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March 2010

Superannuation Savings Gap for Women

Prepared for IFSA

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1. Executive Summary

1.1 Introduction

From time to time, IFSA has engaged Rice Warner Actuaries to estimate the *Retirement Savings Gap* (RSG).

The RSG is the value for the working population of the shortfall they will have in building an adequate (reasonable) retirement benefit. It provides a snapshot of Australia's progress as a nation towards funding a comfortable retirement. Trends over time will show whether the relative position is improving.

Government has an important role to play in encouraging Australians to save for their retirement. The financial services industry also has an important role to play in educating Australians about retirement matters and assisting individuals to improve their personal situations. Success can be measured through a reduction in the gap over time.

The latest update on the *Retirement Savings Gap* (RSG) report will soon be provided to IFSA to reflect the situation following the Global Financial Crisis (GFC). The results will be based on figures for the year ending 30th June 2009.

IFSA has now requested that Rice Warner provide detailed information on the RSG for women including analysis of the additional reasons why women struggle to accumulate an adequate superannuation benefit.

This report sets out our findings. The material is based on the data and results that will be published in the soon to be released RSG report. The material is supplemented by some cameos to illustrate the financial impact of various contingencies affecting women.

1.2 Difficulties in building Retirement Savings for Women

The Australian superannuation system has been designed around the paid workforce so women, who typically move in and out of the workforce during their lifecycle, are disadvantaged in terms of saving for their retirement.

Those women who choose to have children are likely to spend some time away from work followed by periods of part-time work. This may also lead to missed promotional opportunities at work as many careers advance between the ages of 30 and 40 which coincide with the prime ages for raising children.

Assuming all else is equal, we estimate that a woman with a career break of five years can expect to save approximately 26% less than a woman without a career break. This is before any adjustment for wage inequality or missed promotion at work.

A young woman today who retires at age 67 will need to save 13% more than an otherwise identical man due to her increased longevity.

There is also evidence that many women still receive lower pay than men for identical work leading to further reductions in superannuation contributions which ultimately has an adverse impact on the final retirement benefits of women.

Other factors impact heavily on women. One of these is divorce which, for mothers with dependant children, can lead to several years where no savings are made.

Another factor is widowhood. Although about 60% of Australians enter retirement with a partner, many spend the bulk of their superannuation in the first 10 to 15 years of retirement as a result of having insufficient savings. In the majority of cases, the male partner dies first and many widows then spend the later years of their retirement dependant on the Age Pension.

1.3 Population Savings Gap

Our calculations show that the current settings for superannuation are insufficient to provide the population with their expectations of a comfortable living standard in retirement. As most of today's working population will receive a part or full Age Pension when they retire, the gap will be partly closed by the level of government support.

In calculating the savings gap we have used a target benefit (including any entitlement to the Age Pension) of 62.5% of earnings at retirement for people earning between 50% and 200% of average wages. Below 50%, people receive a high replacement rate from the Age Pension; above 200% (about $120,000), people generally have other assets or income to support their retirement lifestyle.

We have assumed that people will need to save enough to pay the target benefit up to their life expectancy at the start of their retirement. In fact, 50% of retirees will outlive this period and will then revert to a full Age Pension unless they have other income or an even higher superannuation benefit.

We estimate that there is a total deficit of $418 billion for women in the working population as at 30th June 2009 (expressed in today's dollars). It is important to understand that this amount is not a lump sum that is required immediately. It is an amount which should be spread over the expected term to retirement for women in the current workforce.

A breakdown of our estimate is set out in the table below:

Table 1.   Retirement Savings Gap for Women at 30 June 2009

	Women ($ billion)
Asset (accumulated savings plus future contributions)	1,120
Contribution from Age Pension	544
Projected value of all benefits	1,664
Liability (target benefits)	2,082
Retirement Savings Gap (RSG)	418

The Age Pension reduces over 25% of women's Savings Liability. Note that many women end up on a full Age Pension in the later years of their retirement. However, the Age Pension benefit is a safety net which alleviates poverty in retirement. It is not intended to provide a comfortable retirement.

1.4   Cameos

We have carefully designed four different case studies that depict the effects which increased longevity, career breaks and wage inequality can have on a woman's retirement savings.

The profile of each cameo is set out in the table below. Further details of each profile can be found in Section 5.

Table 2.   Cameo Parameters

Cameo	Sex	Age	Current Income $	Pre-retirement Income $	Current Super Savings $	Super Contributions (% of Gross Salary)		Career Break	Retirement Age	Homeowner/ Renter
						Employer	Member			
1	M	22	35,000	56,556	0	9	0	None	67	Renter
2	F	22	35,000	56,556	0	9	0	None	67	Renter
3	F	22	28,875	46,659	0	9	0	None	67	Renter
4	F	22	28,875	41,177	0	9	0	5 Years[1]	67	Renter

The key take outs from these cameos are:

- A typical woman (Cameo 4) is expected to save $91,400 or 35% less for her retirement than a typical man (Cameo 1);

- A woman retiring in 45 years time at age 67 (Cameo 2) must save an additional $55,300 or 13% more for retirement than an otherwise identical man (Cameo 1) as she is expected to live 2 years longer;

- A woman who takes a career break (Cameo 4) is expected to save $45,200 or 26% less than a woman who does not take a career break (Cameo 3);

- The SG contribution is not sufficient to provide an adequate retirement benefit for any member who lives to their **average** life expectancy. For example, a woman (Cameo 2) may be required to contribute 16% p.a. to achieve adequacy (including 9% SG);

- For those women that live beyond the average life expectancy and live to the age at which 25% of retirees will live, the situation is worse - these women will be required to contribute 19.9% p.a. (including 9% SG).

The results of the cameos are summarised in the table below.

Cameo	Sex	Career Break	Adequate Income $	Savings at Retirement $	Savings Required for Adequacy $	Expected Retirement Savings Gap $	Ratio of Savings at Retirement to Savings Required for Adequacy
1	M	None	35,347	263,900	414,000	150,100	0.64
2	F	None	35,347	263,900	469,300	205,400	0.56
3	F	None	29,162	217,700	283,300	65,600	0.77
4	F	5 Years[2]	25,736	172,500	187,600	15,100	0.92

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[1] Starting when she is aged 27.
[2] Starting when she is aged 27.
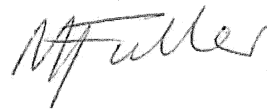
1.5   Assumptions

We have made a number of assumptions in calculating the Retirement Savings Gap, and these should be considered carefully. The full range of assumptions is detailed in Appendix A.
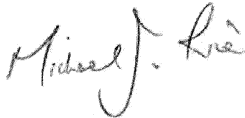
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2.   Background to the Retirement Savings Gap

2.1   Measurement Criteria

The Retirement Savings Gap is a measure of the current shortfall in national savings between two amounts:

- The amount required to be saved by the nation as a whole to ensure "adequacy" in retirement; and

- The amount saved in the superannuation system, and estimated to be saved in future years up to retirement, by the current workforce.

The shortfall can be expressed as a lump sum amount, or an amount that needs to be saved on an annual basis over the future working lifetime of the current workforce. In this report, we have presented the figure as a lump sum in present day dollars in line with IFSA's requirements and consistent with our previous reports.

The term "adequacy" in retirement can have different meanings for different people. In this report we have determined adequacy to be the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy. We have ignored people who earn more than twice average earnings as it is probable that they will have adequate provision in retirement.

The amount saved has been determined by reference to the current level of superannuation savings and the likely level of future superannuation savings based on current contribution trends. In deriving this figure, we have ignored superannuation savings in respect of those people who are already retired.

2.2   Pension Age and Age Pension

Eligibility for the Age Pension currently commences at age 65 for men (women are moving towards age 65). However, the Government announced in its 2009 Budget that the Age Pension eligibility age would gradually increase to age 67 from 1 July 2023.

We expect that younger members will need to stay in the workforce until the new Age Pension eligibility age of 67. In reality, most Australians currently retire before age 65, the median age being about 60. However, if members continue to retire earlier, they will need to live entirely off their superannuation and other savings until they reach the Age Pension eligibility age. This will reduce their savings available to fund later years - when the Age Pension will form a significant part of their income.

In calculating the Retirement Savings Gap, we recognise that in the future around 40% of the Australian population will retire on a full Age Pension and a similar number will receive a part pension (Treasury expects approximately 75% of people above age 65 to receive some form of the Age Pension in 2050). Adequacy in retirement is a function of Age Pension entitlement, superannuation benefits and income from other investments.

We have made explicit allowance for the Age Pension by modelling the retirement income Retirement Savings Gap separately for different income cohorts and calculating the Age Pension offset for each cohort *at all ages in retirement*.

Section 4 shows the modelling results both before and after taking the Age Pension into account.

2.3   Adequacy

The model is heavily dependent on the definition of "adequacy" in retirement. As stated above, this has been determined to be the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy.

