

IMPACT OF PRIVATE SAVING AND LONGER CAREERS ON RETIREMENT INCOMES

**Retirement and Income Modelling Unit
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The views in this Paper are those of the author and do not necessarily reflect those of the RIM Unit, any Commonwealth Department or the Government

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DETERMINANTS AND MEASURES OF LIVING STANDARDS IN RETIREMENT

The level of income which people have available to them in retirement will be a key determinant of their retirement living standard. Most people's income in retirement will be funded from a combination of superannuation assets, other private savings and a full or part-rate Age Pension. In combination with the taxation system, these income sources will endow retirees with a particular level of spending capacity.

Australia's three-pillared retirement income system is well known. The three pillars comprise the means-tested Age Pension and associated social security arrangements, compulsory employer superannuation contributions through the Superannuation Guarantee (SG) and voluntary private savings. The voluntary private savings component includes employer contributions that are beyond SG requirements, voluntary member superannuation contributions and other forms of saving such as property, shares and other non-superannuation financial assets. A key policy objective of this system is to enable Australians to achieve a higher standard of living in retirement than would be possible from the publicly funded Age Pension alone. The World Bank has broadly endorsed Australia's general approach to the provision of retirement incomes.

Anticipated future improvements in life expectancy, while not being explicitly linked to private saving, will have a considerable impact on the decisions of members both leading up to and particularly during retirement years.

The impact of this demographic change is in contrast to the impact of delaying retirement – improved life expectancies lead to reductions in annual drawdowns of private funds and consequently retirement expenditure. Pressure on the age pension will also be increased, as retirees will be receiving potentially greater benefits from the government each year (due to the reduction in private drawdown) for a greater number of years.

VOLUNTARY PRIVATE SAVINGS

This paper extends the analysis provided in the Treasury submission to the Senate Select Committee on Superannuation inquiry into superannuation and standards of living in retirement, by considering the individual elements of the third pillar of the retirement income system (voluntary savings).

In addition to compulsory employer contributions, some employers make above SG contributions for their employees. Individuals can also save voluntarily for their retirement through superannuation and/or other savings vehicles outside of superannuation such as property investment (including owner-occupied housing), shares and financial securities. Voluntary retirement savings are encouraged through the provision of taxation incentives for superannuation.

The impact of this third pillar of the retirement income system on standards of living in retirement is often overlooked when the adequacy of current arrangements is discussed. Yet it has the potential to have a marked impact on the standard of living in retirement, be it through the superannuation benefits beyond those provided under SG, unlocking the value of equity held in housing or the drawing down of other financial assets held by retirees.

EMPLOYEE POST-TAX CONTRIBUTIONS TO SUPERANNUATION

Employees can make voluntary member contributions to superannuation from either post-tax income or via salary sacrifice. While post-tax contributions do not benefit from the concessional tax rate applying to superannuation contributions, they still benefit from the concessional tax rate applying to the earnings on benefits inside the fund. Salary sacrifice arrangements enable many employees to exchange part of their gross (pre-tax) salary in return for their employer contributing money into superannuation on their behalf. Salary sacrifice arrangements enable employees to gain

the benefit of the concessional tax rate applying to employer superannuation contributions. Special taxation arrangements apply to self-employed people for their superannuation contributions.

Research into the tax treatment of superannuation has highlighted the improved benefits of using superannuation as an investment vehicle in preference to investing outside of super¹. This research also found that for a constant level of gross income member contribution to superannuation, the use of salary sacrifice was preferable to making contributions out of post-tax funds as this lead to a greater net contribution to the member's account (although this will not be the case for low-income earners once the co-contribution policy is introduced).

The impact of voluntary member contributions into superannuation has been analysed, with results of the analysis discussed on the subsequent pages.

DATA SOURCES

Both the 2000 ABS Survey of Employment Arrangements and Superannuation (SEAS) and a 1999/2000 Sample Tax File were analysed to establish the level of contributions into superannuation funds.²

One of the limitations of the SEAS file is the number of respondents who do not provide information regarding their contributions to superannuation and who do not give the ABS

¹ Rothman, Dr. G. 'Assessing the Tax Advantages of Investing in Superannuation', Paper to the Eighth Annual Colloquium of Superannuation Researchers, University of New South Wales, July 2000

² Both salaries and superannuation contributions have been indexed by wage movements (of approximately 4 per cent per annum) to provide figures for 2002/03. Superannuation contributions have also been grossed-up to incorporate the impact of the increase in SG from 7 per cent at the time of data collection to the current figure of 9 per cent by multiplying by a factor of 9/7.

permission to gather the information. The value of contributions for these respondents is assigned to a dummy variable and hence cannot be incorporated into any subsequent analysis.

While this leads to an understating of the aggregate contributions (and the number of members receiving these contributions), the distribution and statistical properties of the available data reconcile reasonably well with the results obtained from the sample tax file data. Consequently, the SEAS data has been used predominantly as a method of validating results obtained from the more comprehensive sample tax file.

EMPLOYER CONTRIBUTIONS BEYOND SUPERANNUATION GUARANTEE (SG) REQUIREMENTS

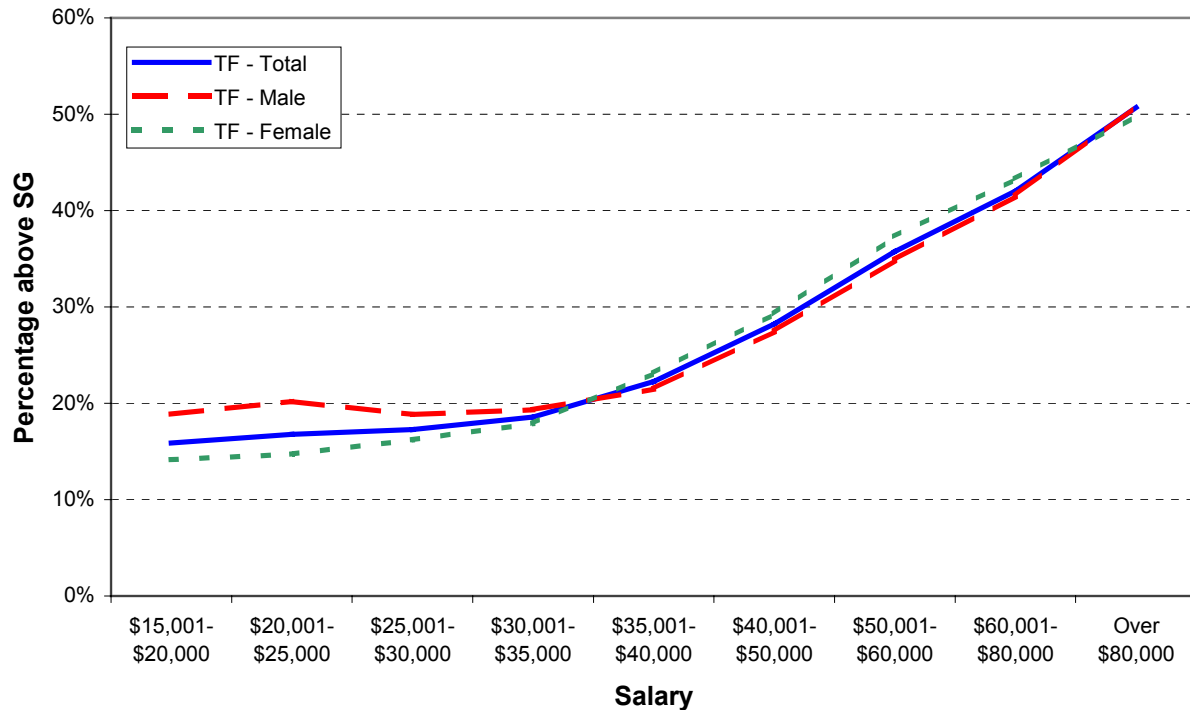
Many employers provide superannuation contributions beyond SG requirements in order to help attract or retain staff, particularly in high-level positions. This notion is borne out when evaluating the proportion of employees who receive these more generous benefits by salary and age groupings.

