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Retirement Savings Gap at June 2011

Prepared for the
Financial Services Council

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1. Executive Summary

1.1 Introduction

Since 2003, the Financial Services Council (FSC) has engaged Rice Warner Actuaries (Rice Warner) to estimate the *Retirement Savings Gap (RSG)*. This figure is the value for the working population of the shortfall they will have in building an adequate (reasonable) retirement benefit. The assumptions are set out in Section 2 (Background to the Retirement Savings Gap) of the report.

The RSG 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.

The Government encourages Australians to save for their retirement through a range of tax concessions. It also provides the Age Pension which is an integral part of the retirement income of more than 80% of Australians. The financial services industry 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.

This report updates the RSG to reflect the situation following the Global Financial Crisis (GFC) and its impact on retirement savings. This report sets out the results based on data as at 30 June 2011.

1.2 Results

We estimate that there is a deficit of some \$836 billion at 30 June 2011. This result allows for the Government's May 2010 announcement that it will increase the Superannuation Guarantee contribution rate from 9% to 12% over the next eight years. Without this increase, the estimated RSG would be \$184 billion higher at \$1,020 billion.

If the increase in the Superannuation Guarantee contribution rate to 12% was effective immediately, the Savings Gap would decrease to \$768 billion- a reduction of 8%.

The estimated Gap has decreased by \$61 billion in dollar terms; it stands at \$79,200 per person as compared to \$87,900 per person as at 30 June 2009. This represents a decrease of approximately \$8,700 per person in nominal terms or approximately \$8,200 in real terms. This reduction is mainly due to the effect of Government's May 2010 announcement that it will increase the Superannuation Guarantee contribution rate from 9% to 12%. (Refer to Section 6 Differences from Previous Report, for a detailed analysis of the decrease).

The RSG is equivalent to approximately 7.6 months GDP¹. In our previous report at 30 June 2009 we had estimated the RSG to be \$897 billion (which was then about 11.5 months GDP).

We have used a target benefit (including any entitlement to the Age Pension) of 62.5% of pre-retirement earnings for all people earning between 50% and 200% of average wages. Below 50% (about \$30,000), people receive a high replacement rate from the Age Pension so there is no RSG. Above 200% (about \$135,000), people generally have other assets or income to support their retirement lifestyle and it can be argued that this cohort has every opportunity to fund their own retirement.

¹ GDP was approximately \$1.32 trillion in the 2010-11 financial year.

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.

The increased Superannuation Guarantee (gradually moving from 9% to 12%) helps to reduce the RSG. However, it is not a panacea for the current working cohort since it will not eliminate the total RSG. Voluntary contributions will be needed if more Australians are to save for an adequate retirement income.

Some employers currently pay more than the required 9% Superannuation Guarantee. We estimate that if these employers did not accept the additional the full increase in the Superannuation Guarantee the Savings Gap would increase by \$61 billion to \$897 billion an increase of 7.3%.² This report assumes that the current average employer contribution will increase in line with 9 - 12% change.

This year we have also made an allowance for assets which are held in the post retirement phase in respect of individuals under age 65 who are drawing a Transition To Retirement (TTR) pension. These members have assets in both the accumulation and pension phases. As the members who hold these assets are still participating in the workforce they should be included in the population for the Savings Gap. In order to avoid overestimating the size of the gap, we have added pension assets in respect of these members onto our estimate of current superannuation assets. The effect of these additional assets is a reduction in the savings gap of \$11 billion.

Past trends show that voluntary contributions more than double as people age. Accordingly, incentives to encourage greater levels of voluntary contributions will remain an important policy lever. In this respect, the Government's May 2010 announcement that it would increase the concessional contribution caps for Australians aged above 50 with a superannuation balance of less than \$500,000 will provide important flexibility and incentive for older Australians to make greater voluntary concessional contributions towards funding their retirement.

The RSG figures are lump sum amounts, expressed in today's dollars. In the report, we also express them as additional regular savings (over and above current contribution levels), which need to be made to ensure that current working Australians have a reasonable chance of retiring with the set target.

The updated RSG is approximately \$79,200 per person in the selected population (persons aged 25 - 64 earning between 50% and 200% of average wages, refer to Section 4.2 Population Model) which represents a decrease of about \$8,700 per person over the RSG reported as at 30 June 2009. Table 1 shows the size of the Savings Gap by income and sex.

It is interesting to note that the Savings Gap is highest for those on middle incomes. Those on lower incomes receive a greater proportion of their income from the Age Pension resulting in a diminished Savings Gap; those on higher incomes typically have enough savings to provide themselves with an adequate retirement income.

² Research from ASFA shows that approximately 16.7% of total employer contributions are in respect of salary sacrifice and 13.9% of total employer contributions are made in addition to the 9% SG, this data has been used when estimating the impact of employers not accepting the full increase in the Superannuation Guarantee.

Table 1. Retirement Savings Gap (\$M) by Income and Sex

Annual Income	Males	Females
under 37,700	0	0
37,701 – 45,200	5,229	13,588
45,201 – 52,800	21,089	38,459
52,801 – 60,300	57,738	71,266
60,301 – 75,400	138,490	130,726
75,401 – 113,100	160,209	101,615
over 113,100	70,557	27,142
Total	453,312	382,797

Table 2 (refer to Section 6 Differences from Previous Report, for greater detail) shows that the decrease in the RSG reflects a complex relationship between:

- changes in the underlying population mortality
- increases in earnings
- changes in the population income distribution
- changes in the underlying population demographics
- changes in the estimate of pre-retirement savings
- changes in assumptions in the model to reflect changes to the underlying economic variables.

Table 2. Analysis of Difference of Retirement Savings Gap

	\$ billion
Retirement Savings Gap Estimate, 30/6/2009	897
Effect of gradually increasing SG from 9% to 12%	(184)
Effect of change in current savings	(54)
Effect of AWOTE increase ³	82
Effect of demographic changes ⁴	61
Effect of Co-contribution changes	(2)
Effect of cost of insurance changes	47
Effect of TTR pension assets	(11)
Retirement Savings Gap Estimate, 30/6/2011	836

³ Increases in AWOTE will increase required adequate savings at retirement resulting in an increase in the Savings Gap.

⁴Demographic factors including the ageing of the population and mortality assumptions influence the size of the Savings Gap from year to year. Generally, as the size of the working population grows the size of the Savings Gap is likely to increase.

