Completing the Pensions Task: Infrastructure For Nationally Coordinated Private Schemes

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Abstract
Abstract: State-sponsored private pension schemes generally provide retirees with a lump sum, but do nothing to assist them with its conversion to an income stream. An optimal way to affect this conversion is to purchase a guaranteed term-certain annuity with part of the sum, while investing the remainder in a national bourse index fund. At present annuities must be purchased from commercial providers. If Government were to issue part of its public debt in the form of annuity bonds, retirees could purchase riskless annuities at lower cost, with government being involved in the pension scheme throughout all phases

Keywords
Keywords: lump sum conversion, retirement incomes, government annuity bonds

Cover Page Footnote
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Introduction

Most state-sponsored schemes for provision of private pensions are designed to deliver lump sums to retirees. Mitchell and Utkus (2003, p.1) remarked 'Participant-directed defined contribution plans have become the cornerstone of the private sector retirement system around the world'.

However, when time to convert their lump sum to a retirement income stream arrives, where such schemes are in place, retirees are invariably left to their own devices, or are reliant on the advice of financial planners. In most countries, very little useful guidance is given and, even more fundamentally, no government pension infrastructure is provided to assist in this process. Consequently, lump sum retirees set about deriving their income streams virtually in vacuo. Discernible world-wide trends in conversion strategies are emerging. Lump sum retirees are, for the main part, providing themselves with income by regular drawdown from managed funds. In Australia, where the total funds under management in superannuation is just over one trillion dollars, over the twelve months to March 2007 sales of account-based (drawdown) pensions and annuities totalled about $1.39 billion compared with sales of lifetime annuities of just $29 million. ‘Basically, Australian consumers are not very interested in financial products which offer a low implicit rate of return, have high fees and which have nil capital value on the death of the primary or reversionary beneficiary’ (Clare, 2007, p.7)

These figures reflect the fairly stark choice of income stream products currently available to retirees. Trott (2005) observed:

At the moment, retirement income products are broadly polarised, with insurance companies assuming the investment and longevity risks for annuity products, and with individuals accepting it under drawdown · · · this means that there is scope for product providers to develop new innovative products that share the risk · · · the distinction between annuities and drawdown will blur in future, with different products providing varying degrees of investment flexibility, income flexibility and mortality cross-subsidy.

Impetus for innovation

National governments, in the face of rapidly ageing populations (and concomitant political implications), are eager to improve private pension schemes. For instance in Australia, Recommendation 3 of the Parliamentary Joint Committee on Corporations and Financial Services, (August, 2007, p.24) is as follows:

The committee recommends that APRA (Australian Prudential Regulatory Authority) in consultation with peak superannuation bodies and academics in particular, undertake empirical research on the strengths and weaknesses of superannuation systems operating in other OECD countries and that the findings be made publicly available. The aim is to develop a framework for benchmarking Australia’s superannuation system against international best practice

International organizations are actively seeking ways to improve private pension arrangements. The OECD encourages policy makers, regulators and market participants to an understanding ‘of the scope and operation of funded pension arrangements’ on the world scene (OECD, 2005, p.1).
The OECD Working Party on Private Pensions aims for ‘specific suggestions for the design of efficient and effective funding rules that provide a high level of benefit security at a reasonable cost to stakeholders and taxpayers’. (OECD, 2007, p.22). It is the objective of this paper to provide just such a specific suggestion.

**Australia’s Private Pensions Scheme – the Superannuation Guarantee Scheme (SGS)**

SGS is Australia’s nationally coordinated system for provision of private retirement pensions. Under SGS a statutory proportion of gross income (currently 9 percent) is compulsorily and regularly contributed into an employee member’s fund account. The contribution is taxed at 15 percent. Within limits, the member can choose the sort of investment portfolio into which monies are directed. Investment earnings within the fund are taxed at 15 percent during this accumulation phase; realized capital gains are taxed at a maximum of 10 percent. Over the member’s working life the account balance is expected to grow to provide a termination lump sum sufficient to fund the member’s retirement. Preservation age is the age at which benefits can be accessed. On cessation of employment beyond preservation age the lump sum is available to the employee to provide for the employee’s own pension. Provided certain guidelines are met there is no tax on pension income and no tax on investment earnings on pension assets.

**The income stream problem for SGS retirees**

Under conservative assumptions an employee who spends forty years in the workforce making only mandated contributions to the scheme - additional voluntary contributions are permissible - can expect to have approximately $0.6m. (in 2008 AUD – See Appendix Note 1) with which to fund retirement. The retiree is then faced with the problem of using the lump sum to provide a reliable income stream with the capacity to cope with both inflation risk (the risk that the purchasing power of a retirement income is significantly reduced over time)-and longevity risk (the risk that the retiree ‘outlives’ the pension that the lump sum can reasonably be expected to provide).

It is at this point SGS and similar accumulation schemes effectively abandon retirees. Retirees are left without pension design guidance and without pension infrastructure. The Australian Government does encourage retirees to use ‘New Pensions’ to provide flexible retirement incomes for themselves by discreional drawdown from managed investments within a superannuation fund (details of the New Pensions are contained in the Australian Government (2007) publication *Simplified Superannuation – Final Decisions*). Generous taxation inducements are in place for pensions which fit in with the New Pensions definition. Pension income is tax-free out of the fund and earnings and capital gains on pension assets within the fund are also tax-free.