One of the difficulties of performing such an analysis is trying to discern when these contributions are being made by the employer for the reasons suggested above and when these contributions arise as a result of a member exercising an option to salary sacrifice. While neither data set contains sufficient information to answer this question, the objective of analysing this issue is to assess the value of contributions above SG rather than to attribute them to one group or another. Therefore, for the purposes of reporting the findings below the results are classified simply as employer contributions exceeding the required SG level.

Data from the sample tax file suggests that while an estimated 27 per cent of members receive employer support that exceeds the SG level, more than 40 per cent of members with salaries in

excess of \$60,000 receive these additional contributions. Furthermore, more than 40 per cent of members between the ages of 50 and 70 receive additional support.

Chart 1: Percentage of Members with Employer Contributions above SG by Salary Level

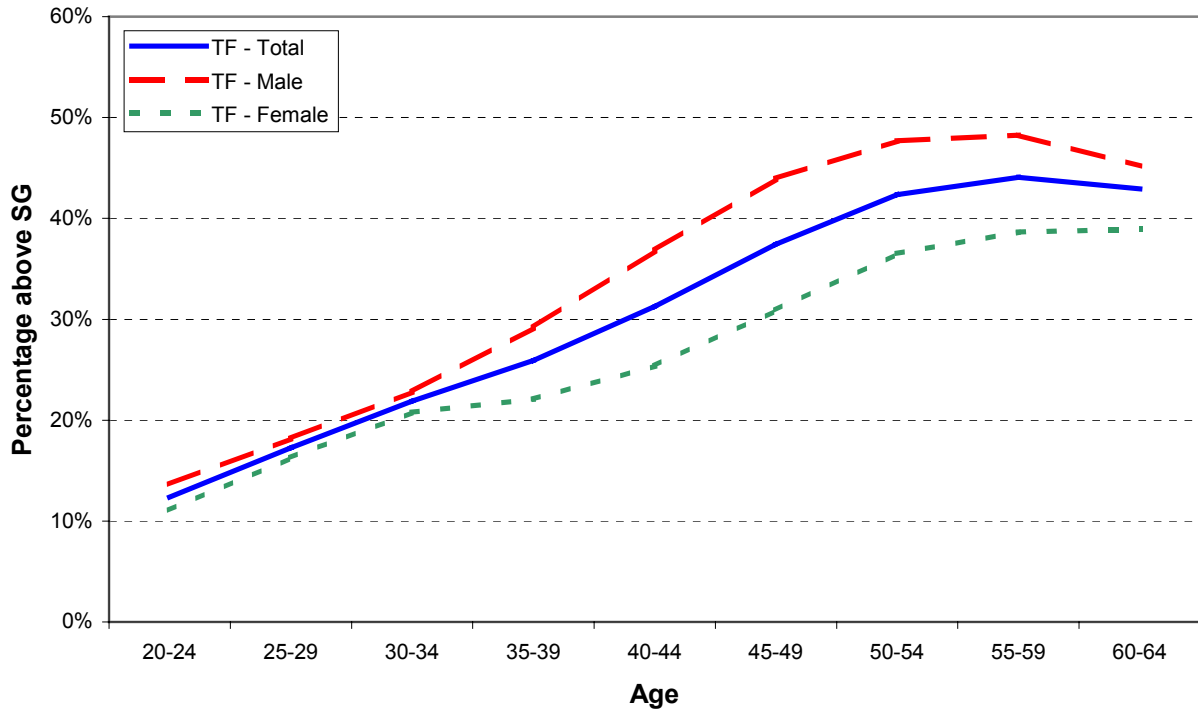


Data Source: 1999/2000 Sample Tax File Data (Salaries indexed by wage movements to \$ 2002/03)

The median percentage level of additional employer support provided is also linked to salary. The sample tax file data suggests that within the group of people receiving additional support, the median level of contributions increase as salary increases. The median level of employer contributions for this group is between 9 and 10 per cent for salaries up to \$20,000, between 10 and 11 per cent for salaries up to \$35,000, between 11 and 12 per cent for salaries up to \$50,000 and above 12 per cent thereafter³.

³ Contributions have been grossed-up to incorporate the impact of the increase in SG from 7 per cent at the time of data collection to the current figure of 9 per cent by multiplying contribution values by a factor of 9/7. The proportion of members receiving these additional contributions has not been adjusted.

Chart 2: Percentage of Members with Employer Contributions above SG by Age



Data Source: 1999/2000 Sample Tax File Data

When evaluating the proportion of members receiving additional contributions by age grouping, females are seen to have lower rates (see Chart 2). However, this results from more males than females being in the higher salary ranges. As the comparison of results for males and females by salary ranges showed, there is a slight difference for salaries up to \$35,000 but very similar results for salaries above this level (see Chart 1).

Analysis based on SG contributions alone (such as that provided in the Treasury Submission to the Senate Select Committee Inquiry) has suggested that replacement rates decline significantly as salary levels increase. This is due primarily to the level of age pension decreasing as private income increases. The analysis presented above implies that the replacement rates based on SG alone may

understate the standard of living enjoyed in retirement, particularly by those in the higher income ranges.

Research conducted by Treasury⁴ in the past showed this same established pattern of actual superannuation contribution rates as a percentage of income rising with rising income. Accordingly while SG only savings would give the replacement rate dropping significantly as income rises, actual savings patterns may not give rise to this drop for a significant percentage of members.