1.3 Comparison with Previous Results

The results of the previous RSG reports are detailed in Table 3. The results are not directly comparable because of changes in assumptions and data over time. However, the upward trend on a per capita basis in recent years indicates that Australians were not saving enough for retirement. The continuation of inadequate funding levels would produce an ongoing increase in the RSG over time. However, the increase into SG from 9% to 12% and the deferral of the Age Pension has led to a reduction of the RSG since 2009.

Table 3. Results of the Rice Warner Savings Gap

Data at	Retirement Savings Gap		
	Males	Females	Total
December 2002	n/a	n/a	375
June 2004	237	216	452
June 2008	358	337	695
June 2009	479	418	897
June 2011	453	383	836

1.4 Additional Contributions

The average contributions currently paid in the industry are 14% concessional (employers and salary sacrifice) and 3.2% for non-concessional (members). The rate increases with age as older members make higher average voluntary contributions. Section 4.4 (Future Savings and Contributions Rates) explains the basis for these apparently high contribution rates.

We expect that the current average employer contribution will increase in line with changes to the rate of SG level increase from 9% to 12% though many commentators (and Treasury) consider that much of this increase will be absorbed by lower wage rises.

Currently, there are also many employers who pay more than the required 9% Superannuation Guarantee. We have assumed that these employers will increase their current contributions in line with the changes to the rate of the SG level to maintain the current differential. We have also assumed that the increase in the SG will not influence member contribution patterns. This is probable because the majority of member contributions currently made are intended to take advantage of the co-contribution or reflect the transfer of proceeds of non-superannuation assets into a tax-privileged structure.

Table 4 shows the additional contribution required to offset the RSG over the future lifetime of each age/sex cohort.

This is shown both as an average additional contribution (above the assumed average employer and member contribution, taking into account the SG increase). The Current Average Member Rate in Tables 4 and 5 includes all non-concessional contributions made by members, whereas the Current Average Concessional Rate includes both employer and salary sacrifice contributions. For example, females in the 45 to 49 age bracket collectively need to pay an additional before tax contribution of 7.1%. If they made that in addition to the current employer and member contributions, the total contribution would be 25.6% of salary (which is an additional rate of 16.6% above 9% SGC).

Table 4. Male Contribution Rates

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00	9.00	3.8	12.8
30-34	0.74	10.16	5.0	15.9
35-39	1.60	11.51	5.0	18.1
40-44	2.58	13.05	5.8	21.4
45-49	3.68	14.79	7.2	25.7
50-54	4.70	15.53	8.6	30.0
55-59	5.89	18.26	11.9	36.0
60-64	7.00	20.00	22.8	49.8
Average	3.17	13.98	8.45%	25.60%

Table 5. Female Contribution Rates

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00	9.00	4.5	13.5
30-34	0.74	10.16	4.0	14.8
35-39	1.60	11.51	3.7	16.8
40-44	2.58	13.05	4.6	20.2
45-49	3.68	14.79	7.1	25.6
50-54	4.70	15.53	9.0	30.3
55-59	5.89	18.26	9.3	33.4
60-64	7.00	20.00	9.7	36.7
Average	3.17	13.98	6.38%	23.53%

Table 6 shows the size of the gap for each age/sex cohort. It is evident that younger members have the largest Retirement Savings Gap. However they also have a longer period of time over which they are able to close the gap through additional contributions.

Table 6. Retirement Savings Gap (\$M)

As at 30 June Age	2011	
	Males	Females
25-29	84,454	88,112
30-34	78,456	59,735
35-39	66,230	50,189
40-44	59,397	46,757
45-49	57,836	55,812
50-54	46,201	46,666
55-59	36,161	26,325
60-64	24,577	9,200
Total	453,312	382,797

1.5 Main Assumptions

We have made a number of assumptions in calculating the RSG, and these should be considered carefully. The full range of assumptions is detailed in the report. Section 6 (Differences from Previous Report) discusses the differences from the previous report.

The assumptions that have the most impact on the model are summarised below. Where appropriate, we have retained the assumption from the previous report:

- Economic:
 - 7.5% pa gross return on the accumulation of assets⁵
 - 4.5% p.a. increase in salaries⁶
 - 3.0% p.a. increase in general price inflation of costs
 - 1.20% expense rate, reducing to 0.60% over 15 years
 - 0.25% cost of insurance
 - 15.0% tax on all future employer contributions
 - 6.0% investment tax on the investment roll up.
- Long-term real return net of fees, insurance, taxes and wage inflation of 1.7% using the economic assumptions above:
 - this is calculated as $(7.50\% - 0.60\% - 0.25\%) \times (1 - 6.0\%) - 4.5\%$ ⁷

⁵ The 7.5% return is based on a typical superannuation fund objective of CPI+4.5% (after tax and fees)

⁶ This assumption is based on the long term trend in salary increases. This equates to 1.5% above the upper limit of the Reserve Bank's targeted inflation rate.

⁷ Refer to section 4.7 (Assumptions) and the following page for comments on these assumptions.

- Demographic:
 - Mortality in accordance with the Australian Life Tables 2005-2007 published by the Australian Government Actuary.
 - Future improvement to post-retirement mortality in accordance with the 100 year improvement rates published by the Australian Government Actuary in the Australian Life Tables 2005-2007.
- Future contributions:
 - Average current employer contribution (including salary sacrifice) of 14.0%.
 - 3.0% gradual increase of employer contribution from 2013 to 2019, see Section 4.4.1 (Increase of SG from 9% to 12%) for detail.
 - Average member contribution of 3.2%.

1.6 Sensitivities

The sensitivities of the assumptions that have the most impact are detailed in Table 7, together with the effect on the RSG.

Table 7. Sensitivity Analysis

Assumption	Adjustment	RSG	Difference from Base RSG	
	(%)	(\$billion)	(\$)	(%)
Gross Retirement Savings Gap	N/A	836		
Ignore Post-retirement Mortality Improvements	N/A	517	-319	-38.1
Target Replacement Rate = 62.5%	+2.50	994	158	18.9
	-2.50	690	-146	-17.5
Real Investment Return ⁸ = 3.0%	+0.25	771	-65	-7.8
	-0.25	900	64	7.6
Long-term Expense Rate = 0.60%	+0.10	853	17	2.0
	-0.10	819	-17	-2.0
Average Employer Contributions = 14.0%	+1.00	755	-81	-9.7
	-1.00	920	83	10.0

⁸ Gross return = 7.5% and salary inflation = 4.5% giving a real return of 3.0%.

