TAX EXPENDITURES AND MEASURING THE LONG TERM COSTS AND BENEFITS OF RETIREMENT INCOME POLICY

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This paper discusses the tax expenditures concept, the issues involved in measuring the long term costs and benefits of a retirement income policy and the concepts that the Retirement Income Modelling Task Force (RIM) will need to keep in mind in modelling the long term impacts of retirement income policies. The paper reviews the concept of tax expenditures for retirement income policy and the criticisms of the estimates contained in the annual Tax Expenditures Statement published by the Treasury. The paper seeks to clarify the relevance of the annual tax expenditures estimates as a measure of the annual fiscal impact of the superannuation tax concessions, before going on to develop a measure of the *long term* costs and benefits of retirement income policy. The paper then tests the sensitivity of this long term measure to certain key parameters influencing the cost of retirement income policy.

1. THE TAX EXPENDITURES CONCEPT

The introduction to the Treasury's annual Tax Expenditures Statement (TES) defines tax expenditures in the following terms:

> "Tax expenditures are those provisions in the Australian tax law which tax certain classes of taxpayers or particular types of income differently from the chosen benchmark structure. These provisions may take the form of tax exemptions, deductions, deferrals, rebates or special rate relief."[2]

A positive tax expenditure indicates favourable taxation of a particular activity compared to the chosen benchmark, while a negative tax expenditure indicates heavier tax compared to the benchmark.

The Treasury identifies tax expenditures because they impact on the Budget and the economy in essentially the same way as Budget outlays. The annual tax expenditure estimates indicate the impact of the tax concessions identified on that year's Commonwealth Government Budget outcome. For a given Budget deficit or surplus target, the presence of a particular tax expenditure will mean that tax revenue from other taxpayers or activities will have to be higher or that the Government will have to reduce budget outlays. Alternatively, if the Government does not wish to increase taxes or reduce spending, a tax expenditure on a particular activity will mean that the Budget deficit will be larger (or the surplus smaller) in the year concerned with corresponding impacts on economic outcomes in areas such as aggregate demand, interest rates and inflation.

The purpose of the annual Tax Expenditures Statement (TES) is to identify tax concessions and to cost them on a basis equivalent to Government outlays. As noted in the 1992 statement:

> "Presentation of tax expenditures on a comparable basis to outlays facilitates informed discussion about the extent and cost to revenue of concessions given by Government under

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1 The views expressed in this paper are those of the Author and do not necessarily reflect those of the Retirement Income Modelling Task Force or of the Government. However, I would like to acknowledge the assistance of my colleagues on the RIM Task Force for their assistance in the preparation of this paper, particularly Dr George Rothman for his work in obtaining data from the RIP model.

2 The Treasury, "Tax Expenditures Statement", AGPS Canberra, December 1992. Page 1.

> the major expenditure heads and provides a comprehensive base on which to draw conclusions about the stance of fiscal policy. However, the classification of a particular item as a tax expenditure does not imply any judgement on the merit of its place in the tax system."[3]

Similar to direct outlays such as capital works or education, tax expenditures like that on superannuation have an immediate economic and budgetary impact that the TES measures. However, like many budget outlays, the Budgetary impact of a tax concession (as measured by the tax expenditure on that item) does not provide much information about the overall value of the measure. This paper discusses the tax expenditures concept, the issues involved in measuring the long term costs and benefits of a retirement income policy and the concepts that the Retirement Income Modelling Task Force will need to keep in mind in modelling the long term impacts of retirement income policies.

(a) History of the tax expenditures estimates

The Government has published information on tax expenditures since 1980. From 1980 to 1984 an Appendix to Statement No 4 of Budget Paper No. 1, entitled "Tax Expenditures" provided a listing of major tax expenditure items, together with their cost to revenue. The 1985-86 Budget did not include a listing of tax expenditures because of the demands of tax reform work but, in December 1986, the Treasury published a separate, more comprehensive "Tax Expenditures Statement". The Treasury has published a Tax Expenditures Statement (TES) in each year since.

From the start, the Treasury has identified the tax expenditure on retirement and other employment termination benefits (the superannuation tax expenditure for short) as a major item. Treasury published its first estimate of the magnitude of the superannuation tax expenditure 1983-84, in an Attachment to the Appendix on Tax Expenditures of that year's Budget Statement No 4. Table 1 sets out the annual estimates of the superannuation tax expenditure for each year since 1983-84.

Table 1 shows that retirement and other employment termination benefits have accounted for around 40% of the identified tax expenditures in most years since 1983-84, which has easily made them the largest single identified tax expenditure item. The magnitude of the superannuation tax concessions and the changes to those concessions in recent years have, understandably, led to a great deal of attention being focussed on them. On present policy settings, we can expect the superannuation tax expenditure to show further rapid growth as the Superannuation Guarantee Charge (SGC) leads to increased superannuation coverage *and* contribution levels through the remainder of the 1990s.

This projected growth underlines the importance of the question of whether the superannuation tax expenditure, which by definition focuses on the single year cost of revenue forgone as a result of the superannuation tax concessions, is an appropriate measure of the *long term* implications of retirement income policy. As noted at the outset, while the tax expenditures estimates provide a guide for costing tax concessions on a basis consistent with those used to cost Budget outlays, they are not a cost benefit analysis and do not purport to measure the worth of particular measures. However, the tax expenditures methodology does provide us with many of the concepts necessary to undertake a more comprehensive assessment of the worth of the superannuation tax concessions. The remainder of this section outlines the benchmark for measuring tax expenditures and the definition of the superannuation tax expenditure.

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3 Treasury, *op cit*, page 1.

Table 1: Annual Tax Expenditures on Retirement Benefits

Year	Tax expenditure *($m)*		Tax expenditure on retirement and other employment termination benefits as a % of the total
	Retirement and Other Employment Termination Benefits	Total Tax expenditures	
1983-84	2625*(a)*	6445*(a)*	40.7%
1984-85	2890*(a)*	7351*(a)*	39.3%
1985-86	3170	8174	38.8%
1986-87	3475	8513	40.9%
1987-88	3715	9609	38.7%
1988-89	3825	10,652	35.9%
1989-90	3615	10,510	34.4%
1990-91	4455	11,530	38.6%
1991-92	4965*(p)*	11,223*(p)*	44.2%

(a) Published data revised by author to take account of revisions in the 1992 tax expenditures statement to the offset item "Tax on funded pensions".

(p) Preliminary.

Sources: *Tax Expenditures Statement, The Treasury, December 1992; December 1991 & December 1990; Budget Paper No. 1, 1983-84 & 1984-85*

(b) The income tax benchmark

In Australia, the TES measures tax expenditures against a comprehensive income tax benchmark based on the Haig-Simons definition of income and which has the following broad characteristics[4]:

- The legislated personal income tax scale, including the tax free threshold, is used to determine the benchmark tax rate applicable to income;
- The individual is the tax unit;
- A single tax year is the accounting period;
- The tax base consists of nominal (as opposed to real) income;
- Generally, income is assessed on an accruals basis, except where a realisations basis is considered an essential component of the tax system (eg as in the case of capital gains where accruals taxation would be impractical);
- Expenses incurred in earning assessable income are deductible; and
- Taxable entities are taxable on their foreign source income on a worldwide basis, with a limit on foreign tax credits on a source by source basis, equal to the amount of Australian tax payable in respect of the foreign income.

This benchmark structure records the impact of particular provisions in a particular income year and takes no account of any clawbacks of tax from those provisions in later years or any other offsetting (non-tax) fiscal impact. The tax expenditure estimates therefore do not measure whether particular measures are "worthwhile" in the long term or their total fiscal impact, only their immediate impact on tax revenues in the year under consideration. Nor do the tax expenditure estimates take account of any changes in behaviour that could arise because of the removal or modification of particular tax concessions.

Most OECD countries that prepare tax expenditure estimates use this no behavioural change assumption. In most countries, including Australia, the tax expenditures estimate the *revenue*

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4 See Attachment A of the December 1992 Tax Expenditures Statement *(op cit)* for a more detailed explanation of the income tax benchmark used to measure tax expenditures in Australia.

forgone as a result of tax concessions against a benchmark of taxation at full marginal rates, rather than measuring the *revenue gain* from removing those concessions. The alternative "revenue gain" approach to tax expenditure analysis is much more difficult to use because of the complexity of the models required to capture the effects of the decisions of taxpayers, changes in levels of economic activity due to the change in the tax expenditure and the interaction of different forms of taxes.