We note that IFSA has chosen the 62.5% figure as it is within the range chosen by an earlier Senate Select Committee on Superannuation and Financial Services within which people can maintain their standard of living in retirements. It concluded that an adequate retirement income would fall between 60% and 65% of pre-retirement income. This equates to approximately 75% of pre-retirement expenditure and is a level which provides an adequate income in retirement, though it is modest for many people.

In our Savings Gap Report at 30 June 2004, adequacy was defined as an income stream at retirement equal to 62.5% of gross earnings, commencing from age 65. However, the "annuitisation" of adequacy implicitly assumes that members who die relatively early in their retirement subsidise those members that do not. Therefore, we believe that the revised definition of adequacy is a better reflection of reality, where the majority of members take their retirement benefit as a lump sum or roll it over to an account-based pension.

More detailed discussion on "adequacy" is contained in our separate *Superannuation Adequacy* report prepared for IFSA (October 2009).

2.4   Non-superannuation Assets

Our model examines the Retirement Savings Gap mainly in terms of superannuation savings. However, there will be other savings in addition to superannuation held by the general population that will impact upon the "pure" Savings Gap presented in this report. Detailed research and analysis of these savings is beyond the scope of this report. Nonetheless, some comment on the effect that non-superannuation assets might have on the Retirement Savings Gap is considered with the results in Section 4. We have made some broad allowance for investment properties of wealthier individuals, as discussed in Appendix A.7.6.

2.5   Population

We have ignored that portion of the population that has already attained age 65. Whilst a large number of this cohort has inadequate provision for retirement, there is little scope to improve this situation through further savings. A small number within this group is still working and may generate some additional savings within superannuation, but most have no capacity to improve their financial position.

Similarly, we have ignored people under the age of 25. The younger generation has a focus on education and work training and need not be concerned about superannuation as a priority at this time. We note that ignoring those aged under 25 serves to decrease the estimated Retirement Savings Gap.

We have also ignored wealthier individuals on pre-retirement incomes in excess of twice average earnings. These individuals hold much of Australia's private wealth and most should be self-sufficient in retirement.

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3. Women in Retirement

3.1 Generational Shift

Most Australians today have different aspirations from those of their parents. This is illustrated most starkly when looking at Australian women. In contrast to their mothers and grandmothers, many Australian women today hold degrees and full-time jobs earning significant incomes.

Retirement income is as important for women as it is for men. Despite reaching parity with men on many issues, retirement income is not one of them. Consequently, retirement income is now as important an issue for women as it is for men. All working women have their own superannuation account and they need to build it to protect themselves against future uncertainty - some will separate or divorce; others will be prematurely widowed.

3.2 Issues for Women

There remain many differences between the retirement outcomes of men and women. The following points serve to illustrate the increased difficulties faced by the majority of women.

- Women who have already retired are far more likely to be full Age Pensioners than men of the same age. This largely reflects past earnings and savings patterns;

- There are a larger number of women than men amongst older Age Pensioners, reflecting the increased life expectancy of women over men;

- As women bear children, they spend less time in paid work and therefore have fewer years to contribute to superannuation;

- Average earnings of women are less than those of men. This is partly through a larger proportion working part-time and partly through loss of opportunity for career advancement through breaks in employment for child rearing. Lower income means that superannuation contributions are smaller;

- Women live longer than men, so that their average retirement is expected to be longer. Even from age 65 (which becomes their Age Pension age from 2014), women are expected to live around 21.6 years, compared with 18.5[3] years for men. Increased longevity means that the lump sum at retirement has to be spread over more years, resulting in reduced annual income in the retirement years; and

- In households where men have been the primary breadwinners, many women have tended to rely on their husband's income - and therefore, his superannuation. However, an ever increasing divorce rate has reduced the level of financial security for women in these circumstances.

3.3 Community Expectations

The Community, which has slightly more women than men, would expect that all Australians should have equal opportunities to build an adequate retirement income, irrespective of gender.

For retirees, the Age Pension is available as a safety net. However, it is generally acknowledged that this is inadequate. It is not financially possible to increase the Age Pension above the current level, given that more than 80% of Australians above retirement age receive a full or part pension. Therefore, part of the solution must be to increase each individual's superannuation savings.

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[3] Figures taken from the Australian Life Tables 2005-2007.

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The Superannuation Guarantee system was introduced as a basis for assisting retirees to become self sufficient in retirement. In practice, it is considered by many commentators that the Superannuation Guaranatee should be increased from the current 9% to at least 12%, and possibly as high as 15%.

4. Retirement Savings Gap Results

The Retirement Savings Gap for women as at 30 June 2009 is calculated as $418 billion after allowance for the Age Pension. It is important to note that this amount is not a lump sum that is required immediately, but an amount that would need to be funded over the expected term to retirement for women in the current workforce.

The Retirement Savings Gap can be subdivided between the sexes as follows:

Table 3.   Retirement Savings Gap for Women at 30 June 2009

	Women ($ billion)
Asset (accumulated savings plus future contributions)	1,120
Contribution from Age Pension	544
Projected value of all benefits	1,664
Liability (target benefits)	2,082
Retirement Savings Gap	418

The Age Pension reduces the Savings Liability for women by over 25%. Reasons for its significant impact include:

- Women generally have relatively low average retirement savings which increases their chance of eligibility to receive Age Pension benefits; and

- Women typically have relatively low pre-retirement earnings and will therefore generally have a lower adequate retirement income. It follows that a greater proportion of their retirement income will be sourced from the Age Pension.

If we did not allow for the Age Pension component, the Savings Gap would be higher for women at $962 billion ($2,082 - $1,120).

5. Cameos

In this section we calculate the Retirement Savings Gap (RSG) for a range of scenarios to illustrate the disadvantages that women face in saving for their retirement.

The scenarios are detailed below and the underlying assumptions are set out in the Appendix.

Table 4. Cameo Parameters

Cameo	Sex	Age	Current Income $	Pre-retirement Income $	Current Super Savings $	Super Contributions (% of Gross Salary)		Career Break	Retirement Age	Homeowner/ Renter
						Employer	Member			
1	M	22	35,000	56,556	0	9	0	None	67	Renter
2	F	22	35,000	56,556	0	9	0	None	67	Renter
3	F	22	28,875	46,659	0	9	0	None	67	Renter
4	F	22	28,875	41,177	0	9	0	5 Years[4]	67	Renter

Cameo 1 shows a typical male profile which we use as a benchmark. Cameo 2 shows a woman who is identical to Cameo 1 apart from gender. The difference in results reflects the increased longevity of women.

Cameo 3 represents a woman with earnings that are approximately 82.5%[5] of the man's earnings (Average Weekly Earnings Statistics published by the ABS show that female full-time ordinary earnings are 82.5% of the male equivalent). This illustrates the effect of wage inequality on the retirement savings for women.

Cameo 4 represents a typical young woman who takes a five year career break when she is aged 27 to bear and raise her children. This shows the financial impact of having children but returning full time. The impact of returning part-time to work is financially worse.

5.1 Cameos Results

For each Cameo we have estimated:

- Their adequate retirement income;

- Their savings at retirement (comprised solely of the accumulated value of 9% SG contributions and investment earnings);

- The savings required to ensure that the Cameo will receive an adequate income until life expectancy;

- Their RSG (the savings the Cameo requires to be adequate less their estimated savings at retirement); and

- The ratio of estimated savings at retirement to the savings required to be adequate. This ratio gives an indication of how close the individual is to achieving adequacy.

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[4] Starting when she is aged 27.
[5] ABS Catalogue 6302.0, 25 February 2010, *Average Weekly Earnings*, full-time ordinary earnings.

The table below summarises the results of our estimates for each Cameo.

Table 5.   Cameos Results

Cameo	Sex	Career Break	Adequate Income $	Savings at Retirement $	Savings Required for Adequacy $	Expected Retirement Savings Gap $	Ratio of Savings at Retirement to Savings Required for Adequacy
1	*M*	*None*	35,347	263,900	414,000	150,100	0.64
2	F	*None*	35,347	263,900	469,300	205,400	0.56
3	F	*None*	29,162	217,700	283,300	65,600	0.77
4	F	5 Years[6]	25,736	172,500	187,600	15,100	0.92

Our estimates show that Cameo 4 (a typical woman) is expected to save $91,400 or 35% less than Cameo 1 (a typical man). The significant difference in savings at retirement is a result of Cameo 4 taking a five year career break and earning approximately 82.5% of Cameo 1's earnings over her career.

The graph below represents the results of the RSG estimates for each of the four Cameos.