PROPORTION OF EMPLOYEES MAKING POST-TAX CONTRIBUTIONS

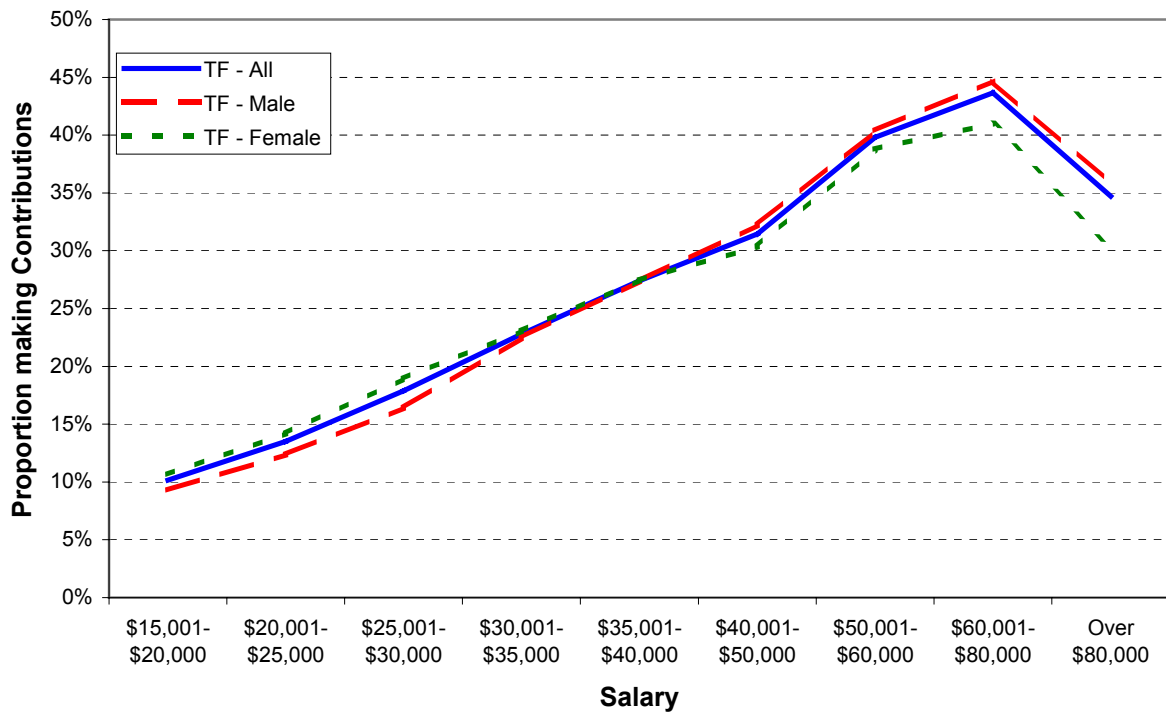
The SEAS and sample tax files provide quite similar results for the level of ‘coverage’ with regard to employee post-tax contributions, both for all contributions and for contributions being made in conjunction with employer support.

Approximately 20 per cent of all employees with at least one superannuation fund are making some form of member contribution. This figure increases to over 25 per cent when evaluating the results for employees who also receive employer support.

The percentage of employees making post-tax contributions increases with their salary range up to a salary of \$80,000 (see Chart 3). Beyond this salary level, the percentage of employees making contributions declines. A similar result is observed with regard to age – the percentage of employees making post-tax contributions rises steadily to its peak in the 55-59 year old age bracket and declines subsequently (see Chart 4). The difference between men and women by age is once again driven primarily by differences in incomes in each age range.

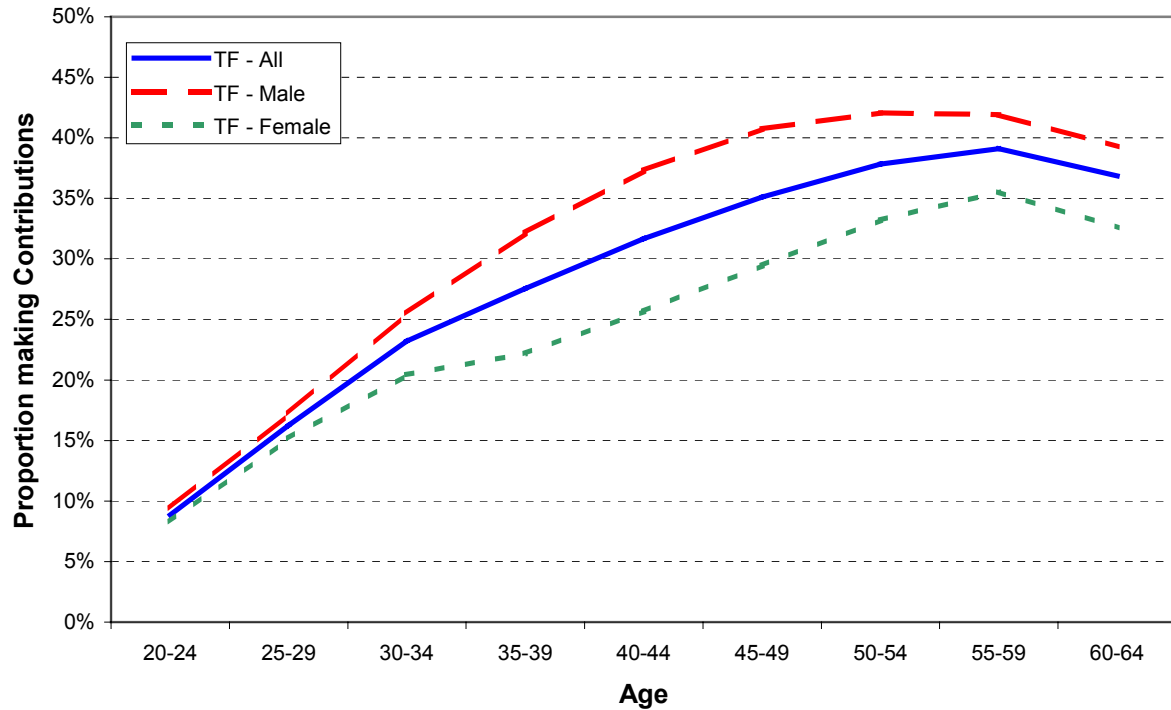
⁴ Rothman, Dr. G. and Tinnion, J., ‘Retirement Income Adequacy and the Emerging Superannuation System – New Estimates’, Paper presented to the Seventh Colloquium of Superannuation Researchers, July 1999

Chart 3: Percentage of Members with Employer Support Making Personal Contributions by Salary Range



Data Source: 1999/2000 Sample Tax File Data (Salaries indexed by wage movements to \$ 2002/03)

Chart 4: Percentage of Members with Employer Support Making Personal Contributions by Age



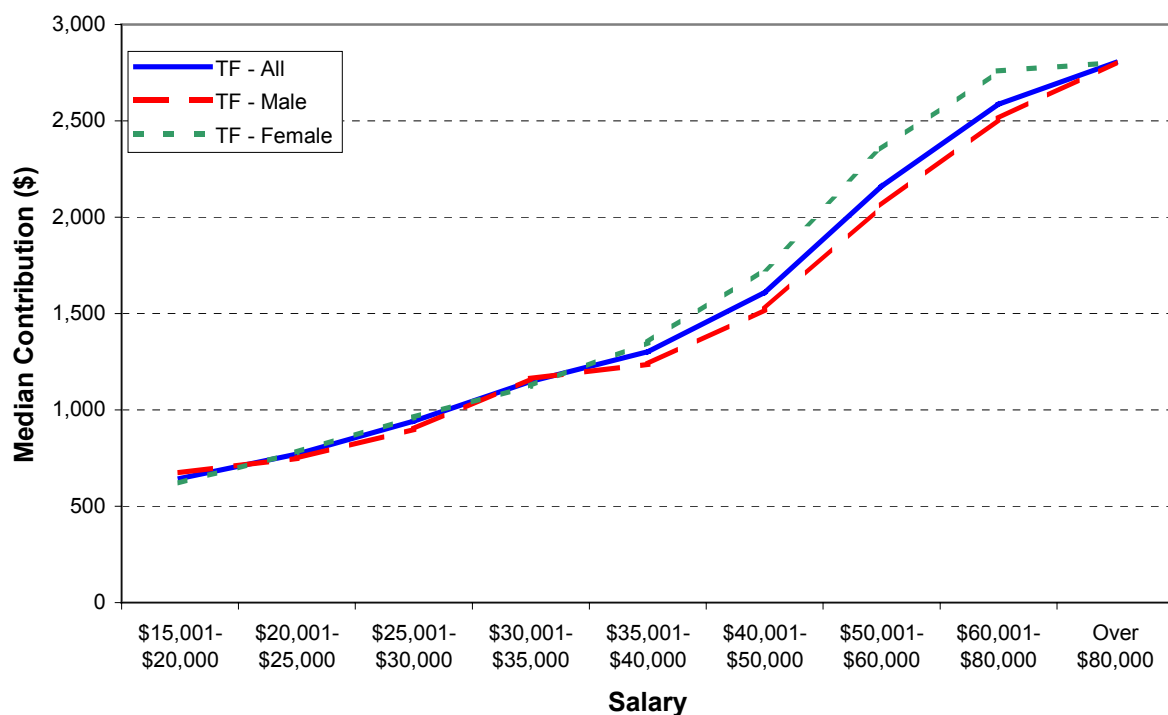
Data Source: 1999/2000 Sample Tax File Data

