The equity implications of changing the tax basis for pension funds

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Abstract

Governments in many developed economies provide occupational pension plans with significant taxation incentives. However, as many retirement income systems are now being reviewed due to demographic, social and economic pressures, these taxation arrangements are also under scrutiny. This paper compares the implications for intragenerational equity between the traditional taxation treatment adopted by most OECD nations and that adopted by Australia, where there is a tax on contributions, a tax on investment earnings and a tax on benefits when paid. The results in this paper suggest that there is remarkably little to distinguish between the two tax structures in terms of summary measures of lifetime income. It is shown that the form in which the benefit is taken in retirement is very significant in influencing intragenerational equity.

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1 Introduction

The provision of income to retired persons is subject to much debate and reform throughout the world with Governments of countries at all stages of economic development expressing considerable interest in the topic and, in some cases, making far reaching decisions. These changes are affecting both national social security programs and occupational pension plans in the private sector. The reasons for this awakening of interest in the development of national retirement income systems vary among countries. Some factors that have been important are: an ageing population which has placed increased financial pressure on existing retirement income programs; increasing longevity; lower saving rates; changing employment patterns which have led to an increase in early retirements and greater flexibility in labour markets; international pressure (e.g. in the European Community); and the decline of family and other informal support structures. For a comparative review, see Disney (1996).

For several decades, Governments in many developed economies have provided occupational pension schemes with significant taxation incentives. The value of these incentives has been an important factor in the popularity of these pension schemes, particularly as personal income tax rates have risen during this century.

However, one of the responses to the financial and social pressures besetting retirement income programs has been to review the traditional taxation treatment of occupational pension plans. Yet, very few developed countries have made any significant changes to the taxation treatment of occupational pension plans. Australia and New Zealand are two exceptions. Indeed, New Zealand is the only OECD nation to remove totally these taxation incentives and is now taxing occupational pensions in a similar manner to other forms of savings. Not surprisingly, this adjustment has reduced the popularity of pension plans (Davis, 1995). Australia has made some fundamental changes to its taxation treatment of pension plans whilst maintaining some taxation support.

The objective of this paper is to compare the implications for intragenerational equity between the revised taxation treatment adopted by Australia and the traditional taxation treatment adopted by most other OECD nations. These results may then assist policy makers and Governments in reviewing the tax treatment of occupational pension plans. Section 2 of the paper compares the tax treatment of occupational pension plans in Australia with a typical OECD structure. Section 3 briefly describes the model used for the comparisons while Section 4 sets out the results obtained. Section 5 sums up and presents some conclusions.

2 A comparison of the tax structures

2.1 The traditional approach

The most common approach to the taxation of occupational pension plans has been to permit employers and employees to claim a tax deduction for their pension fund contributions and to exempt these contributions and the subsequent investment income of the pension fund from any immediate taxation. However, the benefits paid from the pension fund are subject to full taxation when received by the individual. This is often known as the EET approach; namely tax-exempt contributions, tax-exempt investment income but taxable benefits. For example, see Knox, (1990), Dilnot and Johnson (1993) and Dilnot et al (1994). The principal advantages of this approach to the taxpayer are that the tax is deferred and the subsequent level of income tax is reduced (assuming a progressive income tax system), as the level of income received in retirement is normally lower than during the working years.

This traditional tax treatment of occupational pension plans stands in contrast to the normal tax treatment of savings which arise from after-tax earnings where tax is also paid on the investment income. However no tax is payable on the withdrawals (benefits). This system is often known as the TTE approach; that is tax on contributions (or savings), tax on the investment income but with no tax on the benefits as they arise from previously taxed savings.

To limit the size of the possible tax incentives provided to occupational pension plans, many countries limit the level of tax deductible contributions, the size of benefits, or the amount of surplus that can be maintained in pension plans (World Bank, 1994).