Graph 1.   Cameos Results

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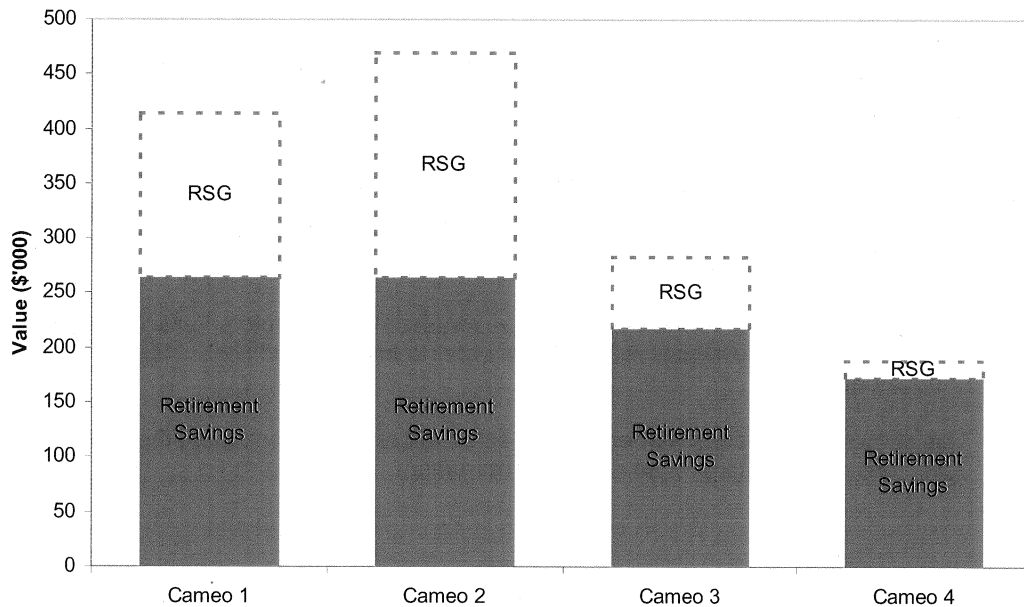
[6] Starting when she is aged 27.

The table below shows the required contribution rates needed to achieve an adequate income up to life expectancy for each of the four Cameos. Note that these contributions would be sufficient for the 50% of the population who do not live past their life expectancy.

Table 6.   Contribution Rates Required to Receive an Adequate Retirement Income until Life Expectancy

Cameo	Current Contribution Rate (% of Gross Salary)		Incremental Contributions (% of Gross Salary)		Total Contributions to Achieve Adequacy (% of Gross Salary)	
	Employer	Member	Employer	Member	Employer	Member
1	9.0	0.0	5.1	0.0	14.1	0.0
2	9.0	0.0	7.0	0.0	16.0	0.0
3	9.0	0.0	2.7	0.0	11.7	0.0
4	9.0	0.0	0.8	0.0	9.8	0.0

5.2   Impact of Greater Longevity for Women

The longevity of the average woman is greater than that of the average man. This directly increases the retirement savings required by women as the period over which they are required to provide themselves with an adequate retirement income is longer. Similarly, the cost to government also increases from the increased period over which Age Pension benefits are made.

The latest Australian Life Tables 2005-2007[7] show that women aged 67 (in the year 2055[8] when Cameos 1 and 2 have been assumed to retire) are expected to live until age 95 while men of the same age are only expected to live until age 93. Women aged 67 (in the year 2055) are expected to live for two years longer than men of the same age.

A comparison of the "Savings Required for Adequacy" for Cameo 2 and Cameo 1 in Table 5 shows that a woman must save approximately $469,300 (in today's dollars) in order to receive an adequate retirement income of $35,347 while a man is only required to save $414,000. That is, because Cameo 2 is expected to live two years longer than Cameo 1, she must save $55,300[9] (or 13%) more at retirement than an otherwise identical man.

We have estimated that Cameo 2 would be required to contribute an extra 1.9% of her salary (compared to Cameo 1) until retirement in order to fund the additional $55,300 that she requires to be adequate.

This shows that because women are expected to live longer than men, they are required to save considerably more for an adequate retirement.

5.3   Impact of Wage Inequality

The latest Average Weekly Earnings Statistics published by the ABS[10] show that the average full-time ordinary earnings for women is approximately 82.5% of the male average equivalent.

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[7] With the application of the 25 year mortality improvement factors.
[8] Individuals currently aged 22 will be 67 in 2055.
[9] Refer to Table 5 and Graph 1.
[10] ABS Catalogue 6302.0, 25 February 2010, *Average Weekly Earnings*,

While a difference in job profiles between the genders may explain some of the discrepancy in average earnings it is still not uncommon for women who perform identical tasks to earn less than their male counterparts.

To illustrate the effect of wage inequality, we estimate that Cameo 2 will have saved $263,900 at retirement while Cameo 3 will have saved only $217,700. That is, Cameo 2 will have saved $46,200 (or 21%) more than Cameo 3. Reduced wages has significantly reduced the retirement savings of Cameo 3.

Although we have estimated that Cameo 2 will have saved $46,200 more at retirement than Cameo 3, we note that the RSG for Cameo 2 is significantly higher than the RSG for Cameo 3. We have estimated that the RSG for Cameo 3 will be approximately $205,400 compared to $65,600 for Cameo 4, a difference of $139,800.

The reason for this seemingly contradictory observation lies in the definition of adequacy. Adequacy has been defined as the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy (refer to Section 2.3). Therefore, individuals with higher pre-retirement earnings are required to save more for an adequate retirement.

We believe that incorporating a replacement rate of earnings into our definition of adequacy is more realistic than basing adequacy on a budgetary standard (for example the December quarter Westpac-ASFA Modest Retirement Standard for a single woman was $19,996 p.a.). Although adequacy is highly dependent on the individual, retirees are likely to want to maintain their standard of living in retirement. For example, if an adequate income had been defined to be $19,996 p.a. then this would probably be adequate for an individual that was earning $30,000 p.a. during their working life. However, $19,996 p.a. would likely be inadequate for an individual accustomed to earning (say) $60,000 p.a. during their working life.

Using a replacement rate allows us to model the desire of retirees to maintain their pre-retirement living standards. We further note that the Senate Select Committee on Superannuation and Financial Services concluded that a replacement rate of between 60% and 65% of pre-retirement income[11] would constitute an adequate retirement income.

Although we have estimated that the Savings Gap for a woman with a career would be smaller than the Savings Gap for a woman that did not take a career break, it is more important to focus on the retirement savings foregone as a result of the career break. We have shown that it is possible for a five year career break to reduce a woman's retirement savings by 26%.

5.4 Impact of Career Break for Women

Women tend to spend less time in the workforce as they will generally take a career break for child bearing and rearing.

A career break can impact on an individual's retirement savings in two key ways:

- No employer contributions are received during the career break; and

- Potential promotional salary increases may be lost.

Allowing for a five year career break (commencing at age 27) for Cameo 4 means that she will have saved approximately $172,500 at retirement. However, if Cameo 4 had not taken the career break then we have estimated that she would have saved $217,700 (refer to the results of Cameo 3 in Table 5) or $45,200[12] (26%) more for her retirement. The contributions and

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[11] IFSA chose the 62.5% replacement rate as the mid-point of this range.
[12] Refer to Table 5 and Graph 1.

salary increases foregone by Cameo 4 during her five year career break (over the 45 years until her retirement) has significantly hampered her ability to save for retirement.

Although we have estimated that Cameo 3 will have saved $45,200 more for her retirement than Cameo 4, her RSG is $50,500 greater than the RSG of Cameo 4. Once again, this situation arises because of the lower savings required to be adequate (which results from her lower pre-retirement earnings, see commentary in previous section).

5.5   Higher Level of Longevity

The Retirement Savings Gap is sensitive to the definition of adequacy. Our base case assumes that people will save an adequate level until their life expectancy. As 50% of retirees will outlive the expectancy at retirement, this measure will be inadequate for half of the population.

In this section we summarise the effect of increasing the target longevity by assuming that the women represented in the Cameos will live longer and therefore require a higher savings amount at retirement to fund the longer period.

We have considered the following two scenarios:

- Survival to the 75[13] survival percentile; and
- Survival to the 90[14] survival percentile.

The results based on the 75th survival percentile are set out in Table 7 and Table 8, while the results based on the 90th survival percentile are set out in Table 9 and Table 10.

In both scenarios the total contributions required to achieve adequacy are a high percentage of salary. The SG contribution is not sufficient to provide an adequate retirement benefit for any individual who lives beyond their average life expectancy. This highlights the importance of voluntary contributions (that is, in addition to SG) for individuals if they want to achieve adequacy in retirement.

Table 7.   Cameo Results - 75th Survival Percentile

Cameo	Sex	Career Break	Adequate Income $	Savings at Retirement $	Savings Required for Adequacy $	Expected Retirement Savings Gap $	Ratio of Savings at Retirement to Savings Require for Adequacy
1	M	None	35,347	263,900	559,500	295,600	0.47
2	F	None	35,347	263,900	585,100	321,200	0.45
3	F	None	29,162	217,700	358,500	140,800	0.61
4	F	5 Years[15]	25,736	172,500	233,900	61,400	0.74

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[13] The 75th survival percentile is the age at which 25% of men/women of a particular age are expected to live.
14 The 90th survival percentile is the age at which 10% of men/women of a particular age are expected to live.
[15] Starting when she is aged 27.