VALUE OF EMPLOYEE POST-TAX CONTRIBUTIONS

Analysis of the median contribution value was performed for the group of employees who made personal contributions. Again, the overall SEAS and sample tax file data sets matched up reasonably well (though not as well as was the case for the proportion of members making contributions).

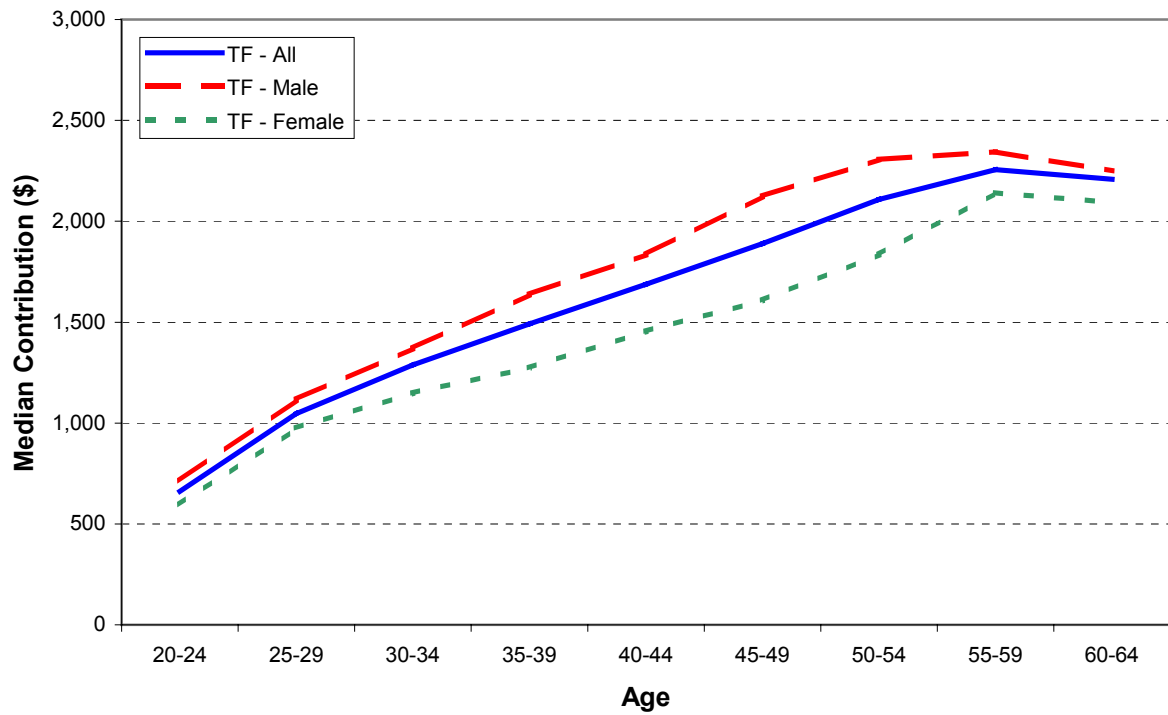
The median level of contribution increased as salary increased (see Chart 5), while there was a median contribution peak in the 50-54 year old age bracket (SEAS file data) and the 55-59 year old age bracket (sample tax file data – see Chart 6).

Chart 5: Median Contribution for Members with Employer Support Making Personal Contributions by Salary Range



Data Source: 1999/2000 Sample Tax File Data (Contributions and Salaries indexed by wage movements to \$2002/03)

Chart 6: Median Contribution for Members with Employer Support Making Personal Contributions by Age



Data Source: 1999/2000 Sample Tax File Data (Contributions indexed by wage movements to \$2002/03)

In terms of the median contribution as a percentage of salary, the contribution level was fairly steady at approximately 3.5 per cent of salary based on tax file data, and approximately 4.5 per cent based on SEAS data (within a salary range of \$15,000 - \$80,000).

Consider the example of a member using salary sacrifice as their means of making the median personal contributions towards their superannuation (and receiving SG contributions only from their employer). The value of the total contributions suggested above is akin to having an employer contribution level of 12.5 per cent or 13.5 per cent. For a member making contributions out of post-tax income, this figure increases to an equivalent SG of 13.1 per cent or 14.3 per cent.⁵

This result is borne out in the improvement in replacement rates achieved by making such contributions. Table 1 highlights the significant impact on replacement rates in retirement created by making personal contributions during working life. The details of each replacement rate calculation are presented in Appendix A.

Table 1: Replacement Rates for Members making Supplementary Contributions⁶

Gender	Career (Years)	Salary as proportion of AWOTE	Method of Contribution	Contribution as Percentage of Salary		
				0%	3.5%	4.5%
Male	30	0.75	Post-tax	74%	87%	91%
			Salary Sacrifice	74%	83%	86%
Male	30	1	Post-tax	65%	78%	83%
			Salary Sacrifice	65%	74%	77%
Male	35	0.75	Post-tax	77%	93%	98%

⁵ A post-tax personal contribution is not subject to contributions tax, so to provide an equivalent net contribution using SG the additional contribution component required is equal to $3.5 / (1 - 0.15) = 4.1\%$, or $4.5 / (1 - 0.15) = 5.3\%$.

⁶ All replacement rates are calculated using the Treasury's preferred method of comparing average retirement expenditure with final working life expenditure (as per the submission to the Senate Select Committee Inquiry). All benefits are taken as life pensions at a retirement age of 65.

			Salary Sacrifice	77%	88%	92%
Male	35	1	Post-tax	68%	85%	90%
			Salary Sacrifice	68%	80%	83%
Female	Broken*	0.75	Post-tax	72%	86%	90%
			Salary Sacrifice	72%	81%	84%
Female	Broken*	1	Post-tax	62%	76%	81%
			Salary Sacrifice	62%	71%	74%

* Broken career assumptions are full-time work from ages 25 to 29, no work from ages 30 to 34, part-time work from ages 35 to 44 and full time work from ages 45 to 64.

It is important to note that a post-tax (either post-income tax or post-contribution tax, depending on the method chosen) contribution of 3.5% of gross salary can be achieved either by setting aside 5.11% of gross salary for post-tax contributions, or by salary sacrificing 4.12% of gross salary⁷.

