse) than another, it cannot be more (less) risky than the other.

This dominance of return applies in comparing not-for-profit and retail superannuation returns. Figure 1 below compares the median return of not-for-profit and retail funds annually, from 1996 to 2006.

Simple inspection reveals two important facts about retail and not-for-profit returns during this period, which included two substantial bull markets and one bear market. First, it is obvious that retail and not-for-profit returns are highly correlated; the shape of both lines is very similar. This was achieved because retail and not-for-profit funds held similar investment portfolios through this period.

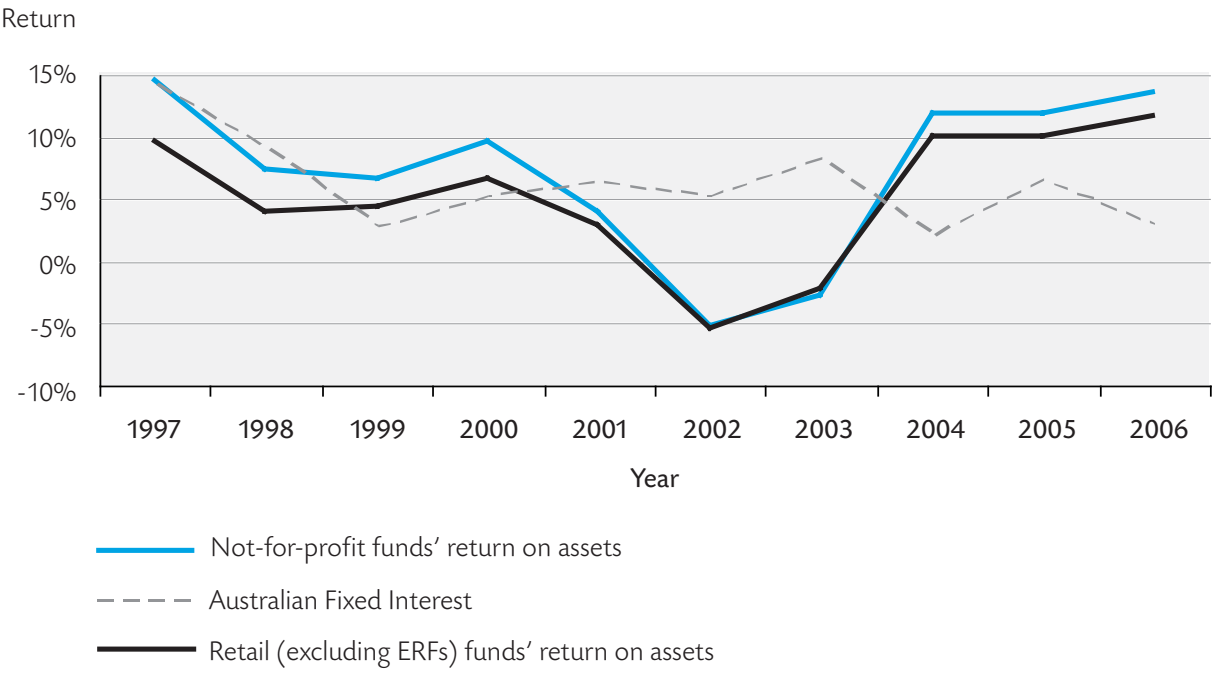
Second, although the shape of the lines is similar, retail funds in aggregate consistently earn less than not-for-profit funds in aggregate. In years with high average returns (1997 through 2000 and 2004 through 2006), not-for-profit funds earn considerably more than retail funds. In the three relatively bad years of 2001 through 2003, not-for-profit funds earned more in aggregate than did retail funds, though retail fund losses in 2003 were 0.2 per cent less than median not-for-profit fund losses.

We can summarise this pattern as: over the ten year study period, retail funds always earned less in good investment markets, and earned about the same as not-for-profits in poor investment markets. This performance was, as an arithmetic matter, less volatile, but it was not less risky.

Since publishing 10YoS APRA has observed two more years of investment returns, and the same pattern of retail fund under-performance has held in those years. Given this return dominance, there is no need to resort to arithmetic transformations of returns to estimate relative risk.

To illustrate this point, we have added an additional line to the above chart, showing returns to a notional Australian fixed interest portfolio. Upon inspection, one can see that this portfolio's returns through market cycles vary substantially from the more diversified portfolios commonly associated with superannuation funds. A risk-return calculation against this line, using volatility or similar measures, would be sensible, because sometimes fixed interest performs better, and sometimes worse, than more diversified portfolios.