(c) The definition of the superannuation tax expenditure

The TES derives the tax expenditure for retirement and other employment termination benefits as the difference between the tax actually collected from superannuation funds and benefits in a year and the tax that would have been payable on superannuation savings and benefits under the comprehensive income tax benchmark outlined above. The TES assesses the value of the tax expenditure on superannuation against a benchmark where:

- employee remuneration is deductible to the employer and taxed to the employee at the employee's marginal rate as it is earned;
- savings out of such earnings are not tax deductible;
- earnings on savings are treated as income and taxed at the person's marginal rate of tax; and
- dissavings of amounts (including interest) accumulated and already taxed are not taxed again.

The actual treatment of superannuation savings is different from this benchmark in the following respects:

- employee remuneration paid as *employer* contributions to a superannuation fund are taxed at 15% in the hands of superannuation funds rather than at the employee's marginal tax rate;
- up until 30 June 1992, the following forms of member financed superannuation contributions received concessional taxation treatment:
  - employees whose only employer superannuation contributions were "superannuation agreement contributions" (ie contributions made under an industrial award or similar agreement) were eligible for a deduction for personal contributions of up to $3000; and
  - from 30 June 1990, employees with annual assessable income below $31,000 and who were members of schemes (called "eligible schemes") where the average annual level of employer superannuation support was certified as being $1600pa or less were eligible for a 25% rebate on contributions of up to $3000pa, with the maximum rebatable contribution reduced by 50 cents for each dollar of income over $25,000;
- self employed people (ie those who receive less than 10% of their income from wage or salary employment) are entitled to a deduction for superannuation contributions up to $3000 plus 75% of the excess of contributions over $3000, to a maximum deductible amount equal to the amount allowed under the RBL funding limits;
- superannuation fund earnings are taxed at a nominal rate of 15% (instead of at the member's marginal rate) on a basis *similar* to that which would apply if the income were paid to the individual direct;
- lump sum superannuation benefits are taxed by including 5% of any concessional components and that part of the benefit that relates to pre-July 1983 days of service in the person's assessable income and taxing that part that relates to post-June 1983 days of service, less undeducted contributions and concessional components, at the lesser of the person's marginal tax rate or tax under the ETP tax scales (ie generally zero tax on the first $76,749 (indexed) and 15% tax, plus Medicare levy, on amounts in excess of that threshold); and
- the recipient's assessable income includes superannuation pensions and rollover annuities, exclusive of the undeducted purchase price amount. The recipient pays tax on this assessable

income at marginal rates and a rebate, generally equal to 15% of that part of the assessable pension or annuity payment attributable to post June 1983 fund membership, reduces this tax.

Table 2 sets out the superannuation tax expenditures arising from this methodology for 1990-91 and 1991-92.

Table 2: Estimated tax expenditures through retirement and other employment termination tax concessions: 1990-91 and 1991-92

	1990-91	1991-92*(a)*
Costs:	*$ million*	
1. Under-taxation of employer contributions	2063	2223
2. Deduction for self-employed/unsupported	310	410
3. Under taxation of fund earnings	1707	1802
4. Under taxation of unfunded lump sums	572	690
5. Superannuation rebate	-	62
Sub Total	4652	5187
less Offsets		
6. Tax on funded pensions	*(b)*	*(b)*
7. Tax on the pre 1/7/83 component of funded lump sums	50	62
8. Tax on the post 30/6/83 component of funded lump sums	147	160
Total Offsets	197	222
Tax Expenditure	4455	4965

(a) Figures provided are preliminary only and are subject to revision on receipt of tax data for 1991-92.

(b) Indeterminate but unlikely to be significant.

Source: Tax Expenditures Statement, The Treasury, December 1992

2. CRITICISMS OF THE SUPERANNUATION TAX EXPENDITURE

Several commentators have criticised the TES measure of the superannuation tax expenditures. Professor David Knox has criticised the TES methodology in several books over recent years and, in Knox (1992), criticises the TES estimates of the superannuation tax expenditure as being misleading for the following reasons:

"• the use of single year figure is inappropriate to measure the cost of a long term 'investment' which will produce a return in future years with increasing taxes on benefits;
- there is no allowance for the fact that there has been significant growth in the coverage which must increase the cost in the early years but which will bring rewards in future years;
- no allowance is made for <u>any</u> saving in future age pension costs;
- no allowance is made for the much higher future revenue as tax receipts increase in respect of post 1983 benefits;
- a double-counting effect increases the figure (Board of Inland Revenue(1989));
- the use of marginal tax rates to establish the savings benchmark; and

- the assumption that removal of these tax concessions would not cause any change in the behaviour of individuals."[5]

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5 Knox, D.M. Taxing superannuation in Australia: costs and benefits of the alternatives. Research Paper Number 354, Department of Economics, University of Melbourne, October 1992. Page 5.

Bateman and Piggott[6] (1992) express similar reservations about the effectiveness of the annual TES estimates of the superannuation tax expenditure in measuring the long term fiscal impacts of the superannuation tax concessions. They note that:

- "While tax expenditures can in aggregate be interpreted as the cost of departures from the comprehensive income base, it is not legitimate to infer that the tax expenditure associated with any component can be reclaimed by removing that particular concession." Essentially, taxpayers are likely to have other concessionally treated savings avenues available to them (eg housing or negatively geared investment) into which they would transfer in preference to a fully taxed alternative such as conventional bank saving.
- The procedure used to estimate the superannuation tax expenditure is to apply some assumed average of the marginal tax rates of superannuation fund members to contributions and then do the same thing for fund earnings. While this does yield a single year estimate of revenue cost, it is internally inconsistent in the longer term. Taxing contributions will reduce the earnings base, and the value of the tax expenditures from the fund earnings tax concessions will thus diminish.
- A long term perspective on superannuation fund contributions would have to take into account projected reductions in age pension payouts, and factor these into the revenue cost calculations.
- The tax expenditures estimates assume that a changed tax regime would induce no change in consumer choice. Removal of tax concessions would, however change the relative attractiveness of superannuation savings and most likely result in increased current consumption - including purchase of consumer durables - rather than saving in a bank.

The Association of Superannuation Funds of Australia (ASFA) (1990) criticise the superannuation tax expenditure figures as being misleading. They are critical of the TES figures being used as a measure of the "tax concessions" granted to superannuation, pointing out that the figure is not a measure of the overall concessions but is, rather "... an estimate of the extra tax revenue which would have been collected in the current year had the contributions been actually paid to the member as income instead of being saved for use in retirement." ASFA's specific criticisms of the superannuation tax expenditure estimates were that:

- "... no allowance is made for the tax to be paid in the future on the benefit provided by this year's contributions and investment income. The offsets allowed for are the taxes on benefits paid in 1988/89, which arise from the lower contributions paid as much as 30 or 40 years ago!"; and
- "... the figures make no allowance at all for the savings to the Government in the way of reduced calls on the age pension system. The lack of symmetry in such an omission is graphically illustrated by the fact that the Government's attempts to increase coverage and contribution levels (so that there will be a reduced cost to the community of supporting the aged) will actually have the perverse result of increasing the "tax concession" as calculated by the Treasury."[7]

Dixon (1986) has also criticised the superannuation tax expenditure in the terms of its treatment of unfunded superannuation arrangements, failure to take account of the potential offsetting savings

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6 Bateman and Piggott, The Superannuation Guarantee Charge: What do we know about its aggregate impact? School of Economics, University of NSW September 1992 (Revised October 1992). Paper based on a presentation to EPAC, September 1992. Pages 13-14

7 The Association of Superannuation Funds of Australia Federal Secretariat, "Treasury Maintains the Tax Concession Myth", Superfunds, March 1990. Page 27.

from the social security system or the costs of deferring tax receipts from the current time to the future. He states that:

> "Significant components of the tax expenditures, namely the interest cost of deferral of tax collections and the expenditures in respect of unfunded lump schemes are not included in the costings, while the expenditures in respect of funded schemes may well be overstated because of the assumptions made with respect to investment income and the exclusion of social security savings."[8]

In part, these criticisms of the superannuation tax expenditure estimates are a reflection of their being the only available overall measure of the cost of the superannuation tax concessions. Because of this, there has been a tendency to interpret the tax expenditure estimate out of context, as a measure of the longer term value of the tax concessions, rather than as a measure of the *immediate* budgetary impact of removing a departure in tax treatment from a benchmark 'norm' assuming no behavioural change.

