

Projecting the Adequacy of Australian Retirement Incomes

- for whole of population, income and gender groups

George P Rothman

Retirement and Intergenerational Modelling and Analysis Unit

Department of the Treasury

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Researchers,

University of NSW

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address: Department of the Treasury, Langton Crescent, Parkes, ACT, 2600

email: George.Rothman@treasury.gov.au

website: <http://rim.treasury.gov.au/>

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Abstract

Treasury's RIMGROUP model has been used to prepare revised estimates of aggregate adequacy for both the whole Australian population and for subsets by gender and income. This analysis is based on the latest version of RIMGROUP which incorporates the Better Super Reforms, the 2009 age pension changes, the GFC, and recent and foreshadowed government policies on superannuation including the proposed increase in the superannuation guarantee from 9% to 12%. The paper updates similar analysis presented to the 15th Colloquium in 2007.

Much of the published material on retirement income adequacy in Australia is of a hypothetical nature, projecting, for example, the projected income replacement rate for an individual of given gender, income and superannuation saving rate retiring in say 37 years time. Over recent years more analyses have tried to cover the entire Australian population or large sections of it. The aggregate analyses presented here use a comprehensive cohort based model to cover the range of labour force experiences including part time work, differing retirement ages, differing total superannuation contribution rates by age, gender and income and the contribution of savings outside superannuation. The evolution of the retirement income system and changing replacement rates over time is explicitly shown.

As noted, there are now a number of aggregate models presenting public findings in this area, notably the IFSA/FSC 'Savings Gap' model, the AMP retirement income model and increasingly dynamic microsimulation modelling by NATSEM. The paper discusses how different model structures, and particularly key assumptions, can markedly influence results and conclusions.

The current average expenditure replacement rate for Australian retirees is estimated at just over 60% but is projected to rise to over 80% in around 20 years. Over the longer term replacement rates for women overall are projected to exceed those of men, in some income ranges exceeding those of men by a substantial margin.

Author: Dr George P Rothman

The Retirement and Intergenerational Modelling and Analysis Unit
Department of the Treasury, Langton Crescent, Parkes, ACT, 2600

INTRODUCTION

For most Australians income in retirement will be sourced from a combination of superannuation savings, other private savings and a full or part-rate Age Pension. Some will choose also to draw down on the equity in their home and perhaps to obtain some paid employment while primarily retired. In combination with the taxation system, these income sources (and capital drawdowns) will provide retirees with a particular level of spending capacity. Whether this spending capacity is ‘adequate’ has been the subject of considerable examination and debate over a number of years, including notably the examination by a Senate Select Committee (Senate Select Committee, 2002) and more recently the Henry review (AFTS,2009); industry groups such as ASFA continue to have strong views (eg ASFA, 2009). The author has contributed to this debate both directly and indirectly but particularly through a paper presented to the 15th Colloquium in 2007. This paper updates that analysis incorporating new policies and to some extent considering other recent contributions to the debate.

Over recent years many policies of government have modified superannuation, taxation and age pension arrangements for senior Australians in ways that mostly have raised retirement incomes, both for those that have only compulsory levels of superannuation (the Superannuation Guarantee (SG)) and for those who choose to save more within superannuation. Substantial work has also been done by the Cooper review to improve the efficiency of the industry which should raise retirement incomes. On the other hand other trends, such as continuing increases in longevity, will tend to reduce average annual retirement incomes.

While the impact of the global financial crisis GFC has led to disappointing short and medium term returns, long term returns for Australian superannuation have continued to be very strong by world standards. Despite the GFC, our superannuation system is almost universally regarded as strong, appropriately regulated and sound, with total assets more than doubling over the past 7 years to their current level of over \$1360 billion (around the level of Australia’s current GDP). Nonetheless the debate on adequacy continues.

Much of the published material on retirement income adequacy in Australia is of a hypothetical nature, projecting, for example, the expected replacement rate for an individual of given gender, income and superannuation saving rate retiring in say 37 years time. Over recent years more analyses have tried to cover the entire Australian population or large sections of it. The aggregate analyses presented here use a comprehensive cohort based model to cover the range of labour force experiences including part time work, differing retirement ages, differing total superannuation

contribution rates by age, gender and income and the contribution of savings outside superannuation. The evolution of the retirement income system and changing replacement rates over time is explicitly shown.

The paper will briefly review various measures of adequacy before presenting revised estimates of aggregate adequacy for both the whole Australian population and for subsets by gender and income. The analysis is based on a revised updated version of RIMGROUP; it is similar to the version used for relevant projections of the 2010 Intergenerational Report (Intergenerational Report, 2010). Importantly it incorporates the 2007 Better Super Reforms, the GFC impacts on asset levels, the 2009 increases to the age pension, the policy of increasing the eligibility age for the age pension from 2017, and the government's announced intention to gradually raise the Superannuation guarantee from 9% to 12% over the period 2013-14 to 2019-20.

There are now a number of (competing) aggregate models presenting public findings in this area, notably the IFSA 'Savings Gap' model developed by Rice Warner, the model underlying the AMP retirement adequacy index and increasingly modelling by NATSEM based on APPSIM a dynamic simulation model. The paper discusses how different model structures, and particularly key assumptions, can markedly influence results and conclusions.

MEASURES OF LIVING STANDARDS IN RETIREMENT

The adequacy of retirement incomes can be assessed using either an absolute (or budget) framework or a relative framework; a relative framework is the more popular, using a version of a replacement rates framework. Comparison with a poverty benchmark is another relative measure.

An absolute or **budget framework** seeks to estimate the actual income required to live at a certain (budget) standard or lifestyle in retirement. A prominent example is research commissioned by Westpac Banking Corporation and ASFA (Saunders et al 2004), which has estimated how much it costs for Australians to have certain specified lifestyles in retirement. This analysis was considered in some detail in an earlier joint paper by the author (Rothman and Bingham, 2004)¹. ASFA has continued to update the standards (ASFA, 2011). Current estimated levels for a 'modest' lifestyle are around \$21,200 for singles and \$30,700 for couples. For a so called 'comfortable' lifestyle the levels are \$39,400 for a single and \$53,900 for a couple.

¹ Rothman and Bingham (2004) concluded that most baby boomers were likely to have retirement spending power equivalent to the 'modest but adequate' (MBA) budget from a combination of SG contributions and the age pension.

Care needs to be taken to understand what these budgets are and whom they should apply to. The terminology can be misleading; the modest budget was originally termed ‘modest but adequate’ and was considered a satisfactory level of spending for those on median wages or below. The comfortable lifestyle was previously termed ‘comfortably affluent’ and was considered an appropriate spending capacity for those in the top two deciles of income. Importantly, both budgets assume the persons live in a fully paid off home.

Some limited RIMGROUP based analysis in relation to the ASFA standards is given in a later Section after the main analysis.

Replacement rates are defined as ratios comparing a person’s income or spending capacity after retirement to that applying before retirement. The proposition underlying the replacement rate concept is that a person’s standard of living in retirement should be a reasonable proportion of his or her standard of living during working life.