Figure 1: Median return on assets[a] vs Australian Fixed Interest[b]



[a] Superannuation entities with at least $100 million in assets. Not-for-profit comprises of corporate, industry and public sector funds. [b]UBS Australian Composite Bond Index.

Survivorship Bias

In this section (page 9), the ICFS authors speculate that survivorship bias may have affected APRA's results in 10YoS. Survivorship bias arises when an observer infers information about returns over a given time period, by examining the returns of only those entities which are still operating at the end of the period.

Tables 9, 10, and 12 and their associated figures in 10YoS are subject to survivorship bias, as they only include funds that existed through the entire period. Most of the remaining publication, by contrast, reported upon the cohort extant in each of the ten years, so was not subject to survivorship bias.

Survivorship bias does not affect the overall outcomes from 10YoS regarding the relative performance of retail funds compared to not-for-profit funds.

The calculation of returns using arithmetic means

The ICFS authors assert (pages 10 and 11) a preference for using geometric rather than arithmetic means for determining returns over the ten year study sample in 10YoS.

Arithmetic means calculate an unbiased estimate of the expected return of a fund, whereas geometric returns calculate the historical compounded return. Both measures have informative value. When constructing the 10YoS publication, APRA considered using both methods. Ultimately APRA used the most intuitive and simple measure in 10YoS: the arithmetic mean appears in tables 8, 9, 10 and 12, which contain multi-year returns.

APRA showed the effect of geometric compounding in figure 7.3 in TYoS: *Value of $1,000 invested at 1 July 1996*, which shows the value of $1,000 invested in 1996 by 2006. The data provided in table 7: *Return on assets*, also allow users to calculate geometric averages.

Most tables in 10YoS contain individual years' returns and users can calculate geometric returns from the data provided. The arithmetic and geometric returns are the same for single year returns: differences between the measures only appear in multi-year returns.

In any event, both arithmetic and geometric calculations produce the same overall conclusion: retail funds in aggregate materially and consistently earn less than not-for-profit funds.

In this section the ICFS authors highlight the Global Investment Performance Standards (GIPS).

As APRA moves to consider fund level superannuation fund reporting, we intend to revisit the geometric vs. arithmetic mean issue, and we will also consider whether the relevant APRA publications should follow the GIPS guidelines.

Diversity of the number of funds within fund classifications

The Review observes (page 12) that the number of funds differs across the four classifications, that fund numbers have reduced in aggregate, and that the rate of fund growth or shrinkage has varied by sector. All these observations are arithmetically correct. None of these observations, however, is relevant to the return calculations reported by APRA in 10YoS and the quarterly superannuation publications.

The difference in investment choices offered within fund classifications

This section (page 13) observes that retail fund trustees follow strategies which allow members to make more finely defined member directed investment allocations. This is generally true, and is allowable under SIS. APRA does not state a preference among the range of member investment choice strategies. Some trustees offer only one investment choice in a fund, which is typically a diversified investment with concentration towards asset classes which are expected to earn high returns, at the cost of increased risk. Many trustees, often associated with the not-for-profit sector, offer about five "thematic" choices with names such as "balanced", "balanced growth", or "growth", in addition to perhaps five asset class choices ranging from cash through the major asset types. Many other trustees, often associated with the retail sector, offer several hundred highly detailed investment choices, in addition to the "thematic" choices noted above.

All three of these strategies are acceptable under SIS.

Consider the case of three trustees. Trustee A offers no member directed investment options, instead offering a single diversified investment proposition. Trustee B offers 300 different investment options, none of which is a default option. Trustee C offers a default investment option, and 12 additional investment options, and allows members to direct their investment options as they see fit.

Each of Trustees A, B, and C have constructed an investment strategy for their funds as a whole. The fact that each trustee has selected strategies which greatly vary the amount of member directed investment is allowable under SIS.

Each trustee, however, remains responsible for the investment strategy of the fund as a whole. APRA would expect, among other things, that each trustee would from time to time consider the relative return of their funds, at both the aggregate and investment option level. If this return was not generating good prospects for member retirement benefits, then a reconsideration of the fund strategy might be in order.

Performance measurement of asset allocation of superannuation funds

In this section (page 14) the ICFS authors argue that retail fund asset allocations differ from allocations at not-for-profit funds, and more attention should be focused upon these differences. To some extent APRA agrees with this proposition. It is likely, for example, that APRA's next revision to the superannuation statistical collection will include the data necessary for APRA to calculate and benchmark fund returns using conventional asset class allocations.

On the other hand, asset allocation is only one of the trustee's decisions which must be made in the context of the Sole Purpose Test and operating in the members' best interest.