2.2 The Australian approach

Prior to 1988, Australian pension (or superannuation) plans were taxed according to the traditional method of taxing pension plans, namely the EET approach. As mentioned above, this meant that the receipt of any taxation was deferred until retirement which involved a deferral of many years. In an environment where the levels of contributions and pension assets were growing and where the Government's budget was under financial pressure, this long term deferral of taxation revenue was considered by the Government to be inappropriate. Hence the Government's primary motivation was to bring forward the revenue that it would otherwise receive in the future. A secondary incentive was to improve the allocation of resources within the capital markets.

The changes, introduced in 1988, can be summarised as follows.

1. A 15% tax is paid by the pension fund on the receipt of all employer contributions and tax deductible contributions from the self-employed. Most employer contributions remain tax deductible for employers as a business expense (subject to prescribed limits) but the pension fund receiving these contributions must pay a 15% tax on these contributions. In practice, the

effective tax rate is slightly reduced by deductions for administration and insurance charges;

2. A 15% tax is paid by the pension fund on the investment income received. In practice, the effective tax rate may be significantly reduced by dividend imputation and other investment credits obtained by the fund. One of the reasons for this change was to bring the pension funds into the tax system so that they could receive the benefits of the dividend imputation system. It was argued that without this involvement, the funds had an incentive to invest in ways that passed the imputation credits on to other investors which, in turn, resulted in inefficient capital markets.
3. There is a reduction in the tax rate payable on retirement benefits by 15% to allow for the tax previously paid on tax deductible contributions. It should be noted that employee contributions are not tax deductible and these contributions are therefore excluded from the benefits ultimately subject to taxation.

These changes mean that the Australian occupational pension system is now subject to a tax on deductible contributions (from employers and the self-employed), a tax on the fund's investment income and a tax on the resulting benefits. However, as none of these taxes is at the full rate, the system may be described as the 'ttt' approach; that is a limited tax on contributions, investment income and benefits. For most income earners, the pension (or superannuation) system remains a tax advantaged option although the introduction of tax at the three stages has made it more complex such that the level of taxation support is much less transparent.

Table 1 outlines the major differences in the tax treatment for occupational pension plans between the Australian system and the assumed OECD style as modelled in this paper. As mentioned earlier, the primary purpose of this paper is to investigate whether this unique Australian tax system causes any significant differences to the overall equity of the lifetime tax system when compared with the approach adopted in most other developed economies.

Table 1: A brief summary of the 2 tax structures

Item	Tax rate in Australia	Tax rate assumed in OECD
Employer contributions	15%	Nil
Investment income	7.5% (net)[1]	Nil
Lump sum benefits	0% up to $77,796[2] then at 16.4%	15% up to $77,796[2] then at 31.4%
Pension benefits	Marginal income tax rates less a 15% rebate	Marginal income tax rates

Notes

1 The effective tax rate on investment income has been assumed to be 7.5% and not 15% due to the presence of dividend imputation credits.

2 Many benefits in Australia are paid in the form of lump sums and these are the prevailing tax rates applying to these payments. The assumed rates for the OECD structure have been set to these rates and then increased by 15%.

3 The model used

The results in Section 4 below are based on the LITES (Lifetime Income, Taxation, Expenditure and Superannuation) model, which is a micro simulation model where each individual receives a unique earnings profile during the pre-retirement years, based on Australian earnings data. Each individual's earnings profile contains an annual increase which is based on the assumed average increase for the community, the shape of the lifetime earnings profile plus a random variable designed to reflect the uncertainty of an individual's earnings. In effect, this means that individuals do not receive the same proportion of the average wage throughout their life but a more realistic lifetime earnings profile.

The model also allows for earnings, pension fund contributions, taxes throughout the person's life (both before and after retirement), receipt of the Government funded age pension (which may be subject to the means tests) and a range of alternatives in terms of expending the superannuation benefit at retirement. A full description of the model is found in Atkinson, Creedy and Knox (1997).

The model also requires a number of macroeconomic assumptions as it projects an individual's earnings, expenditures and savings over several decades. The most important assumptions relate to the relativities between the various rates. For instance, it is assumed that the pre-tax rate of return for the pension funds is 3% per annum greater than the increase in the average wage. Further assumptions are listed in the appendix.

