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Retirement Savings Gap as at 30 June 2013

FSC

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1. Executive Summary

1.1 Introduction

This report, the Retirement Savings Gap as at 30 June 2013, provides a snapshot of Australia's progress as a nation towards funding a comfortable retirement. The figures calculated serve as indicators of the shortfall in adequate retirement savings for the working population, measuring the shortfall they will have in building an adequate (reasonable) retirement benefit.

The *Retirement Savings Gap* (RSG) is a measure of the shortfall the working population will have and continue to build versus the amount required for an adequate (reasonable) retirement benefit for their life expectancy.

Most members take on all their own longevity risks as there are very few Australian superannuation funds which pay defined pension benefits. Consequently, we also examined the *Longevity Savings Gap* (LSG), which is the size of the shortfall in adequate retirement savings for those Australians who live considerably longer than average life expectancy.

The Retirement Savings Gap as at 30 June 2013 further examines the impact of various actions which may be taken by either individuals or governments to reduce the savings gap and the associated retirement outcomes.

The RSG and LSG examine the required savings needed to pay a targeted benefit under three different scenarios:

1. The target benefit is required up until life expectancy, the age at which 50% of retirees will survive.

2. The target benefit is required to the age where 25% of retirees will survive (75th survival percentile).

3. The target benefit is required to the age to which 10% of retirees will survive (90th survival percentile).

Note that a member purchasing an annuity effectively funds a benefit for average life expectancy (the first scenario).

Trends over time will show whether the relative position is improving. The Australian Federal 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 for nearly 80% of retired Australians. The financial services industry has an important role to play in educating fund members about retirement matters and assisting individuals to improve their personal situations. Community success can be measured through a reduction in the gap over time.

This report sets out the results based on data as at 30 June 2013.

1.2 Results

We estimate that there is a deficit of some $727 billion at 30 June 2013. This result allows for the impact of the Government's October 2013 announcement that it will delay the increase in the timetable for lifting the Superannuation Guarantee contribution rate from 9.25% to 12% by two years. Without this delay, the estimated RSG would be $15 billion lower at $711 billion.

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Table 1 shows the difference between the Retirement Savings Gap at the 5[0th] percentile and the Longevity Savings Gaps which calculates the cost of retirees surviving to the 75th and 90th percentile respectively.

**Table 1.   Retirement and Longevity Savings Gaps**

As at 30 June 2013	Amount ($b)	Difference from RSG ($b)	Percentage (%) difference
50th Percentile (RSG)	727	N/A	N/A
75th Percentile (LSG)	1,331	604	83%
90th Percentile (LSG)	1,928	1,201	165%

Clearly, the task of getting individuals to save beyond their life expectancy is very expensive. Yet most retirees do not purchase a lifetime annuity which is the only vehicle which will meet this objective without requiring higher levels of funding.

The average RSG per person is estimated to be $67,000, showing a sizable gap for those seeking retirement adequacy up to life expectancy. This grows to $122,700 at the 75th survival percentile and $177,700 at the 90th survival percentile. The estimated Retirement Savings Gap has decreased by $109 billion in dollar terms since 2011 (from $836 billion); when it stood at $79,200 per person at 30 June 2011. This represents a decrease of approximately $12,200 per person in nominal terms or approximately $11,200 in real terms. This reduction is mainly due to the increase in savings over the period and an increase in Age Pension entitlements with the additional Clean Energy Supplement (CES)

The RSG is equivalent to approximately 5.7 months GDP. [1] In our previous report, with calculations as at 30 June 2011, we had estimated the RSG to be $836 billion.

Graph 1.   Comparison of Savings Gap to GDP and annual income of Australia
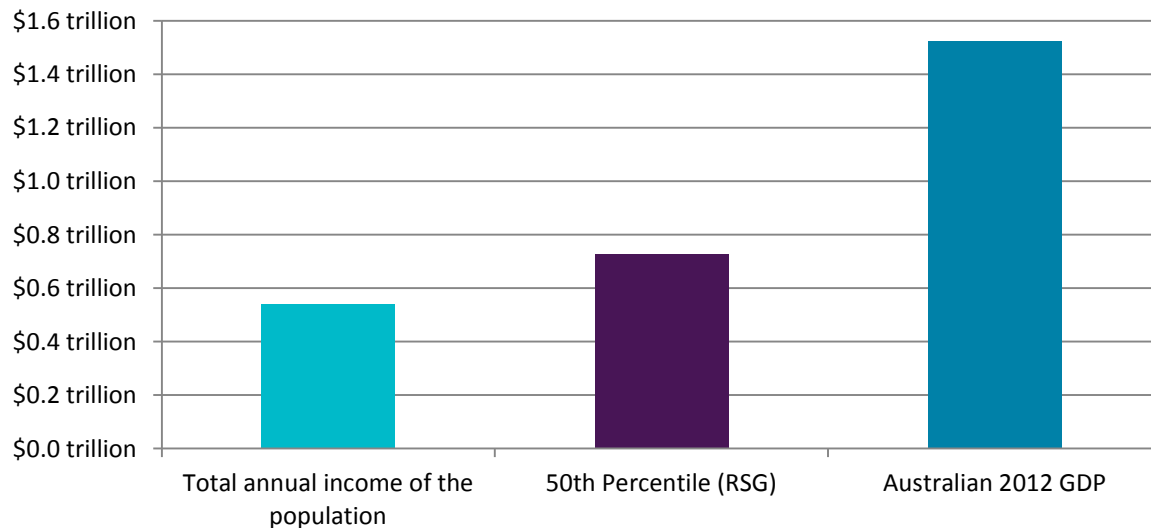
The increasing Superannuation Guarantee has also helped to significantly reduce the Savings Gap, despite the proposed two year delay. However, it is not in itself a solution for the current working cohort since it will not eliminate the total savings gap. Increased contributions levels above this will be

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[1] GDP was approximately $1.52 trillion in the 2012-13 financial year.

needed if more Australians are to save for an adequate retirement income. Alternatively, Australians will need to retire at a later age.

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.

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 lower savings requirement from their superannuation; those on higher incomes generally have enough savings to provide themselves with an adequate retirement income.

Table 2 and Graph 2 (refer to Section 6, *Differences from Previous Report*, for greater detail) show 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, 30/06/2011	**836**
Effect of increase in age pension entitlements	-136
Effect of AWOTE (average earnings) Increase	129
Effect of change in current savings	-120
Effect of change in ABS Census Income Data	-48
Effect of fee changes	23
Effect of demographic changes	20
Effect of 2 year delay in SG increasing from 9.25% to 12%	15
Effect of cost of insurance changes	8
Retirement Savings Gap Estimate, 30/06/2013	**727**