Assumption	Adjustment	RSG	Difference from Base RSG	
	(%)	(\$billion)	(\$)	(%)
Employers reduce wage increases to reflect increase in Superannuation Guarantee		762	-74	-8.8
Employers currently paying more than the SG level of 9% do not pass on the full Superannuation Guarantee increase		897	61	7.3

It is important to recognise that the effect of each of the assumptions listed above has been considered in isolation to all other changes, i.e. the effect of the sensitivities is not cumulative.

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2. Background to the Retirement Savings Gap

2.1 Measurement Criteria

The RSG 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
- 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 the Financial Services Council'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 males (females 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 by 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 61. 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 RSG, we recognise that in the future around 40% of the Australian population will retire on full Age Pension and a similar number 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 RSG separately for different income cohorts and calculating the Age Pension offset for each cohort *at all ages in retirement*.

Section 7 (Results) 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 the Financial Services Council 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 the Financial Services Council (October 2009).

2.4 Non-superannuation Assets

Our model examines the RSG 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 RSG is considered with the results in Section 7 (Results). We have made some broad allowance for investment properties of wealthier individuals, as discussed in Section 4.7.6 (Non-superannuation Assets).

2.5 Population

We have ignored that portion of the population which 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 below age 25 serves to decrease the estimated RSG.

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.

3. Background

Since August 2003, Rice Warner has prepared a series of reports for the Financial Services Council on the RSG for the Australian population.

The first (*The Retirement Savings Gap based on data at 31 December 2002*) and second (*The Retirement Savings Gap - Two Years On based on data at 30 June 2004*) reports deemed adequacy to be an income stream at retirement equal to 62.5% of gross earnings, commencing from age 65. We note that the Financial Services Council chose this figure as it was within the range (60% - 65% of pre-retirement income) at which people can maintain their standard of living in retirement, chosen by the late Senate Select Committee on Superannuation and Financial Services. 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.

However, for the third and fourth reports (*Superannuation Savings Gap at June 2008 and 2009*) and this report (*Superannuation Savings Gap at June 2011*) 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 from an account-based pension⁹. 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.

The results of the previous RSG reports are summarised in Table 8. The figures *Before Age Pension* show how much would be needed to be saved if the Age Pension were designed to be a safety net. However, this state benefit is an integral part of the retirement income of most Australians, so its value must be included in overall retirement income. Consequently, the figures *After Age Pension* are the appropriate figures for the RSG.

Table 8. Results of the Rice Warner Savings Gap Over Time

Basis	Data at	Retirement Savings Gap		
		Males	Females	Total
Before Age Pension	December 2002	198	548	746
	June 2004	347	476	823
	June 2008	719	860	1,579
	June 2009	864	961	1,825
	June 2011	897	968	1,845
After Age Pension	December 2002	n/a	n/a	375*
	June 2004	237	216	452
	June 2008	358	337	695
	June 2009	479	418	897
	June 2011	453	383	836

* The Age Pension was broadly estimated to reduce the savings gap at December 2002 by between \$100 billion to \$200 billion which was an under-estimate of the impact. If we apply the same modelling method used as calculated at June 2004, then the 2002 After Age Pension savings gap is considerably less.

⁹ 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).

Because the Age Pension was not explicitly allowed for in the savings gap estimate at December 2002 (see the note to Table 8), the results in the table above suggest that the savings gap between December 2002 and June 2004 increased by approximately \$77 billion.

As noted in the 2005 report, the change in the estimated savings gap since the 2003 report reflects:

- high investment earnings over the period
- a fall in the gap due to improvements in government support
- changes in assumptions in the model¹⁰
- change in the underlying population (which had grown over the period)
- change in the treatment of the Age Pension integration (this was the main cause of the significant reduction in the savings gap after accounting for the Age Pension).

¹⁰ Please see Rice Walker, September 2005, *The Retirement Savings Gap - Two Years On*, for details on the change in assumptions.

4. Methodology and Assumptions

4.1 Overview

The RSG 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 RSG 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.

4.2 Population Model

A projection of the underlying population forms the basis for the RSG 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
- 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 RSG between males and females.

We measure the RSG 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 12.1 million in 2011.

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

Table 9. Population Aged 25 - 64 in 2011

Age Band	Males	Females	Total
25-29	855,489	830,509	1,685,998
30-34	777,660	775,484	1,553,145
35-39	812,520	823,654	1,636,174
40-44	781,757	790,243	1,571,999
45-49	790,870	803,796	1,594,665
50-54	735,936	752,749	1,488,685
55-59	664,161	678,363	1,342,524
60-64	611,723	615,912	1,227,635
Total	6,030,116	6,070,709	12,100,825

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 also supplemented with 2006 Census statistics updated by the ABS¹¹.

We have adjusted the income bands for general wage inflation over the three years to 30 June 2011, and have applied the resulting income distribution to the population at 30 June 2011 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 RSG 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.

¹¹ ABS catalogue number 2068.0 - 2006 Census of Population and Housing, Australia.

4.3 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 2011.

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

Table 10. Superannuation Market Breakdown at June 2011

Market Segment	Funds (number)	Assets (\$ billions)	Accounts ('000)
Not for Profit Funds			
Corporate Funds	144	66.0	638
Industry Funds	64	255.2	11,841
Public Sector Funds	37	192.5 ⁷	3,111
Total Not for Profit¹	245	513.7	15,589
Commercial Funds			
Employer Master Trusts		100.6	4,640
Personal Superannuation		162.4	4,661
Post Retirement Products		133.2	1,116
Retirement Savings Accounts		1.6	93 ²
Eligible Rollover Funds		6.2	6,270
Unallocated Reserves		3.4	
Commercial Funds¹	141	407.4³	16,779⁴
Self-Managed Funds	452,591	420.	871
Total Superannuation	452,977	1,341.7⁵	33,240⁶

1. We have reclassified a number of funds to provide a better breakdown of the market. APRA's statistics show \$60.0 billion in corporate funds, \$249.7 billion in industry funds, \$202.9 billion in public sector funds and \$369.0 billion in retail funds.
2. The number of accounts has been estimated by assuming that the average RSA account balance is \$17,250.
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 \$1,340.1 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 2010 and the underlying trends.
7. If we include the public sector unfunded liabilities, which totalled \$201 billion at 30 June 2011, then the public sector's assets would increase to \$402 billion.