Table 8. Contribution Rates Required to Receive an Adequate Retirement Income until 75th Survival Percentile

Cameo	Current Contribution Rate (% of Gross Salary)		Incremental Contributions (% of Gross Salary)		Total Contributions to Achieve Adequacy (% of Gross Salary)	
	Employer	Member	Employer	Member	Employer	Member
1	9.0	0.0	10.1	0.0	19.1	0.0
2	9.0	0.0	10.9	0.0	19.9	0.0
3	9.0	0.0	5.8	0.0	14.8	0.0
4	9.0	0.0	3.2	0.0	12.2	0.0

Table 9. Cameo Results – 90th Survival Percentile

Cameo	Sex	Career Break	Adequate Income $	Savings at Retirement $	Savings Required for Adequacy $	Expected Retirement Savings Gap $	Ratio of Savings at Retirement to Savings Require for Adequacy
1	M	None	35,347	263,900	782,000	518,100	0.34
2	F	None	35,347	263,900	910,100	646,200	0.29
3	F	None	29,162	217,700	559,500	341,800	0.39
4	F	5 Years[16]	25,736	172,500	365,100	192,600	0.47

Table 10. Contribution Rates Required to Receive an Adequate Retirement Income until 90th Survival Percentile

Cameo	Current Contribution Rate (% of Gross Salary)		Incremental Contributions (% of Gross Salary)		Total Contributions to Achieve Adequacy (% of Gross Salary)	
	Employer	Member	Employer	Member	Employer	Member
1	9.0	0.0	17.7	0.0	26.7	0.0
2	9.0	0.0	22.0	0.0	31.0	0.0
3	9.0	0.0	14.1	0.0	23.1	0.0
4	9.0	0.0	10.0	0.0	19.0	0.0

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[16] Starting when she is aged 27.

Appendix A Methodology and Assumptions

A.1 Overview

The Retirement Savings Gap model begins with an analysis of the current size of superannuation industry assets and projected future superannuation contributions and assets (excluding post retirement products) arising from the current workforce. Future entrants to the workforce are not considered and the position of those over retirement age is ignored.

We have also ignored those people currently in receipt of welfare benefits, since calculation of a Retirement Savings Gap for these individuals would be meaningless. This effectively assumes that the proportion of people on welfare benefits would remain constant in future. The model uses projections of the workforce for quinquennial age groups subdivided by bands of income.

By combining growth of the current superannuation market with accumulated projected future contributions, an estimate of likely total future savings - or the "Asset" in the context of this report - is determined. Furthermore, by projecting the workforce to age 65, an estimate of the number of people requiring "adequate provision" can be determined. Age 65 is used as a proxy for retirement age, although we note that a number of individuals will formally retire before this age. This leads to an estimate of likely required savings, or the "Liability" in the context of this report.

The difference between the Liability and the Asset is the Retirement Savings Gap. Once the size of the gap is known, the additional contributions required to bridge the gap can be determined.

A.2 Population Model

A projection of the underlying population forms the basis for the Retirement Savings Gap model, producing the distribution of incomes in each year over the future working lives of different cohorts in the population. This allows determination of the amount of superannuation savings through future contributions, as well as the size of the Liability, which depends directly on pre-retirement earnings due to the adopted definition of "adequacy".

We measure cohorts by age and income in our projection. This is necessary as:

- Younger individuals will have a longer period to make future superannuation contributions than individuals closer to retirement; and

- Measurement of the impact of the social security Age Pension necessitates consideration of different income groups, as lower income earners are likely to have a greater dependence on the age pension in retirement than higher income earners.

We have further segmented each cohort by sex, as this allows measurement of the differences in the Retirement Savings Gap between men and women.

We measure the Retirement Savings Gap in terms of the current population of working age, excluding those earning over twice average earnings. For the purposes of this model, we have assumed the working age population to be the population aged 25-64. The population aged 25-64 as published by the Australian Bureau of Statistics (ABS) was 11.7 million in 2009.

The ABS provides the number of persons by age and sex as follows:

Table 11. Population Aged 25 - 64 in 2009

Age Band	Men	Women	Total
25-29	803,368	781,035	1,584,403
30-34	747,424	744,406	1,491,830
35-39	801,377	810,110	1,611,487
40-44	759,484	766,876	1,526,360
45-49	778,116	791,489	1,569,605
50-54	712,644	725,784	1,438,428
55-59	646,979	658,092	1,305,071
60-64	584,274	585,485	1,169,759
Total	5,833,666	5,863,277	11,696,943

These individuals need to be allocated further to income bands. We have based this analysis on data published in a working paper *Cross-sectional income distributions in the Australian Population* by Mr Tim Higgins of the School of Finance and Applied Statistics, Australian National University.

The paper summarises the number of individuals in a range of income bands by quinquennial age group and sex based on a 1% sample of the 2001 Census sourced from the ABS. Our previous report used the same data to allocate individuals to the income bands which we have now also supplemented with 2006 Census statistics updated by the ABS[17].

We have adjusted the income bands for general wage inflation over the three years to 30 June 2009, and have applied the resulting income distribution to the population at 30 June 2009 as published by the ABS.

To project the population, we have made assumptions about the expected transfers between income groups (for example, individuals moving from the $30,200-$37,700 income band to the $37,700-$45,200 income band) over time. This makes allowance for future promotional increases expected in a normal ageing workforce, and therefore higher levels of contributions to be saved in future years. The net effect of the assumed transfers is an average 0.5% p.a. increase in income above general wage inflation.

This method of projecting the number of individuals to retirement age makes no allowance for individuals re-entering the workforce at a later time or for individuals leaving the workforce. It also makes no allowance for broken careers for parents during the birth and the subsequent years of raising children.

This effectively means we assume no change in the level of unemployment, which is unlikely in practice. If we enter a period of higher unemployment, it will increase the Retirement Savings Gap as individuals with broken periods of service would tend to have lower average account balances at retirement and therefore tend to be more reliant on the Age Pension.

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[17] ABS catalogue number 2068.0 - 2006 Census of Population and Housing, Australia.

A.3 Current Savings

Our starting point for calculating the Asset is to determine the amount of current savings in superannuation. The major distributions by market segment have been sourced from the APRA *Quarterly Superannuation Performance* report as at 30 June 2009.

Total assets, number of member accounts and numbers of funds for differing market segments were determined to be as follows:

Table 12.   Superannuation Market Breakdown at June 2009

Market Segment	Funds (number)	Assets ($ billions)	Accounts ('000)
Not for Profit Funds			
Corporate Funds	191	60.8	688
Industry Funds	72	191.4	11,911
Public Sector Funds	38	146.1	3,134
Total Not for Profit[1]	301	398.2	15,734
Commercial Funds			
Employer Master Trusts		78.5	1,532
Personal Superannuation		159.0	7,653
Post Retirement Products		97.2	1,365
Retirement Savings Accounts		6.2[2]	413[2]
Eligible Rollover Funds		4.7	6,552
Unallocated Reserves		4.4	
Commercial Funds[1]	162	350.1[2]	17,515[4]
Self Managed Funds	414,707	334.8	811
Total Superannuation	415,170	1,083.1[5]	34,059.9[6]

1. We have reclassified a number of funds to provide a better breakdown of the market. APRA's statistics show $54.8 billion in corporate funds, $191.1 billion in industry funds, $151.6 billion in public sector funds and $344.6 billion in retail funds.
2. APRA reported total assets of $1.2 billion held in RSAs at June and September 2008 growing to $5.8 billion by December 2008 and finally $6.2 billion at June 2009. The number of accounts has been estimated by assuming that the average RSA account balance is $15,000.
3. Includes assets in RSAs managed under Retirement Savings Accounts Act (1997) and not included in APRA's statistics
4. Includes members with RSAs and annuities managed under the Life Act and not included in APRA's statistics.
5. Note that APRA's statistics show total superannuation assets of $1,076.7 billion. We have included the RSAs' assets in our total.
6. We have estimated this total based on actual numbers published by APRA as at 30 June 2009 and the underlying trends

Total superannuation savings at 30 June 2009 amounted to $1,083 billion. However, for the purposes of this model, an adjustment to this figure is required to take account of:

- Assets in respect of post-retirement members, e.g. allocated pensioners and annuitants;

- Unfunded public sector liabilities; and

- Assets in respect of individuals who earn more than twice average earnings.

A.3.1   Post-retirement assets

We have attributed $214 billion to members of post-retirement funds based on APRA's *Quarterly Superannuation Performance, June 2009* and a survey of superannuation funds holding funds under management of approximately $205 billion.

The $214 billion have been allocated to the various market segments as follows:

Table 13.   Post-retirement Assets

Market Segment	Post-retirement Assets ($billion)
Corporate Funds	7
Industry Funds	19
Public Sector Funds	32
Retail Funds	97
Self Managed Funds	59
Total Post-retirement Assets	214

Our estimate of $32 billion for the Public Sector post-retirement assets as at 30 June 2009 is significantly lower than our estimate of $115 billion in our previous report as at 30 June 2008.