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Graph 2.   Analysis of Difference of RSG
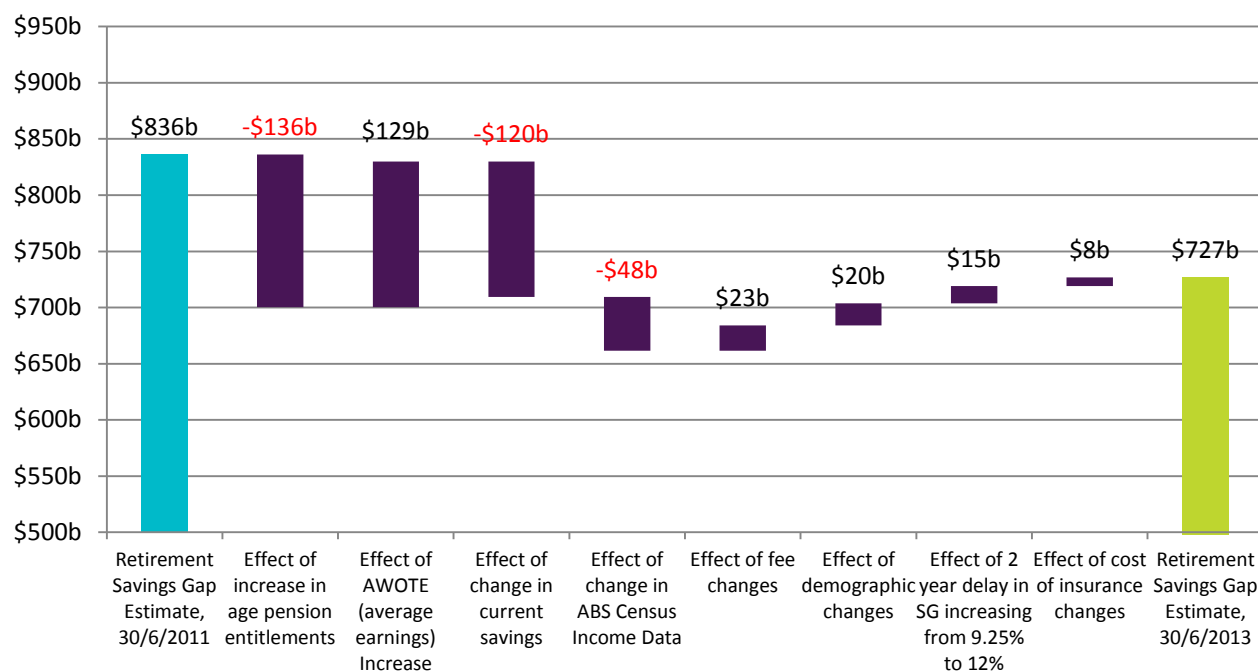
1.3   Comparison with Previous Results

The results of the previous RSG and LSG reports are detailed in Table 3. These results are not directly comparable because of changes in assumptions and data over time. The modest decrease in the savings gap is largely due to an increase in the Age Pension which provides a greater share of retirement incomes for low-income earners.

Table 3.   Results of the Rice Warner Savings Gap and Longevity Savings Gap ($ billion)

	Males	Females	Total
Retirement Savings Gap - 50% at 30 June 2011	453	383	836
Retirement Savings Gap - 50% at 30 June 2013	377	350	727
Longevity Savings Gap - 75% at 30 June 2011	823	618	1,441
Longevity Savings Gap - 75% at 30 June 2013	764	567	1,331
Longevity Savings Gap - 90% at 30 June 2011	1215	925	2,139
Longevity Savings Gap - 90% at 30 June 2013	1,121	807	1,928

Graph 3.   Results of the Rice Warner Savings Gap and Longevity Savings Gap ($ billion)
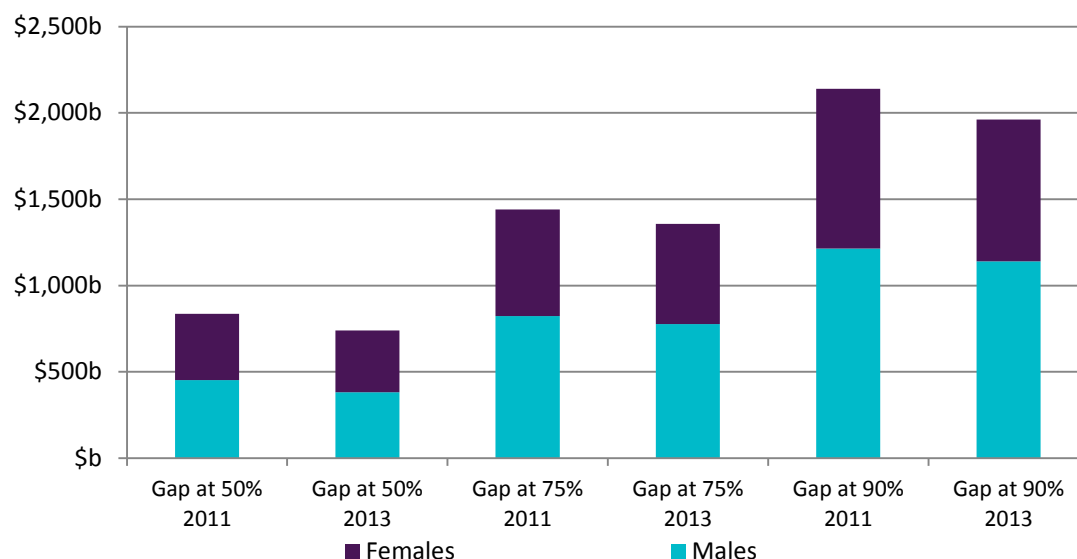
1.4   Main Assumptions

We have made a number of assumptions in calculating the RSG, and these should be considered carefully. The full range of assumptions is available in Section 4, *Methodology and Assumptions* and 6 discusses the differences from the previous report.

Future contributions, retirement age, demographic and economic assumptions have the most impact on the model. Where appropriate, we retain the assumptions to be consistent with previous reports.

1.5   Sensitivities

The sensitivities of the assumptions that have the most impact on the Savings Gap are detailed in Table 4, together with the effect on the RSG.

Table 4.   Sensitivity Analysis of RSG

	Adjustment	RSG	Difference from Base RSG	
	(%)	($billion)	($)	(%)
Gross Retirement Savings Gap	N/A	727	N/A	N/A
Ignore Post-retirement Mortality Improvements	N/A	429	-297	-40.9
Target Replacement Rate = 62.5%	+2.50	853	126	17.4
	-2.50	604	-123	-16.9
Long-term Expense Rate = 0.65%	+0.10	768	42	5.7
	-0.10	686	-41	-5.6
Real Investment Return = 3.0%	+0.25	584	-143	-19.7
	-0.25	881	154	21.2
Average Employer Contributions = 14.0%	+1.00	644	-82	-11.3
	-1.00	811	85	11.6

	Adjustment	RSG	Difference from Base RSG	
	(%)	($billion)	($)	(%)
No SG delay	N/A	711	-15	-2.1
Increase to 12% in 2013	N/A	663	-64	-8.8
No SG increase	N/A	921	194	26.7

It is important to recognise that the effect of each of the assumptions listed in Table 4 has been considered in isolation to all other changes, i.e. the effect of the sensitivities is not cumulative.

This report was prepared and peer reviewed for FSC by the following consultants.

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2. Background

2.1 Previous Reports

Since August 2003, Rice Warner has prepared a series of reports for the Financial Services Council on the RSG for the Australian population. In 2011/2012, the Financial Services Council requested that Rice Warner provide further research on the *Longevity Savings Gap* (LSG), to measure the additional saving required collectively for Australia as a nation to achieve adequacy beyond life expectancy.

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% to 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, fourth and fifth reports (*Superannuation Savings Gap at June 2008 , 2009, and 2011*) and this report (*Retirement Savings Gap as at 30 June 2013*) 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 pension[2]. 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 5. The figures *Before Age Pension* show how much would need 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.

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[2] 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).

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Table 5.   **Results of the Rice Warner Retirement 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
	June 2013	831	983	1,814
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
	June 2013	377	350	727

* 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.