Total superannuation savings at 30 June 2011 amounted to \$1,342 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

- assets in respect of individuals who earn more than twice average earnings
- assets in respect of pre-retirement members, engaging in a transition to retirement strategy with assets in the post-retirement sector.

4.3.1 *Post-retirement assets*

We have attributed \$406 billion to members of post-retirement funds based on APRA's *Quarterly Superannuation Performance, June 2011* and a survey of superannuation funds holding funds under management of approximately \$134 billion.

The \$406 billion have been allocated to the various market segments as follows.

Table 11. Post-retirement Assets

Market Segment	Post-retirement Assets (\$billion)
Corporate Funds	4
Industry Funds	21
Public Sector Funds	43
Retail Funds	133
Self-Managed Funds	206
Total Post-retirement Assets	406¹

1. Numbers do not add to the total due to rounding.

This year we have revised the assumption on the post-retirement assets held by self-managed funds, this resulted in higher assets attributed to post-retirement funds compared to the 2009 report.

4.3.2 *Unfunded Public Sector Liabilities*

Unfunded public sector liabilities need to be taken into account as an Asset in the RSG 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.

The following data has been collated from state and federal budgets up to 30 June 2011.

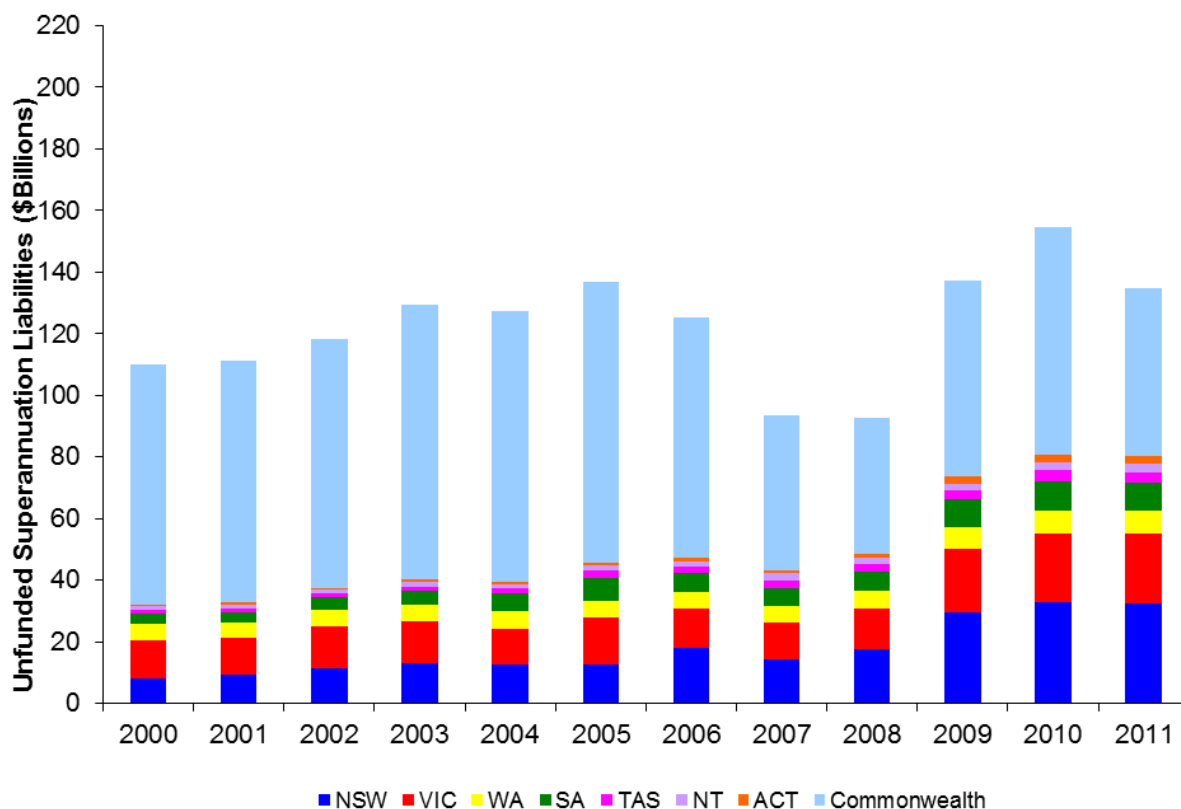
Table 12. Unfunded Superannuation Liabilities (\$billions)

	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
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	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

	C'wealth	NSW	VIC	WA	SA	TAS	NT	ACT	Total
2006	77.8	17.8	12.9	5.5	6.1	2.1	1.7	1.1	125.1
2007	50.3	14.4	11.9	5.5	5.7	2.5	2.2	0.8	93.3
2008	44.0	17.6	12.9	5.8	6.5	2.5	2.1	1.1	92.5
2009	63.6	29.4	20.7	7.2	8.9	2.7	2.4	2.2	137.2
2010	73.7	32.7	22.5	7.4	9.5	3.5	2.7	2.6	154.6
2011	54.2	32.3	22.8	7.4	8.7	3.5	2.7	2.6	134.3

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

Graph 1. Unfunded Superannuation Liabilities



Unfunded public sector liabilities amounted to \$210 billion at 30 June 2011. If we allow for the value of assets held by the Future Fund (valued at \$75 billion at 30 June 2011), these unfunded liabilities stood at almost \$135 billion at 30 June 2011. 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 2011.

After adjusting for post-retirement assets and unfunded public sector liabilities, the current savings amount decreases to \$1,146¹² billion for the purposes of this model.

¹² This figure is calculated as Total Superannuation Market assets - Post-retirement Assets + Public Sector Unfunded Liabilities + TTR Post Retirement Assets (i.e. \$1,342b - \$406b + \$210b + \$20b = \$1,166b).

4.3.3 Transition To Retirement Post Retirement Assets

After subtracting \$406 billion in pension assets we then have to add back any assets held in respect of pre-retirement members who have a Transition To Retirement pension account.

Based on an industry survey of TTR accounts and assets we have estimated that approximately \$20 billion of post-retirement assets in respect of members aged between 55 and 64 are attributable to TTR pensions. These assets have been allocated to both males and females aged between 55 and 64 in a manner consistent with the results of our survey.

4.3.4 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 \$1,166 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 \$134 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 \$739 billion at 30 June 2011. This results in the following data in respect of current savings for the relevant population.