The reason for the significant reduction in our estimate is due to the unique structure of the CSS and PSS pension arrangements. These funds only accrue member contributions and rollovers. When a member retires, any benefit (apart from lump sums) is transferred to the Department of Finance. It pays the benefit into consolidated revenue and then meets pensions each year as they fall due. One of the consequences of this arrangement is that the amount of assets in the superannuation system falls as each member of these funds retires.

We note that APRA's *Quarterly Superannuation Performance, June 2008* included pensions paid to CSS and PSS members. This resulted in an overestimation by us of post-retirement Public Sector assets. This was because we estimated the post-retirement Public Sector assets by capitalising pension payments. However, pension payments to CSS and PSS members are not derived from the superannuation system and hence there are no assets in the superannuation system held in respect of these pensioners.

Accordingly, we have now excluded pension payments to CSS and PSS members from the total Public Sector pension payments. This results in an estimated value of post-retirement Public Sector assets of $32 billion (out of total Public Sector assets of $146 billion).

A.3.2   Unfunded Public Sector Liabilities

Unfunded public sector liabilities need to be taken into account as an Asset in the Retirement Savings Gap calculation as they represent guaranteed benefits promised by the various State and Commonwealth governments and paid out of revenue to individuals when benefit

payments fall due. These liabilities declined after the closure of many generous defined benefit arrangements. However, the liabilities have risen in the last few years.

The following data has been collated from state and federal budgets up to 30 June 2009:

Table 14.   Unfunded Superannuation Liabilities ($billions)

	C'wealth	NSW	VIC	WA	SA	TAS	NT	ACT	Total
2000	77.9	7.9	12.3	5.4	3.5	1.2	1.0	0.7	**110.0**
2001	78.7	9.3	11.8	5.2	3.2	1.3	1.2	0.7	**111.4**
2002	80.8	11.4	13.4	5.5	4.0	1.3	1.4	0.5	**118.3**
2003	89.0	13.1	13.4	5.6	4.4	1.4	1.4	1.0	**129.3**
2004	87.9	12.6	11.7	5.7	5.7	1.5	1.5	0.7	**127.3**
2005	91.1	12.5	15.3	5.6	7.2	2.5	1.5	1.0	**136.6**
2006	95.9	17.8	12.9	5.5	6.1	2.1	1.7	1.0	**143.2**
2007	102.7	14.4	11.9	5.5	5.7	2.5	2.2	1.1	**146.0**
2008	108.1	17.6	12.9	5.8	6.5	2.5	2.1	1.1	**156.6**
2009	124.6	29.4	20.7	7.1	9.7	2.7	2.4	2.2	**198.8**

Notes: Queensland does not have unfunded superannuation liabilities.
         These figures do not include 'Other employee entitlements and provisions' liabilities.

Graph 2.   Unfunded Superannuation Liabilities

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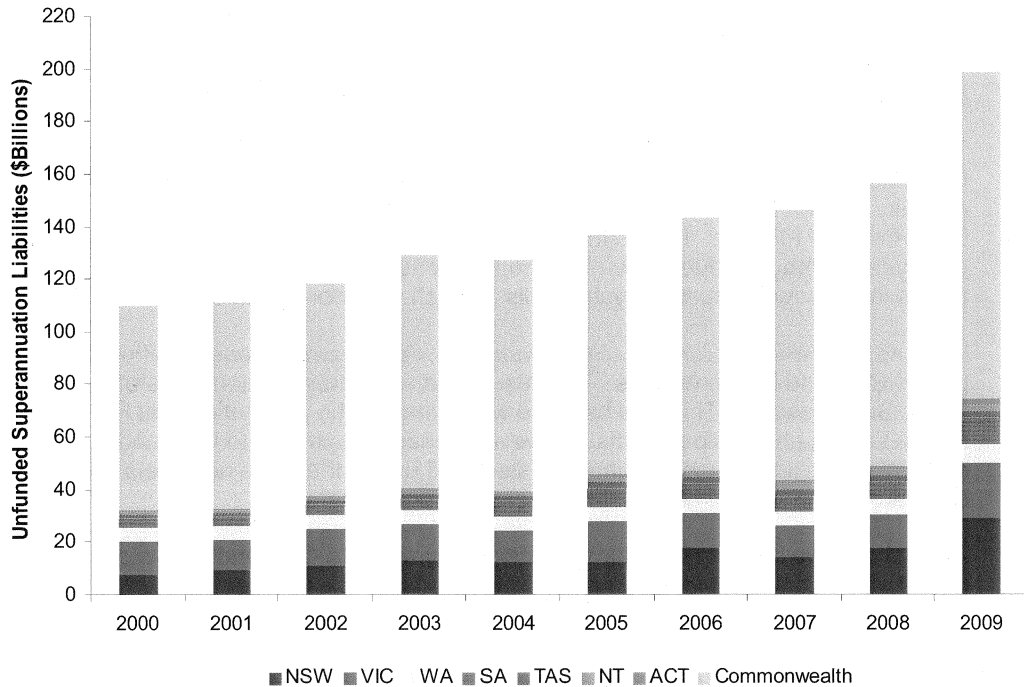
Unfunded public sector liabilities amounted to $198.8 billion at 30 June 2009. Allowance is made in our model by adding this amount to the "Public Sector Funds" assets from the APRA *Quarterly Superannuation Performance* report as at 30 June 2009.

After adjusting for post-retirement assets and unfunded public sector liabilities, the current savings amount decreases to $1,068[18] billion for the purposes of this model.

A.3.3 Distribution of Assets by Age and Income

The total amount of superannuation assets needs to be allocated to each projected population group, i.e. to each age/sex/income cohort, before the amount of assets in respect of individuals earning more than twice average earnings can be identified and removed.

We have allocated the $1,068 billion of current pre-retirement superannuation assets to quinquennial age groups and sex based on a survey of superannuation funds covering funds under management of approximately $205 billion.

To allocate the amount of superannuation savings in each age/sex cohort further to income bands, we calculated notional fund build-ups in each age/sex/income cohort based on possible past contribution rates. The actual amount of superannuation savings for each age/sex cohort was then distributed further to each income band, pro-rata to the notional accumulations.

The result is a segmentation of current pre-retirement superannuation savings by quinquennial age group, sex and income band. Savings in respect of individuals whose earnings will eventually exceed twice the average were eliminated by deducting the average account balance for each person eliminated from the respective age/sex/income cohort as determined by the population model.

This reduces current savings in respect of the relevant working age population to $681 billion at 30 June 2009. This results in the following data in respect of current savings for the relevant population:

Table 15.   Savings at 30 June 2009

Age Band	Savings ($M)	
	Men	Women
25 - 29	7,611	7,066
30 - 34	14,787	14,215
35 - 39	25,154	22,453
40 - 44	40,581	29,822
45 - 49	56,271	36,780
50 - 54	77,634	50,278
55 - 59	88,929	62,912
60 - 64	79,643	67,251
Total	**390,611**	**290,778**

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[18] This figure is calculated as Total Superannuation Market assets - Post-retirement Assets + Public Sector Unfunded Liabilities (i.e. $1,083b - $214b + $199b = $1,068b) .The increase in this figure from our previous report ($1,035 at 30 June 2008) is the result of the decreased estimate of savings held in respect of post-retirement members see Appendix A.3.1.

Note this table excludes those earnings less than $30,000 a year (which includes those out of the workforce). It also excludes those earning more than $120,000 a year.

A.4 Future Savings and Contribution Rates

The second component of the Asset is the roll-up of future contributions.

Likely future contributions can be determined by applying contribution rates to the total income in each age/sex/income cohort in the population model. However, for the purposes of this study, we have varied the contribution rate by age only.

Note that Employer Contributions are effectively concessional contributions and include salary sacrifice as well as the Superannuation Guarantee payments. Similarly, Member contributions are all non-concessional contributions including large one-off payments made (eg from asset sales).

Government co-contributions are made in addition to the Member Contributions shown (see 4.4.1 below).

The assumed contributions by age group are as follows:

Table 16.   Assumed Contribution Rates - June 2009

Age Group	Employer* (%)	Member (%)
25-29	9.00	0.00
30-34	10.16	0.74
35-39	11.51	1.60
40-44	13.05	2.58
45-49	14.79	3.68
50-54	16.53	4.79
55-59	18.26	5.89
60-64	20.00	7.00
Average	13.98	3.17

These contribution rates reflect the fact that individuals closer to retirement tend to contribute more towards superannuation. These individuals have fewer other priorities for their disposable income (such as saving for a car or buying a house) than the younger age groups, and saving for retirement is a more pressing issue.