Because the Age Pension was not explicitly allowed for in the savings gap estimate at December 2002 (see the note to Table 5), the results in the table above suggest that the savings gap between December 2002 and June 2004 increased by approximately $77 billion.

2.2   Background to the Retirement Savings Gap

2.2.1   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 to life expectancy

- the amount currently saved in the superannuation system, and the further amounts estimated to be saved in future years accumulated with earnings 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 the cohort which earns 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.

2.2.2   Pension Age and Age Pension

Eligibility for the Age Pension currently commences at age 65 for males (the female age is 64.5 years 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. At that time, the age may well be increased further.

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, with the median retirement age being about 62. 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 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 RSG separately for different income cohorts and calculating the Age Pension offset for each cohort *at all ages in retirement*.

Section 2 (Results) shows the modelling results both before and after taking the Age Pension into account.

2.2.3   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 retirement. 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 a modest target for many people.

In our Retirement 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).

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2.2.4   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 3 (Results). We have made some broad allowance for investment properties of wealthier individuals, as discussed in Section 4.7.3 (Non-superannuation Assets).

2.2.5   Population

We have ignored that portion of the population which has already reached 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.

2.2.6   Background to the Longevity Savings Gap

The key difference between the 'Retirement Savings Gap' and the 'Longevity Savings Gap' (LSG) is the amount of time retirees will require an adequate income in retirement. For the RSG 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, ignoring people who earn more than twice average earnings as it is probable that they will have adequate provisions in retirement.

It is expected that half of all Australians will live beyond their life expectancy. Consequently, it is likely that many Australians would prefer to have sufficient retirement savings to provide themselves with an adequate retirement income well beyond life expectancy. For this reason, in this report we have modelled the savings shortfall to provide replacement income of 62.5% of pre-retirement earnings (in real terms) for those who survive until both the 75th survival percentile and the 90th survival percentile.

This approach allows us to assess the shortfall in savings for Australians to have adequate incomes in retirement even when they live beyond the average number of years.

The current absence of any pooling of longevity risk results in retirees needing enough savings to fund their entire retirement, the length of which can vary considerably. Retirees who survive well beyond their life expectancy may exhaust their savings early and be unable to draw an adequate income, resulting in a rapid deterioration in their living standard and an increased drawdown on the Age Pension which will have a negative impact on the Commonwealth Budget.

Individuals can address their own LSG by:

▪   delaying retirement

- saving more in superannuation

- exhausting existing assets including the family home

- deferment of consumption of their superannuation savings, through taking the minimal pension payment each year

- purchasing longevity products, such as lifetime or deferred annuities.

This report explores the impact of the above actions on the LSG and the associated retirement outcomes.

3. Results

3.1 Retirement Savings Gap

The RSG as at 30 June 2013 is calculated as $727 billion after allowance for the Age Pension, compared to our estimate of $836 billion as at 30 June 2011. 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 (ages 25 to 65), has grown from 10.6 million to 10.8 million. The estimated Gap has decreased by $109 billion in dollar terms; it stands at $67,300 per person as compared to $79,200 per person as at 30 June 2011. This represents a decrease of approximately $12,200 per person in nominal terms or approximately $11,200 in real terms. This reduction is mainly due to the effect of assets growth of the period and increase in age pension entitlements.

The RSG can be subdivided by gender as follows.

Table 6.   Retirement Savings Gap by Sex

As at 30 June	2011			2013		
	Males	**Females**	**Total**	**Males**	**Females**	**Total**
Asset (accumulated savings plus future contributions)	1,622	1,380	3,002	1,852	1,440	3,291
Contribution from Age Pension	436	579	1,014	454	633	1,087
Projected value of all benefits	2,058	1,958	4,016	2,306	2,073	4,379
Liability (target benefits)	2,512	2,341	4,852	2,682	2,423	5,105
Retirement Savings Gap	**453**	**383**	**836**	**377**	**350**	**727**

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 $584 billion to $881 billion with a mid-point of $727 billion.

We note that the RSG (after the Age Pension) is higher for males. Males tend to receive lower Age Pension benefits as they generally have greater superannuation 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 superannuation savings at retirement and their longer expectation of life (and thus the longer period over which to provide an adequate income) relative to males.

3.1.1   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 7 shows the composition of the RSG (after allowing for the Age Pension) by quinquennial age group. 0 and Graph 4 display the RSG per person in each group as at 30 June 2013.

Table 7.   Retirement Savings Gap ($M)

As at 30 June Age	2011		2013	
	Males	**Females**	**Males**	**Females**
25-29	84,454	88,112	74,516	77,885
30-34	78,456	59,735	63,947	58,746
35-39	66,230	50,189	64,064	50,765
40-44	59,397	46,757	52,933	41,391
45-49	57,836	55,812	37,494	45,896
50-54	46,201	46,666	38,925	43,286
55-59	36,161	26,325	28,366	24,388
60-64	24,577	9,200	16,670	7,446
Total	**453,312**	**382,797**	**376,916**	**349,803**

Table 8.   Retirement Savings Gap Per Person by Age and Gender ($)

As at 30 June 2013	Males	Females
25-29	$102,541	$101,847
30-34	$103,116	$82,307
35-39	$99,416	$64,777
40-44	$85,358	$55,290
45-49	$56,282	$58,723
50-54	$63,289	$59,971
55-59	$47,795	$36,459
60-64	$29,166	$12,252
Total	**$74,524**	**$60,407**

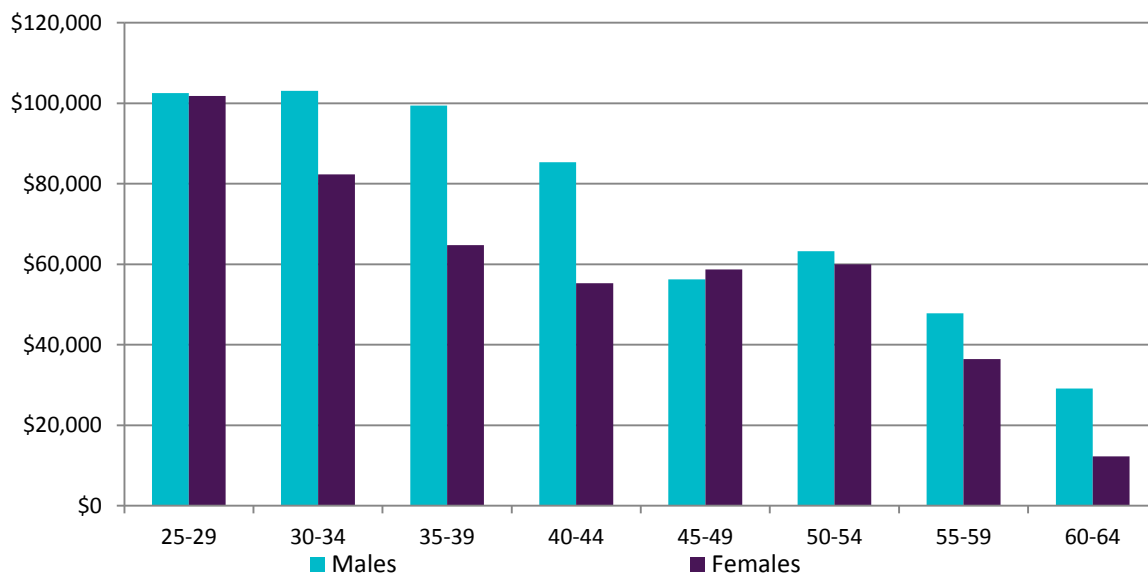**Graph 4.   Retirement Savings Gap Per Person by Age and Gender ($)**

Table 9 and Table 10 show 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.