The tax expenditures estimates *are* an appropriate measure of the immediate budgetary impact of the superannuation tax concessions that allow us to compare the cost of those concessions with costings of budget outlays. However, they are only an assessment of the amount expended on the superannuation tax concessions in the year concerned and, like any other outlays estimate, do not provide an indication of the *worth* of those tax concessions. Like any outlay, the worth of the superannuation tax concessions requires a longer term assessment of costs and benefits. The Department of Finance (1991) has recognised the problem of assessing the worth (as opposed to the cost) of outlays measures and published a "Handbook of Cost-Benefit Analysis"[9]. We need to apply similar techniques to the superannuation tax concessions in order to determine their worth.

The criticisms of TES seek a more comprehensive measure of the costs and benefits of the superannuation tax concessions, taking account of the current year revenue costs, the discounted value of future social security outlays and the likely behavioural impact of removing of the tax concessions on an individual's savings, both in terms of the amount that they would choose to save and the type of vehicle they would use to undertake such savings (ie whether they would use a fully taxable vehicle or the next most concessionally taxed vehicle available). The superannuation tax expenditure estimates were never intended to perform this role and we clearly should not interpret them as doing so.

Knox[10] (1991) outlines an alternative discounted cash flow methodology based upon an individual fund member and estimated cost of the taxation support as at the date of retirement. This proposed methodology calculates the tax expenditure by calculating the annual tax expenditures for an individual and offsetting the discounted value of these expenditures against the discounted value of the tax on the retirement benefit. He then calculates the individual tax expenditures for representative individuals and, by assuming a 'steady state' situation and using ABS data on the distribution and characteristics of superannuation fund members, calculates an aggregate figure. After adjusting this figure for the likely magnitude of contributions made by the self employed, he comes up with an estimate of the superannuation tax expenditure in the order of $2.5-3.0 billion per

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8 D.A. Dixon, "Suggested Refinements of the Treasury Costings of the Occupational Superannuation Tax Expenditures", Australian Tax Forum, Volume 3, Number 2, 1986. Page 231.

9 Department of Finance, "Handbook of Cost-Benefit Analysis", AGPS Canberra 1991.

10 D.M. Knox, "Tax, Super and the Age Pension: The Issues of Cost, Equity and Incentives", Australian Tax Research Foundation, Research Study No. 14, 1991. Pages 39-50.

annum for 1988-89 compared with the then published TES estimate of $3.66 billion (since revised up to $3825 million).

Knox notes that (after allowing for the impact of the savings from the 1988 superannuation tax changes on the TES estimates) the figures given by his discounted cash flow methodology and the TES estimates are of the 'same order' but stresses that in longer term analysis they are likely to diverge, particularly as the level of coverage of superannuation increases. More importantly, he notes that his methodology, in common with that of the TES, still does not take into account the impact of superannuation savings on age pension outlays.

Knox's alternative methodology, while presenting the basis for an overall assessment of the impact of the superannuation tax concessions, falls short of assessing their full value, both in terms of the cost to the Government and in terms of their impact on the net retirement income position of the individual. Nor is it clear that his methodology is capable of being taken the extra steps necessary to perform such an assessment. We need a more sophisticated modelling approach to perform a more complete assessment of the impact of retirement income policies. INDMOD[11] has the capacity to perform such analysis for individual case study examples while the RIP[12] model is able to generate estimates of the aggregate costs of different policy alternatives. The Appendix set out details of these models. The remainder of this paper discusses the relevant concepts for modelling the costs and benefits of retirement income policy with the aid of such models.

3. ISSUES INVOLVED IN MEASURING THE LONG TERM COSTS AND BENEFITS OF RETIREMENT INCOME POLICIES

It is clear from the foregoing discussion that the annual superannuation tax expenditure estimates are not, and were never intended to be, a measure of the longer term impact or worth of the superannuation tax concessions. The purpose of the tax expenditures is to provide an estimate of the single year budgetary impact of removing the superannuation tax concessions to allow commentators to compare this impact with the budgetary impact of direct outlays. They provide no information on the *recurrent* fiscal impact of removal of the tax concessions or of the longer term value of the tax concessions once we take offsets from reduced age pension outlays and increased tax receipts from retirees into account.

A more complete analysis of the superannuation tax concessions and their cost needs to provide estimates of both:

- the long term costs and benefits of retirement income policy and whether there is a positive overall return, in terms of improved retirement incomes, reduced age pension outlays, increased tax receipts from retirement incomes and the accumulated cost to Government of the tax concessions; and
- the magnitude of the *annual* costs of the tax concessions into the future, compared to a reasonable non-concessionally taxed counterfactual. This is important in terms of intergenerational equity and the affordability of policy in individual years into the future. While a policy may provide a positive net return in the long term, we should not overlook its

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11 INDMOD is a spreadsheet based model developed by the Retirement Income Modelling task force of the impact of retirement income policy on individuals.

12 The RIP model is a model that measures the impact on national savings and Government outlays of different retirement income policies. RIP was developed by National Mutual, who have made it available to the Retirement Income Modelling task force.

affordability in individual years. In this regard, while the superannuation tax concessions impose a strain on the Government's budget now, we must weigh this against having to fully fund the provision of income support and community services to the aged in the future from a tax base that will be coming under considerable pressure as a result of population ageing.

The remainder of this section discusses the issues relevant to the measurement of the costs and benefits of the superannuation concessions and the implications of the different approaches that we adopt.

(a) Benchmark issues

The tax expenditures statement measures the cost of the superannuation tax expenditure by comparing actual tax receipts under the current arrangements with those which we would obtain under a comprehensive Haig-Simons income tax benchmark assuming no behavioural change. The income tax benchmark is, however, not the only benchmark that we could use. Alternative benchmarks would include:

- assessing the value of the concessions against an expenditure tax benchmark; and
- assessing the cost of the concessions against a counterfactual scenario, such as the cost of direct outlays that would be necessary to provide the same level of retirement income as a given level of superannuation provision.

Our choice of benchmark will depend upon the type of policy analysis we wish to perform.

(i) Income tax benchmark

The income tax benchmark is the most appropriate benchmark to use if we wish to perform a cost benefit analysis of retirement income policy. This is because the income tax benchmark compares outcomes under the concessions with those that would arise under the "standard" non-concessional tax regime that would prevail without the concessions. However, we need to modify the benchmark from the traditional "revenue forgone" benchmark for measuring tax expenditures towards being a measure of the "revenue gained" as a result of abolishing or modifying the tax concessions. This would involve incorporating assumptions concerning the behavioural responses to tax concessions (or their modification or removal) into models, particularly over the long term. Using this modified benchmark would, therefore, provide a measure of the actual changes in outcomes bought about by the tax concessions.

(ii) Expenditure tax benchmark

An expenditure tax benchmark is most appropriate if we wish to examine the theoretical effectiveness of the superannuation tax concessions in overcoming the distortions in savings decisions inherent in an income tax system. An expenditure tax benchmark assesses outcomes under the superannuation tax concessions against those obtained in a theoretically "ideal" scenario where people save out of their pre-tax income. Interest on such savings is tax exempt and dissaving taxed at the recipient's full marginal rate of tax, adjusted (upwards) to account for the narrower tax base that would arise under a comprehensive expenditure tax system. This benchmark tax system is one which, in theory, does not impact upon a person's decision to save or consume income from one period to the next.

(iii) An outlays equivalent benchmark

An outlays equivalent benchmark is most appropriate if we wish to determine whether the Government could provide a particular outcome more effectively through tax concessions for advance funding or by direct Government outlays once a person has retired. In the case of superannuation benefits, this would involve comparing the NPV of the tax revenue forgone as a result of the tax concessions with the NPV of the cost of increasing the age pension to a level sufficient to provide the same net retirement income as the age pension supplemented by superannuation would provide. The Treasury used this approach in its May 1992 submission to the Senate Select Committee on Superannuation[13] and in modelling contained in the June 1992 "Security in Retirement" Statement[14].

(iv) Summary of benchmark issues

The choice of benchmark for assessing the effectiveness of retirement income policy depends upon the type of analysis we wish to undertake. The objective of this paper is to develop a cost benefit analysis of retirement incomes policies and for this purpose the most appropriate benchmark is the income tax benchmark, modified to take account of the likely behavioural responses to removing the concessions. This provides an estimate of the costs and benefits of the concessions by comparing the concessionally taxed outcomes with those we might expect to observe, given certain behavioural assumptions, under the 'standard' income tax regime. However, we need to extend the income tax benchmark for analysing the cost of the superannuation tax concessions beyond the Tax Expenditures Statement methodology, for instance along the lines of Professor Knox's individual discounted cash flow methodology with the value of social security savings taken into account, if we are to use it for long term analysis. The next section discusses such an approach.