We consider that the above contribution rates better reflect the ability and propensity of individuals at different ages to make contributions to superannuation. We note that these contribution rates still produce contribution levels that are broadly consistent with the current contribution levels as published in APRA's *Quarterly Superannuation Performance* Report dated 30 June 2009 (after allowing for contributions made to self-managed funds).

The average contribution rates do not show the skewness in contributions between members. The majority of members rely entirely on the 9% SG contribution - which is inadequate. However, many members make salary sacrifice contributions which pull up the average. As these are deducted from salary, they decrease the underlying earnings base thereby increasing the percentage of salary paid into superannuation.

The level of member contributions is relatively low but many members transfer other assets into superannuation. These are recorded as contributions even though they are not deducted from payroll.

The model is sensitive to the assumptions employed for future contribution rates. By way of example, a 1% increase in employer contributions results in a reduction in the Retirement Savings Gap (allowing for the Age Pension) of just under $79 billion or approximately 9%.

The Government capped concessional contributions in the May 2009 Federal Budget. From the 2009-10 financial year, the maximum total concessional contributions that persons aged under 50 can make has been halved to $25,000 p.a. (indexed). The existing cap for those aged 50 and over remains at $50,000 but from July 2012 will be reduced to be in line with the prevailing cap for those aged under 50.

As we exclude individuals earning over 2 x AWOTE (the group most affected by the reduced contributions cap) we have not adjusted our contributions assumptions. There will be some members under this salary who will now be prevented from "catching up" their contributions and closing their superannuation savings gap.

A.4.1 The Co-contribution Scheme

The Government Co-contribution Scheme has been in operation since 1st July 2003.

In the May 2009 Budget the government announced that it would temporarily scale back the co-contribution scheme. The table below contains the details of the superseded co-contribution scheme (2008 - 09) and the temporary scaling back of the scheme.

Table 17.   Changes to Co-contribution Scheme

Contribution Year	Co-contribution Matching Rate (%)	Maximum Co-contribution ($)
2008 - 09	150	1,500
2009 - 10	100	1,000
2010 - 11	100	1,000
2011 - 12	100	1,000
2012 - 13	125	1,250
2013 - 14	125	1,250
2014 - onwards	150	1,500

Statistics released by the former Assistant Treasurer, Honourable Mal Brough, in February 2005 show that around 450,000 individuals received Co-contribution payments in the 2003-04 income year, 37% of payments were in respect of men, and 63% were in respect of women[19].

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[19] More recent information is not available.

A breakdown of Co-contributions by age band was released as follows:

Table 18.   Co-contributions by Age

Age Range	Proportion of Co-contribution Payments (%)
Under 21	4
21 - 25	8
26 - 30	7
31 - 35	9
36 - 40	11
41 - 45	13
46 - 50	14
51 - 55	15
56 - 60	12
61 - 65	6
66 - 70	1
Total	100

We have broadly allocated the projected future Co-contribution payments to individual income bands based on the Co-contribution available as well as the ability/propensity to contribute at each income band. We have further allocated the Co-contribution payments by age and sex according to the statistics released by the former Assistant Treasurer.

We note that the latest ATO taxation statistics, for the year to 30 June 2007, indicated that approximately 1.3 million Co-contributions (a take up rate of approximately 13.0% of those eligible to receive a Co-contribution) worth $1.2 billion were paid (resulting in an average Co-contribution payment of $880). For the purposes of calculating the value of Co-contributions received we have assumed that this take up rate of 13.0% will continue into the future.

A.5 Required Level of Funding

The required level of funding is the Liability component of the Retirement Savings Gap calculation.

This component of the model uses the projected number of individuals to retirement age as produced by the underlying population model. As discussed in Section 2.3 the Liability is determined as the savings required at retirement to provide 62.5% of pre-retirement earnings (in real terms) for each year until life expectancy.

A.5.1   Effect of the Age Pension

The continuation of the Social Security Age Pension in its present form indefinitely into the future would significantly reduce the Liability.

As a result of defining the retirees' Liability as the savings required to support a retirement income being sourced from an account-based pension rather than a Term Allocated Pension[20], we have revised the way that we allow for the Age Pension. The effect of the Age Pension was calculated for each age/sex/income cohort by:

- Calculating the year-by-year age pension to which each individual would be entitled based on their remaining pension account balance and their defined adequate income; and

- Calculating the difference between the savings required to be adequate without the Age Pension and with the Age Pension.

Our analysis makes the following assumptions:

- We have assumed that assets outside superannuation would be negligible for the population in question for the purposes of the Age Pension means test. This is not unreasonable if one considers that for most people considered in the model, the family home will be the only significant non-superannuation asset at retirement, and it is exempt from the means tests.

- We have assumed that 75% of retirees qualify for the Couples pension, and the balance for the Singles pension. This is consistent with the current experience according to Age Pensioner statistics sourced from Centrelink.

- We have assumed that the means test limits would be indexed in line with general price increases in future. This is contrary to the legislated policy, which indexes the limits in line with general wage increases on a year-by-year basis. This approach implicitly assumes systematic tightening of the means tests resulting in a gradual reduction in age pension eligibility over time.

As detailed in section 4, the calculated effect of the Age Pension is a reduction in the Retirement Savings Gap of $929 billion (rounded).

A.6 Retirement at 67

We expect that younger members will need to stay in the workforce until age 67 (the new Age Pension age from 1 July 2023). If they do not do so and retire earlier, they will need to live entirely off their superannuation and other savings until they reach that age. This will reduce the benefit available to fund later years - when the Age Pension will form a part of their income.

In practice, most Australians currently retire before age 65, the median age being about 60. However, we have started with a base case that members will delay retirement until age 67. Naturally, this significantly reduces the benefit required compared to that needed for an earlier retirement.

By retiring at age 67, members benefit both from the extra savings accumulated during their extended working life and the shorter period over which their retirement income will be consumed. Furthermore, there will not be any delay between the start of actual retirement and the eligibility date to receive the (means-tested) Age Pension. However, we note the practical difficulties in keeping most people within the workforce to such an advanced age.

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[20] An account based pension allows greater flexibility in an individual's drawdown pattern. For example, individuals are able to adjust their drawdown to maximise their Age Pension benefits (if eligible).

The Henry Review noted the savings that could be made from shifting members to a later retirement age and recommended shifting the Preservation Age to 67. This would preserve most superannuation benefits for longer and improve overall adequacy. However, it does not seem practical to do this over the next 15 years without generating significant employment opportunities for older workers. Further, this would require a major shift in retirement planning for the whole population.

A.7 Assumptions

A.7.1 Economic Assumptions

To project the data into the future we have made assumptions regarding inflation, investment returns, administration expenses, mortality etc. These assumptions, detailed below, have been used to calculate the projected growth in each of the segments to an assumed retirement age of 65. No allowance has been made for any retirements prior to age 65.

We have retained the economic assumptions adopted in our previous report. These are as follows:

- 7.5% gross return on the accumulation of assets;
- 4.5% increase in salaries; and
- 3.0% increase in general price inflation of costs.

This effectively assumes a real rate of return of 3% over salary inflation, and 4.5% over price inflation before the effect of expenses and tax. We consider these rates are still appropriate for the purposes of the model.

These assumptions have been derived from various sources.

The gross return on assets has been compared with the assumptions recommended by the Institute of Actuaries of Australia (IAAust) in their report on "Superannuation and Standards of Living in Retirement" dated September 2002. The IAAust recommend a range of assumptions after fees and tax within the range 6% to 8%. Its allowances for fees and tax are not detailed in percentage terms but grossing up to allow for these could result in a range for the gross return of 8% to 10%, which suggests our assumption is below the lower end of the range.

We also recently surveyed the leading asset consultants and a small group of fund managers about the returns they expected over the future. Universally, the group had a similar expected return for each asset class for periods of 10 years and all longer durations. The results of the survey indicated an average nominal return gross of fees and taxes of around 7.5% p.a.

Furthermore, an analysis of superannuation fund returns published by ASFA[21] shows an average nominal return gross of fees and taxes of 10.2% for the 47 years to 30 June 2009. While this nominal return is higher than our assumed nominal return of 7.5%, once it is adjusted for wage inflation, superannuation funds achieved a real return gross of fees and taxes of 2.7% p.a. This is fairly close to our real return gross of fees and taxes of 3.0% p.a.

The increase in salaries roughly reflects the average increase in Average Weekly Ordinary Time Earnings (AWOTE) over the last four years. General price inflation takes into account the Reserve Bank's stated range of 2%-3% p.a. and notes that annualised CPI increases over the last 4 years are 3.0% - hence our adoption of a rate at the upper end of the range.

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[21]Serhan A, 2009, *Returns: Into the Light,* ASFA SuperFunds magazine, pg 13., issue 339

The results of the model are extremely sensitive to changes in the gaps between the assumptions. More specifically, an increase of 0.25% in the gap between the gross return and the increase in salaries serves to decrease the Retirement Savings Gap by approximately $114 billion (or 13%).