3.1.2   Required contribution rates by cohort

Table 9.   Required Additional Contribution – 30 June 2013 - Males

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00	9.25	2.58	11.83
30-34	0.74	10.41	3.10	14.25
35-39	1.60	11.76	3.66	17.02
40-44	2.58	13.30	3.97	19.85
45-49	3.68	15.04	3.47	22.19
50-54	4.79	16.78	5.61	27.18
55-59	5.89	18.51	7.14	31.54
60-64	**7.00**	**20.25**	**12.05**	**39.30**

Table 10. **Required Additional Contribution – 30 June 2013 - Females**

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00	9.25	3.10	12.35
30-34	0.74	10.41	3.00	14.15
35-39	1.60	11.76	2.89	16.25
40-44	2.58	13.30	3.12	19.00
45-49	3.68	15.04	4.40	23.12
50-54	4.79	16.78	6.45	28.02
55-59	5.89	18.51	6.61	31.01
60-64	**7.00**	**20.25**	**6.14**	**33.39**

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.

3.1.3 Impact of Age Pension

If there were no Age Pension, the rates required would be considerably higher as shown in Table 11 and Table 12

Table 11.   Required Additional Contribution – 30 June 2013 before Age Pension – Males

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00	9.25	5.72	14.97
30-34	0.74	10.41	6.28	17.43
35-39	1.60	11.76	7.21	20.57
40-44	2.58	13.30	8.07	23.95
45-49	3.68	15.04	8.11	26.83
50-54	4.79	16.78	12.53	34.10
55-59	5.89	18.51	17.70	42.10
60-64	7.00	20.25	41.69	68.94

Table 12.   Required Additional Contribution – 30 June 2013 before Age Pension - Females

Age Band	Current Average Member Rate	Current Average Concessional Rate	Required Additional Concessional Contribution	Required total contribution Rate
	(%)			
25-29	0.00	9.25	7.5%	16.8%
30-34	0.74	10.41	7.3%	18.4%
35-39	1.60	11.76	7.9%	21.2%
40-44	2.58	13.30	9.1%	25.0%
45-49	3.68	15.04	12.6%	31.3%
50-54	4.79	16.78	18.4%	40.0%
55-59	5.89	18.51	22.6%	47.0%
60-64	7.00	20.25	44.9%	72.2%

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.

3.1.4   Results by Income

The results can also be expressed by income band.

Table 13 shows the composition of the RSG (after the Age Pension) in terms of income.

Table 13.   **Retirement Savings Gap ($M) by Income and Sex**

Annual Income	Males	Females
under 44,400	0	0
44,400 - 55,500	3,401	11,708
55,500 - 62,900	11,558	24,554
62,900 - 74,000	49,137	75,552
74,000 - 88,800	100,632	102,759
88,800 - 133,200	150,814	109,241
over 133,200	61,374	25,990
Total	**376,916**	**349,803**

Most of the RSG is attributable to individuals earning over about $49,950, 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 $44,400 p.a. and the gap is small for individuals earning up to $55,500 p.a. Some may even experience an increase in living standards, as the Age Pension can provide an approximate maximum of $21,500 p.a.

Table 14 and Graph 5 examine the RSG per person by gender and income.

Table 14.   **RSG per Person by Gender and Average Income**

Annual Income	Males	Females
under 44,400	0	0
44,400 - 55,500	4,638	19,905
55,500 - 62,900	26,880	81,541
62,900 - 74,000	86,033	199,237
74,000 - 88,800	199,062	349,502
88,800 - 133,200	304,407	491,254
133,200 – 148,000	558,918	864,108

Graph 5.   RSG per Person by Gender and Average Income
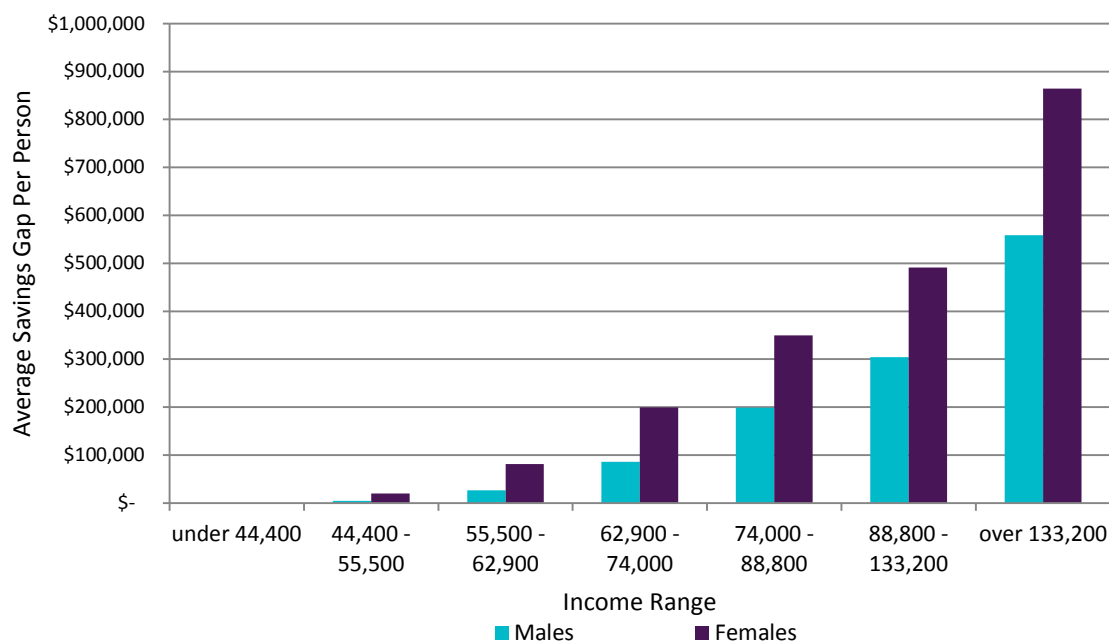
3.1.5   Other Assets

We discuss in Section 4.7.3 (Non-superannuation Assets) the impact on the RSG of non-superannuation assets which has not been considered in detail in this report.

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 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.

3.1.6   Varying retirement age

In our model, we have assumed that all members of the population retire at the future pension eligibility age of 67, however, in reality the median age of retirees leaving the workforce is around age 61. If this current trend continues, the Retirement Savings Gap would be much higher. This can be attributed to a variety of factors.

- lower savings at retirement due to less time spent in the workforce

- higher required savings due to a longer time spent in retirement

- the inability to draw on the Age Pension for the first seven years of retirement, before reaching the Age Pension age

▪ Larger numbers of people surviving to age 60 than surviving to age 67.

It is unrealistic for people to fund an adequate benefit if they retire at the current average retirement age. In order to reduce the cost to the government of early retirement and increase the probability of retirees having an adequate retirement income, the government should introduce policies that provide incentives for people to delay retirement, for example, an increase of the preservation age (the age at which members can legally access their superannuation benefits). We have modelled the effect of delaying the retirement age.

The results show (as expected) a decrease in the Retirement Savings Gap. Table 15 shows a reduction in the Retirement Savings Gap at life expectancy for changes in the retirement age from age 60 to 67, a similar reduction can be expected for the Longevity Saving Gap at the 75th and 90th survival percentiles.