Treasury, as well as a number of key groups (including the Institute of Actuaries²), consider that a replacement rate measure based on a comparison of potential (net) expenditure before and after retirement is strongly preferable to a comparison of gross incomes before and after retirement. Some important groups (including IFSA/FSC (see later)), however, have based their replacement rates on gross measures. Gross measures may be misleading because of substantial differences in taxation and saving before and after retirement and by income level; the gross measure requires a higher relative net spending for higher income groups than for lower income groups.

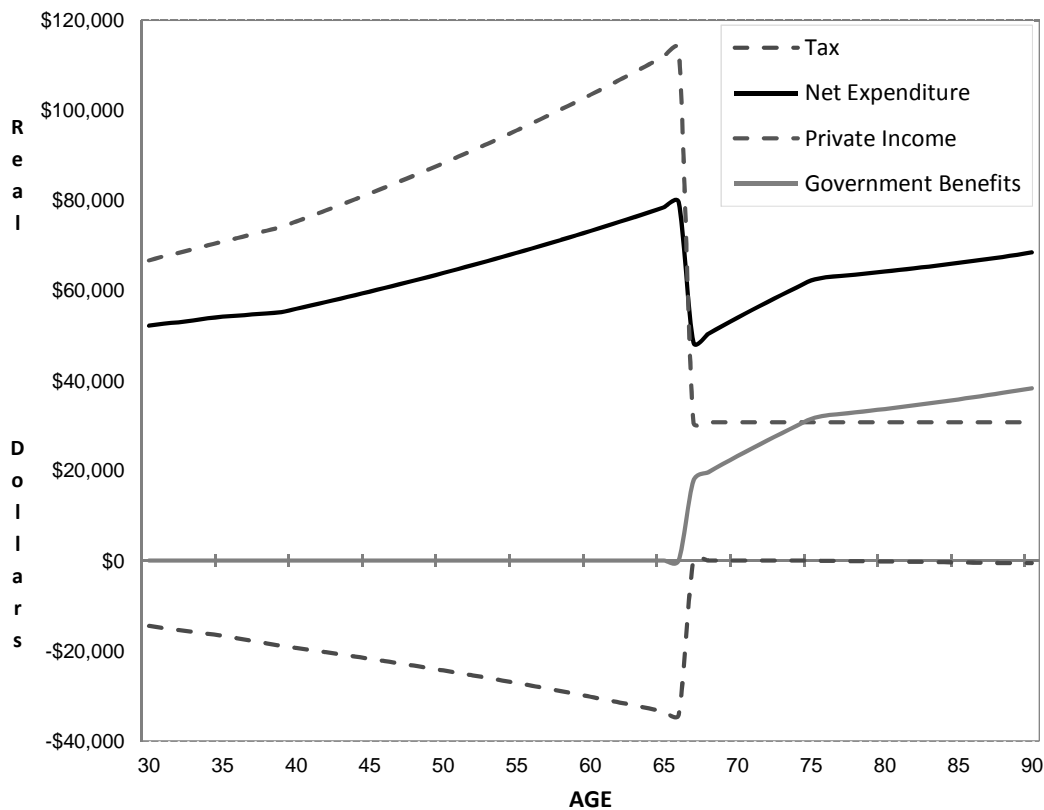
An expenditure replacement rate is an after tax measure which takes account of the drawdown of capital during retirement. This paper uses such measures as the best guide to standards of living. Replacement rates based on income alone do not take account of draw-downs of capital. Consequently, such measures understate the contribution of retirement savings to the maintenance of living standards in retirement. However it is worth noting that expenditure or spending is not quite the same as consumption; this is because it does not include the provision of (free or subsidised) government services nor imputed rent on owner occupied housing.

Two replacement rate measures which have been commonly used and advocated are the ratio of average expenditure in retirement to the expenditure in the last year of working life, and the ratio of first year retirement expenditure to the expenditure in the last year of working life. A comparison of expenditure levels in the first year of retirement and the last year of working life can often be

² ‘*Superannuation and Standards of Living in Retirement – Modelling Assumptions*’, Institute Of Actuaries Report to the Senate Select Committee Inquiry into Superannuation and Standards of Living in Retirement, September 2002

unrepresentative of standards of living across the whole of retirement, particularly where superannuation benefits are taken as a lump sum³. Chart 1 shows an example of expenditure **in real dollars** projected over both working life and retirement. The importance of the periods of retirement and working life over which averages are taken to calculate replacement rates is clearly demonstrated; typically neither working life expenditure nor retirement expenditure is constant in real terms.

Chart 1: Example hypothetical expenditure projections for working life and retirement in real terms for a single female, benefits taken as a life expectancy pension



Among alternative measures are the ratios of average expenditure in the first 5 (or 10) years of retirement to the average expenditure in the last 5 (or 10) years of working life. Such measures may be particularly useful for evaluating scenarios where a member phases down to retirement by working part-time for a period before fully retiring. These measures also provide symmetry when comparing pre and post-retirement expenditure levels.

³ Some of the controversy concerning adequacy arises from differing approaches to such measures, rather than from the parameters used or calculations done within an agreed framework.

Substantial differences can arise because of different measures; this is illustrated in Table 1 below. This table parallels similar tables in Rothman and Bingham, 2004 and Rothman 2007 but has been revised and updated to incorporate government policy changes, notably the change in age pension age and the foreshadowed increase to 12% SG. The replacement rates are therefore consistently higher than in the earlier Tables. Allocated pensions are chosen as the investment vehicle in retirement as these have become even more popular since the introduction of Better Super. The drawdown rate of capital in retirement assumed in this table leaves minimal estate at average life expectancy as potential replacement rates are being estimated.

Table 1: Various expenditure replacement measures for a single female with a working life of 37 years (including government policies announced but not yet legislated)

Salary (multiple of AWOTE)	Discount method	Average over retirement / last year work*	First 5 years retired / last 5 years work	First year retired / last year work
.	CPI	91%	99%	94%
	AWE	76%	91%	92%
	CPI	78%	86%	82%
	AWE	66%	80%	80%
.	CPI	65%	73%	69%
	AWE	55%	68%	68%
.	CPI	57%	70%	69%
	AWE	48%	64%	68%

* Published analyses by Treasury have mostly used these measures.

The discount method alternatives in the Table specify how the retirement and working life expenditures are discounted to bring them to a common time, say the date of retirement. The alternative discounting rates make a substantial difference for the first measure in the Table but less of a difference for measures 2 and 3.

It is important to note that Table 1 assumes Superannuation Guarantee (SG) contributions only are made, that there are no savings outside superannuation and all monies saved are invested (no new cars or kitchens upon retirement). With these assumptions, clearly replacement rates fall as income rises, because at higher incomes age pension payments are lower (or nil), and, dependent on investment choice, some tax in retirement may be payable. In the Table above because of the investment choice made, no tax in retirement is paid.

Whether or not any particular expenditure replacement rate is optimal is a matter for judgement. It is generally accepted, however, that a replacement rate of somewhat less than 100 per cent will be sufficient. This is because (most) retirees do not face some major expenses, (eg home mortgage costs, the cost of raising children, work related expenses and the cost of commuting to and from work) which are more likely to be faced by many people of working age. Additionally some services and products are available to most retirees from government or private sources at a reduced cost. Different replacement rates will be appropriate for different individuals. The Government has not set an explicit benchmark replacement rate but many commentators see expenditure (net) replacement in the range 65 to 80 per cent as usually adequate. Many government policies act to improve replacement rates, either with immediate impact such as the 2009 pension rise or more gradually, such as the rise in SG rate and the low income superannuation contribution rebate.