Table 13. Savings at 30 June 2011

Age Band	Savings (\$M)	
	Males	Females
25 – 29	10,220	10,069
30 – 34	17,020	17,656
35 – 39	27,742	26,889
40 – 44	40,772	33,023
45 – 49	57,266	41,448
50 – 54	73,254	52,661
55 – 59	92,993	72,308
60 – 64	86,601	78,770
Total	405,867	332,824

Note: this table excludes those earnings less than \$3,000 a year (which includes those out of the workforce). It also excludes those earning more than \$120,000 a year.

4.4 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 (e.g. from asset sales).

The Employer Contributions take the Government's May 2010 commitment to increase the Superannuation Guarantee contribution rate from 9% to 12% into account.

Government co-contributions are made in addition to the Member Contributions shown (see 4.4.2 The Co-contribution Scheme).

The assumed contributions by age group are as follows.

Table 14. Assumed Contribution Rates - June 2011

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	3.18

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 2011 (after allowing for contributions made by high income earners).

The average contribution rates do not show the skewness in contributions between members. The majority of members rely entirely on the 9% Superannuation Guarantee 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 RSG (allowing for the Age Pension) of about \$81 billion or approximately 10%.

Concessional contribution caps were reduced 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.

The Government announced in May 2010 that it would increase the concessional contribution caps for Australians aged above 50 from \$25,000 to \$50,000 where the person's superannuation balance is less than \$500,000.

As we exclude individuals earning over 2 x AWOTE (the group most likely to be 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 retirement savings gap.

4.4.1 Increase of SG from 9% to 12%

In this report we take into account the Government's May 2010 announcement that it will gradually increase the Superannuation Guarantee contribution rate from 9% to 12% from 2013 to 2019.

We have assumed all future employer contributions will increase from year 2013 as shown in Table 15. We have also assumed that the tabled increases will not impact on our wage inflation assumption of 4.5%. For example, in 2013 wages will increase by 4.5% and the superannuation guarantee will also increase by 0.25%.

Table 15. Changes to SG contribution

Year	Increase in Employer contribution
	(%)
2011	0.00
2012	0.00
2013	0.25
2014	0.50
2015	1.00
2016	1.50

Year	Increase in Employer contribution
	(%)
2017	2.00
2018	2.50
2019	3.00
After 2019	3.00

We note that some people are already contributing more than 12% SG, hence the 3% increase may not have full effect on these people, and the impact of this policy on the savings gap may be overstated. However, it would be difficult to predict people's reaction to the policy, hence we ignore this possibility and illustrate the potential effect of the policy, assuming it will affect everybody equally.

4.4.2 The Co-contribution Scheme

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

In the May 2010 Budget the Government announced that it would scale back the co-contribution scheme. The table below contains the details of the superseded co-contribution scheme (2008 - 09) and the scaling back of the scheme.

Table 16. 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 - onwards	100	1,000

Statistics released by the former Assistant Treasurer, The 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 males, and 63% were in respect of females¹³.

¹³ More recent information is not available.

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

Table 17. Co-contributions by Age

Age Range	Proportion of Co-contribution Payments
	(%)
Under 21	4.5
21 – 25	6.0
26 – 30	5.4
31 – 35	6.8
36 – 40	9.1
41 – 45	11.5
46 – 50	14.3
51 – 55	15.5
56 – 60	15.1
61 – 65	9.4
66 – 70	2.3
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 2011, indicated that approximately 1.2 million Co-contributions (a take up rate of approximately 9.5% of those eligible to receive a Co-contribution) worth \$700 million were paid (resulting in an average Co-contribution payment of \$610). For the purposes of calculating the value of Co-contributions received we have assumed that this take up rate of 9.5% will continue into the future. This number is lower than the co-contribution amount in the 2009 report, reflecting the lower co-contribution matching rate.

4.5 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 (Adequacy) 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.

4.5.1 *Effect of the Age Pension*

The continuation of Social Security (the Age Pension) in its present form indefinitely into the future significantly reduces the Liability.

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
- 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 66% 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 7 (Results), the calculated effect of the Age Pension is a reduction in the Retirement Savings Gap of \$1,014 billion (rounded).

4.6 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 is increasing slowly and is now about age 61. 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.

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.

Note that if we had used the current median retirement age of 61 to calculate the Savings Gap then the Savings Gap would be much larger than the estimated headline figure of \$836 billion.

4.7 Assumptions

4.7.1 *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
- 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 ('Institute') in their report on 'Superannuation and Standards of Living in Retirement' dated September 2002. The Institute 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 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 ASFA¹⁴ 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% - hence our adoption of a rate at the upper end of the range.

¹⁴Serhan 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 \$65.3 billion (or 8%).

4.7.2 Management Expense Rates

Our December 2010 report to the Financial Services Council entitled *Superannuation Fees Report 2008 - Market Segment Analysis at 30 June 2010* sets out the fees charged in the superannuation market by industry segment as follows.

Table 18. Fees 2008

Sector	Segment	Total Fees % ¹
Wholesale	Corporate	0.80
	Corporate Super Master Trust ¹⁵ (large)	0.87
	Industry	1.26
	Public Sector	0.81
Retail	Corporate Super Master Trust ¹⁶ (small)	2.41
	Personal Superannuation	2.07
	Retirement Income	1.85
	Retirement Savings Accounts	2.30
	Eligible Rollover Funds	2.42
Small Funds	Self-Managed Super Funds	1.01
Total		1.27

1. Expressed as a % of *average* assets over the year to 30 June 2010.

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 1.08% for the year commencing 1 July 2011.

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

¹⁵ Excludes employer plans with less than \$5 million in assets.

¹⁶ 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
- 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.

Table 19 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 19. Assumed Expense Rates

Year Commencing 1 July	Expense Rate (%)
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 RSG by about \$17 billion (or 2%).

4.7.3 Cost of Insurance

According to figures published in APRA's *Quarterly Superannuation Performance, at 30 June 2011* report the cost of member benefit insurance over the year to 30 June 2011 was as follows.

Table 20. Cost of Member Benefit Insurance – Year to 30 June 2011

Market Segment	Cost of Insurance \$M
Corporate	98
Industry	1,501
Public Sector	278
Retail	2,116
Total Superannuation Market	3,993

Together with Rice Warner's risk insurance research, we have estimated the annual cost of insurance for superannuation funds to be approximately 0.43% of pre-retirement superannuation assets over the year to 30 June 2011. In our previous report (RSG at 30 June 2009) we had assumed that insurance would cost 0.25% of assets.