Table 15. **Total Retirement Savings Gap – delaying retirement age ($billion)[3]**

As at 30 June 2013	Males	Females	Total
Retire at age 60	813	559	1,372
Retire at age 61	748	519	1,267
Retire at age 62	665	470	1,135
Retire at age 63	636	451	1,086
Retire at age 64	593	424	1,017
Retire at age 65	502	420	922
Retire at age 66	443	387	830
Retire at age 67	377	350	727

It is important to note, that many of those retiring before the Age Pension age will receive income from the Disability Support Pension so they will not necessarily draw on their retirement savings. This would reduce the Retirement Savings Gap shown in Table 15, but would conversely increase the cost to the government. We have not modelled the impact of the Disability Support Pension on the Retirement Savings Gap or the total Pension payments made by the government in this report.

It is evident that delaying retirement is an effective way to close the savings gap. However, some people will not be able to do this due to ill health. Even with an assumed retirement age of 67, the gap is still significant.

3.1.7   Adequacy for couples

Our model assumes that all retirees require 62.5% of pre-retirement income in their retirement years. Research shows that couples generally require less than a single person in their retirement years. This can be attributed to couples sharing fixed expenses such as housing and transport. Currently, two thirds of Australians are married at the time of retirement. As people die, the percentage falls and 58% of Australians of pension age are married.

Table 16 contains our estimate of the size of the Savings Gap for a variety of definitions of adequacy for couples, assuming that 58% of the population on average will be married during retirement.

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[3]Note that our Savings gap model is based on quinquennial groupings of lives with one group aged between 60 and 64. In order for the results of the early retirement scenarios to be comparable with the other Longevity Savings Gap figures, we have assumed that individuals older than one of the above retirement ages retire with immediate effect

Table 16.   Varying adequacy requirements ($billion)

Proportion of a single's income required by a couple	Adequacy definition for couples per person (% pre-retirement income)	Males	Females	Total
Income 150% of a single	46.9%	156.8	170.9	327.7
Income 160% of a single	50.0%	201.7	207.2	408.9
Income 170% of a single	53.1%	248.8	244.6	493.5
Income 180% of a single	56.3%	297.9	284.4	582.3
Income 190% of a single	59.4%	349.3	327.7	677.0
Base scenario	62.5%	376.9	349.8	727.0

While these figures show a considerably reduced retirement savings gap, it should be noted that most couples would expect to retire on 62.5% of their joint pre-retirement income. Further, many of these couples have one primary income earner so will not have two incomes.

3.2   Longevity Savings Gap

The Longevity Savings Gap as at 30 June 2013 is outlined in Table 17. The gap by age and gender is represented in Table 18, Table 19 and Graph 6, 7 and 8.

Table 17.   Longevity Savings Gap

	RSG at 50% ($b)	LSG at 75% ($b)	LSG at 90% ($b)
Males	377	764	1,121
Females	350	567	807
Total	**727**	**1,331**	**1,928**

Table 18. **Longevity Savings Gap by Age and Percentile**

$million	50%	75%	90%
Males			
25-29	74,516	124,963	181,136
30-34	63,947	125,387	180,904
35-39	64,064	128,642	174,785
40-44	52,933	100,068	153,156
45-49	37,494	90,438	139,865
50-54	38,925	91,050	127,688
55-59	28,366	60,902	96,336
60-64	16,670	42,191	66,882
Females			
25-29	77,885	119,123	164,049
30-34	58,746	90,803	128,238
35-39	50,765	82,421	117,406
40-44	41,391	69,538	98,112
45-49	45,896	75,861	106,943
50-54	43,286	70,247	98,980
55-59	24,388	43,103	67,981
60-64	7,446	16,364	25,458

Table 19.   Longevity Savings Gap per Person by Age and Percentile

| $	50%	75%	90%
Males			
25-29	102,541	171,961	249,260
30-34	103,116	202,189	291,712
35-39	99,416	199,630	271,236
40-44	85,358	161,366	246,974
45-49	56,282	135,754	209,948
50-54	63,289	148,039	207,609
55-59	47,795	102,614	162,317
60-64	29,166	73,816	117,015
Females			
25-29	101,847	155,772	214,520
30-34	82,307	127,221	179,669
35-39	64,777	105,171	149,811
40-44	55,290	92,889	131,059
45-49	58,723	97,061	136,830
50-54	59,971	97,326	137,135
55-59	36,459	64,437	101,626
60-64	12,252	26,926	41,890

Graph 6.   Savings Gap per Person 50th Percentile
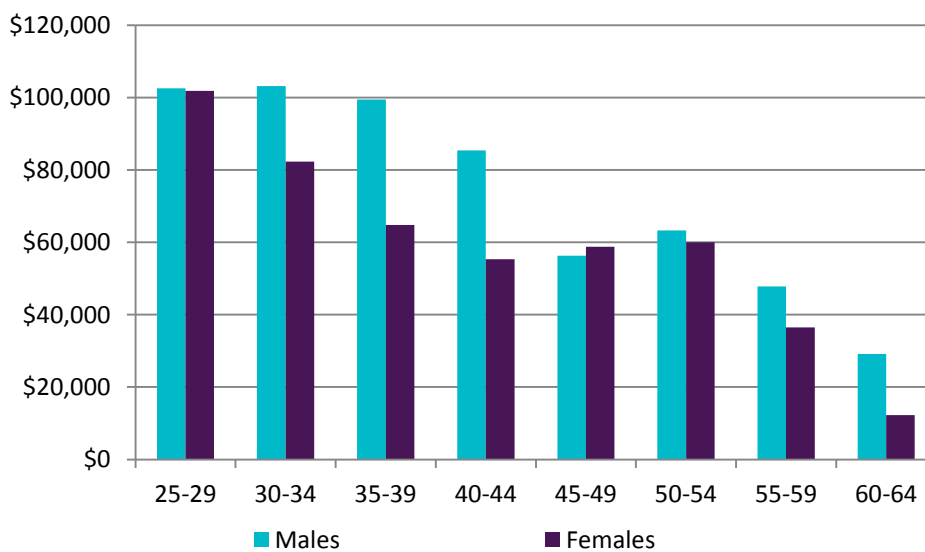
Graph 7. **Savings Gap per Person 75th Percentile**
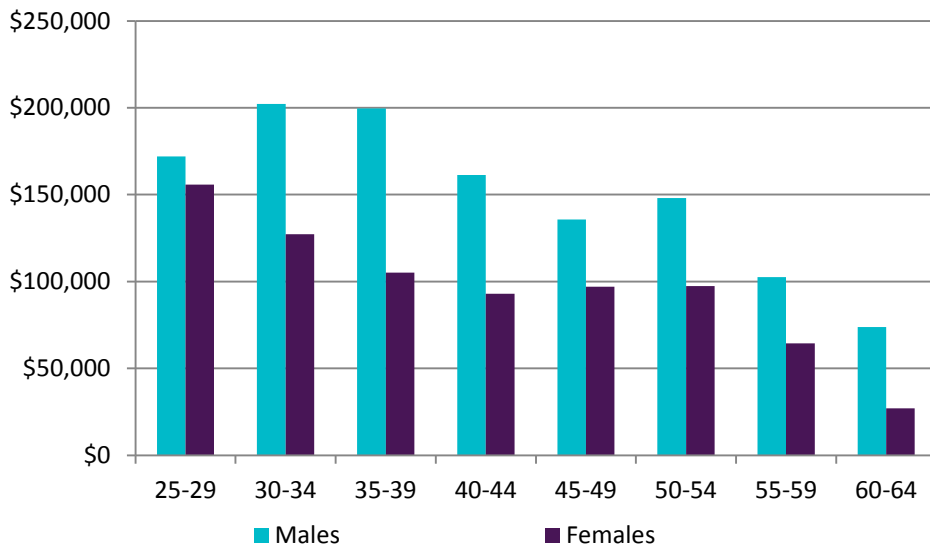
Graph 8. **Savings Gap per Person 90th Percentile**
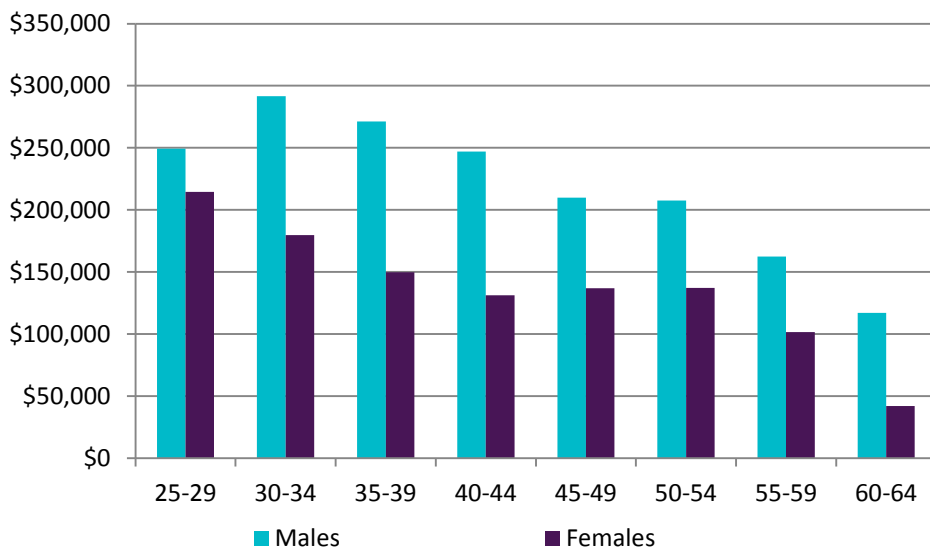
4. Methodology and Assumptions