THE MODEL

RIMGROUP is a comprehensive cohort projection model of the Australian population which starts with population and labour force models, tracks the accumulation of superannuation in a specified set of account types, estimates non superannuation savings, and calculates tax liabilities, social security payments including pensions and the generation of other retirement incomes.

These projections are done for each year of the projection period *separately for each birthyear gender decile cohort*. The model projections begin in July 2000.

RIMGROUP is a very large model incorporating some 113,000 records, with many variables calculated for each record and with subgroups formed for those with different superannuation accounts and different retirement ages. Nonetheless, it is not an individually based microsimulation and there is some necessary ‘pooling’ of work experiences, account balances and income levels. For example, unemployment is viewed as a temporary phenomenon and superannuation accumulation is shared by those working and (temporarily) not working⁴. Similarly migrants are pooled with others in the model and may dilute the assets of the group they join.

Aggregate modelling based on RIMGROUP has been of considerable policy significance; it was used for example in the development of Better Super and the 2009 Pension review. It has been used in preparing all three Intergenerational reports (eg Intergenerational Report, 2010). More details of the RIMGROUP model, the approach taken to modelling retirement and the current set of economic parameters used are in Attachment A.

⁴ But those permanently unable to work through disability are distinguished and treated separately.

ADEQUACY

In line with the discussion above, the main adequacy concept used is a replacement rate based on post retirement consumption expenditure compared with pre retirement expenditure. This includes income from all investments, all private pension payments (taxed or untaxed), the age pension, and drawdowns from capital less any taxation payable. Both legislated policies and policies to which the government is clearly committed are incorporated. In this aggregate analysis the comparison drawn is between the expenditure of retirees for the 5 years after pension eligibility age with the expenditure capacity of non retirees for the 5 years before age pension eligibility age. Given the structure of RIMGROUP in which new retirees are pooled with existing retirees, this definition makes it easier to do aggregate analysis, while distinguishing between cohorts which may have retired a decade or more earlier. The distinction is relevant because, in general, retirees do not maintain a living standard in retirement that is fully linked to average wages – while (almost all of) the age pension is linked to total male average wages, the mix of investments of retirees means that their privately sourced income, which may include a high proportion of interest bearing investments and may include capital drawdowns, will usually not grow in real terms.

What differentiates the aggregate from hypothetical analyses?

Most studies of adequacy use hypothetical analysis (eg Rothman and Bingham, 2004, Gallagher, 2011). The primary difference between aggregate and hypothetical analysis is the coverage in the aggregate analysis of the entire Australian population. Aggregate analysis covers the range of labour force experiences including unemployment and other breaks from the labour force, the range of retirement ages, and the varying superannuation coverage across the population including some schemes with better than SG rates of contribution, salary sacrifice arrangements, and member contributions. Additionally RIMGROUP estimates other financial savings at retirement and adds these to the pool of monies to be allocated and invested at retirement. RIMGROUP also allocates retirement investments patterns in a realistic way and allows for some dissipation at retirement and drawdown during retirement. These patterns are a function of gender and income decile.

Also significant in the aggregate analysis is the time dimension, whereby the experiences of those retiring now can be directly compared with those retiring in thirty or forty years - time is an important and automatic dimension of the analysis. Often hypothetical analysis has only considered those retiring in 30, 35, 37 or even 40 years time but Gallagher, 2011 and Australia's Future Tax System, 2009 have provided hypothetical results for a range of current ages.

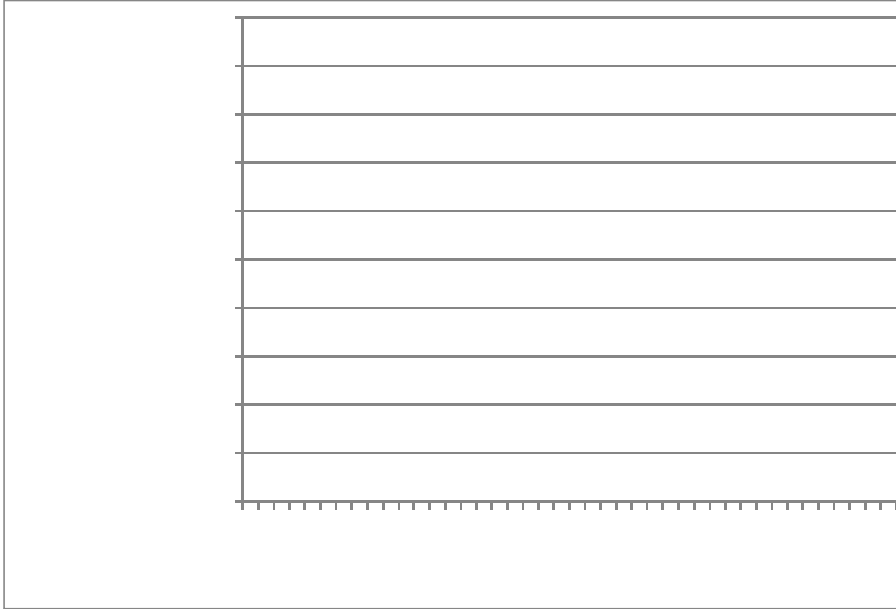
The analysis presented below has the capacity to project changing replacement ratios for over 40 years into the future with realistic superannuation and other savings and assuming moderate drawdown of assets in retirement. It will be shown that as the SG system matures and the SG rate rises to 12% the projected replacement rates rise significantly.

POTENTIAL AGGREGATE REPLACEMENT RATES

For an analysis of **potential** replacement rates it seems appropriate to assume that assets are largely drawn down in an annuity pattern over the person's or couple's retirement. This measures the potential afforded by the retirement income framework. In practice, given uncertainty as to their longevity, most prudent people won't achieve this and as an operational compromise we have assumed annuity drawdown of fixed interest deposits but only moderate drawdown of shares and allocated pensions, assuring some inheritance on average. The analysis is also conservative by, as noted above, allowing some dissipation at retirement with not all accumulated funds invested to provide retirement income. Because of the increased incentive to take allocated pensions under the Better Super arrangements, a significant change over time in investment allocations at retirement is assumed, with allocated pensions becoming over time a more popular way to utilise available funds at retirement. These assumed patterns together with the labour force, retirement and longevity trends underlying the 2010 Intergenerational Report are the basis of the aggregate results which follow.

Ratios of retirement expenditure over pre retirement expenditure are calculated for two groups: those who have had long term superannuation coverage, mainly employees, and the full population, adding in those who have had limited or no superannuation coverage. For convenience we will call these groups 'workers' and 'all'. The time analysis of aggregate replacement ratios for these two groups is shown in Chart 2 below.