For this paper, the cohort consists of 3000 males in full time work, each of whom commences earning at the age of 20 and retires at the age of 65. The LITES model produces a number of economic summary measures in respect of the cohort. The summary measures provide some insights into the relative equity or progressivity in respect of a range of alternative retirement income structures and/or different behaviour decisions by the individuals.

This paper reports the results of a number of summary measures based on net lifetime income including the Gini coefficient and the Kakwani measure of progressivity. It is possible to produce others but Creedy (1997) has shown that the general trends are the same for the major inequality and progressivity measures used in the economic literature. It should also be noted that the absolute values of these numbers are less important than the relative values and changes that occur due to different structures and/or changes in behaviour.

4 The results

Table 2 presents the results for selected summary measures assuming a total pension fund contribution of 12% of earnings, with a 3:1 split between the employer and employee. These initial results assume uniform mortality rates and no additional savings. Later analyses allow for savings outside the pension fund and post–retirement mortality linked to the level of lifetime earnings.

The results also allow for five different behaviours by the individuals in the cohort at retirement. In each example, it is assumed that all individuals in the cohort behave in the same manner. The behaviours range from converting the total accumulated benefit at retirement into a lifetime annuity to immediately spending the total benefit and relying on the Government age pension only to provide retirement income. The bank option allows for the retiree to invest the benefit in the bank and gradually withdraw the benefit over 15 years. Although these assumed behaviours may appear rather rigid, Atkinson and Creedy (1996) have shown that this fixed behaviour assumption does not distort the results when alternative schemes are compared.

One other variation should be noted. The Government age pension in Australia is means tested so that retirees with income or assets above prescribed limits receive a reduced pension. Currently about 50% of the aged population receive a full pension and another 30% receive a part pension. The remaining 20% receive no age pension at all. The last 2 options in Table 2 vary this assumption and allow for the removal of the means tests and the introduction of a universal age pension from age 65. It is assumed that the full age pension is 25% of the average wage for a single person.

Table 2: A comparison of the summary measures for the two tax systems

AUSTRALIA **[OECD]**						
Measure: *Route:*	Kakwani		Gini inequality		Total Tax Ratio	
i.100% annuity	.3897	**[.3794]**	.2122	**[.2147]**	.1593	**[.1583]**
ii. 50%annuity 50% bank	.4374	**[.4417]**	.2091	**[.2100]**	.1497	**[.1470]**
iii. 50% annuity 50% spent	.5082	**[.5301]**	.2100	**[.2096]**	.1302	**[.1260]**
iv. 100% bank	.4592	**[.4877]**	.2064	**[.2040]**	.1479	**[.1441]**
v. 100% spent	.5710	**[.6340]**	.2115	**[.2082]**	.1154	**[.1093]**
Case i. & universal pension	.4874	**[.5187]**	.2118	**[.2108]**	.1322	**[.1267]**
Case v. & universal pension	.5328	**[.5908]**	.2128	**[.2095]**	.1208	**[.1147]**
pre-tax Gini inequality value .2860						

The most notable result from Table 2 is that the summary measures are much more affected by the assumed behaviour at retirement than by the tax structure. This result applies to both the existing Australian system and the assumed OECD system. Most notably, the progressivity is least (as shown by lower Kakwani and higher Gini measures) when option (i) is used, and greatest when option (v) is used under both structures. The introduction of a universal pension and the corresponding abolition of the means tests reduces the range of values. In comparing the two tax structures, the range of values of summary measures for the assumed OECD case is greater,

indicating that the progressivity of the system is more sensitive to retirement behaviour than the Australian system.

However, the values provided by the two systems are comparable, and it therefore appears that the value of the higher rate of taxes on benefits under the assumed OECD structure is broadly comparable in effect (in terms of equality and progressivity) to the value of a measure of tax exemption before retirement.