4.1 Overview

- Economic:
    - 7.5% p.a. gross return on the accumulation of assets
    - 4.5% p.a. increase in salaries
    - 3.0**%** p.a. general price inflation increase in costs
    - 1.20% expense rate, reducing to 0.65% over 15 years
    - 0.47% 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 1.5% using the economic assumptions above:
    - This is calculated as (7.50% - 0.65% - 0.47%) x (1 - 6.0%) - 4.5%.

- 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 2021 (with consideration for the two year delay).
    - Average member contribution of 3.2%.

- Retirement at age 67.

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 67, an estimate of the number of people requiring 'adequate provision' can be determined. Age 67 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.

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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 to 64. The population aged 25 to 64 as published by the Australian Bureau of Statistics (ABS) was 12.4 million in 2013.

The ABS provides the number of persons by age and sex in Table 20.

Table 20.   **Population Aged 25 to 64 in 2013**

Age Band	Males	Females	Total
25-29	870,860	846,012	1,716,872
30-34	796,442	794,101	1,590,544
35-39	809,895	819,734	1,629,629
40-44	814,600	828,835	1,643,435
45-49	791,199	805,222	1,596,421
50-54	765,811	781,144	1,546,955
55-59	685,507	697,782	1,383,289
60-64	632,835	636,567	1,269,403
Total	**6,167,151**	**6,209,397**	**12,376,549**

These individuals need to be allocated further to income bands. We have based this analysis on data provided by the ABS in the 2011 ABS Census Statistics.

We have adjusted the income bands for general wage inflation over the two years to 30 June 2013, and have applied the resulting income distribution to the population at 30 June 2013 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 to $37,700 income band to the $37,700 to $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.

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 Rice Warner *2013 Superannuation Market Projections* report which utilises the APRA *Quarterly Superannuation Performance* report as at 30 June 2013.

Total assets for differing market segments were determined in Table 21.

Table 21.   Superannuation Market Breakdown at June 2013

Market Segment	Assets ($ millions)	Market Share (%)
Not for Profit Funds		
Corporate Funds	67,804	4.2
Industry Funds	329,678	20.4
Public Sector Funds	245,576	15.2
Total Not for Profit[1]	**643,058**	**39.8**
Commercial Funds		
Employer Master Trusts	116,771	7.2
Personal Superannuation	182,731	11.3
Post Retirement Products*	158,632	9.8
Retirement Savings Accounts	1,900	0.1
Eligible Rollover Funds	5,468	0.3
Unallocated Reserves**	1,407	0.1
Commercial Funds[1]	**466,910**	**28.9**
Self-Managed Funds	**507,200**	**31.4**
Total Superannuation	**1,617,169**[#]	

*   Most of these assets represent retail account-based pensions but the figure also includes term certain and lifetime annuities.

** This amount is held within the Statutory Funds of life insurance companies to back annuities and capital guaranteed business.

Total superannuation savings at 30 June 2013 amounted to $1,617 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 estimated the assets held in retirement products based on the Rice Warner *2011 Superannuation Market Projections Report*.

Our analysis indicates a total retirement market of $492 billion at 30 June 2013 which has been allocated to the various market segments in Table 22.

Table 22.   Post-retirement Assets

Market segment	Post-retirement Assets ($million)
Corporate Funds	3,661
Industry Funds	27,034
Public Sector Funds	54,272
Retail Funds	158,632
Self-Managed Funds	248,528
Total Post-retirement Assets	**492,128**

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 2013.

Table 23.   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**
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**
2012	61.5	50.9	32.8	8.9	13.5	6.9	3.8	5.2	**183.6**
2013	54.6	48.1	29.1	8.6	11.9	5.0	3.8	2.5	**163.7**