**CHART 2: Potential Aggregate Replacement Ratios – Workers and Full Population,
(all deciles and deciles 5 and 6)**



Replacement ratios are projected to rise significantly over time: in the case of all workers from around 63 per cent currently to 70 per cent at around 2018 and over 80 per cent by 2030⁵. For the ‘all’ group the replacement ratios are estimated as already around 68 per cent and are projected to rise to over 80 per cent by 2023 on. It should not be surprising that the replacement rates for the ‘all’ group are generally higher than for workers, as for some in this group moving from say, unemployment benefit to an age pension, automatically gives a replacement rate of over 100%.

Lifetime income deciles 5 and 6 combined are used to approximate person on median incomes and these deciles show similar patterns. These replacement rates though reaching reasonable levels over the medium term are somewhat lower throughout than those for all deciles combined.

Gender

It is well established that women have different labour force participation compared to men, with longer periods out of the workforce, more part time work, and lower wages on average than men. All these patterns are built into the aggregate model together with projections which include a continuing increase in the work force participation of women. Also included are up to date superannuation coverage and contribution rates for women.

⁵ Minor peaks in Charts 2, 3, 4a and 4b arise primarily because age pension age which is being gradually increased from 2017 can only be increased in RIMGROUP by whole years.

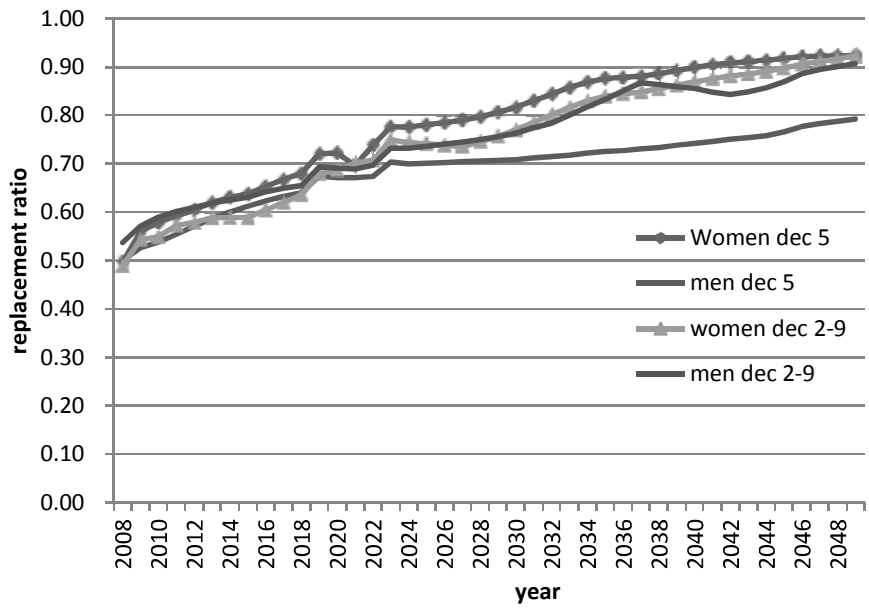
For women working as full time employees, superannuation coverage rates are slightly higher than those of men. However, given that a greater proportion of women are working part time, coverage for women employees overall at 91.8 per cent is lower than the corresponding 93.2 per cent rate for men (ABS, 2007).

In this chart I try to remove extremes by considering deciles 2 to 9 inclusively as a proxy for all. Thus overall replacement rates are similar with a small initial advantage for men reversing over the long term. For decile 5, women have a distinctly higher replacement rate throughout, with the maturing of the SG arrangements, the co-contribution, the continuing strong increase in workforce participation of women and the greater relative significance of the age pension for women leading to the gap widening for decile 5 women over time. It should also be noted that Census data shows that over 70% of people enter retirement as a member of a couple.

Of course these ratios are relative. In absolute terms the modelled pre retirement spending of women workers in these deciles is around 75 per cent of that of men, reflecting the composition of work undertaken and the much higher proportion of women working part time⁶. Women also have significantly lower relative post retirement income from private sources. But age pension payments to both men and women are the same (for any given level of income and assets), boosting the replacement ratios for women; thus the 2009 pension increases were more important in boosting adequacy for women than for men.

⁶ Women working full time currently earn 83% of men's wages on average; overall the percentage averages around 65%. Taxation is higher at higher incomes impacting relative spending capacity.

CHART 3: Potential Aggregate Replacement Ratios for Women compared with those of Men



By Income Level

Some further analysis to analyse replacement ratios by income level which is done conveniently within RIMGROUP using the decile structure. This is done in Charts 4a and 4b below.

CHART 4a: Potential Aggregate Replacement Ratios for Selected Deciles, Men

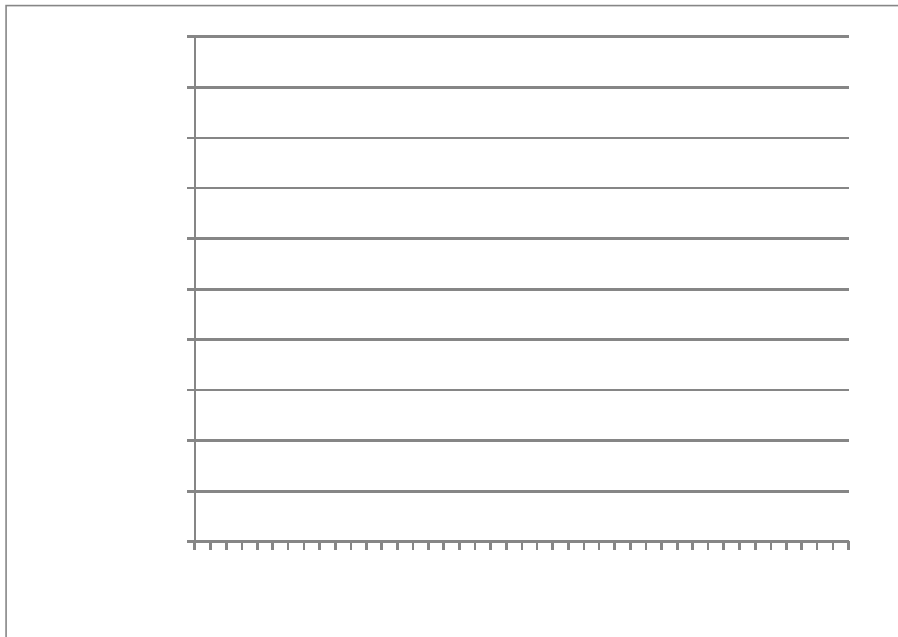
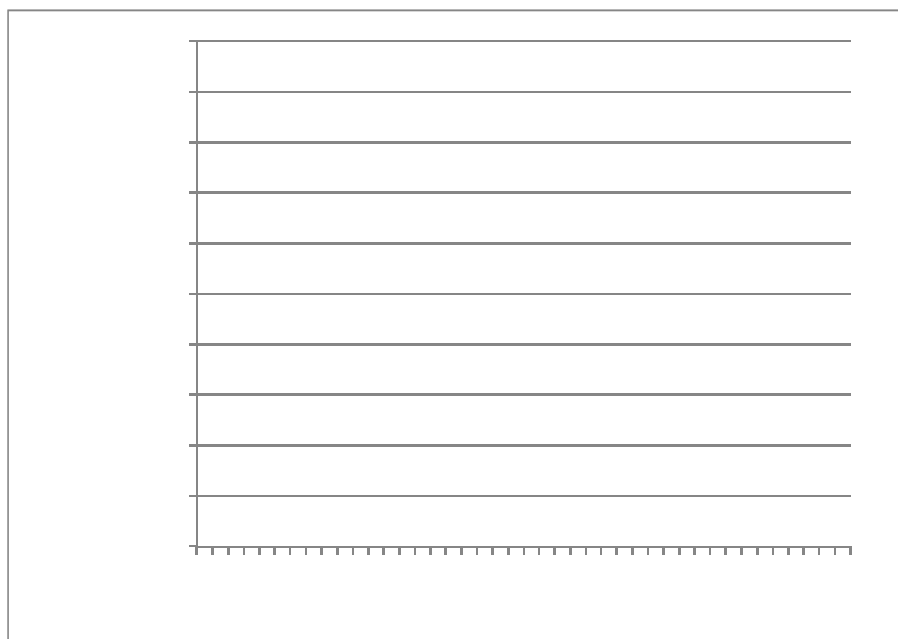