It should also be noted that not all of the behaviour options are in fact available to retirees under typical OECD conditions. For example, option (v), the immediate consumption of the total lump sum benefit, is commonly not permitted. To take the comparison out of the theoretical framework, actual cohort behaviour might be expected to resemble route (iii) for Australia, and case (i) with the universal pension for many OECD nations. If the summary measures for these two cohort behaviours are compared, they are found to be remarkably similar.

Table 3 shows the results when differential mortality is assumed. Many of the similarities previously noted also hold true for this assumption.

Table 3: A comparison of the summary measures with differential mortality

AUSTRALIA **[OECD]**						
Measure: *Route:*	Kakwani		Gini inequality		Total Tax Ratio	
i.100% annuity	.2579	**[.2468]**	.2425	**[.2449]**	.1557	**[.1542]**
ii. 50%annuity 50% bank	.3369	**[.3419]**	.2291	**[.2293]**	.1491	**[.1465]**
iii. 50% annuity 50% spent	.3821	**[.3996]**	.2315	**[.2309]**	.1297	**[.1257]**
iv. 100% bank	.3915	**[.4190]**	.2171	**[.2145]**	.1510	**[.1470]**
v. 100% spent	.4738	**[.5306]**	.2242	**[.2208]**	.1170	**[.1109]**
case i. & universal pension	.3105	**[.3284]**	.2459	**[.2458]**	.1272	**[.1219]**
case v. & universal pension	.4478	**[.5006]**	.2244	**[.2210]**	.1223	**[.1162]**
pre-tax Gini inequality value .2860						

Perhaps the most interesting result here is that in both mortality scenarios, and under both tax structures, the removal of the means-test on the age pension increases the progressivity of the route (i) choice (as shown by a higher Kakwani measure), and narrows the range of the summary values spanned by the two extreme behaviours. That is, the removal of the means tests improves the relative progressivity of the 100% annuity option and dampens the extent of the fluctuation which is dependent upon behaviour. It also appears to make the systems less sensitive to retirement choices.

In Table 3, the level of progressivity is lower, the inequality index higher and the welfare premium lower, for both the Australian and OECD tax structures, when compared with Table 2. Not surprisingly, this result is caused by the additional pension payments received by those who live longer and who, on average, received higher incomes during their working years. These additional pension payments would be received from both the public pension and private annuity arrangements. As with Table 2, the value of these measures is affected more by the assumed behaviour at retirement than by the structure of the system. Thus the general effect is that the regressive elements are reinforced. The differential mortality assumption makes the choice of annuity purchase, that is route (i), even less progressive than the others, and emphasises the effect of differential mortality.

The above results assumed no additional saving outside the pension fund. However, many individuals have savings both within and outside their pension fund. Hence Tables 4 and 5 show comparative summary measures for common and differential mortality assumptions where there is additional saving of 5% of disposable income during the working years, outside the pension system.

Table 4: Assuming common mortality and 5% Additional Savings

AUSTRALIA **[0ECD]**						
Measure: *Route:*	Kakwani		Gini inequality		Total Tax Ratio	
i.100% annuity	.3517	**[.3415]**	.2124	**[.2151]**	.1732	**[.1720]**
ii. 50%annuity 50% bank	.3874	**[.3904]**	.2093	**[.2104]**	.1654	**[.1624]**
iii. 50% annuity 50% spent	.4717	**[.4910]**	.2099	**[.2096]**	.1389	**[.1347]**
iv. 100% bank	.4031	**[.4269]**	.2066	**[.2042]**	.1647	**[.1609]**
v. 100% spent	.5257	**[.5817]**	.2115	**[.2082]**	.1241	**[.1180]**
case i. & universal pension	.4390	**[.4646]**	.2115	**[.2105]**	.1451	**[.1399]**
case v. & universal pension	.4920	**[.5439]**	.2129	**[.2095]**	.1295	**[.1234]**
pre-tax Gini inequality value .2860						