The justification for providing replacement rates based on 0.75 x AWOTE is that this figure is approximately equivalent to median ordinary time earnings for a full-time worker. Treasury's submission to the Senate Select Committee on Superannuation and Standards of Living in Retirement used data from the ABS Survey of Employee Earnings and Hours (May 2000) to justify this estimate. Three further statistics also justify this choice:

- The most recent ABS Time Series data also suggests that AWOTE (Average Weekly Ordinary Time Earnings) is equal to approximately \$47,000 per annum. SEAS Data (indexed by wage movements to the current timeframe) suggests the median salary for full-time workers is approximately \$38,500. However, this figure includes payments for overtime, which are omitted when considering ordinary time earnings.

⁷ The figure for post-tax contributions is calculated as $3.5 / (1 - 0.315) = 5.11\%$, while the relevant salary sacrifice figure is calculated as $3.5 / (1 - 0.15) = 4.12\%$.

- Based on data taken from the 2001 ABS Survey of Working Arrangements, we have estimated that overtime accounts for approximately 7 per cent of total salary earned. Reducing the \$38,500 figure above by 7 per cent gives a median result of approximately \$35,800, or 76.2 per cent of AWOTE.
- Tax data from 1999/2000 also shows that for members receiving SG contributions, the mean salary level is equal to 73.7 per cent of AWOTE, further validating the merit of 0.75 x AWOTE analysis.

Career Lengths

RIM estimates that the average years of full-time equivalent working life for a male 15 years of age in 1982 and retiring at age 65 in 2032 is 37 years. This validates the use of the 35 years of working life assumption in the analysis presented above (see Appendix C for details).

For females, equivalent full-time working life is projected to rise very slowly over time. RIM estimates that the average years of full-time equivalent working life for a female 15 years of age in 1982 and retiring at age 65 in 2032 is 26 years. It is important to note that for the cases presented for a female with a broken working career that the full-time equivalent career length assumed is 30 years, which is greater than the data for women overall. The reasoning behind this is that the females in the analysis are assumed to be sole providers for their retirement and therefore are more likely to work longer hours and/or for longer periods within a broken working career.

The most recent ABS Australian Labour Market Statistics suggest married women and non-married women have very similar participation rates between the ages of 25 and 65, but that non-married women are more likely to be working full-time than married women, particularly from age 35 onwards (see Appendix D for details). This leads to an increase in full-time equivalent working life, and can be adapted to our analysis of partnered and non-partnered women.

The data also suggests that from ages 60 to 64, women are more likely to be working part-time than full-time. While using this as an assumption for our analysis would bring the working life figures into line, it would also inflate replacement rate results, as the final year of working life would be part time and consequently provide a significantly lower net income. By the same token, the replacement rates presented above may be unrepresentative of the real value of the retirement income system, as the hours worked in the final year are not representative of hours typically worked throughout working life.

Making contributions out of post-tax income rather than salary sacrifice leads to lower working life expenditures for a constant (net income) level of contribution to superannuation. As alluded to earlier when discussing the concessional nature of investing in superannuation, salary sacrifice provides superior results to post-tax contributions for a constant gross income level of contribution.

The replacement rates reached by making contributions out of post-tax income exceed those reached by making the same level of contributions via salary sacrifice for two reasons. As discussed above, contributions from post-tax income are not subject to contributions tax, leading to a greater level of superannuation funds accumulated during working life for a given net contribution. The other impact is on final working life expenditure, which is used as the denominator for replacement rate calculations.

While this may appear to artificially inflate replacement rate figures, it is important to address the reasoning behind using replacement rates as a measure of adequacy in the first instance. The notion of retirement income adequacy is tied heavily to meeting the expectations of members. If members are accustomed to a working life expenditure that is net of post-tax contributions to superannuation, it is therefore reasonable to use such a yardstick to measure the relative living standards achievable during retirement.

In keeping with the current concerns surrounding future returns for superannuation funds (both in the short term and to a lesser extent the longer term), Table 2 presents the estimated replacement rates under a long-term earnings assumption of 5 per cent per annum.

An earnings rate of 5 per cent per annum provides results that are comparable to a working life scenario where an average return of say, 7 per cent is realised for just over half the years while an average return of 3 per cent is realised for the remaining years. The justification for this composition of varying returns across working life is that for a given arithmetic average return over a period of time, greater volatility in annual returns leads to a reduced effective annual return.

Table 2: Sensitivity Analysis of Replacement Rates – Assumed Earnings Rate of 5%

Gender	Career (Years)	Salary as Proportion of AWOTE	Method of Contribution	Contribution as Percentage of Salary		
				0%	3.5%	4.5%
Male	30	0.75	Post-tax	70%	81%	84%
			Salary Sacrifice	70%	76%	79%
Male	30	1	Post-tax	60%	71%	75%
			Salary Sacrifice	60%	67%	70%
Male	35	0.75	Post-tax	72%	84%	88%
			Salary Sacrifice	72%	80%	82%
Male	35	1	Post-tax	62%	75%	79%
			Salary Sacrifice	62%	71%	73%
Female	Broken*	0.75	Post-tax	68%	80%	83%
			Salary Sacrifice	68%	75%	78%
Female	Broken*	1	Post-tax	58%	70%	73%
			Salary Sacrifice	58%	65%	68%

* Broken career assumptions are full-time work from ages 25 to 29, no work from ages 30 to 34, part-time work from ages 35 to 44 and full time work from ages 45 to 64.

Again, the methodology of analysing retirement incomes based on SG alone has been shown to potentially understate the replacement rates (particularly for higher income ranges). As mentioned when assessing the impact of employer contributions beyond the Super Guarantee level, past Treasury research has highlighted the fact that aggregate superannuation contributions increase in line with incomes.

The fact that a significantly smaller proportion of members in younger age brackets are making member contributions when compared to their counterparts in older age brackets may be primarily attributable to two factors. These are a lower level of income and also a general form of behaviour surrounding the accumulation of assets, which forms the next area of discussion in this paper.

HOME OWNERSHIP AND ALLOCATION OF TOTAL MEMBER ASSETS

Saving through home ownership also has a direct bearing on the adequacy of retirement incomes by significantly reducing the cost of accommodation in retirement. This is a significant strategy, as the majority of older people in Australia are homeowners. The Australian Housing Survey 1999 showed that 80 per cent of households in which the reference person was aged over 65 owned their home outright and a further 4 per cent were purchasing. Where the reference person was aged 55 to 64, 66 per cent of households owned their home outright and 17 per cent were purchasing.