Let us revisit the examples of Trustees A, B, and C given in the previous section. Suppose Trustee B, in reviewing its fund's average returns over time, discovered that members had earned 4 per cent per annum, compared to an average 7 per cent return achieved by comparable funds. Trustee B could reasonably conclude from the realised returns that its overall strategy was not working very well to generate member retirement benefits, and it might choose to reconsider this strategy.

Number of Observations

The ICFS authors note (page 16) that APRA's 10YoS return calculations are based upon ten annual observations, rather than (for example) 40 quarterly observations. This is a reasonable observation, and APRA considered using its quarterly collections to replace or augment the annual data comprising the bulk of the 10YoS publication. In the end we decided to concentrate on the annual data for the following reasons:

- APRA's internally generated quarterly collections only commenced in 2004. Material collected prior to this has not been subject to the same quality assurance processes as have our annual collections; and
- The annual collection is audited, vs. the "best efforts" basis of the quarterly collections.

As APRA's quarterly collection data increases, we will consider how we might best use this material.

Age Cohort

On pages 4,5, and 16 of the Review, the ICFS authors speculate that retail fund members are older than the average not-for-profit fund member. There is no need for speculation upon this point. Tables 4 and 5 of APRA's *Annual Superannuation Bulletin* provide the requisite information, and we produce charts developed from these tables below.

As the tables below demonstrate, industry funds have the youngest members on average, and public sector funds have the oldest members. Corporate and retail sector age profiles are in between. Measured by the dollar weighted distribution, corporate and industry funds are "younger" than retail funds, but public sector funds and retail funds have similar proportions of dollars held by members older than 50.

From their speculation about age distribution, the ICFS authors then assert that retail funds might earn lower returns, because their membership base is more conservative due to age, and more in need of short term liquidity. Therefore, we are invited to infer, retail funds might plausibly earn less than not-for-profit funds, even as all trustees strive with equivalent skill and dedication to maximize fund members' interests.

Figure 2: Age segmentation of member accounts by fund type (entities with more than four members)

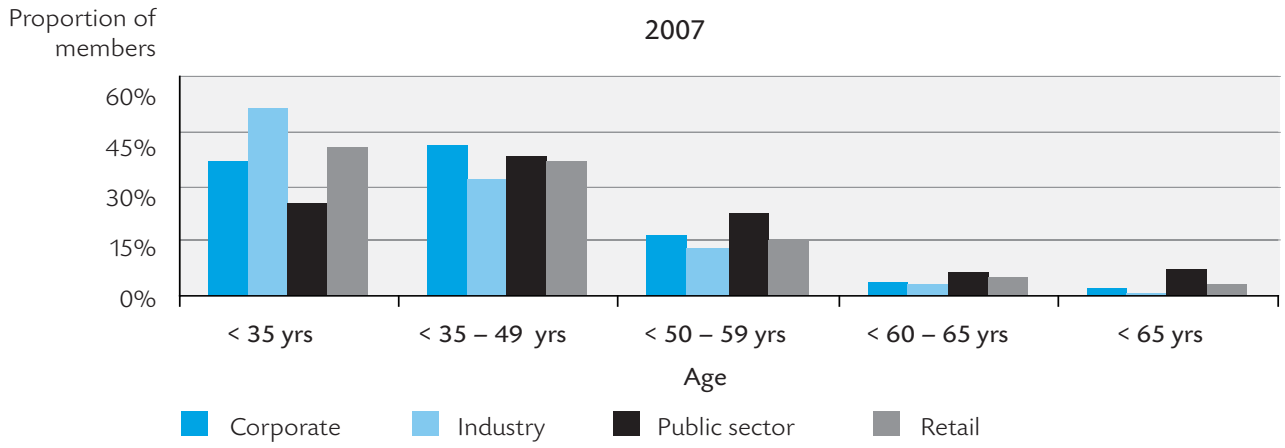
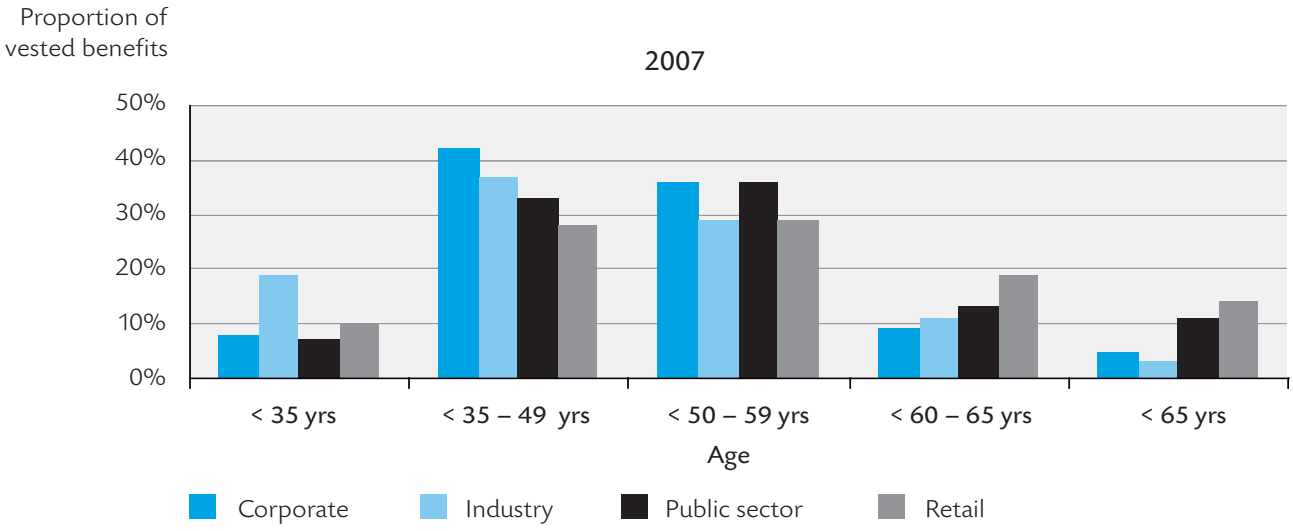