Table 5: Differential Mortality and 5% Additional Savings

AUSTRALIA **[OECD]**						
Measure: *Route:*	Kakwani		Gini inequality		Total Tax Ratio	
i.100% annuity	.2164	**[.2057]**	.2470	**[.2495]**	.1692	**[.1674]**
ii. 50%annuity 50% bank	.2999	**[.3039]**	.2288	**[.2292]**	.1648	**[.1618]**
iii. 50% annuity 50% spent	.3533	**[.3689]**	.2317	**[.2311]**	.1384	**[.1344]**
iv. 100% bank	.3465	**[.3698]**	.2168	**[.2143]**	.1677	**[.1636]**
v. 100% spent	.4359	**[.4866]**	.2243	**[.2209]**	.1257	**[.1196]**
case i. & universal pension	.2599	**[.2737]**	.2501	**[.2500]**	.1398	**[.1347]**
case v. & universal pension	.4131	**[.4605]**	.2246	**[.2211]**	.1310	**[.1249]**
pre-tax Gini inequality value .2860						

The additional savings element reduces progressivity somewhat in all cases, and increases the tax ratio. Otherwise the comparisons between the OECD and Australian structures, and between the different retirement behaviours, are as reported for the case of no additional savings.

5 Conclusions

The results in this paper indicate that there is remarkably little to distinguish between the OECD and Australian tax structures on pension funds, when summary measures of lifetime income are used. Under both tax structures, it is apparent that the behaviour choices at retirement are very significant in influencing equity. Also, the progressivity measures indicate that effects on progressivity of the OECD structure are more sensitive to retirement behaviour choice than the Australian system. If it is considered desirable to encourage the use of income streams, the Australian structure compares favourably in that it provides a slightly more progressive result than the OECD. On these two considerations the Australian scheme seems to be fulfilling the desired requirements a little better than the OECD structure, since it is more independent of the retirement behaviour. However, the regulations in most OECD nations do not permit the range of behaviours which is permitted in Australia, so the *actual* range of effects is smaller for the OECD than the theoretical comparative figures suggest.

In terms of taxation, the assumed OECD tax structure results in larger accumulations at retirement, and delays the incidence of taxation. The net effect on individuals

depends, in part, on the shape of their earnings profile, and it is not clear how the combination of effects are experienced in general.

However a striking general result is that the introduction of a universal pension into either structure achieves three effects: the range of effect of progressivity covered by the extreme behaviours is narrowed, the annuity option is associated with higher progressivity and the consumption option is associated with a reduced progressivity. For example, in the case of differential mortality and no additional savings, the Kakwani measures for the OECD structure ranges from 0.2468-0.5306 across the extreme routes, to 0.3284-0.5006 with a universal pension. A similar trend occurs for the Australian structure. This would seem to support the stated aims of progressivity and support of income provision as opposed to lump sum benefits. This finding supports findings in Atkinson, Creedy and Knox (1996) which show the removal of means testing result in a more consistent overall effect across the range of behaviours.

The major difference between the tax structures arises as a result of the 15% contributions tax under the Australian structure, which brings forward the revenue (in terms of the Government's financial position) and affects the size of the retirement benefit before tax. The results show that there are minimal differences between the two tax structures when assessed in terms of the summary measures of lifetime income used to assess progressivity within a cohort of full time workers. This important conclusion is relevant internationally as many Governments are now reviewing the taxation and financial arrangements of their pension programs.

Appendix

The major assumptions used in the simulations are as follows.

Both structures

Contribution rates	Employer		9% of earnings
	Employee		3% of earnings
Ages of fund membership		Entry	20
		Retirement	65

Annual increase in Average wages	6%
Annual increase in income tax thresholds	5.5%
Annual inflation rate	5%
Gross annual investment rate of return on fund accumulation	9%
Gross annual investment rate of return on savings accumulation	7%
Gross annual rate of return on bank account during retirement	5%
Tax on savings fund investment income	25%
The purchase price of retirement annuities is	12.5
Annuities purchased escalate in payment at	5%

Australian assumptions

Tax on employer contributions	15%
Tax on super fund investment income	7.5%

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