Our approach assumes that any benefit proceeds arising from insurance are not re-invested in the superannuation system.

4.7.4 Taxation

The model allows for taxation as follows:

- 15% contributions tax on all future contributions
- 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 RSG by approximately \$17 billion (or 2%).

The taxation elements take into account the Government's May 2010 commitment to rebate contribution tax for lower income earners. This however has no effect on the amount of the RSG. If we assume a constant replacement rate of 62.5%, those low income earners who are eligible to receive the rebate, will have lower requirements and can rely on the Age Pension to make up the majority of their required income after retirement.

4.7.5 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 21. Probability of Survival to Age 67

Age Band	ALT 05 – 07	
	Males	Females
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 male and 1.47% p.a. for a 65 year old female.

The impact of improving mortality has a significant effect on the model. If no allowance were made for improving mortality, the RSG would reduce by approximately \$319 billion (or 38%).

4.7.6 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 \$103,000 own an investment property. In our 2009 report we assumed that the mean value of investment properties was equal to \$450,000. This year we adjusted the mean according to the increase in the ABS house price index over the past two years, resulting in an assumed mean value of \$510,650 in 2011 dollars.

These assumptions reduce the calculated Gap for those individuals in the model earning between \$103,000 and twice the average income (or approximately \$136,000). These are broad assumptions only, but our modelling indicates that their impact on the RSG is relatively small, so they are not inappropriate. For example, a 10% increase in the value of the investment property reduces the Gap by \$2.2 billion (or 0.26%). 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.

4.7.7 *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 RSG for younger females.

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 RSG, although we would expect the overall impact to be small since low income earners have a limited effect on the projection results.

5. Comment on Assumptions

5.1 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.

5.2 Current Savings by Age Cohort

The population model provides a mechanism for generating future contributions for the individuals in respect of whom the RSG 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 ABS¹⁷.

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

As detailed in section 4.3.4 (Distribution of Assets by Age and Income), 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 \$134 billion of funds under management.

The starting point of this demographic projection is an analysis of superannuation accounts as at 30 June 2011. We allocated current savings to the different age/sex cohorts as follows:

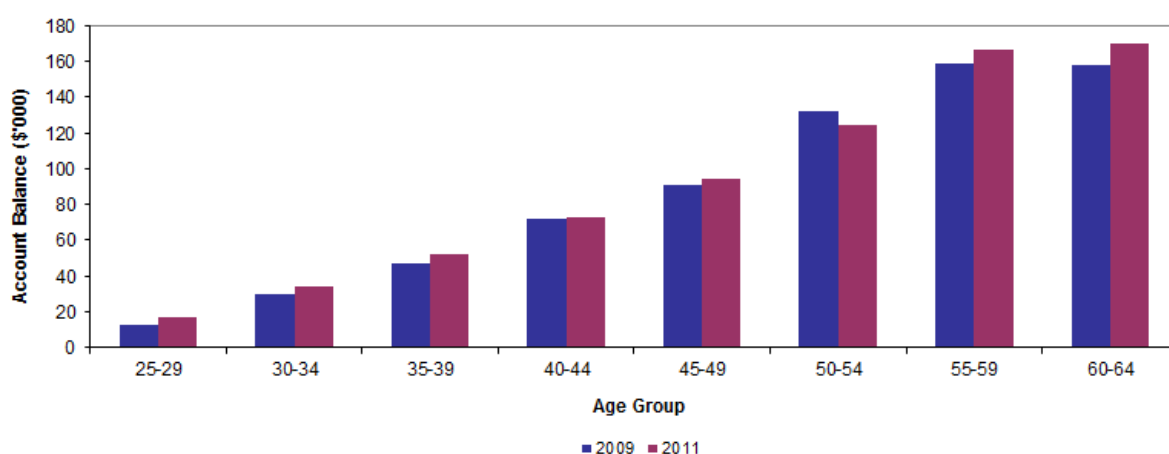
- APRA's *Annual Superannuation Bulletin, June 2010* indicates 32.9 million member accounts as at 30 June 2010. The APRA report gives the breakdown of member accounts by the five main industry segments - Corporate Funds, Industry Funds, Public Sector Funds, Small Funds and Retail Funds
- We have estimated the number of accounts as at 30 June 2011 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

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

- 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.
- 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 in Graph 2.

Graph 2. Assets Per Person By Age at 30 June 2010 and 30 June 2011

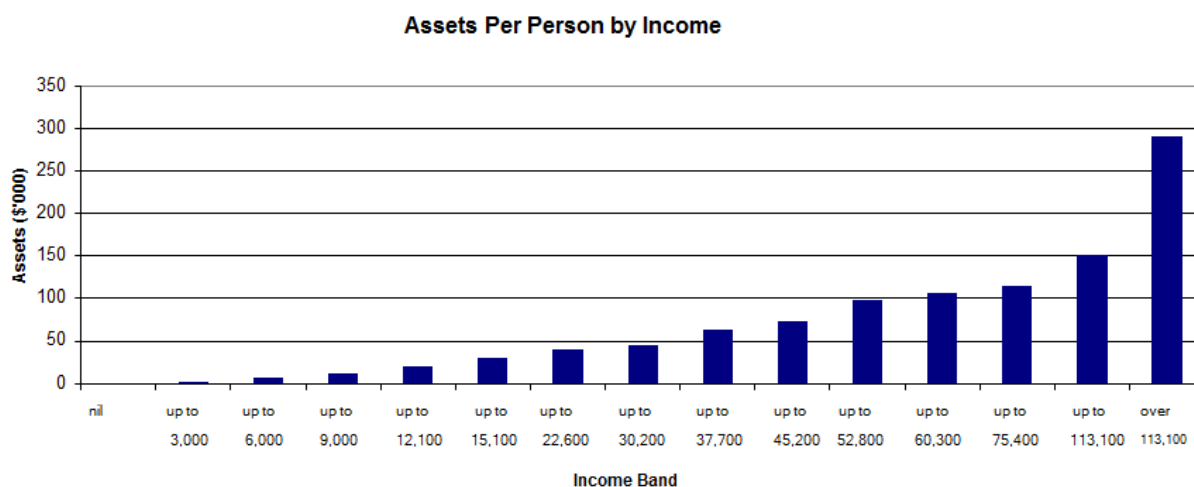


The average account balances are generally higher than in our previous report. This reflects a recovery in investment markets until the end of the 2010-11 financial year and in the case of members aged 55-64, the addition this year of post-retirement assets held in respect of TTR members.