(b) The mechanics of measuring the long term cost of the tax concessions

The TES estimates of the superannuation tax expenditure are not an estimate of the long term cost of the superannuation tax concessions because they only provide an estimate of the *first year* fiscal impact of removing the concessions. This means that we *cannot* interpret the TES estimates in Table 1 as a time series of the cost of the tax concessions or project those estimates forward to assess the impact of the concessions in the future. This is because, even assuming no behavioural change, the TES estimates do not take account of the erosion of the initial revenue gain that would arise because of the higher taxation eroding the superannuation tax base.

The following simple example of a person who starts at the beginning of period (t) with superannuation assets of $10,000 illustrates this point. This person has an annual income of $30,000, a marginal tax rate of 40% and receives employer superannuation contributions of 10% of salary to a fund with an earning rate of 10% pa which credits earnings on the opening balance at the end of the year.

If we assume maintenance of the tax concessions, the TES methodology would show tax expenditures of $1000 in year (t), $1085 in year (t+1) and $1177 in year (t+2). However, these estimates do not provide a valid estimate for determining the long term cost or benefit of the tax concessions *as at year (t)* because they do not take account of the difference in accruing benefits

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13 Treasury, "Submission to the Senate Select Committee on Superannuation - Implications of the Superannuation Guarantee Levy for the Accumulation of Superannuation Benefits and Related Issues", May 1992

14 J. Dawkins, "Security in Retirement - Planning for Tomorrow Today", Statement by the Treasurer of the Commonwealth of Australia, 30 June 1992, pages 42-50.

(and tax on those benefits) that would arise if we removed the tax concessions commencing from year (t). We can obtain a more appropriate measure of impact of the tax concessions in the out years by comparing the projected tax revenue that would arise, assuming we maintain the concessions, with the tax revenue that would arise if were to abolish them from year (t). This methodology gives an estimate of the cost of the tax concessions of $1000 in year (t), $1045 in year (t+1) and $1091 in year (t+2). This involves calculating the cost of the tax concessions by comparing two projections, one assuming we retain the tax concessions and the other where we assume abolition of the superannuation tax concessions from the base year on.

Comparing the TES methodology with the alternative approach shows that simply projecting the annual tax expenditures will overstate the ongoing revenue gains from abolishing the tax concessions. Similarly, this means that interpreting the tax expenditures estimates in Table 1 as a *time series* of the ongoing cost of the superannuation tax concessions will also tend to overstate the recurring revenue gains from removing the superannuation tax concessions.

This means that when we model the cost of the superannuation tax concessions, we should compare the tax revenue obtained from a concessionally taxed accumulation with that obtained from a separate, non-concessionally taxed accumulation. This is a fault in the National Mutual RIP model, for instance, which estimates the annual superannuation tax expenditure as, *inter alia*, a fixed proportion of each year's superannuation fund earnings multiplied by the difference between the concessional superannuation fund rate of tax and the assumed average marginal tax rate of the population. The RIM Task Force has solved this problem with the RIP model by doing separate model runs for concessional and non-concessional rates of tax and subtracting the values obtained from these runs to derive more appropriate cost estimates.

In any given year the "tax expenditure" is the difference in tax collected from the concessionally taxed saving stream and the tax collected on the non-concessional benchmark accumulation. Over time the aggregate cost of the superannuation tax concessions is the accumulated value of these annual tax expenditures, compounded forward or discounted back (depending upon when we make a comparison) by the Government discount rate, which will generally be a long term bond rate. This is analogous to Knox's discounted cash flow methodology.

To assess the *total* costs of a retirement income policy, we must also calculate the age pension entitlements and tax payable under both the concessionally taxed and non-concessional tax benchmarks for each year of retirement and for each person. The age pension represents a cost to Government and the tax payable an offset to this cost. Our model should then take the value of the age pension payable in each year of retirement, offset by the tax payable and discount this back to the comparison year to get a complete assessment of the cost of retirement income policy to the Government.

To summarise, for each individual, the annual cost of retirement income policy is equal to:

1. Tax on non-concessionally taxed superannuation contributions and earnings in the year
2. *less* Tax on concessionally taxed superannuation contributions and earnings in the year
3. *plus* Tax on retirement income in the year with non-concessionally taxed accumulation
4. *less* The age pension payable in the year with a non-concessionally taxed accumulation
5. *less* Tax on retirement income in the year with concessionally taxed accumulation
6. *plus* The age pension payable in the year with a concessionally taxed accumulation

where the we calculate the concessionally taxed and non-concessionally taxed accumulations as separate accumulations from some starting point. In this framework, individuals will generally

either be in the accumulation phase of their benefit (lines 1 & 2) or the drawdown phase (lines 3 to 6). The total cost of retirement income policy for an individual would be the net present value at some point in time of all the annual values calculated as above. We can also aggregate these individual annual tax expenditures in a model such as the RIP model to obtain a time series estimate of the aggregate cost to Government of a retirement income policy.

We should still take care in interpreting these modelling results, however, because the models only take account of the impact of retirement income policy in respect of the household sector. The modelling results are most suitable for comparisons of different policy options and we should*not* be regard them as forecasts of actual outcomes. This is because the modelling makes particular assumptions concerning behaviour which may not hold over the time horizons concerned and because the modelling does not take into account the impacts of policy in other sectors of the economy. For instance, models of retirement income policy generally do not take account of the impact of an increase in retirement saving on indirect tax receipts when calculating the cost to Government of a policy.

(c) The Government discount rate

It is clear from the foregoing discussion that the Government discount rate we assume applies is an important element of an analysis of the long term costs and benefits of retirement income policies. For instance, ignoring the age pension and the treatment of end benefits for the moment, if we assume the Government discount rate is exactly equal to the fund earning rate, the benefit a person receives from $1 of up front superannuation tax concession will be identical to the discounted cost of providing the same increase in gross retirement income through a direct outlay to the person when they are in retirement.

This means that (ignoring any behavioural assumptions and impacts on age pension outlays) if the Government discount rate was equal to the fund earning rate, compensating for a person for the impact on benefits of removing the tax concessions would require an outlay at the date of retirement with a net present value equal to the revenue gains. However, if the Government's discount rate is higher than the fund's earning rate, the tax concessions become a relatively more expensive way of increasing a person's retirement income, while if the Government discount rate is lower, the concessions become relatively more cost effective.

All this indicates that the choice of Government discount rate will be a crucial element of any policy analysis.

- Most commentators argue that, because providing tax concessions increases the Government's net borrowing requirement, the Government discount rate is equal to its cost of funds. We can proxy the Government's cost of funds by using a long term bond rate, such as the 10 year bond rate.
- An alternative method of determining the Government's discount rate, however, is to examine the behaviour of Governments. Some commentators have suggested that government decisions often imply a discount rate well in excess of their cost of funds.
- Another alternative is to use the benchmark discount rate for cost-benefit analysis of major projects recommended by the Department of Finance[15]. The Department of Finance recommends that Departments use a *real* discount rate (ie a rate in excess of the assumed

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15 The Department of Finance, Circular number 1992/3, "Benchmark Discount Rate to be Used in Cost-benefit Analysis", February 1992.

> inflation rate) of 8% in cost benefit analysis of expenditure proposals where the return is uncertain. Where we know the return to a project with virtual certainty and it is not subject to a substantial amount of risk, we can use the real long term Treasury Bond rate as the discount rate. We could view the superannuation tax concessions as similar to a major expenditure proposal and assess them in a similar way. Because the returns of superannuation funds are not risk free, a cost benefit analysis of superannuation under the Finance guidelines would have to use the 8 per cent real benchmark discount rate.

Determining the Government discount rate from the actual behaviour of Governments, while it may more accurately predict actual Government behaviour, is something that we can only determine anecdotally and which is likely to vary in an inconsistent manner. Because of this, the most appropriate discount rate to use in modelling the cost of the superannuation tax concession is the Government's cost of funds, or possibly the Department of Finance benchmark discount rate, both being measures that we can model objectively. The analysis in this paper generally uses the assumed 10 year bond rate as the Government discount rate.