CHART 4b: Potential Aggregate Replacement Ratios for Selected Deciles, Women



Some of the comparisons in Charts 4a and 4b are quite striking. The projected replacement rates for the deciles become much closer over the longer term and the relativities are interesting. The initial pattern tends to reflect the pattern we see in Table 1 (based on hypothetical analysis) with lower deciles having the higher net replacement rates. However over the medium and longer term, particularly for women, the higher deciles catch up and sometimes overtake the lower deciles; for men the pattern persists to some extent but the gap is narrowed considerably and for women the fifth and eighth deciles overtake the second decile. There is no conflict with the hypothetical analysis, however, as this aggregate picture includes all forms of saving for the deciles, not just in superannuation, and importantly, also reflects the established pattern that actual superannuation contribution rates as a percentage of income rise with rising income (Rothman and Tellis, 2008). Accordingly while SG only savings shows replacement rates dropping as income rises, actual savings patterns do not always do so. The relative position of those in decile 2 has improved since the author's 2007 analysis because of the large rise in the pension in 2009 (the 2009 rise is particularly clear in the Charts for women in decile 2). Similarly, the policy to effectively refund contribution tax to those with low incomes improves the relative position of low deciles. On the other hand the maturing of, and increases in the SG, impacts more on those in higher income deciles as these deciles have a greater proportion of their retirement incomes coming from their own

savings rather than the age pension. Similarly those in higher income deciles are more likely to have the opportunity to work longer as age pension age increases.

SENSITIVITY OF RESULTS

In the projection process many judgements need to be made on future participation rates, retirement ages, future expected returns of superannuation funds, future levels of voluntary contributions, saving outside superannuation, future tax scales, the drawdown patterns of the retired and so on. There is also sensitivity to government policies such as the SG rate, the co-contribution, and the Better Super policies.

Some parameter variations have immediate or almost immediate effect. The drawdown rates on investment are a good example of this. Reducing drawdown over the course of retirement by a plausible amount brings an immediate reduction of replacement rates of the order of 5 per cent with the impact decreasing slightly over time. Conversely if drawdowns were higher than in the base case, replacement rates as measured in this paper would rise. Similarly, government policies such as the 2009 increase in maximum age pension payments have immediate effect, as can be seen on the earlier charts where in 2009 (representing 2009-10) replacement rates are noticeably higher than in 2008, particularly for lower deciles and women.

Alternatively, some parameter variations may have substantial impact only after a substantial period of time. Changing investment returns in the modelling to around 1 percentage point higher than the base case has limited impact initially, but much higher impact after say, a 30 years period, after which retirees (in accumulation funds) will enjoy much higher superannuation balances and consequentially higher retirement incomes. As an example, for men on median wages ten years of higher returns generates about 5% higher replacement rates while 30 years of higher returns increases projected replacement rates by about 18%. Similarly higher SG or voluntary superannuation contributions take a long time to show up in an aggregate analysis.

The replacement rate measure chosen might also be important. Rather than comparing 5 years after and before age pension age, a 10 year comparison has been tested. There were only minor differences in the replacement rates calculated.

ARE THE RESULTS MATERIALLY DIFFERENT TO THE 2007 RESULTS AND WHY?

The author's 2007 Colloquium paper used an earlier version of the same model and similar methodology; it incorporated the 2007 Better Super changes. These new results incorporate a number of subsequent key policy and parameter changes. The most important of these are:

- The 2009 increases to the level age pension
 - Together with related age pension changes such as the increase in the income test withdrawal rate to 50% and the inclusion of reduced pension withdrawals for modest amounts of income from work;
- The foreshadowed increases to age pension age to age 67 by 2023;
- The government's policy of increasing the SG gradually from 2013 to reach 12% by 2020.
- The global financial crisis (GFC) reducing superannuation balances;
- The revised demographic and labour force projection underlying the 2010 IGR. Of particular significance are:
 - Continuing improvements in longevity not fully allowed for in earlier projections; and
 - Much higher net immigration levels. Given the group structure of RIMGROUP this tends to reduce apparent adequacy as more migrants without super balances share in the super accumulations of others in their group.
- A decision to reduce the settled down earnings rate in the RIMGROUP model by 0.5 per cent.
- The government policy of effectively rebating contributions tax for low income earners
 - Subject to a \$500 cap; and

less importantly:

- Halving of contribution caps; and
- Relatively minor changes to the co-contribution scheme.

So there are a quite a few changes pulling adequacy estimates in both directions: the increases in the maximum age pension payment and the SG rising to 12 per cent act to improve adequacy, while the GFC, migration increases, the choice of a lower long term earnings rate and contribution caps changes exert downwards influences. The age pension age changes also add to the complexity of the modelling and interpretation.

The results are consistent with the author's 2007 results and relatively robust given so many changes in a relatively short time. Replacement rates benefit from the age pension quantum changes and SG rise and are projected to rise strongly reaching levels of 70% or more in the medium term (less than 10 years), levels that are usually judged adequate by most observers. Based on this analysis they continue to rise strongly for most deciles; on a relative replacement basis, women generally do as well or better than men. Higher income deciles that need to save more than the SG rate do so in aggregate, including saving by voluntary salary sacrifice and outside superannuation.

It's worth noting that moving to a 12% SG certainly improves adequacy but makes less of a difference in this analysis than some may expect. There are a number of reasons for this:

- In this aggregate analysis many are already salary sacrificing or receiving over 9 % from a 'generous' employer. In RIMGROUP our assumption is that such persons do not contribute more until they have too; for example, if already contributing 11% of the relevant wages base, they do not increase their contribution level til the compulsory level exceeds 11% and then move only to the compulsory level – the margin over the compulsory level is not maintained;
- The rise to 12 per cent is a gradual one;
- We assume the incidence of the extra contributions is upon employees (immediately). Thus wages growth is lower than in the counterfactual and this has an impact on contributions. Government pensions, which are primarily linked to wages growth, also don't rise quite as quickly.

MEASURING ADEQUACY USING THE ASFA BUDGET STANDARDS

In assessing replacement rates as above, the retirement incomes for the first five years after age pension age for groups within RIMGROUP are necessarily calculated. Thus as a limited secondary exercise RIMGROUP can be used to assess gender and income groups against the ASFA modest and comfortable budget standards⁷.