A.7.2   Management Expense Rates

Our December 2008 report to IFSA entitled *Superannuation Fees Report 2008 - Market Segment Analysis at 30 June 2008* sets out the fees charged in the superannuation market by industry segment as follows:

Table 19.   Fees 2008

Sector	Segment	Total Fees %[1]
Wholesale	Corporate	0.73
	Corporate Super Master Trust[22] (large)	0.79
	Industry	1.07
	Public Sector	0.69
Retail	Corporate Super Master Trust[23] (small)	2.12
	Personal Superannuation	2.00
	Retirement Income	1.84
	Retirement Savings Accounts	2.30
	Eligible Rollover Funds	2.49
Small Funds	Self Managed Super Funds	0.98
Total		1.21

1. Expressed as a % of *average* assets over the year to 30 June 2008.

As our model does not segment by fund type, we have considered only an average management expense rate across the entire superannuation industry. In our Savings Gap report at June 2008, we assumed that an overall expense rate of 1.20% p.a. (rounded) of assets will halve to 0.60% p.a. over the 15 years to 30 June 2023. This effectively assumed that expense rates will fall by 0.04% p.a. over this period. We have maintained this assumption resulting in an expense rate of 1.16% for the year commencing 1 July 2009.

Note that we expect fees to reduce as a percentage of assets in all market segments, for a number of reasons including:

- Growth in assets, which will mean that fees will reduce as a percentage of FUM;

- Consolidation of accounts which will lead to elimination of many fees on multiple accounts and reduced fees (as a percentage of assets) on the main account;

- Consolidation of superannuation funds, which will lead to elimination of many smaller less-efficient funds;

- Transfers of corporate funds into other arrangements, which usually results in savings of fund costs;

- Improvements in technology which should drive down the cost of managing superannuation;

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[22] Excludes employer plans with less than $5 million in assets.
[23] Employer plans with less than $5 million in assets.

- Reductions in distribution costs as the delivery of financial advice is delivered more cost-effectively to a wider group of members; and

- Establishment of clearing houses to allow employers to make contributions electronically, allowing a significant reduction in costs associated with the collection and allocation of contributions.

The table below contains the year by year management expense rates that we have assumed. These expense rates include all fees charged but do not include the cost of insurance, which is considered separately.

Table 20.   Assumed Expense Rates

Year Commencing 1 July	Expense Rate (%)
2009	1.16
2010	1.12
2011	1.08
2012	1.04
2013	1.00
2014	0.96
2015	0.92
2016	0.88
2017	0.84
2018	0.80
2019	0.76
2020	0.72
2021	0.68
2022	0.64
2023 and onwards	0.60

To illustrate the sensitivity of this assumption, a 0.10% reduction in the long term expense rate (from 0.60% to 0.50%) has the effect of reducing the Retirement Savings Gap by about $38 billion (or 4%).

A.7.3   Cost of Insurance

According to figures published in APRA's *Quarterly Superannuation Performance, at 30 June 2009* report the cost of member benefit insurance over the year to 30 June 2009 was as follows:

Table 21.   Cost of Member Benefit Insurance - Year to 30 June 2009

Market Segment	Cost of Insurance $M
Corporate	98
Industry	1,140
Public Sector	228
Retail	1,609
Total Superannuation Market	**3,075**

The annual cost of insurance for superannuation funds was therefore approximately 0.29% of pre-retirement superannuation assets over the year to 30 June 2009. In our previous report (Superannuation Savings Gap at 30 June 2008) we had assumed that insurance would cost 0.25% of assets.

As the increase in the cost of insurance is relatively modest we consider it unnecessary to adjust our assumption of adding 0.25% to the annual expense rate. Our approach assumes that any benefit proceeds arising from insurance are not re-invested in the superannuation system.

A.7.4 Taxation

The model allows for taxation as follows:

- 15% contributions tax on all future contributions; and
- 6% investment tax on the investment roll up.

The investment tax assumption is less than the 15% levied on investment income for superannuation products because it makes implicit allowance for imputation credits used by funds to offset the tax and the 10% concessional tax rate on capital gains available to superannuation funds. A 1% shift in the investment tax assumption affects the Retirement Savings Gap by approximately $16 billion (or 2%).

A.7.5 Mortality

We have allowed for mortality pre-retirement using the Australian Life Tables 2005-07 (ALT2005-07) published by the Australian Government Actuary. For the quinquennial groupings in this projection, this results in the following probabilities of each age cohort surviving to age 67:

Table 22.   Probability of Survival to Age 67

Age Band	ALT 05 - 07	
	Men	Women
25 - 29	0.87	0.92
30 - 34	0.87	0.92
35 - 39	0.87	0.92
40 - 44	0.88	0.93
45 - 49	0.89	0.93
50 - 54	0.90	0.94
55 - 59	0.92	0.95
60 - 64	0.95	0.97

We have also allowed for mortality post retirement in accordance with ALT2005-07. Allowance has been made for improvement in mortality after retirement to permit a more plausible valuation of the income stream in retirement. This allowance has been made by applying the "100-Year Future Percentage Mortality Improvement Factors" published in ALT 2005-07. These factors were derived from the historical trends in Australian mortality improvement over the last 100 years for the purpose of producing estimates of future mortality and life expectancy scenarios.

This effectively assumes that future mortality will improve at the rate of 1.16% p.a. for a 65 year old man and 1.47% pa for a 65 year old woman.

The impact of improving mortality has a significant effect on the model. If no allowance were made for improving mortality, the Retirement Savings Gap would reduce by approximately $277 billion (or 31%).

A.7.6   Non-superannuation Assets

We have made some allowance for non-superannuation assets by allowing for investment properties held by the wealthier individuals in the model. We have assumed that 10% of individuals on incomes over $94,000 own an investment property, with a mean value of $450,000[24] in 2009 dollars.

These assumptions reduce the calculated Gap for those individuals in the model earning between $94,000 and twice the average income (or approximately $120,000). These are broad assumptions only, but our modelling indicates that their impact on the Retirement Savings Gap is relatively small, so they are not inappropriate. For example a 10% increase in the value of the investment property reduces the Gap by $2 billion (or 0.2%). The relatively small effect is due to the fact that any reduction in the Gap due to income derived from these assets is partially offset by a reduction in the Age Pension entitlement.

A.7.7   General

There are a number of items for which we have made implicit assumptions. Whilst it is impossible to be dogmatic about every single possibility and outcome that affects the model, there are a number of items that deserve comment.

For instance, the model assumes that female workers will have a full history of employment, with no breaks in service for maternity leave, career breaks etc. Similarly, it assumes that those women currently off work to bear and raise children will not return. Of course, in practice, some will leave and be replaced by others returning to the workforce. Unfortunately, there are no reliable statistics showing the extent and incidence of broken service so we have not done this more complex modelling. As a result, the model will understate the Retirement Savings Gap for younger women.

The model projects at the individual income level rather than the household income level. Consequently, the results will include those low income "secondary earners" who do not require an "adequate" income stream in retirement when total household income is taken into account. This will serve to overstate the Retirement Savings Gap, although we would expect the overall impact to be small since low income earners have a limited effect on the projection results.

Furthermore, we have assumed that everyone will retire at age 67. The real gap would expand exponentially if we had chosen the current median retirement age of 60 as the future retirement age for current workers.

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[24] The House Price Index, published in the ABS catalogue number 6416.0, *Price Index of Established Houses: Eight Capital Cities*, fell by 0.7% between June 2008 and June 2009. As the Retirement Savings Gap is not sensitive to this assumption (a 10% increase in the assumed house price results in a fall in the Retirement Savings Gap of 0.2%) we did not consider it necessary to change this assumption.

Appendix B   Comment on Assumptions

B.1   General

With any model, the results that emerge will be sensitive to the assumptions employed. In particular, difficulties can arise where insufficient data exists to justify a particular assumption or methodology adopted. This section sets out those parts of the model where these difficulties have arisen.

B.2   Current Savings by Age Cohort

The population model provides a mechanism for generating future contributions for the individuals in respect of whom the Retirement Savings Gap is calculated. The starting population for the model is based on income distribution data published in a working paper *Cross-sectional income distributions in the Australian Population* by Mr Tim Higgins of the School of Finance and Applied Statistics, Australian National University, based on a 1% sample of the 2001 Census sourced from the ABS. We have also supplemented this income distribution data with updated 2006 Census statistics published by the ABS[25].

However, the amount of current savings is not segmented in a similar fashion, yet we must do this:

- As we need to know expected term to retirement so that the savings are allocated investment earnings for the appropriate period;

- So there is consistency with the contribution roll-up calculations; and

- As modelling of the Age Pension requires the total amount of assets to be known for each income band.

As detailed in Appendix A.3.3, we have allocated the total amount of current savings in respect of the population to the different age/sex cohorts based on a survey of superannuation funds covering $205 billion of funds under management.