(d) The benchmark tax rate

In developing an income tax benchmark treatment of savings a consideration is the tax regime applying to non-concessional savings. A criticism of the TES estimates of the superannuation tax expenditure is that the benchmark chosen is ordinary savings taxed at full marginal rates and that this is unrealistic because individuals can access savings options that bear tax at less than their full marginal rate[16]. The principal concessionally taxed saving alternatives are:

- investment in owner-occupied housing;
- negatively geared investments;
- investment in assets with a substantial capital gains element in the return;
- investment in assets which yield deferred income with up front tax deductions; and
- possibly life insurance bonds (mainly for those on the top marginal tax rate),

all of which produce returns taxed at effective rates well below those applying to ordinary savings. It would be fair to regard the tax treatment of many of these alternative saving vehicles as well entrenched elements of our taxation system (eg the tax treatment of owner occupied housing) which are unlikely to change. In this respect they represent legitimate alternatives to saving through ordinary savings accounts which are subject to tax at the individual's full marginal rate.

Knox (1991) comments on the use of the individual's marginal rate as the benchmark rate of tax in the following terms:

> "..it must be stressed that most individuals do <u>not</u> pay their marginal rate on their investment income.
>
> It is therefore suggested that the use of the marginal tax rate is inappropriate in the establishment of the savings benchmark. The actual rate that should be used will vary with the individual but the choice of a 25% rate for all members is a reasonable compromise."[17]

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16 See both Knox (1991 & 1992) and Bateman and Piggott (1992).

17 D.M. Knox, "Tax, Super and the Age Pension: The Issues of Cost, Equity and Incentives", Australian Tax Research Foundation, Research Study No. 14, 1991. Page 21.

While other forms of savings may be available to people as alternatives to concessionally taxed superannuation savings, the available evidence is that very few people save using vehicles other than owner occupied housing, interest bearing accounts and superannuation. Savings decisions depend upon more than just the effective tax rate (or rather the after tax rate of return) applying to the savings vehicle. Other considerations include liquidity preference, transactions costs and risk. Dilnot (1990), in a study based on data from the 1986 income distribution survey, found that most Australians hold their wealth either in interest bearing accounts or in owner occupied housing:

> "The least wealthy 30 per cent [of the population] have no wealth. The first form of wealth to be accumulated is interest-bearing assets: presumably because of their liquidity, the certainty of their return, and because they give access to housing loans. The level of interest-bearing wealth is quickly built up to around $4000 and subsequently remains broadly constant until the top 20 per cent of the distribution is reached. Once $4000 of interest-bearing assets have been acquired, any subsequent accumulation of assets seems to come in the form of housing, until the top 5 per cent of the distribution is reached, at which point a fairly dramatic shift into equities begins. By the top percentile 61 per cent of wealth is held in the form of equities."[18]

Another consideration is whether using the effective tax rate on alternative savings vehicles is appropriate to the task of measuring the cost of the superannuation tax concessions. If a we use a concessionally taxed regime as the benchmark, it too has a potential revenue cost that we need to estimate in order to evaluate the desirability of retaining the alternative set of tax concessions. However, where the alternative savings vehicle is one that is a well entrenched feature of the taxation system, such as the taxation treatment of owner occupied housing (where the imputed rent and capital gains are entirely tax free) or capital gains (where only real gains are taxable, and then only on realisation), we should take into account the effective tax rates applying to such investments in determining the benchmark tax rate to apply in assessing the cost of the superannuation tax concessions.

We need to examine the distribution of effective tax rates on alternative savings by age and income level to determine the most appropriate effective tax rates to apply. Studies such as that of Dilnot (1990) show that we can expect the main alternative savings vehicle to be investment in owner occupied housing which people make from after tax income and which has a zero effective marginal tax rate on the investment returns (ie imputed rent and capital gains). The results of using housing as the basis for setting the tax rate under the alternative tax benchmark will give the same results in the cost benefit analysis as a zero savings offset, as discussed in detail in the next section.

(e) Alternative savings behaviour

In calculating the value of the superannuation tax expenditure, TES assumes that withdrawal of the superannuation tax concessions would have no impact on the level of superannuation savings. This 'no behaviour change' assumption is a standard assumption made in costing policy changes because of the difficulty in estimating their effect on people's behaviour. However, while a no behaviour change assumption may be appropriate in a single year "snapshot" analysis, a long term analysis is likely to be extremely sensitive to behavioural changes. It is also inappropriate to model the long term effect of tax concessions (or compulsion) designed to modify people's savings behaviour using a 'no behaviour change' assumption.

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18 A.W Dilnot, "The Distribution and Composition of Personal Sector Wealth in Australia", Australian Economic Review, 1st Quarter 1990. Page 36.

The alternative saving behaviour assumption employed has a critical impact on estimates of the extent to which the superannuation tax concessions add to aggregate savings and on the cost of the superannuation tax concessions. If people would have saved without concessions, the cost of the superannuation tax concessions will be much higher in the accrual phase of a benefit relative to the non-concessionally taxed benchmark and the offsets from reduced age pensions and income tax payable in retirement will be much smaller. On the other hand, if the superannuation tax concessions lead to *additional* retirement savings being undertaken, the alternative benchmark savings will be lower, implying a lower cost of the concessions in the accrual phase and there will be a much greater relative offset from tax payable in retirement and from reduced age pension outlays.

FitzGerald and Harper (1991) considered the issue of how much additional saving the Superannuation Guarantee Charge (SGC) would induce. They concluded that:

> "Assessing how much of the increased superannuation saving under the SGL would remain in total private saving is difficult, although there are grounds ... to believe, given how much of it is forced saving from low to middle income households, that much of it would. We judge that perhaps half and possibly more would remain in aggregate private saving well into the future."[19]

FitzGerald and Harper base their conclusion in large part on work by Dilnot (1990). Dilnot extrapolated household wealth from the 1986 Income Distribution Survey (IDS) and found that people at the upper end of the income distribution hold a disproportionate share of Australian wealth and that there is little evidence of substantial non-housing saving among low to middle income earners. The Treasury also adopted this notional value for the savings offset factor of around 50% as an assumption in modelling prepared for the Senate Select Committee into Superannuation and the June 1992 "Security in Retirement" Statement. Investigating this key behavioural question is, of course, a major topic on RIM's research program.

The implication of low to middle income earners, who comprise the majority of the Australian population, having very low savings or wealth is that they are very likely to have their consumption constrained by their disposable incomes. This means an increase in *compulsory* superannuation (such as under the SGC) will most likely to lead to an increase in their net savings because they do not have other savings they can readily reduce.

On the other hand, those people whose consumption is not income constrained are much more likely to reduce other saving in response to an increase in compulsory superannuation, for instance by reducing housing repayments or reducing the amount saved in other savings vehicles. A similar picture is likely to be the case for voluntary superannuation encouraged by tax concessions because it is likely that the first people to respond to such concessions will be those who would have saved anyway in less concessionally taxed savings vehicles. Generating new savings through a voluntary system is likely to require very considerable tax concessions to overcome the disadvantages imposed by the long term illiquid nature of superannuation savings, which people can generally only access upon retirement after they reach the preservation age.

The foregoing discussion indicates that the behavioural response to the superannuation tax concessions and other arrangements such as the SGC is likely to be a critical element of estimating the likely costs of the superannuation tax concessions. There is, however, very little information on

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19 V.W FitzGerald and I.R. Harper, "Super Preferred or 'Level Playing Field' - Implications for Saving and the Financial System", Paper presented to the Third Annual Melbourne Money and Finance Conference, Sebastopol, Victoria, 6-7 December 1991. Page 28

this issue. Generating such information, whether by a thorough review of academic literature in Australia and abroad or by more direct means, must be a matter of high priority in modelling the costs and benefits of retirement income policy.

4. IMPACTS ON MODELLING RESULTS

This section reviews the impact of different benchmark assumptions on estimates of the long term costs and benefits of the superannuation tax concessions. The section draws on both the individual spreadsheet model (INDMOD) developed by RIM and results from the RIP model developed by National Mutual and made available to RIM.

As already noted, we need to take care in interpreting the results of these models because the analysis involved is necessarily only a partial analysis which does not take into account changes elsewhere in the economy. For instance, the models treat the Commonwealth Budget as a "sink" whereby the Government has an unlimited capacity to finance current tax concessions. Furthermore, even where we can show policies are worthwhile in the long term, policy makers cannot disregard their short term fiscal consequences.

(a) The impact of different government discount rates

Table 4 sets out the results from INDMOD showing the impact on estimates of the costs and benefits of the superannuation tax concessions of different government discount rates, relative to the earning rates of superannuation funds, assuming a 50% savings offset factor applies (see the next section for details of the significance of this assumption). The Table expresses all values in the table as percentages of the value of the person's pre-retirement disposable income.