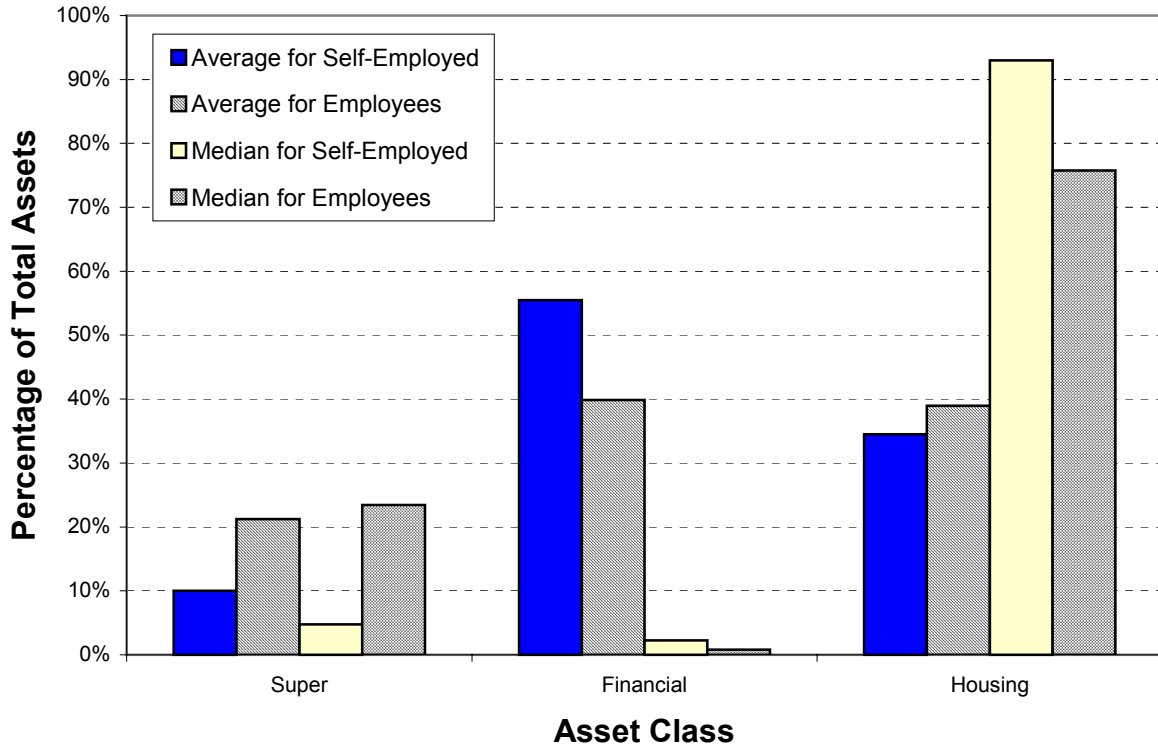
In evaluating the composition of assets held by members in housing, superannuation and other financial assets (such as deposits, shares, securities and insurance reserves), distinct behavioural patterns become apparent. To investigate the issue further, consider the following estimates of this asset composition held by members.

Table 3: Imputed composition of assets held by members in 1999/2000 ('\$000)

Members	Employment	Measure	Super	Financial	Housing	Total
All	Self-employ	Mean	23	125	78	226
All	Employee	Mean	31	58	57	146
All	Self-employ	Median	3	1	60	64
All	Employee	Median	8	0.2	25	33
Aged 55 to 64	Self-employ	Mean	39	167	105	311
Aged 55 to 64	Employee	Mean	76	128	112	316
Aged 55 to 64	Self-employ	Median	5	12	75	92
Aged 55 to 64	Employee	Median	25	11	85	121

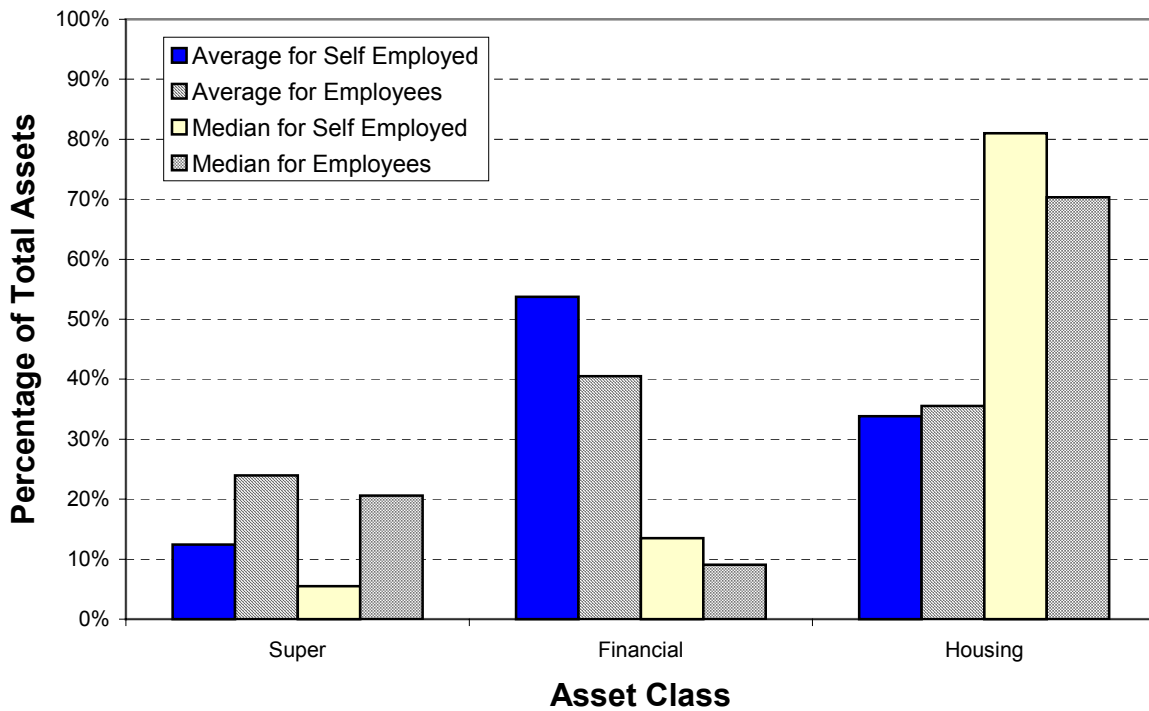
Data Sources: 2000 ABS SEAS File (Superannuation Balances), 1999/2000 Sample Tax File (Financial Assets), 1999/2000 ABS Income Distribution Survey (Housing)

Chart 7: Breakdown of Member Assets - All Members



Data Sources: 2000 ABS SEAS File (Superannuation Balances), 1999/2000 Sample Tax File (Financial Assets), 1999/2000 ABS Income Distribution Survey (IDS) (Housing)

Chart 8: Breakdown of Member Assets - Members Aged 55-64



Data Sources: 2000 ABS SEAS File (Superannuation Balances), 1999/2000 Sample Tax File (Financial Assets), 1999/2000 ABS Income Distribution Survey (IDS) (Housing)

It is important to note that the values attained for superannuation balances in Table 3 are incomplete and the statistics above understate the true value of superannuation balances. This is due to the limitation of the SEAS data file mentioned on page 4, where some respondents do not answer a question and do not give the ABS permission to gather the information. We believe the true values of superannuation balances to be approximately double the figures provided in Table 3 and the subsequent charts, but do not have sufficient data to provide accurate estimates of these increased values.

These estimates have been derived from income data by using a personal earning rule to estimate the underlying asset value. This methodology is very uncertain for individual cases, but in large sample the variations may average out.

When comparing the asset compositions based on average and median asset levels for both members aged between 55 and 64 and for all members, there is a significant bias towards housing for the median level of assets held. This appears to suggest that the behavioural pattern of a typical member is to invest their initial savings (up to a level of say, \$50,000) almost exclusively in housing. Beyond this point, additional investment is spread more evenly across the three asset classes specified. There also appears to be a pattern of greater investment in financial assets as opposed to superannuation for the self employed, perhaps reflecting a need for liquidity.

These behavioural patterns may help to explain the low proportion of younger members making member contributions to superannuation relative to older members, as younger members may still be entrenched in the initial savings period alluded to above. The vast majority of any asset accumulation is essentially going into housing at this point and once a sufficient level has been reached, investment diversifies out into superannuation and other financial assets.