The starting point of this demographic projection is an analysis of superannuation accounts as at 30 June 2008. We allocated current savings to the different age/sex cohorts as follows:

- APRA's *Annual Superannuation Bulletin, June 2008* indicates 32.0 million member accounts as at 30 June 2008. The APRA report gives the breakdown of member accounts by the five main industry segments - Corporate Funds, Industry Funds, Public Sector Funds, Small Funds and Retail Funds;

- We have estimated the number of accounts as at 30 June 2009 from the trend in APRA data;

- We have adjusted the number of commercial fund members to reflect members of retirement savings accounts and holders of annuities which are not included in the APRA statistics;

- We have allocated the commercial fund members to the sub-sectors of the commercial market identified in this report - employer master trusts, personal superannuation, post retirement products, retirement savings accounts and eligible rollover funds. This is a difficult exercise as there are many legacy products, particularly within the life insurance companies;

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[25] ABS catalogue number 2068.0 - 2006 Census of Population and Housing, Australia.

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- Within each industry sector, we have made assumptions about the number of *active*, *inactive* and *retired* members respectively. We have assumed that the number of *active* members would be approximately equal to the size of the employed labour force;

- We have further allocated the number of members within each sector to each age/sex cell. This was done by reference to membership profiles sourced from a number of industry funds, public sector funds and master trust providers; and

- Finally, we have rebalanced the profile of "active" members to approximate the demographic profile of the labour force as published by the ABS.

The resulting distribution of assets by age is shown below:

Graph 3.   Assets Per Person By Age at 30 June 2008 and 30 June 2009
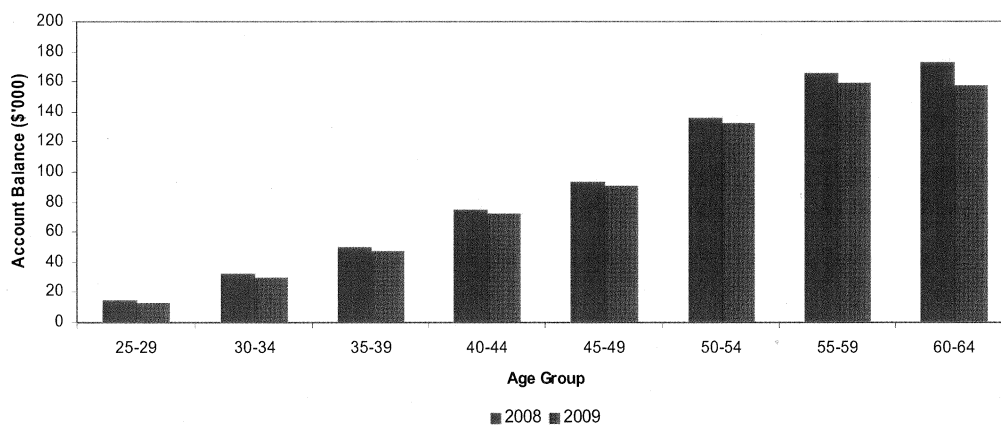

The average account balances are lower than in our previous report. This reflects the significant investment losses experienced during the continuation of the Global Financial Crisis. Figures in APRA's *Quarterly Superannuation Performance, June 2009* report suggest a gross nominal investment loss of around 12% over the year to 30 June 2009 for the overall superannuation market.

The total superannuation assets by age and sex now need to be segmented further by income group. As no reliable statistics suitable for this purpose are available, we have based this allocation on what we consider a plausible past pattern. We considered notional fund balances in each age/sex/income cohort as a basis for distributing the assets in each age/sex cohort (details in Appendix A.3.3).

The adjusted notional fund balances produced in respect of current members of the workforce results in an overall distribution of assets by income band as illustrated below. This is the distribution across all ages; the actual distribution in each age group would vary.

Assets Per Person by Income
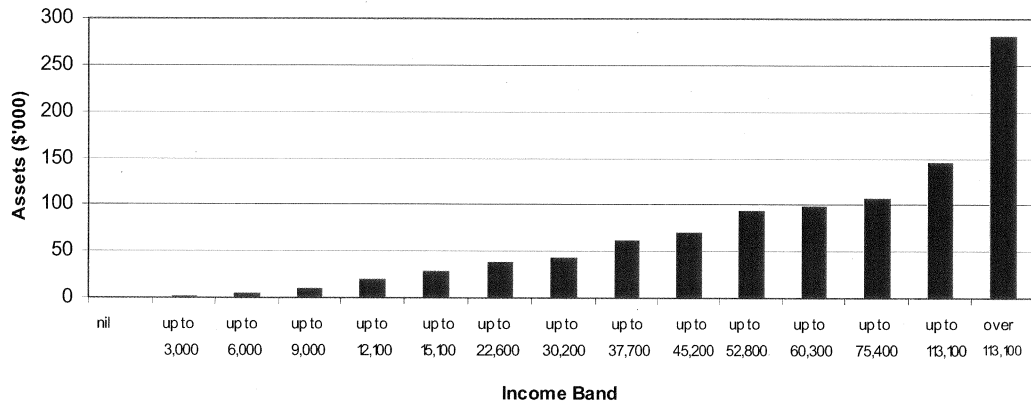
The modelling results for individuals close to retirement would be sensitive to the assumed distribution of assets, as this forms the bulk of the Asset in the Gap calculation. Conversely, the modelling results for younger individuals would not be sensitive to the assumed distribution of assets, as the bulk of the Asset in this case consists of savings through future contributions.

B.3 Future Population Movements

The Retirement Savings Gap model is built on a projection of the population by age, sex and income. The population projection provides the framework which allows the model to calculate the future level of savings through contributions, pre-retirement income for adequacy and eligibility for the Age Pension for population cohorts.

With any model, the difficulty with the projection is determining likely future movement between income-band cohorts. For example, a young professional who joins the workforce after completing tertiary education will be on a low income initially. However, as they progress through professional examinations or gain promotion, that income will rise steadily over time over and above ordinary wage inflation. We call this "promotional increases". By the mid-point of a working career, experience indicates that promotional increases flatten out.

To allow for such promotional increases, we have assumed a pattern of movement between each income band cohort over time. In brief, we have developed a "transition matrix" which details for people in each income band the income distribution of those people in five years' time. Successive application of the transition matrix gives the income distribution for individuals for successive five-year periods.

Adopting promotional increases means that some individuals will eventually reach income levels in excess of twice average earnings, and, where this occurs, they are excluded from the model.

The adopted "transition matrix" effectively assumes that 15% of individuals in each income band will progress to the next income band over a five-year period. The average effect of this assumption is approximately a 0.5% increase in salaries above general wage inflation. This is a broad-brush approach, but the calculated Gap is only moderately sensitive to the assumption. For example, increasing the proportion from 15% to 20% decreases the Retirement Savings Gap by approximately $109 billion, a 12% decrease (note that the increase in the Gap due to

increases in wages is overwhelmed by the decrease in the Gap due to the increase in the number of individuals that reach 2 x AWOTE whom we exclude from our estimates of the Gap).

A summary of the proportion of people in each age cohort whose earnings will exceed twice the average by age 67 (both those currently earning more than twice the average and those projected to rise above twice the average in future) is shown in the following table:

Table 23.   Proportion of Population Earning 2x Average Earnings by Age 67

Age Cohort	Current (%)	Future (%)	Total (%)
25-29	3.5	9.0	12.4
30-34	6.6	9.4	16.0
35-39	8.4	7.6	16.0
40-44	8.5	6.9	15.4
45-49	8.4	5.8	14.2
50-54	8.2	4.0	12.2
55-59	6.4	2.1	8.5
60-64	4.3	0.6	4.9
Overall	6.9	5.9	12.8

B.4 Future Contribution Rates

There is no reliable data on the current contribution level by age and income band. While there is a floor equal to the current Superannuation Guarantee level of 9%, our best estimate of the market would be that contributions will be higher for people with higher disposable incomes and higher for individuals closer to retirement. For the purposes of this model, we assume that contribution rates do not vary by income.

We note that the assumed contribution rates may seem high especially since the 9% SG contribution is the only contribution for the majority of individuals. However, it is important to appreciate that contributions vary significantly by income and age and that the relatively small group of individuals that do make contributions in excess of the 9% SG skew the average contributions rate significantly.

In the absence of better data we consider it more prudent to over-estimate the assumed contribution rates which results in an under-estimation of the Retirement Savings Gap.

Appendix C Cameo Specific Assumptions

The assumptions underlying the Cameos are (on the whole) consistent with those used for the estimations of the population RSG. The only difference in assumptions relates to the Cameos' promotional salary increases.

For the population RSG we had used a transition matrix to model the effect of promotional salary increases (refer to Appendix B.3).

However, for the Cameos we have assumed a promotional salary scale that is consistent with those used in the superannuation industry. Sample promotional increases are shown in the table below.

Table 24.   Promotional Salary Increases

Age	Promotional Salary Increase
20	7.5%
30	2.2%
40	0.6%
50	0.1%
60	0.0%