The total superannuation assets by age and sex now need to be segmented further by income group. As there are no reliable statistics for this purpose 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 Section 4.3.4 Distribution of Assets by Age and Income).

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 in Graph 3. This is the distribution across all ages; the actual distribution in each age group would vary.

Graph 3. 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.

5.3 Future Population Movements

The RSG 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 RSG by approximately \$111 billion, a 13% 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 model).

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 Table 22.

Table 22. 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	6.7	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

5.4 Future Contribution Rates

There is little reliable data on the current contribution level by age and income band. While there is a floor equal to the current Superannuation Guarantee level, 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 Superannuation Guarantee 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% Superannuation Guarantee 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 RSG.

6. Differences from Previous Report

Comparison of the modelling results to those presented in the previous report requires an appreciation of the differences between the models in the two reports before any conclusions can be drawn regarding trends over the period.

6.1 Analysis of Differences from Previous Report

A broad analysis of the difference between the estimated Retirement Savings Gap (allowing for the Age Pension) from the previous report is given below:

Table 23. Analysis of Difference of Retirement Savings Gap (Allowing for the Age Pension)

	\$ billion
Retirement Savings Gap Estimate, 30/6/2009	897
Effect of gradually increasing SG from 9% to 12%	(184)
Effect of change in current savings	(54)
Effect of AWOTE increase	82
Effect of demographic changes	61
Effect of Co-contribution changes	(2)
Effect of cost of insurance changes	47
Effect of TTR Pension Assets	(11)
Retirement Savings Gap Estimate, 30/6/2011	836

Each item in Table 23 is discussed below.

6.2 Effect of gradually increasing SG from 9% to 12%

As noted in Section 4.4.1. (Increase of SG from 9% to 12%), in this update of the RSG report we have taken into account the proposed increase of Superannuation Guarantee rate starting from 2013, from current 9% to 12% in 2019.

This change has a positive effect on the estimated retirement saving gap, as it results in higher estimated future contributions totalling \$184 billion.

6.3 Change in Current Savings

Estimation of the RSG involves determining individuals' savings at retirement. This involves the accumulation of individuals' current savings and future contributions. The increase in population and recovery of the market from 2009 has resulted in an increase in savings held by pre-retirement members totalling \$54 billion. Despite a revision of our estimate of savings held in respect of post-retirement members, as noted in Section 4.3.1 (Post-retirement Assets), which effectively reduced the share of pre-retirement assets.

Note the increase in savings includes the appreciation of non-superannuation asset as noted in Section 4.7.6 (Non-superannuation Assets).

6.4 Increase in Average Earnings

In this report 'adequacy' has been defined as the savings required at retirement to provide pre-retirement earnings (in real terms) for each year until life expectancy. Consequently, as earnings increase, the savings required (the liability) to fund an adequate retirement also increases in nominal terms (as opposed to increases in real terms). However, the increase in earnings also corresponds to an increase in the estimated savings at retirement (the asset) due to the increase in the dollar amount of contributions paid. The increase in AWOTE also leads to the increase in Age Pension payment rates.

Statistics published by the ABS¹⁸ show that AWOTE increased by 9.1% between 2009 and 2011. This increase was consistent with our long-term salary inflation assumption of 4.5% per year.

We estimate that the overall effect of the increase in wages over the two years to 30 June 2011 increases the Retirement Savings Gap by \$82 billion.

6.5 Change in Demographics

Our calculation of the Retirement Savings Gap considers the working population earning less than twice average earnings. The population underlying the current calculation would differ from that at the previous calculation because:

- New entrants into the labour force over the intervening period are now included in the population, and conversely individuals who have left the labour force due to retirement or other reasons are now excluded.
- The underlying population has changed as a result of ageing, mortality and migration.

An increase in population increases future contributions, however also increases the total savings required. The working population increased by 3.4% over the two years to 30 June 2011 resulting in a net increase to the RSG of \$61 billion.

When comparing the results in this report to the results in the previous report, it is also important to remember that the results are in respect of a slightly different population cohort, and improved mortality rates.

In this update of the RSG report we have used Australian Life Tables 2005-07, as we are in the 2009 report. However, the mortality rates are adjusted by mortality improvement factor for the last two years. The increase in average life expectancy at age 67 is about 0.1 years.

6.6 Change in Co Contribution

As noted in Section 4.4.1 (Increase of SG from 9% to 12%), the co-contribution amounts have decreased from the 2009 report due to a lower matching rate. This has a small negative effect of \$2 billion on the RSG as future co contributions will be lower.

6.7 Cost of Insurance

As noted in Section 4.7.3 (Cost of Insurance), the annual cost of insurance for superannuation funds was estimated to be approximately 0.43% of pre-retirement superannuation assets over the year to 30 June 2011. In our previous report (Retirement Savings Gap at 30 June 2009) we

¹⁸ ABS, August 2011, Catalogue Number 6302.0, Average Weekly Earnings.

had assumed that insurance would cost 0.25% of assets. This has the effect of increasing the savings gap by \$47 billion.

7. Results

7.1 Retirement Savings Gap

The RSG as at 30 June 2011 is calculated as \$836 billion after allowance for the Age Pension, compared to our estimate of \$897 billion as at 30 June 2009. 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 of the current workforce.

The underlying population measured has grown from 10.3 million to 10.6 million. The growth came from general population growth (including migration), increase in the population for 25-65, and increases in the cohort eligible (partly due to growth in wages).

The estimated Gap has decreased by \$61 billion in dollar terms; it stands at \$79,200 per person as compared to \$87,900 per person as at 30 June 2009. This represents a decrease of approximately \$8,700 per person in nominal terms or approximately \$8,200 in real terms. This reduction is mainly due to the effect of Government's May 2010 announcement that it will increase the Superannuation Guarantee contribution rate from 9% to 12%. (Refer to Section 6 Differences from Previous Report, for a detailed analysis of the decrease).

The RSG can be subdivided between the sexes as follows.

Table 24. Retirement Savings Gap by Sex

As at 30 June	2009			2011		
	Males	Females	Total	Males	Females	Total
Asset (accumulated savings plus future contributions)	1,363	1,120	2,483	1,622	1,380	3,002
Contribution from Age Pension	386	544	928	436	579	1,014
Projected value of all benefits	1,749	1,664	3,411	2,058	1,958	4,016
Liability (target benefits)	2,227	2,082	4,308	2,512	2,341	4,852
Retirement Savings Gap	478	418	897	453	383	836

As discussed in Section 2.3 (Adequacy), the Senate Select Committee on Superannuation and Financial Services suggested a range for 'adequacy' of 60% to 65% of gross earnings. This gives a range for the RSG of \$690 billion to \$994 billion.