As we could expect, varying the Government discount rate results in a wide variation in the cost of the accrued tax expenditures in the concessionally taxed case with a commensurate impact on the cost benefit analysis. If we view the difference between the individual's net gain in retirement income and the Government's net cost as the *net policy gain or loss*[20] arising from the superannuation tax concessions, we can draw the following conclusions from Table 4:

- The higher the fund earning rate is relative to the government discount rate (ie as in the first column), the more likely we are to assess that the superannuation tax concessions generate a net policy gain. In the table, with a government discount rate 2% below the fund earning rate, the superannuation tax concessions provide the individual with additional benefits equivalent to 23.7% of the person's pre-retirement disposable income for a *gain* to government of 9.7%, implying a net policy gain equal to 33.4% of the value of the person's pre-retirement disposable income. The gain to Government arises because, given the 50% savings offset factor assumed, the value of taxes on amounts accumulating in the superannuation fund exceeds the value of taxes on ordinary savings in the non-concessional benchmark.
- With higher government discount rates, the net policy gain diminishes. Where the government discount rate *equals* the fund earning rate, the net policy gain in the example falls to 28.5% of the value of pre-retirement net income and where we apply the Department of

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20 This measure is premised upon the principal objective of retirement incomes policy being to increase retirement incomes beyond the level that could be achieved from the age pension alone. A *net policy gain* is assumed to occur if a retirement incomes policy increases a person's net retirement income by an amount greater than the net cost to Government of that policy.

Finance's 8% real government discount rate criterion, the net policy gain falls to 2.1%,

Table 4: Impact of different Government discount rates on the value of the superannuation tax concessions

	Government discount rate 2% below fund earning rate	Government discount rate equals fund earning rate	8% real Government discount rate (4% above fund earning rate)
	% of pre retirement disposable income		
CONCESSIONALLY ACCUMULATED BENEFITS			
Net income	***69.8***	***70.0***	***70.3***
Cost to Government	***23.0***	***28.0***	***54.6***
WITH A NON CONCESSIONAL ACCUMULATION			
Net income	***46.2***	***46.2***	***46.4***
Cost to Government	***32.7***	***32.7***	***32.7***
DIFFERENCE IN COST/BENEFITS			
Gain to member	***23.7***	***23.8***	***24.0***
Net cost to Government	***-9.7***	***-4.7***	***21.9***
NET POLICY GAIN/LOSS	***33.4***	***28.5***	***2.1***

Assumptions:

(a) The case modelled is that of a single person, commencing in a fund at age 25 in 1992 and retiring at 65, earning average weekly earnings throughout. This person receives superannuation support at the SGC minimum rate throughout this period (including a 3% employee co-contribution phased in over 3 years from 1998-99) and on retirement has no other, non-superannuation, non-housing savings. Fees of $1.70 per week are assumed during the accumulation period. All benefits are taken as a rollover annuity, with the person assumed to live to average life expectancy.

(b) For the purpose of the modelling, a 50% savings offset factor is assumed (see below for an estimate of the impact of this assumption).

(c) The superannuation fund is assumed to earn 8%pa over the period of the projection, AWE growth is assumed to be 5½% over the projection period, and CPI growth 4%. All net present values are calculated as at the person's date of retirement using the government discount rate.

implying the policy would just break even against that criterion.

These results indicate a long term assessment of the worth of the superannuation tax concessions is likely to be very sensitive to the government discount rate assumed. If we assume the Government discount rate is equal to the Government's cost of funds (eg the 10 year bond rate), it is very likely that superannuation fund earning rates will exceed this amount making it more likely that we will assess the superannuation tax concessions as 'worthwhile'.

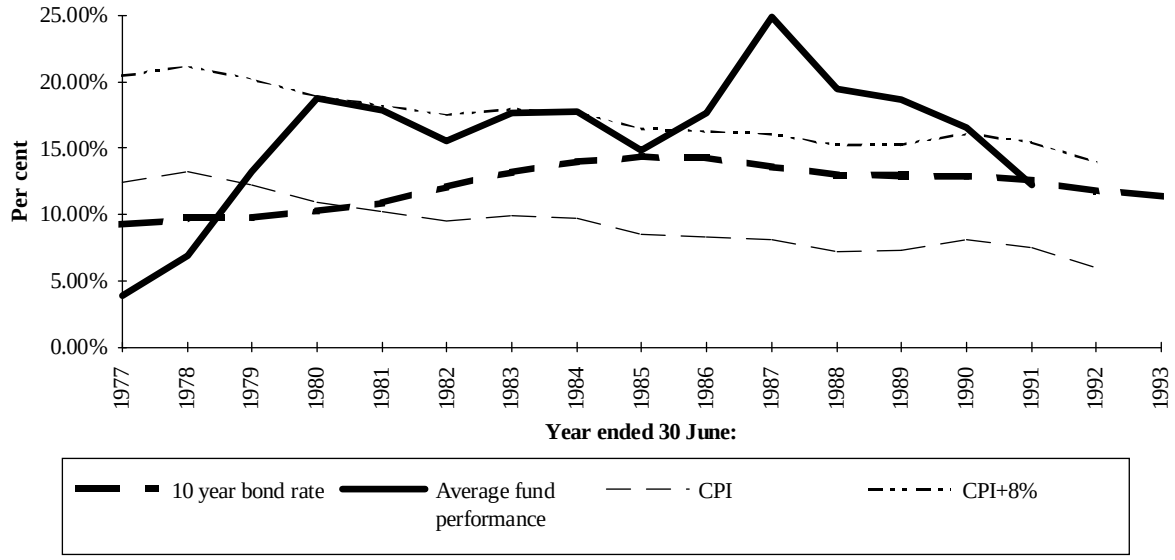
Chart 1 shows the relationship between 5 year average superannuation fund earnings and the corresponding 5 year averages for the 10 year bond rate and the CPI. ASFA[21] calculated the figures for fund earning rates using results for funds participating in actuarial surveys. The chart shows that for most of the period covered, the superannuation fund earning rate was well above the 10 year

[21] The Association of Superannuation Funds of Australia, "Long-term Real Rates of Return", Superfunds, July 1992. Pages 14-16.

bond rate, by as much as 11 per cent in the mid 1980s, although in recent years fund performance relative to the 10 year bond rate has deteriorated. This outcome also holds out over the longer term, the ASFA survey shows that over the 25 years to June 1991, the typical fund performance was 13.0%pa, compared with average 10 year bond rates over the same period of 10.5%. These figures could easily justify the use of a 2% margin between the bond rate and fund earning rates in modelling the impact of the superannuation tax concessions.

Chart 1 also illustrates the relationship between fund earning rates and the 5 year average annual growth rate in the CPI. This shows that, for most of the period covered, superannuation funds had significantly positive real earning rates which would have come very close to satisfying, if not exceeding, the Department of Finance's 8% real rate of return criterion for major Government investments (assuming this criterion had applied for the whole period). Over the 25 years to June 1991, the average annual CPI increase was 5.8%pa, meaning that the average fund earning rate over this period of 13.0% comes very close to satisfying the Department of Finance's 8% real rate of return criterion.

Chart 1: Average superannuation fund performance versus the 10 year bond rate (averages in the 5 years to the date shown)



(b) The impact of different behavioural assumptions

Table 4 used the assumption of a 50% saving offset factor for superannuation, meaning that for each dollar of pre-tax earnings allocated to superannuation, there would be a 50 cent reduction in the amount of pre-tax earnings allocated to other non-superannuation savings. This contrasts with the TES assumption of a full saving offset which, for the reasons set out in Section 3(d) above, is not reasonable for use in long term analysis. As outlined by FitzGerald and Harper (1991), it is reasonable to assume that many low and middle income Australians have their consumption constrained by their disposable income so that a compulsory increase in superannuation savings, such as provided by the SGC, will result in a net addition to their savings. This is an area requiring more work to determine the responsiveness of non-superannuation savings to changes in superannuation saving and the variation in this response depending upon whether superannuation savings are compulsory or voluntary.