Figure 3: Age segmentation of vested benefits by fund type (entities with more than four members)



This line of reasoning has some theoretical attraction, but is empirically unsupported. On the issue of fund returns and member conservatism, let us start by considering industry funds vs. retail funds. Industry funds earn more (on average) than do retail funds, and their members are younger, so perhaps the return differential is due to member preference. This conjecture begins to look dubious when we compare industry funds to corporate and public sector funds. In the 10YoS data period, corporate and public sector ROAs were statistically indistinguishable, somewhat higher than industry funds, and considerably higher than retail funds. Yet corporate and public sector member profiles are considerably older than is the case for industry funds. Public sector age profiles are in fact similar to retail funds. It is not at all apparent from the data that member age profile is driving ROAs.

The results from the APRA data are further supported by results from private sector superannuation ratings firms, who typically compare superannuation funds at the investment choice level, for example by ranking returns of balanced growth options. These comparisons, which in effect correct for member risk aversion in investment choice, routinely demonstrate that not-for-profit fund returns exceed retail fund returns.

The theory that age distribution is a material factor in explaining retail fund under-performance deserves further examination, but the data available on this topic suggests that age distribution is a relatively minor explanatory factor for differences in superannuation fund returns.

Suggested reporting formats

In closing, the ICFS authors suggest that APRA consider reporting on a more disaggregated basis, using both gross and net returns, and broadening the range of risk measures.

APRA intends to expand its superannuation publications to include fund level data, and we will separately consult on this point. In this consultation, selecting risk measures (such as the Sharpe ratio) is likely to feature prominently. For reasons discussed earlier in this paper, even if it were possible to report gross returns, such returns are very much less important than net returns, so APRA intends to continue its focus at the net level, which represents the actual return to members.

Summary

The ICFS Review attempts a number of critiques of APRA's superannuation data, calculation methods, and publication arrangements. The general theme of the ICFS critique is that APRA's publication material as it relates to retail funds portrays them in an insufficiently positive light, relative to other fund types.

APRA has examined each of the arguments put forward in the ICFS Review. This paper provides a detailed rebuttal of the major assertions in the Review.

The ICFS Review has also made relevant suggestions on ways to improve and enlarge APRA's superannuation statistics publications. Over the next several months APRA plans to consult publicly with a view to producing enhanced statistical publications. These enhancements are intended to benefit superannuation fund members and the industry more broadly.

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REVIEW OF APRA INVESTMENT PERFORMANCE STATISTICS OF THE AUSTRALIAN SUPERANNUATION INDUSTRY

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July 2008 International Centre for Financial Services, University of Adelaide

CONTENT:

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

Year: 2004	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
Year: 2005	**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
Year: 2006	**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)

Year: 2004	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**

Year: 2005	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**

Year: 2006	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 Return[1]**	**Risk[2]**	**Sharpe ratio[3]**
- 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 Return[1]	Risk[2]	Sharpe ratio[3]
- 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.