A very high proportion of groups meet the ASFA modest standards: all male groups of income decile two and above and female groups of decile 3 and above meet these standards currently; they will continue to meet them because income for all retiring cohorts in RIMGROUP is projected to increase faster than CPI and the ASFA standards broadly grow with CPI. This result is not surprising as the large rise in the age pension in 2009 means that the gap between the modest standard and the full age pension is small and thus very modest amounts of capital are needed to bridge this gap. The importance of this finding is however somewhat limited; this is because the ASFA standards presume a fully paid off house and many retirees do not have one; adequacy for such retirees is very likely to be lower, despite rent assistance and public housing for some of this sub group.

The proportions found to meet the ASFA comfortable standard seem broadly in line with this spending level being appropriate for the top two deciles of income. Men married or single currently and prospectively meet the standard from about decile 8 upwards (from the 70 per cent point in the income distribution) while women single or married clearly meet the standard both currently and

⁷ RIMGROUP is not structured to readily assess this precisely as couple and homeowner status is not used except where government benefits are being calculated and the income of partners is not readily available.

prospectively from decile 9 up. Married women in decile 8 are likely to meet the comfortable standard now but single women in this decile are not projected to meet it til around 2030. The issue of having a fully paid off home is less of a limitation in these high income deciles.

CONSISTENCY WITH OTHER AGGREGATE ANALYSES

The main projections in this paper indicate that replacement rates while currently moderate, continue to rise, reaching levels of 70% or more in the medium term, levels that are usually judged adequate by most commentators. This analysis, which is consistent with earlier RIMGROUP analyses is strengthened by the new limited assessment against the ASFA budget standards. Overall, no significant savings shortfall or saving gap is indicated.

However as noted earlier, RIMGROUP, though a large model, does has a substantial amount of pooling of experience and to some extent of retirement income balances – if some members of an age, gender, income decile cohort accumulate more than enough for their retirement, this is generously pooled with others in the cohort who have saved too little. Thus the model, while useful for many purposes, is not a direct competitor or substitute for comprehensive dynamic microsimulation such as may become available upon completion and validation of the APPSIM model being built by NATSEM and sponsored by a number of Commonwealth partners. The AMP model is also partly based on individual experiences, starting with individual variation among AMP’s clients but using averages to project into the future.

The closest model to RIMGROUP among the other Australian aggregate models is the Rice Warner analysis from which the Investment and Financial Services Association (IFSA) savings gap is derived.

Since 2003 IFSA, now known as the Financial Services Council (FSC), have argued that there is a substantial saving gap based on work carried out by the actuarial firm of Rice Warner (R-W).

In this work the Superannuation Savings Gap is defined as the current shortfall in national savings between two amounts:

- the national (private) saving required to ensure “adequacy” in retirement; and
- the amount saved in the superannuation system, and estimated to be saved up to retirement, by (most of) the current workforce.

IFSA initially estimated this gap at \$600 billion; the measure has been reviewed and revised, mostly annually. While early revisions were downwards, the latest estimate of the gap by the FSC is \$897 billion at June 2009 (Rice Warner, 2010)

Basically the R-W modelling is a cohort group model similar to RIMGROUP, but arguably somewhat less comprehensive. For example, the analysis performed by Rice Warner does not make any allowance for people with incomes below 0.5 x AWOTE or above 2 x AWOTE and largely ignores saving outside superannuation.

Nonetheless this paper, and the author's 2007 analysis, appears to contradict the FSC findings. There are numerous possible factors which can lead similar models to different conclusions about adequacy:

- R-W uses a different, high and demanding measure of adequacy:
 - a gross measure is used that exceeds 80% net equivalent for higher income levels and is around 88% at wages of twice AWOTE;
 - the measure also requires maintenance of retirement incomes by full wages indexation throughout retirement;
- Savings outside super are largely excluded;
- The latest R-W analysis starts at June 2009 and there has been a substantial recovery of assets in the system since then;
- The foreshadowed increase to 12% SG has not been included; and very importantly
- R-W uses a very low margin for earning rate over wages growth that is at least one percentage point lower than that used in the current analysis (which is itself quite conservative given historical 30 to 40 year averages).

Earlier versions of the R-W analysis did not give sufficient weight to the age pension (as pointed out in my 2007 paper) but this has now been acknowledged and does appear to have been significantly modified and largely or wholly remedied.

While the above factors tend to overstate any gap, R-W does allow for the increase in voluntary savings by age (as does RIMGROUP) and the analysis does have quite high overall contribution rates.

In the author's view a number of adjustments are needed to the R-W analysis to form a fair and reasonable up to date estimate of any savings gap:

- Raise the earning rate margin over wages growth by around 1 per cent; using R-W's own sensitivity table, this reduces the saving gap by around \$460 billion;
- Increase the SG to 12% - reduces gap by around \$160 billion (assume this increases average employer contributions by 2 per cent);
- Relax the definition of adequacy by 2.5 per cent gross to 60 per cent gross – around \$150 billion reduction (note that this still gives net replacement rates between 72% and 85% depending on income); and
- Allow some more recovery of starting assets from GFC levels - \$100 billion reduction (author's estimate) - June 2009 is not a good place to start average returns in a model.

If these adjustments aggregating around \$870 billion are fair, the adjusted aggregate savings gap becomes so small at under \$30 billion as to be well within the uncertainty of the estimates. Further, any gap should be discounted to today's dollars using the earning rate of super funds, not CPI as the author understands is used in the R-W analysis.

CONCLUSIONS

Many analyses of retirement income adequacy in Australia are of a hypothetical nature, modelling, for example, the expected replacement rate for an individual of given income receiving SG contributions only and retiring in say, 35 or 37 years time. Aggregate analyses such as published here add value by covering the range of labour force experiences including part time work, differing retirement ages, differing total superannuation contribution rates by age, gender and income and the contribution of savings outside superannuation. The projected evolution of the retirement income system and changing replacement rates over time is also explicitly shown.

The analysis in this paper based on the updated RIMGROUP model finds that replacement rates are generally equal to or slightly higher than projected in the author's analysis in 2007 using an earlier version of RIMGROUP. In the intervening period there have been numerous changes pulling adequacy estimates in both directions: importantly the 2009 increases in age pension levels and SG rise to 12 per cent act to improve adequacy, while the GFC, increases in assumed net migration, the choice of a slightly lower long term earnings rate and the introduction of lower contribution caps exert downwards influences. The proposed age pension age changes also add to the complexity of the modelling and interpretation.

Starting from moderate levels currently, generally in the range 50% to 65%, replacement rates will be lifted by various policies and the maturing and extension of the SG arrangements. Net replacement rates are projected to continue to rise, reaching levels of 70% or more in the medium term (ten years or so), levels that are usually judged adequate by most observers. Over the course of 20 to 25 years the projections indicate replacement rates for most groups of 80 per cent or more. None of these replacement rates assume any contribution to spending in retirement from reverse mortgages or part time paid work while primarily retired.

In the projection processes many judgements need to be made on future participation rates, retirement ages, future returns of superannuation funds, future levels of voluntary contributions, saving outside superannuation, future tax scales, the drawdown patterns of the retired and so on. Taken together with required simplifications to make the RIMGROUP model a manageable size, it should be clear that the projections are not unique or precise and necessarily have significant uncertainty surrounding them. Indicators of the scale of this uncertainty have been given in the sensitivity section.