Table 5 illustrates the sensitivity of the assessment of the value of the superannuation tax concessions to different assumptions about the extent to which superannuation savings replace other, non-superannuation savings. The table shows that assessments of the value of the superannuation tax concessions will be very sensitive to assumptions about savings offsets:

- Where we assume no savings offset (eg as in the case of the low income earners who have little or no other, non-superannuation savings that they can reduce), the net policy gain from the concessions is very large. This reflects the complete absence of any investment earnings in the benchmark, so that the only cost of the accruing concessions is the annual cost of the concessions for superannuation contributions. Indeed, in the example in Table 5, the cost of the accrued tax expenditures in the concessionally taxed case with a zero saving offset is slightly negative. This indicates that, in the absence of any earnings on savings in the benchmark case, the tax revenue in respect of superannuation fund earnings compounded over the accrual period is greater than the cost of the tax concessions for superannuation contributions, compounded over the same period.

- Where we assume superannuation savings replace other savings to some extent, the net policy gains become smaller, to the point where, as shown in Table 5, there is little net policy gain if we assume a 100% savings offset (along with a government discount rate equal to the fund earning rate).

Table 5 emphasises the sensitivity of any analysis of the value of the superannuation tax concessions to the assumptions made about people's savings behaviour and the need for solid

Table 5: Impact of savings offset factors on the value of the superannuation tax concessions

	Zero savings offset	50% savings offset	100% savings offset
	% of pre retirement disposable income		
CONCESSIONALLY ACCUMULATED BENEFITS			
Net income	***70.0***	***70.0***	***70.0***
Cost to Government	***16.3***	***28.0***	***41.6***
WITH A NON CONCESSIONAL ACCUMULATION			
Net income	***32.7***	***46.2***	***59.4***
Cost to Government	***32.7***	***32.7***	***31.5***
DIFFERENCE IN COST/BENEFITS			
Gain to member	***37.3***	***23.8***	***10.7***
Net cost to Government	***-17.4***	***-4.7***	***10.0***
NET POLICY GAIN/LOSS	***54.7***	***28.5***	***0.6***

Assumptions:

(a) The case modelled is that of a single person, commencing in a fund at age 25 in 1992 and retiring at 65, earning average weekly earnings throughout. This person receives superannuation support at the SGC minimum rate throughout this period (including a 3% employee co-contribution phased in over 3 years from 1998-99) and on retirement has no other, non-superannuation, non-housing savings. Fees of $1.70 per week are assumed during the accumulation period. All benefits are taken as a rollover annuity, with the person assumed to live to average life expectancy.

(b) The Government discount rate equals the assumed 10 year bond rate. All NPVs are calculated using the 10 year bond rate.

(c) The superannuation fund is assumed to earn 8%pa over the period of the projection, equal to the 10 year bond rate, AWE growth is assumed to be 5½% over the projection period, and CPI growth 4%. All net present values are calculated as at the person's date of retirement using the government discount rate, which is assumed equal to the 10 bond rate.

research into this area if we are to properly model the impact of the superannuation tax concessions.

(c) Aggregate modelling results

The National Mutual retirement income policy model (RIP) produces estimates of the aggregate annual costs of different retirement income policy options that we can use to calculate an estimate of the annual tax expenditure, on the same basis as used in TES. By running the RIP model twice, once at concessional tax rates and then again at non-concessional rates, we can also calculate the annual tax expenditures on an accrual basis, taking account of the reduction in age pensions in each year and the increase in tax on end benefits that arise where benefits accrue in a concessional environment.

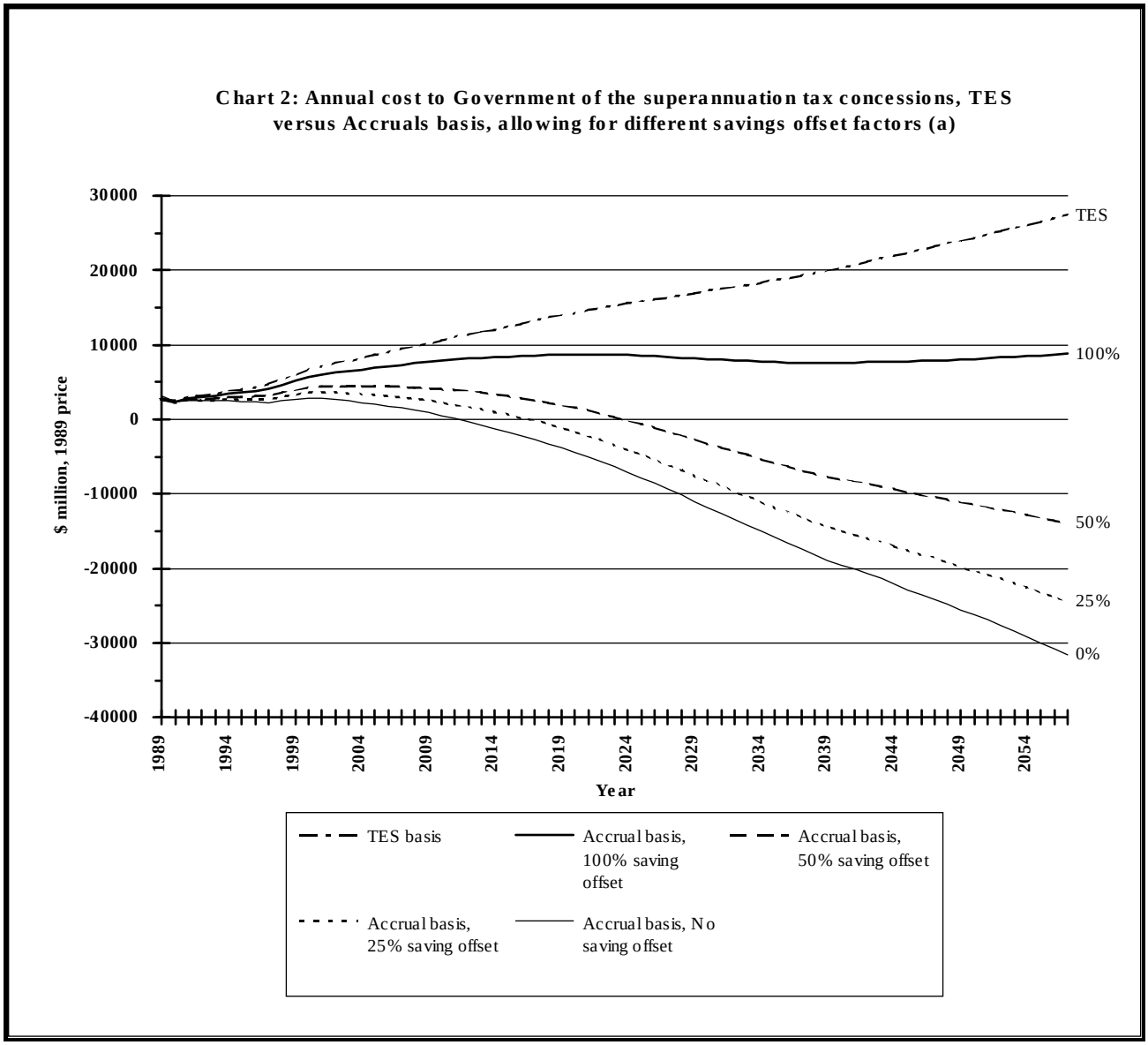
The aggregate results we obtain by these methods make no allowance for other, possibly offsetting, changes in the wider economy or in other government policies arising as a result of the fiscal impact of retirement income policies. That is, the estimates only take account of first round changes in the household sector and therefore we cannot take them as predictions of aggregate equilibrium outcomes.

Chart 2 shows the estimated *annual* revenue gain from abolishing the tax concessions assuming various savings offset factors. The chart shows that simply projecting forward the TES estimate of the superannuation tax expenditure will substantially overstate the cost of the superannuation tax concessions, even where we assume a 100% savings offset. Chart 2 also shows that an assessment of the value of the superannuation tax concessions is *extremely* sensitive to the assumption we make about savings offsets. For instance, Chart 2 shows that we can expect the estimated cost of retirement income policy, assuming superannuation fully offsets other savings, to treble from its base value by 2021 before plateauing at around that level. On the other hand, if we assume a 50% offset factor, the cost to Government of retirement income policy only increases moderately, peaking at a level about 60% higher than the base level in 2004, after which it declines and becomes negative around 2024. This negative cost to government arises because:

- once we assume superannuation does not fully replace other, non-concessionally taxed savings, revenue on superannuation fund earnings eventually exceeds the tax on such earnings under the benchmark case (in a similar manner as where we assumed a zero savings in the previous section). This revenue gain, relative to the benchmark case, in respect of fund earnings is the major cause for the cost to Government in the 50% case commencing to decline, with negative cost to Government arising once this revenue gain, plus other savings (see next point), exceeds the up "front tax" concessions for superannuation contributions; and
- the greater amount accrued under the superannuation tax concessions means lower age pension payouts to, and greater tax receipts from, retirees than under the benchmark case.