A recent NATSEM study⁸ found that the decision to save for a household was linked to the number of clear motivations to save. The proportion of households that were saving increased with each additional motivating factor for up to 3 factors, with savings levels remaining fairly constant beyond that point.

The study also compared the proportion of respondents that considered buying a house and/ or saving for retirement as motivation to save within 3 age groups. For the group aged 25-34, buying a house (35%) was motivation to save for a greater proportion of respondents than saving for retirement (21.8%). For those aged 35-44, the results for home ownership (29.9%) and retirement (31.6%) were reasonably similar, while for those aged 55-64 there were many more people saving for retirement (48.3%) than to buy a house (20%). These findings appear to support the notion of behavioural patterns leading members to invest primarily in housing initially, before diversifying their investments in later years.

The results are validated by comparing the median results for all members with the median results for members aged 55 to 64. Here we see a relative increase in the proportion of assets invested in other financial vehicles and a relative decrease in the proportion of assets tied up in housing.

While an increase in proportional investment in superannuation may have been expected, it is important to note that this group of members have reached preservation age. Consequently, some members may have taken the superannuation benefit and not rolled it over into a complying pension fund, thus shifting funds from superannuation into other financial assets. It may therefore be worthwhile to consider the composition of assets for this age with superannuation and financial assets accumulated into one grouping. It is also relevant to note that as the current Superannuation

⁸ Kelly, S. and Toohey, M. 'Who are Australia's Best Savers?', report commissioned by the Financial Planning Association of Australia, November 2002

Guarantee system matures, an increase in the proportion of assets held in superannuation might be expected.

The ABS paper on Experimental Estimates of the Distribution of Household Wealth found that superannuation assets accounted for 21 per cent of total assets in 2000, an increase from 16 per cent in 1994. However, this survey also found that total liabilities held increased from 13 per cent of asset holdings to 18 per cent of total assets in the same period.

While many members may have a sufficient level of funds invested in superannuation and other financial assets to provide for a reasonable retirement (in conjunction with the age pension), some members may still have the vast majority of their funds tied up in housing. These prospective retirees in particular may wish to improve their standard of living in retirement by unlocking the value of equity via the pension loan scheme or a home equity conversion product offered by the private sector.

OTHER FINANCIAL ASSETS

As shown by the charts showing the composition of assets held, financial assets are typically invested in primarily by those with large total asset values. Therefore, the value of financial assets currently being held will have little impact on the standard of living in retirement for most people but again highlights the understating of replacements for those on high incomes based on SG alone.

RETIREMENT AGE OF MEMBERS

While this is not technically a component of private saving, it is a factor that can often be dictated by the decisions of the member (though this is not true of retirements brought about by

redundancies as retirement age approaches). It is also a factor that has a significant impact on the standard of living available to members during retirement years. Treasury's submission to the Senate Select Committee on Superannuation and Standards of Living in Retirement estimates that a member retiring at age 65 will have an annual replacement rate 5 per cent greater than a member who retires at age 60 with the same salary and working career length.⁹

Increased participation will to at least some extent improve the standard of living of retirees, as a greater level of private funds will be allocated over a shorter timeframe in retirement. This improvement in annual private drawdown figures (and consequently retirement expenditure) can be extended to include the increase in the annual value to retirees of loan amounts allowable under the pension loan scheme or private sector schemes.

The government is also a beneficiary of members working for longer periods, via increased taxes in both working life (and to a lesser extent during retirement) and reduction in both the level of Age Pension paid and the number of years it is paid for. This will assist in maintaining the fiscal sustainability of the current retirement income system.

CONCLUSIONS

This paper has aimed to highlight the extent of private saving in the community and the value it can potentially add to the standard of living enjoyed in retirement. Contributions beyond the level prescribed by SG (both from the employer and the member) can significantly boost replacement rates, while unlocking the value of equity held by members to create an additional income stream during retirement may also be beneficial. The promotion of behaviour by members that leads these

⁹ Based on a comparison of replacement rates for members with a 30 year working career on a salary of 0.75 x AWOTE, with benefits taken as a life pension. The discrepancy in replacement rates is increased when taking the benefit as a lump sum.

options being more frequently exercised may be of great benefit to the retirement income system, particularly over the longer term.

The two 'main' pillars of the retirement income system (namely the age pension and superannuation) will continue to be extremely significant in determining the standard of living enjoyed by members in retirement. However, the value to the retirement income system of the third pillar (private saving) should not be underestimated, particularly as it is the pillar that has the greatest scope for growth in the future.

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APPENDIX A: Hypothetical Replacement Rate Scenario Calculations

Treasury calculates the value of retirement incomes for an individual using the Retirement and Income Modelling (RIM) Unit's RIMHYPO model. The model takes an individual or couple from work force entry to death. All relevant combinations of life events, government policies and retirement income sources can be modelled. This model captures in detail the legislative structure defining the interactions between superannuation, taxation and social security legislation.

The primary assumptions implemented for the analysis contained in the body of this paper were an earnings rate of 7 per cent per annum (for Table 1 and Appendix B), wage inflation of 4 per cent per annum and CPI of 2.5 per cent per annum. Sensitivity analysis of the impact on replacement rates of reducing the assumed earnings rate to 5 per cent per annum is contained in Table 2, while Appendix B shows the impact of only saving in the second half of working life.

Replacement rates are essentially a method of establishing the impact of transition from working life into retirement. It allows for a simpler and more understandable comparison of pre and post-retirement standards of living than a comparison of gross incomes or a statement of post-retirement expenditure.

The use of post-tax expenditure figures (as opposed to gross incomes) is necessary to account for the impact of both the progressive nature of our taxation system and the impact of the Senior Australians Tax Offset (SATO).

Treasury's preferred method of calculating replacement rates is to compare the post-tax income in the final year of working life with the average post-tax income (or private expenditure) in retirement. This average is used in preference to the result for the first year of retirement because the first year result can be significantly affected by the assets test (particularly for a lump sum) and consequently may not be representative of future net income streams.

Gender	Career (Years)	AWOTE	Method	Measures of Net Expenditure and Replacement Rate	Contribution as a Percentage of Salary		
					0%	3.5%	4.5%
Male	30	0.75	Post-tax	Working Life	38,069	36,278	35,766
				Retirement	28,135	31,658	32,664
				Replace Rate	74%	87%	91%
			Sal Sac	Working Life	38,069	37,056	36,767
				Retirement	28,135	30,818	31,590
				Replace Rate	74%	83%	86%
Male	30	1	Post-tax	Working Life	47,150	44,762	44,080
				Retirement	30,436	35,132	36,473
				Replace Rate	65%	78%	83%
			Sal Sac	Working Life	47,150	45,920	45,569
				Retirement	30,436	34,011	35,041
				Replace Rate	65%	74%	77%
Male	35	0.75	Post-tax	Working Life	38,069	36,278	35,766
				Retirement	29,400	33,720	34,956
				Replace Rate	77%	93%	98%
			Sal Sac	Working Life	38,069	37,056	36,767
				Retirement	29,400	32,756	33,687