Notwithstanding such uncertainty, based on the analysis in this paper, once the SG arrangements, including the rise to a 12% level, are reasonably mature, prospects for future cohorts of retirees (as a whole) appear strong and no substantial aggregate savings shortfall or saving gap is indicated. The analysis of proportions already reaching the ASFA budget standards reinforces this finding, indicating that both modest and comfortable standards are already well within reach for the groups for whom they were intended.

Over the medium to longer term, replacement rates for women are generally projected to exceed those for men (although absolute retirement incomes will remain lower). Higher decile cohorts, where the SG alone would not be enough, appear overall to be making sufficient saving voluntarily, both within and outside superannuation, to provide similar (sometimes higher) replacement rates to those of lower deciles.

Though the underlying models are similar, the author's results are quite different to IFSA/FSC's position that a substantial savings gap exists, growing with each recent estimate to now reach of around \$897 billion dollars (in 2009 dollars). The paper argues that the major factor causing the difference is the very low long term margin in the R-W analysis of superannuation earnings rate over wages growth. Once this and other reasonable adjustments are made to the R-W analysis, the author finds that the estimated aggregate savings gap drops to very modest levels, well within uncertainty of the R-W analysis.

As noted in this paper, there is no unique definition of adequacy and numerous (but plausible) assumptions have been made to arrive at these conclusions. Even where the aggregate picture is positive for future cohorts, individual circumstances will vary and different replacement rates will be appropriate for different individuals. Inadequate outcomes for some individual members of a cohort can be masked in the analysis by ‘over-saving’ by some other individuals in that cohort. Life expectancies continue to exceed past projections, allocated pensions are subject to sometimes extreme market variations, and even after the foreshadowed SG rise, individuals should seriously consider making additional savings (or delaying retirement) if they want their standard of living in retirement to broadly keep pace with improvements in broader Australian living standards. In particular, individuals with incomes above AWOTE should have additional savings, whether inside or outside superannuation, if they aspire to a spending capacity in retirement that reasonably reflects their pre-retirement spending capacity.

Government policies over recent years such as the co-contribution, the Better Super reforms and the foreshadowed age pension age increases provide strong incentives to save more and to participate in the workforce for longer.

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ATTACHMENT A: THE RIMGROUP MODEL

RIMGROUP is a comprehensive cohort projection model of the Australian population which starts with a population and labour force model, tracks the accumulation of superannuation in a specified set of account types, estimates non superannuation savings, and calculates tax payments and expenditures, social security payments including pensions and the generation of other retirement incomes.

These projections are done for each year of the projection period *separately for each birthyear gender decile cohort*. The model projections begin in July 2000 and incorporate government policies up to and including the May 2011 budget. Foreshadowed policies such as the increase in the SG to 12 per cent are also included.

Aggregate modelling based on RIMGROUP has been of considerable policy significance; more recently it has been used in the development of Better Super, the 2009 Pension review and the Review of Australia's Future Tax System (Henry Review). It has been also used in preparing all three Intergenerational reports (eg Intergenerational Report, 2010). Some more details of the RIMGROUP model are given in Rothman (1997) and Gallagher (1995).

Strengths and Limitations

The strengths of RIMGROUP lie in:

- Major new parameter research underlying the model in relation to many distributional aspects of superannuation, non superannuation savings, labour force dynamics and retirement documented in earlier papers (including Bacon (1995)). Research has been carried out on superannuation sectors not previously extensively researched, such as the public sector, self employed and rollover funds. An extensive set of decrements have also been researched to account for losses on job change, disability, hardship and death as well as retirement. A number of significant new data sets have been created as part of this research. For the current projections RIMGROUP has been benchmarked to the latest available ABS distributional data.
- The comprehensiveness of the model. This includes the integration into RIMGROUP of a full population model, labour force projection model, the endogenous calculation of GDP, an extensive study of retirement, coverage of saving other than superannuation and wide coverage of government payments to beneficiaries and pensioners, together with modelling of taxation, tax expenditures, and national savings.

- The detail incorporated into the model, particularly the strong distributional framework which distinguishes by superannuation account, age, income and gender. Taxation and government payments are also coded in considerable detail. A wide range of distributional results are available as well as key aggregates.
- The long time frame, to 2060 if required and appropriate.
- The facility to make changes in all underlying parameters and assumptions including the ability to make direct changes through a user friendly interface to the most frequently changed policy and economic parameter settings.

The principal limitations of RIMGROUP lie in:

- the essential nature of a group model. The model is a large one incorporating 112,880 records, with a large number of variables calculated for each record and with subgroups formed for those with different superannuation accounts, different ages of retirement and so on. Nonetheless, it is not an individually based microsimulation and there is some necessary ‘pooling’ of work experiences, account balances, income levels and so on. For example, unemployment is viewed as a temporary phenomenon and superannuation accumulation is shared by those working and (temporarily) not working⁸. Similarly migrants are pooled with others in the model and may dilute the assets of the group they join;
- macroeconomic linkages being externally imposed rather than endogenous to the model. For example unemployment is exogenously supplied and does not respond automatically to the build up of superannuation or changing retirement rates or other aspects of the economy; and
- some data which continue to be unavailable in the detail needed. The extensive and demanding data base continues to need maintenance and fine tuning.

DEMOGRAPHY AND LABOUR FORCE

The base demographic scenario is that underlying the 2010 Intergenerational Report; Treasury’s demographic assumptions roughly align with the middle scenario published by the ABS. The labour force scenarios have been generated specifically by RIMA.

⁸ But those permanently unable to work through disability are distinguished and treated separately.

Retirement

Retirement can be a complicated process whereby full time workers may pass through a period of part time work or become a discouraged job seeker before leaving the work force permanently.

Operationally RIMGROUP is based on the concept of full retirement, defined as a person leaving the workforce and not re-entering it. Despite some considerable data difficulties, retirement has been researched in detail by the RIMA Unit, and a sub model called RETMOD constructed which provides annual projections of full retirement by gender, age and income decile.

Based on these retirement rates, RIMGROUP calculates the number of people retiring each year from each account type and the aggregate value and components of their retirement benefits categorised by the type of retirement (disability or age).

Additional to the basic grouping by gender age and income, 12 retirement subgroups are created depending on type of superannuation coverage and age range at retirement, as there are usually significant differences in retirement income and taxation for such subgroups.

Retirement benefits are then allocated for each sub group of retirees to six destinations. These are:

- Eligible Termination payments (ETPs) dissipated with no impact on retirement income;
- ETPs invested in interest bearing accounts;
- ETPs invested in rollover accounts for those under 65;
- ETPs invested in shares or other assets with likely long term capital gains;
- Monies rolled over into allocated pension accounts; and
- Benefits taken as superannuation pensions or monies rolled over to a complying lifetime annuity.

The allocation can be specified by the user.

Numbers of Social security recipients and payments to them are projected by the model both in relation to unemployment and sickness benefits during working life and age and disability pensions upon retirement. Thresholds and withdrawal levels associated with Social Security income and asset tests are modelled in detail, with the user being able to specify the type of indexation to be applied to the tests and to base levels of payment.