Both these effects become more pronounced as we assume superannuation savings displace smaller amounts of non-superannuation savings (ie as we reduce the savings offset factor).

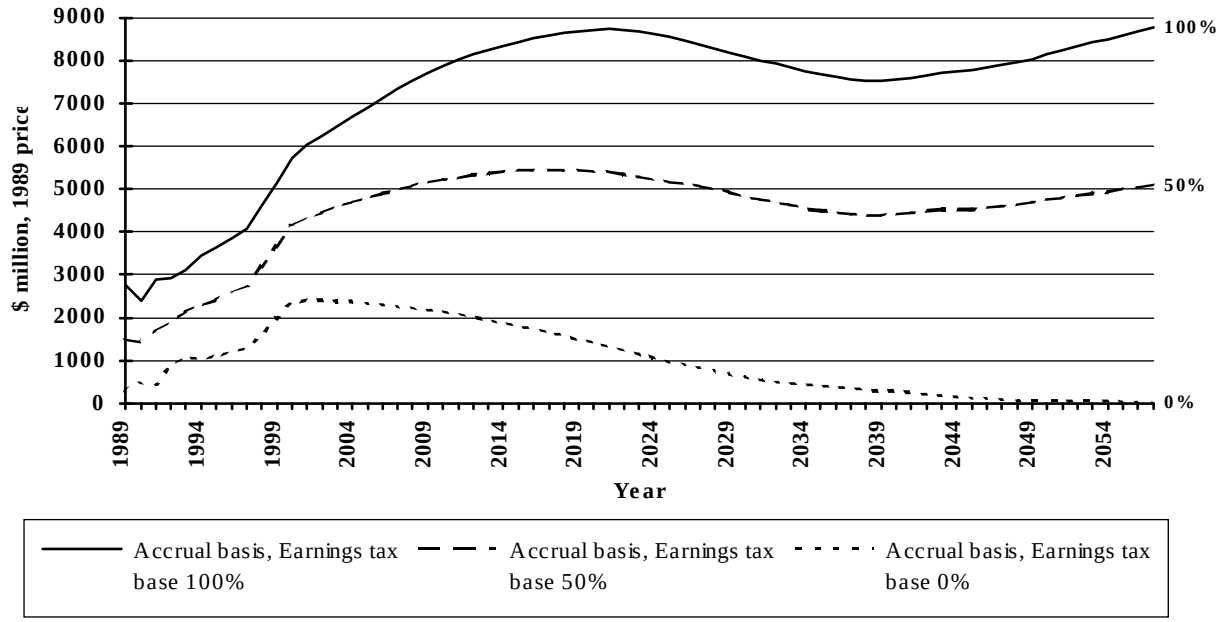
Another significant factor that will affect the cost to Government of the superannuation tax concessions is the tax rate we assume applies to alternative savings vehicles. Chart 3 shows the projected cost to Government of retirement income policy assuming a 100% savings offset and various tax bases for alternative savings vehicles. Essentially, a 100% tax base means that all income earned from an alternative savings vehicle is subject to tax at the individual's marginal tax rate, whereas a 50% tax base factor means that the person's taxable income includes only half these savings (meaning that for a 30% marginal tax rate, such savings bear tax at a marginal rate of 15%).



(a) Chart takes account of the impact of retirement savings on age pension outlays and taxes payable in retirement and assumes all savings are fully taxed under the alternative savings benchmark.

Chart 3 shows the sensitivity of the cost to Government of the superannuation tax concessions to the assumptions made about the tax base applying to alternative savings under the benchmark. A smaller tax base assumption displaces the projected cost to Government downwards for all years in the projection. This reduction in the cost to Government of the concessions as we assume a smaller tax base factor arises because of the smaller tax receipts from fund earnings in the benchmark case relative to the concessionally taxed superannuation case. Less tax collected under the benchmark means that retirement income policy with the superannuation concessions costs less by comparison. The impact of the smaller tax base on fund earnings is offset, however, by lower age pension payments and greater tax receipts in retirement under the benchmark as we reduce the tax base factor.

Chart 3: Annual cost to Government of superannuation tax concessions, Accruals basis, 100% savings offset case allowing for different tax bases for alternative savings.



(a) Chart takes account of the impact of retirement savings on age pension outlays and taxes payable in retirement.

5. CONCLUSIONS

The most appropriate basis for estimating the costs and benefits of the superannuation tax concessions is a comparison against an income tax benchmark which takes account of the likely savings offset factors that will apply to the various classes of person modelled, the likely tax rate on alternative saving and the impact of superannuation savings on the age pension and taxes paid in retirement. Establishing the value of the concession requires a modelling approach that accrues benefits *separately* under a concessional and non-concessional benchmark regime. Simply projecting forward the TES estimates will overstate the cost of the superannuation tax concessions quite considerably because of the double counting effect of projecting forward estimates which are perpetually estimating the first year impact of abolishing the tax concessions.

The modelling results are also extremely sensitive to a number of assumptions, including the Government discount rate used, the rate of substitution between superannuation and ordinary savings and the rate of tax assumed to apply to alternative savings vehicles. The great sensitivity of the modelling results to these assumptions means that developing reasonable assumptions concerning the values that we should use in modelling the costs and benefits of retirement income policies will require considerable research.

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APPENDIX: MODELS USED IN THIS PAPER

(a) The individual hypothetical model, INDMOD

INDMOD is a hypothetical model of individual households that projects the accumulation of superannuation assets and the payment of benefits over a person's lifetime. The model deals with a single household at a time and is able to model single person households, single income couples and two income couples taking account of different lifetime earning profiles, earning levels and labour force participation patterns. INDMOD accumulates assumed employer and member contributions at an assumed fund earning rate, taking account of taxes on contributions and fund earnings and fund administration charges to determine superannuation benefits at retirement.

INDMOD uses the accumulated benefits to determine a retirement income stream, taking account of the mix of benefits chosen, whether a superannuation pension, rollover annuity or lump sum. Lump sum benefits may be dissipated or invested and the type of drawdown of invested lump sums specified. INDMOD calculates annuity factors internally, consistent with the modelling parameters chosen. Users can also incorporate assumptions concerning the amount of non-superannuation savings a person has available to provide retirement income, as at retirement.

INDMOD also includes an alternative, non-concessional savings benchmark. Under this benchmark, INDMOD calculates the amount that would have accumulated in the absence of tax concessions and uses this to derive a corresponding retirement income stream. INDMOD calculates the benchmark using assumptions concerning the proportion of a superannuation benefit that a person would save without the tax concessions and the extent to which such alternative savings would be included in the person's assessable income.

(b) The National Mutual Retirement income policy (RIP) Model

The National Mutual Retirement income policy Model (RIP) is a model developed by National Mutual Operations Research and made available to the Retirement Income Modelling Task Force who are using and developing the model.

The RIP model is a model designed to estimate stocks and flows of superannuation funds and the costs to the Government's budget of various retirement income policy options. The model is based upon *person cohorts* (people of common sex and initial age) which are aged a year at a time and their superannuation benefits accumulated taking account of parameters such as wage levels, employment rates, inflation and rates of return on assets.

The model incorporates three major elements:

- a population model based on ABS population projections which projects the total Australian population by age and sex for each year in the future, allowing for births, deaths and immigration. RIM has extended the population projections used in this model out to the year 2050 based upon the ABS population scenario A;
- a superannuation dynamics model which takes output from the population projection and projects:
  - the number of people employed in each year;
  - the number of people in each type of superannuation fund modelled (public and private sector, categorised by the type of superannuation contributions concerned); and
  - the numbers retired because of death, disability or 'normal' age retirement

  for each person cohort each year in the future; and

- an accounting model which uses the outputs of the first two components of the model to keep track of the total superannuation assets of each person cohort, allowing for contributions, earnings, benefit payments and tax. It calculates the relevant cash flows for each person cohort in each year and stores the results. On retirement, the model splits the accumulated superannuation benefits of each age cohort up according to an income distribution and calculates the tax payments arising from retirement income flows and the age pension payable, given the average level of benefit payable at each level of the income distribution.

Aggregating the results in each year across all the person cohorts allows the model to calculate values for total stocks and flows for the Australian population within the model.

The large number of parameters used in the model gives the facility to model a large range of policy options without altering the model structure.