				Replace Rate	77%	88%	92%
Male	35	1	Post-tax	Working Life	47,150	44,762	44,080
				Retirement	32,146	37,906	39,553
				Replace Rate	68%	85%	90%
			Sal Sac	Working Life	47,150	45,920	45,569
				Retirement	32,146	36,621	37,864
				Replace Rate	68%	80%	83%
Female	Broken*	0.75	Post-tax	Working Life	38,069	36,278	35,766
				Retirement	27,282	31,284	32,366
				Replace Rate	72%	86%	90%
			Sal Sac	Working Life	38,069	37,056	36,767
				Retirement	27,282	30,010	30,723
				Replace Rate	72%	81%	84%
Female	Broken*	1	Post-tax	Working Life	47,150	44,762	44,080
				Retirement	29,201	34,201	35,509
				Replace Rate	62%	76%	81%
			Sal Sac	Working Life	47,150	45,920	45,569
				Retirement	29,201	32,825	33,776
				Replace Rate	62%	71%	74%

APPENDIX B: Sensitivity Analysis of Replacement Rates – Voluntary Saving Only in Second Half of Career

Gender	Career (Years)	AWOTE	Method	Contribution as Percentage of Salary		
				0%	3.5%	4.5%
Male	30	0.75	Post-tax	74%	82%	84%
			Salary Sacrifice	74%	79%	80%
Male	30	1	Post-tax	65%	73%	75%
			Salary Sacrifice	65%	69%	70%
Male	35	0.75	Post-tax	77%	86%	89%
			Salary Sacrifice	77%	83%	84%
Male	35	1	Post-tax	68%	77%	80%
			Salary Sacrifice	68%	74%	75%
Female	Broken*	0.75	Post-tax	72%	80%	83%
			Salary Sacrifice	72%	77%	79%
Female	Broken*	1	Post-tax	62%	71%	74%
			Salary Sacrifice	62%	67%	69%

APPENDIX C: Working Life Estimates for Males and Females

Figures 1 and 2 summarise the Retirement and Income Modelling Unit (RIM) estimates for years of working life, based on the expected average working life of cohorts defined by the person being aged 15 in each of the years 1978 to 2008. Working life is expressed as the number of years in work.

The full-time equivalent working life of a particular cohort is calculated by taking into account the participation rate of the cohort for each year from age 15 until they are 65, using RIM's participation rate projections for each year. It also takes into account the proportion of people working full-time and part-time¹⁰. It is assumed that a part-time year is half a full-time year.

RIM's labour force participation rate projections are derived from the Labour Force Status Model (LFSMOD) which has been described elsewhere¹¹.

The figures show that full-time equivalent working life for men is projected to decline over time. RIM estimates that the average years of full-time equivalent working life for a male 15 years of age in 1982 and retiring at age 65 in 2032 is just under 37 years. For females, equivalent full-time working life is projected to rise very slowly over time. RIM estimates that the average years of full-time equivalent working life for a female 15 years of age in 1982 and retiring at age 65 in 2032 is 26 years.

¹⁰ The results assume the continuation of underlying trends into the future without change in Government policy. Government policies may change these results. For example, since the publication of the first Inter-generational report, there has been an increasing interest in issues to do with workforce participation.

¹¹ See Bacon, B. R., 1995, Labour Force Status, Earnings, Asset Accumulation, Retirement Behaviour and Long-run Projections, RIM Task force for a brief description of LFSMOD.

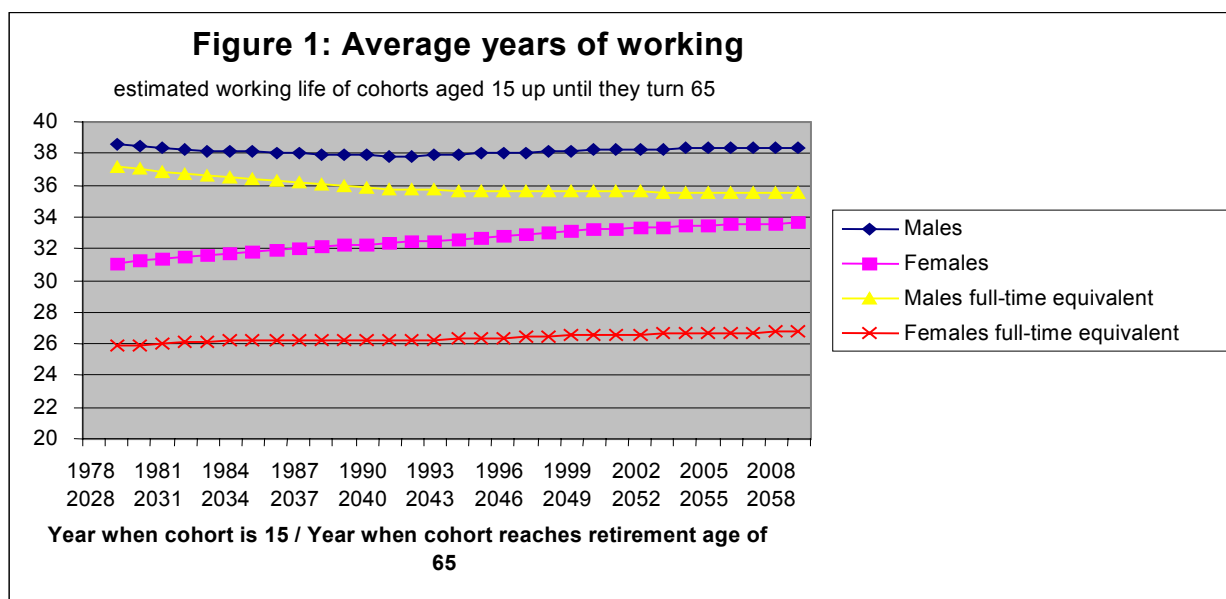


Figure 2: Years of working life

Year when cohort is 15 years old	1978	1982	1992	2002	2008
Year when cohort reaches 65	2028	2032	2042	2052	2058
Working life					
Males	38.5	38.2	37.9	38.3	38.4
Females	31.1	31.6	32.5	33.4	33.6
Full-time equivalent years					
Males	37.1	36.6	35.7	35.6	35.5
Females	25.9	26.1	26.3	26.6	26.7

Alternative methodologies exist for determining average working lives of men and women. One study produced by the Bureau of Labour Market Research in 1986¹² used the prevailing pattern of labour force participation and mortality at a particular point in time to calculate working life of particular cohorts. It was assumed that the same pattern would prevail over time, which the report notes as an unrealistic assumption. The working life for a 15 year old male in 1981 was calculated to be around 41 years, and has been in decline since 1966. Because of their transitory spells in the working force, the methodology used did not allow an estimate of female working life.

¹² Ruzicka, L. T., 1986, The Length of Working Life of Australian Males, 1933-1981, Bureau of Labour Market Research Monograph Series No. 15, AGPS, Canberra.

Appendix D: Proportions of Women Working Full-Time and Part-Time by Age and Marital Status

Age	Marital Status	Proportion working Full-Time	Proportion working Part-Time
25-34	Married	62%	38%
	Not Married	74%	26%
35-44	Married	47%	53%
	Not Married	67%	33%
45-54	Married	54%	46%
	Not Married	66%	34%
55-59	Married	45%	55%
	Not Married	66%	34%
60-64	Married	37%	63%
	Not Married	50%	50%

Data Source: Australian Bureau of Statistics, Australian Labour Market Statistics (Cat No. 6105.0), April 2003