PARAMETER STRUCTURE

Parameters which vary by many of the attributes of gender, age, decile and account type are generated as files in a standard format and input through a parameter integration program (which also sets up the basic 112880 records referred to above). It is expected that these parameters will be varied only infrequently by 'expert' users. Many other parameters of an economic or policy significant nature can be varied readily through a user friendly interface which handles variables which vary by time and/or account type. Examples of variables that can be input through the interface include the returns of various superannuation accounts and retirement investments, rates of compulsory superannuation contributions, inflation, rates of increase in average weekly earnings, various social security and taxation rates and the mode of indexation to apply to them.

BASE PARAMETER SETTINGS

These parameters are adjusted to historical rates, with a gradual transition to the following long term settings:

- 2.5% per annum for inflation;
- 4.14% pa for growth of average full time wages for a person of given age and gender ⁹;
- 5.5% pa for the long term bond rate;
- 6.5% pa for the average pre-tax return of superannuation funds (after expenses of managing funds but before tax- administrative expenses and insurance are deducted separately on a per capita basis); and
- effective tax rates on the earnings of superannuation funds of 3% for defined benefit funds, 4% for established defined contribution funds, 5% for SG funds and 10% for rollover funds.

In RIMGROUP we differentiate between the annual returns for defined benefit funds, defined contribution funds, industry funds and rollover funds. Currently these differences are set at 0.5 -1.5 percentage points, with the defined benefit schemes having the highest rates of return and rollovers the lowest.

⁹ The actual wage outcome is impacted by demographic and structural change such as the increasing proportion of work which is part time.

ATTACHMENT B: KEY CHARTS FROM ROTHMAN, 2007

Full paper available at: http://rim.treasury.gov.au/content/CP07_1.asp

CHART 2: Potential Aggregate Replacement Ratios – Workers and Full Population

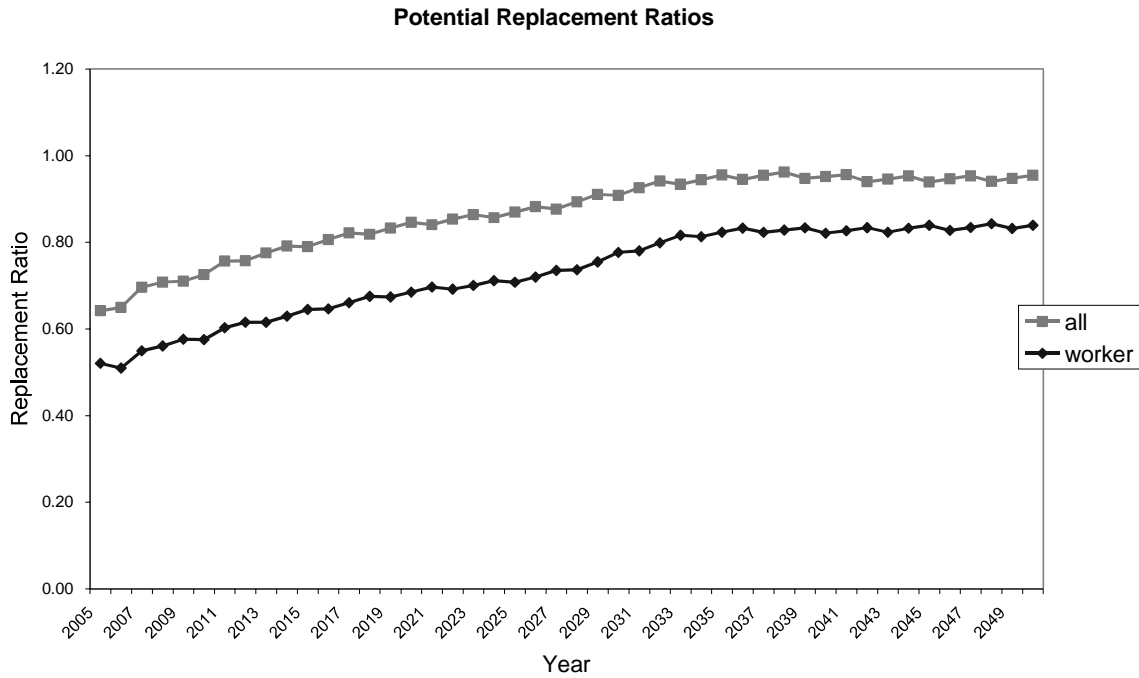


CHART 3: Potential Aggregate Replacement Ratios For Women

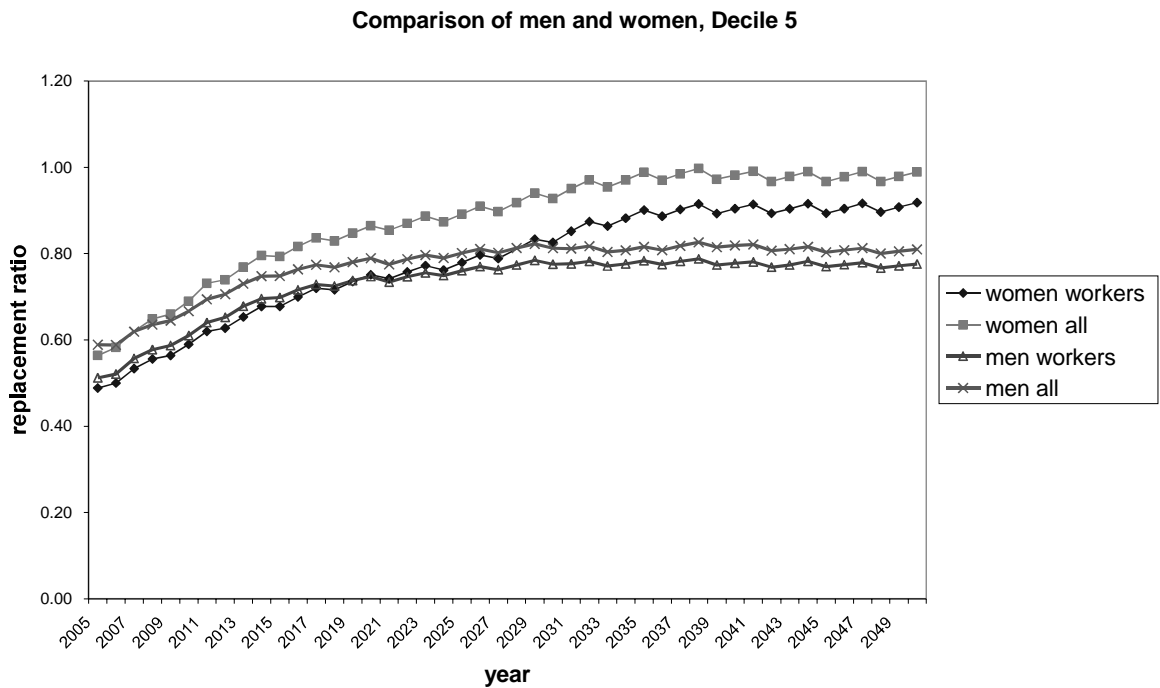


CHART 4: Potential Aggregate Replacement Ratios for Selected Deciles