We note that the RSG (after the Age Pension) is higher for males. Males tend to receive less Age Pension benefits as they generally have greater super savings at retirement. Further, a lower number of males survive to advanced ages (where most retirees receive a full Age Pension). In contrast, females tend to have a lower RSG as a result of the Age Pension

forming a higher proportion of their retirement income (females tend to have lower pre-retirement incomes and therefore lower adequate retirement incomes).

However, if we do not allow for the Age Pension the RSG is higher for females. This reflects the combination of lower super savings at retirement and their longer expectation of life (and thus the longer period over which to provide an adequate income) relative to males.

7.2 Results by Age

The results can be expressed in quinquennial age groupings, together with the required additional annual contribution rate required by each age cohort to achieve the target standard of living in retirement.

Table 25 shows the composition of the RSG (after allowing for the Age Pension) by quinquennial age group.

Table 25. Retirement Savings Gap (\$M)

As at 30 June Age	2009		2011	
	Males	Females	Males	Females
25-29	105,698	105,811	84,454	88,112
30-34	85,530	69,925	78,456	59,735
35-39	79,314	54,319	66,230	50,189
40-44	63,695	51,592	59,397	46,757
45-49	51,704	60,530	57,836	55,812
50-54	39,608	40,081	46,201	46,666
55-59	32,883	24,024	36,161	26,325
60-64	20,132	11,736	24,577	9,200
Total	478,564	418,018	453,312	382,797

Table 26 shows the additional contribution required to offset the RSG over the future lifetime of each age/sex cohort. This is shown both as an average additional contribution (above the assumed average employer and member contribution) and as a contribution in addition to the Superannuation Guarantee rate.

Table 26. Required Additional Contribution - 30 June 2011 - Males

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00	9.00	3.8	12.8
30-34	0.74	10.16	5.0	15.9
35-39	1.60	11.51	5.0	18.1
40-44	2.58	13.05	5.8	21.4

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
45-49	3.68	14.79	7.2	25.7
50-54	4.70	15.53	8.6	30.0
55-59	5.89	18.26	11.9	36.0
60-64	7.00	20.00	22.8	49.8

Table 27. Required Additional Contribution - 30 June 2011 - Females

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00	9.00	4.5	13.5
30-34	0.74	10.16	4.0	14.8
35-39	1.60	11.51	3.7	16.8
40-44	2.58	13.05	4.6	20.2
45-49	3.68	14.79	7.1	25.6
50-54	4.70	15.53	9.0	30.3
55-59	5.89	18.26	9.3	33.4
60-64	7.00	20.00	9.7	36.7

The rates increase with age, as one would expect. The older age groups suffer from the fact that they have not enjoyed Superannuation Guarantee contributions over their working lifetimes and they have less time over which to amortise the RSG.

The generally lower rates for females reflect the lower income distribution which increases eligibility for the Age Pension. If the Age Pension is ignored, the rates for females are considerably higher.

Table 28. Required Additional Contribution - 30 June 2011 before Age Pension - Males

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.0	9.0	7.2	16.2
30-34	0.7	10.2	8.7	19.6
35-39	1.6	11.5	9.0	22.2
40-44	2.6	13.1	10.7	26.4

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
45-49	3.7	14.8	13.6	32.1
50-54	4.8	16.5	17.2	38.5
55-59	5.9	18.3	26.7	50.8
60-64	7.0	20.0	72.0	99.0

Table 29. Required Additional Contribution - 30 June 2011 before Age Pension - Females

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.0	9.0	9.2	18.2
30-34	0.7	10.2	9.0	19.9
35-39	1.6	11.5	9.7	22.8
40-44	2.6	13.1	11.9	27.5
45-49	3.7	14.8	17.2	35.7
50-54	4.8	16.5	23.1	44.4
55-59	5.9	18.3	29.6	53.7
60-64	7.0	20.0	58.9	85.9

The difference for females reflects a number of factors:

- the pool of current savings will be less than for males due to career breaks
- the accumulated future contributions will be less than for males due to the lower average income for females relative to males
- a larger pool of assets will be required at retirement to fund pension payments relative to males given the longer expectation of life for females.

7.3 Results by Income

The results can also be expressed by income band.

Table 30 shows the composition of the RSG (after the Age Pension) in terms of income.

Table 30. Retirement Savings Gap (\$M) by Income and Sex

Annual Income	Males	Females
under 37,700	0	0
37,701 – 45,200	5,229	13,588
45,201 – 52,800	21,089	38,459
52,801 – 60,300	57,738	71,266
60,301 – 75,400	138,490	130,726
75,401 – 113,100	160,209	101,615
over 113,100	70,557	27,142
Total	453,312	382,797

Most of the RSG is attributable to individuals earning over about \$45,200, or approximately 70% of average earnings. These individuals would seek to maintain a higher standard of living in retirement compared to lower income earners and would have reduced eligibility for the Age Pension and Co-contribution.

There is no gap for individuals earning under \$37,700 p.a. and the gap is small for individuals earning up to \$45,200 p.a. Some may experience an increase in living standards, as the Age Pension can provide an approximate maximum of \$19,000 p.a. (as from 1 January 2012).

7.4 Other Assets

We discussed in Section 2.4 (Non-superannuation Assets) the impact on the RSG of non-superannuation assets. The effect of non-superannuation assets has not been considered in detail in this report. Published data is available in the NATSEM model, but this is only reported in terms of average family wealth rather than per individual and so does not correspond with the make-up of our model.

Any assessment of the effect of non-superannuation assets on the RSG would need to consider the associated reduction in Age Pension entitlement which would mitigate the effect. Assessment of the overall effect would necessitate having a breakdown of non-superannuation assets by age, sex and income, as the Age Pension entitlement would vary with these variables.

However, we expect that for most individuals considered in this report non-superannuation assets (other than the family home) would form a relatively small proportion of total assets at retirement. That is, individuals earning less than twice average earnings generally do not have a sufficient disposable income to accumulate a significant amount of assets outside of superannuation.

Given the offsetting effect of the reduction in the Age Pension entitlement, we do not expect non-superannuation assets to have an overly large impact on the retirement savings position of individuals in the model.