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

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Graph 9.   Unfunded Superannuation Liabilities
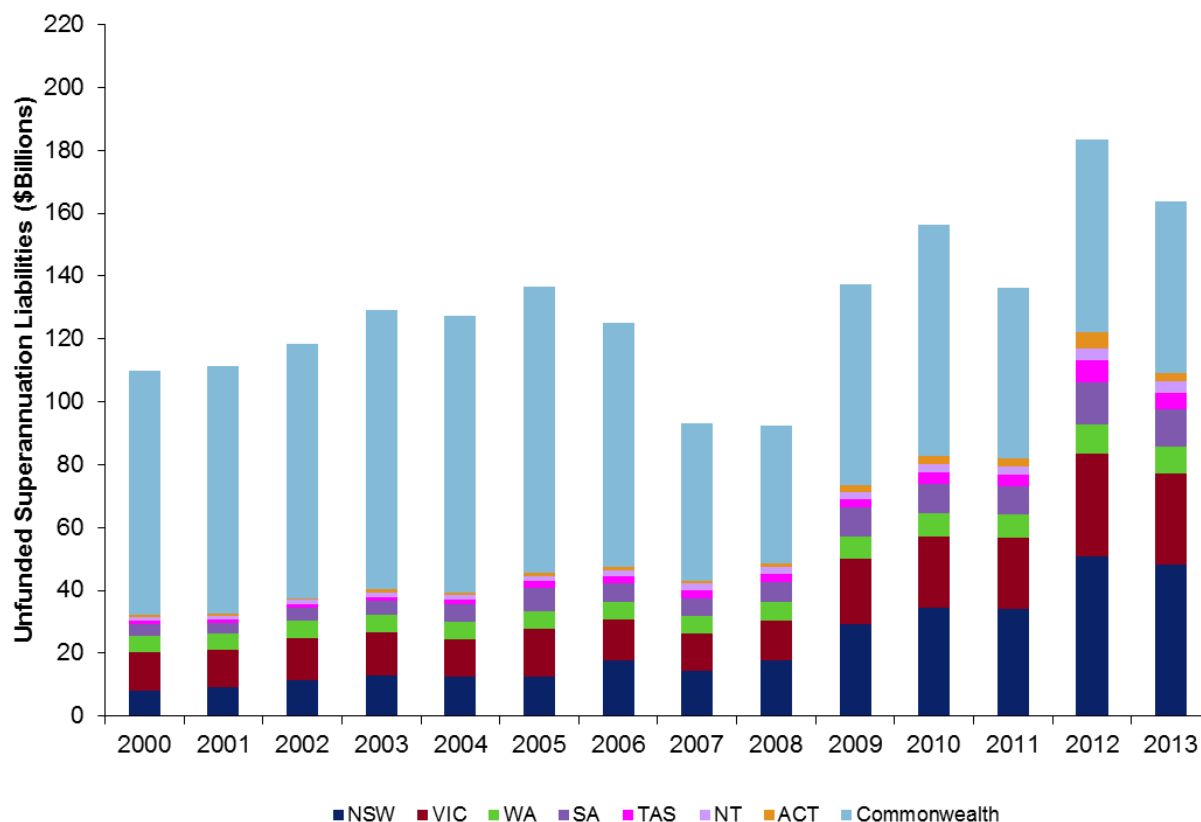
Unfunded public sector liabilities amounted to $253 billion at 30 June 2013. If we allow for the value of assets held by the Future Fund (valued at approximately $89 billion at 30 June 2013), these unfunded liabilities stood at almost $164 billion at 30 June 2013. Allowance is made in our model by adding this amount to the 'Public Sector Funds' assets from the APRA *Quarterly Superannuation Performance* report as at 30 June 2013.

4.3.3   Transition To Retirement Post Retirement Assets

After subtracting $492 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 $24 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.

After adjusting for post-retirement assets, unfunded public sector liabilities and TTR assets, the current savings amount decreases to $1,402[4] billion for the purposes of this model.

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[4] This figure is calculated as Total Superannuation Market assets – Post-retirement Assets + Public Sector Unfunded Liabilities + TTR Post Retirement Assets (i.e. $1,617b - $492b + $253b + $24b = $1,402b).

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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 remaining $1,245 billion of current pre-retirement superannuation assets to quinquennial age groups and sex based on a survey of superannuation funds used for the *2013 Superannuation Market Projections Report*.

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 $895 billion at 30 June 2013. This results in the following data in respect of current savings for the relevant population.

Table 24.   Savings at 30 June 2013

Age Band	Savings ($million)	
	Males	**Females**
25 – 29	13,315	11,849
30 – 34	22,411	19,463
35 – 39	35,923	28,900
40 – 44	51,547	36,289
45 – 49	73,479	47,920
50 – 54	92,759	60,289
55 – 59	118,070	81,462
60 – 64	117,284	83,954
Total	**524,788**	**370,125**

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 and the subsequent October 2013 decision to delay the SG increase by 2 years.

The assumed contributions by age group are outlined in Table 25.

Table 25.   Assumed Contribution Rates - June 2013

Age Group	Employer	Member
	(%)	
25-29	9.25	0.00
30-34	10.41	0.74
35-39	11.76	1.60
40-44	13.30	2.58
45-49	15.04	3.68
50-54	16.78	4.79
55-59	18.51	5.89
60-64	20.25	7.00
Average	**14.21**	**3.15**

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 2013 (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 9.25% 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 $82 billion or approximately 11%.

4.4.1 Delay of SG increase by two years

In this report we take into account the Government's October 2013 announcement that it will delay the gradual increase of the Superannuation Guarantee contribution rate from 9% to 12%. This will have the increase occur from 2013 to 2021 rather than the original 2013 to 2019.

We have assumed all future employer contributions will increase from year 2013 as shown in Table 26. We have also assumed that the tabled increases will not impact on our wage inflation assumption of 4.5%. For example, in 2016 wages will increase by 4.5% and the superannuation guarantee will also increase by 0.25%.

Table 26.   Changes to SG contribution

Year	Increase in Employer contribution (%)
2012	0.00
2013	0.25
2014	0.25
2015	0.25
2016	0.50
2017	1.00
2018	1.50
2019	2.00
2020	2.50
2021	3.00
After 2021	3.00

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. 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 57% of retirees qualify for the Couples pension, and the balance for the Singles pension. This is consistent with the current experience according to Age Pension statistics sourced from Centrelink.

As detailed in Section 3 (Results), the calculated effect of the Age Pension is a reduction in the Retirement Savings Gap of $1,087 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 62. 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.

When the Age Pension eligibility age was raised from 65 to 67, it was noted that this age would be reviewed again in 2023.

Note that if we had used the current median retirement age of 62 to calculate the Savings Gap then the Savings Gap would be much larger than the estimated headline figure of $727 billion.

4.7 Assumptions

4.7.1 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 $18 billion (or 2.5%).

4.7.2   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 27.   Probability of Survival to Age 67

Age Band	ALT 05 – 07	
	Males	Females
25 – 29	0.87	0.93
30 – 34	0.88	0.93
35 – 39	0.88	0.93
40 – 44	0.89	0.93
45 – 49	0.89	0.94
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 1.15% p.a. for a 67 year old male and 1.47% p.a. for a 67 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 $429 billion (or 41%).

4.7.3   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 $111,000 own an investment property. In our 2011 report we assumed that the mean value of investment properties was equal to $511,000. 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 $529,000 in 2013 dollars.

These assumptions reduce the calculated Gap for those individuals in the model earning between $111,000 and twice the average income (or approximately $148,000). 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 $2.1 billion (or 0.28%). 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.

4.7.4   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 distribution of members and current savings by age and sex was determined from the Rice Warner *2013 Superannuation Market Projections Report*. This allocation in the projections report was made as follows:

- APRA's Annual Superannuation Bulletin, June 2012 indicates 31.9 million member accounts as at 30 June 2012. 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 2013 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.

- 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 10.

**Graph 10.** **Assets Per Person By Age at 30 June 2011 and 30 June 2013**
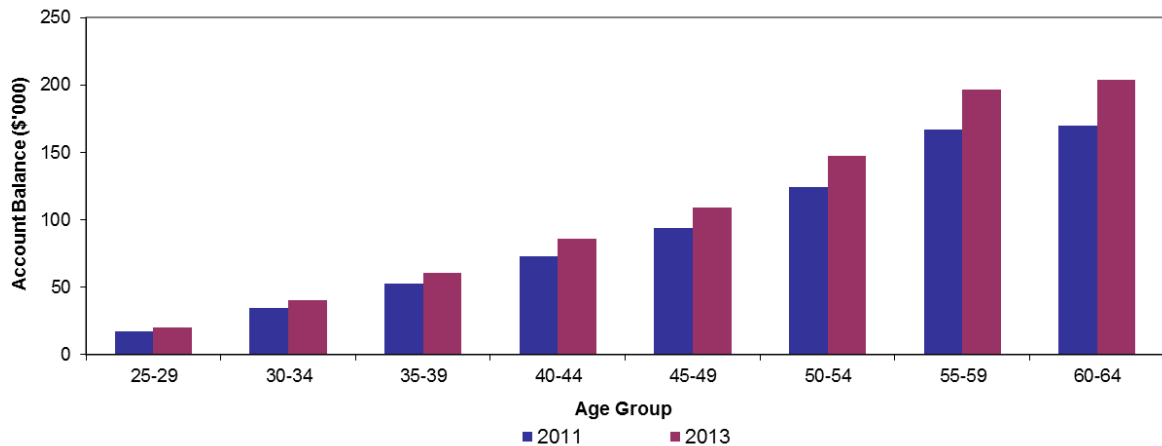
The average account balances are generally higher than in our previous report. This reflects a recovery in investment markets until the end of the 2012-13 financial year.

The distribution of members by income has been derived from data within the 2011 census as detailed in Section 4.2 (Population model).

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

Graph 11. **Assets Per Person by Income**
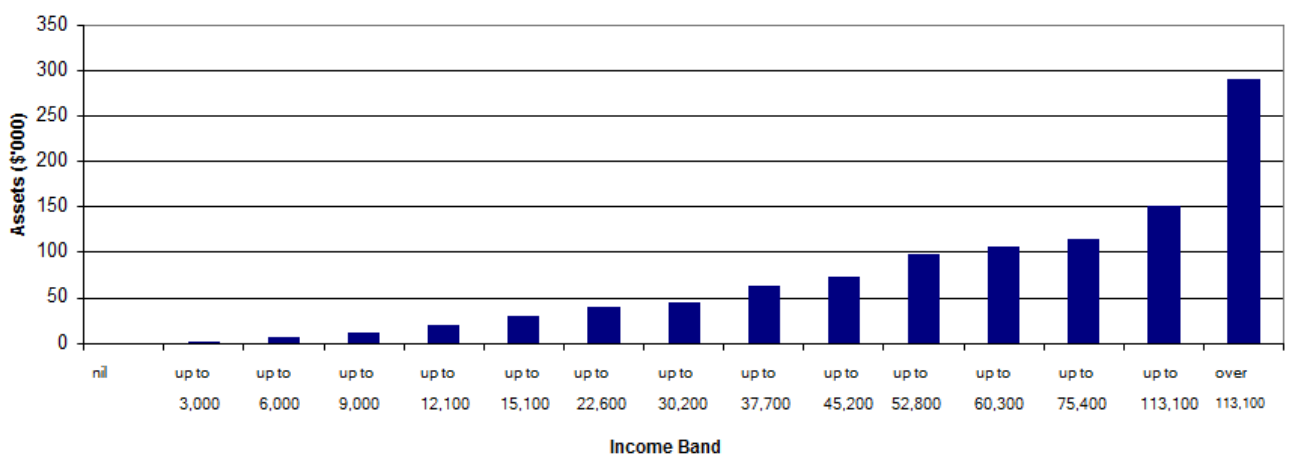
The modelling results for individuals close to retirement would be sensitive to the assumed distribution of assets, as this forms the bulk of the Asset in the Gap calculation. Conversely, the modelling results for younger individuals would not be sensitive to the assumed distribution of assets, as the 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 13% (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 28.

Table 28.   Proportion of Population Earning 2x Average Earnings by Age 67

Age Cohort	Current	Future	Total
		(%)	
25-29	2.9	8.2	11.0
30-34	6.1	9.4	15.5
35-39	7.9	8.3	16.2
40-44	8.3	6.9	15.3
45-49	7.4	5.4	12.8
50-54	7.9	4.2	12.2
55-59	6.2	2.4	8.6
60-64	4.0	0.7	4.7
Overall	**6.4**	**5.9**	**12.3**

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 outlined in Table 29.

Table 29. **Analysis of Difference of Retirement Savings Gap (Allowing for the Age Pension)**

	$ billion
Retirement Savings Gap Estimate, 30/06/2011	**836**
Effect of increase in age pension entitlements	-136
Effect of AWOTE (average earnings) Increase	129
Effect of change in current savings	-120
Effect of change in ABS Census Income Data	-48
Effect of fee changes	23
Effect of demographic changes	20
Effect of 2 year delay in SG increasing from 9.25% to 12%	15
Effect of cost of insurance changes	8
Retirement Savings Gap Estimate, 30/06/2013	**727**

Each item in Table 29 is discussed below.

6.2 Effect of 2 year delay in SG increasing from 9.25% to 12%

In this update of the Savings Gap report we have taken into account the proposed delay of the Superannuation Guarantee rate increase. The SG rate increase of 0.25% applied in 2013, but further increases will undergo a two-year delay before continuing to increase to 12% by 2021 (previously 2019).

This change has a negative effect on the estimated retirement saving gap, as it results in lower estimated future contributions. This causes an increase to the savings gap of $15 billion.

6.3 Effect of change in current savings

Estimation of the Savings Gap involves determining individuals' savings at retirement. This involves the accumulation of individuals' current savings and future contributions. The increase in population and growth in the market from 2011 has resulted in an increase in savings held by pre-retirement members totalling $172 billion.

Note the increase in savings includes the appreciation of non-superannuation assets as noted in Section 4.7.3 (Non-superannuation Assets).

6.4   Effect of AWOTE (average earnings) Increase

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 ABS[5] show that AWOTE increased by 9.0% 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 2013 increases the Retirement Savings Gap by $129 billion.

6.5   Effect of demographic changes

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 1.9% 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 had in the 2009 and 2011 reports. 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   Effect of change in ABS Census Income Data

Census data for 2011 was made available prior to the preparation of this report, which resulted in a small reallocation of members between different income bands. This reallocation resulted in a $48 billion reduction in the savings gap in 2013 compared to 2011.

6.7   Effect of cost of insurance changes

The annual cost of insurance for superannuation funds was estimated to be approximately 0.47% of pre-retirement superannuation assets over the year to 30 June 2013. In our previous report

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[5] ABS, May 2013, Catalogue Number 6302.0, Average Weekly Earnings.

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(Retirement Savings Gap at 30 June 2011) we had assumed that insurance would cost 0.43% of assets. This has the effect of increasing the savings gap by approximately $8 billion.

6.8 Effect of fee changes

In our previous reports we allowed for costs and fees to trend towards a long term expense rate of 0.60%. In 2009, the initial rate cost and expenses applied was 1.20% which we allowed to trend towards 0.60% for two years in our 2011 report. This had the starting point of the 2011 report to be 1.08%.

In this report we have set the initial expense rate to be 1.20% based on the *2011 FSC Fees Report* and will have this number trend towards the long term rate of 0.65%. This has the effect of increasing the savings gap by approximately $23 billion.

6.9 Effect of increase in age pension entitlements

Age pension payment rates are regularly indexed against Male Total Average Weekly Earnings (MTAWE). Where MTAWE grows at a faster rate than our assumed rate of salary growth (4.5%), there may be a reduction in the savings gap.

In 2012 the government introduced the Clean Energy Supplement (CES) as an additional payment to pensioners currently at the level of $13.70 for single pensioners and $10.20 for partnered pensioners (each) per fortnight. The CES was intended to offset any increases to the cost of living caused by the carbon tax (which has since been removed by the Coalition government).

The CES along with the regular indexation of age pension payments in line with MTAWE resulted in a larger than expected increase in age pension payment rates when compared with the 2011 report. The net result is a $136 billion decrease in the savings gap.