But only the most general guidelines on the crucial question as to how to structure New Pension draw downs are offered, and these are prompted by taxation concerns rather than retiree needs. Retirees unfamiliar with investment complexities must rely on the financial planning industry, still beset by conflicts of interest which the Australian Government has only very recently shown signs of making any headway towards resolving.
Age pension safety net

In Australia, there is in place an Age Pension safety net, subject to means tests (Centrelink’s ‘Assets Test’ and ‘Income Test’). At any stage in retirement, those over Age Pension age - currently 65 - with insufficient lump sum to provide an adequate income, have the opportunity to ‘top-up’ their retirement income with some Age Pension. Because SGS has only been in place since 1992 (and commenced with a contribution rate of 3 percent gradually built up to 9 percent) the Age Pension scheme works in tandem with SGS. The government can monitor the amount of top-up retirees can expect to receive by adjusting the the design (thresholds and tapers) of the means tests. For two-thirds of current retirees, the Age Pension is the principal source of income (Kelly and Harding, 2004).

Signals emanating from the Henry Review of Taxation indicate that consideration is being given to:

i. offering the Age Pension (essentially and indexed life annuity) for sale to those who do not qualify via means-testing
ii. obliging self-funding retirees to invest a minimum proportion of their lump sum in a life-annuity
iii. the possibility of Government issuing part of public debt in the form of annuity bonds rather than coupon bonds (Fels and Brenchley, 2009).

An optimal lump sum conversion strategy

The starting point in provision of income stream infrastructure is to understand that there is unequivocally a ‘best’ way to convert a lump sum into an income stream. This is the ORIS (optimal retirement income stream) strategy. The strategy effectively involves splitting the lump sum into two parts:

1) one part is used to purchase a term-certain guaranteed indexed annuity (of about ten to twelve years)
2) the remainder is invested in the national stock market accumulation index fund over the guaranteed income years.

The sum is split in such a way that accumulation in the stock market fund is expected to reinstate at least, the entire original lump sum in real terms at the expiry of the annuity, enabling the strategy, or a modified version of it, to be repeated. Under the mean-variance criterion of classic Markowitz Portfolio Theory this strategy cannot be improved upon.

A proof of optimality is available in Gay (2008) where a detailed case study is also provided. Features of the ORIS scheme are outlined below within the Australian investment and legislative environment, but ideas described are directly applicable to countries with broadly comparable private pension schemes.

Main features of the optimal strategy

Beneficial features of the ORIS strategy are:

Efficiency (value for money)
ORIS furnishes the highest expected return for each given level of risk (portfolio volatility). Thus ORIS is ‘efficient’ in the classic sense of Modern Portfolio Theory and cannot be improved upon under this criterion. This criterion may not mean much to retirees, but retirees’ predilection for high expected returns remarked by Clare (2007) necessarily involving use of portfolios of growth assets, is consistent with retirees acting in accordance with the concept. In fact the mean-variance criterion under which optimality can be demonstrated serves as a benchmark to assess risk under different criteria more directly comprehensible to retirees. For example, the probability that the real lump sum is redeemed in a particular share market accumulation index account over the term of the initial annuity can be determined (Gay 2008 p.125).

Control of market risk

The level of exposure to market risk can be set by the retiree. Since the purchased term certain annuity is guaranteed, volatility of an ORIS retirement portfolio depends solely on the proportion of the lump sum invested in the share market.

For any given lump sum, this proportion is determined by the level of starting indexed annuity chosen and the yield at which this can be purchased. For instance, an Australian retiree with $600,000 lump sum purchasing a twelve-year annuity of $30,000 p.a. payable monthly indexed at 3 percent p.a. at the start of each new year would pay $316,146 at a yield of 5 percent p.a. but $299,371 at a yield of 6 percent p.a. (See Appendix Note 2)

The remainder of the lump sum invested long-term in the accumulation index fund could be expected to yield a conservative 9 percent p.a. over the life of the retiree (the long-term historical arithmetic average return is in excess of 13.3 percent p.a. (ASX, 2009).

Over the last one hundred and nine years, a twelve-year investment only failed to achieve a compound average return greater than 9 percent in seven of the ninety eight periods. Those periods (together with the compound average annual percentage returns achieved) were those ending in the years 1940 (8.5), 1941 (8.5), 1948 (8.8), 1974 (6.1) 1975 (8.2), 1976 (8.1) and 2008 (7.2).

General reasoning suggests that the less the retiree needs to pay on annuity purchase, the larger the amount which can be invested in the higher-yielding index fund. Thus for any given level of starting retirement income, the probability that the real capital will be reinstated depends directly on the yield at which the annuity can be purchased. Australia’s largest commercial provider of guaranteed term annuities (Challenger Financial Services) is currently providing annuities at competitive rates – near 6 percent per annum yield on the purchase price - but many retirees would be concerned about the default risk attaching to any commercial provider

ORIS and longevity risk

With suitable choice of starting annual pension, the strategy can, with high probability, be expected to reinstate the entire original capital, in real terms, at the end of each annuity regime. Thus the ORIS strategy can be expected to maintain the initial value of the entire capital throughout residual life of the retiree while paying the pension.
ORIS and inflation risk
Inflation risk is eliminated or reduced by use of an indexed annuity. If fixed annual indexation is adopted the figure which suggests itself is the Reserve Bank of Australia’s 3 percent inflation target (even if this target is met, 3 percent per annum compound inflation would halve a retiree’s purchasing power in about 23 years).

Continuous availability of capital
The ORIS strategy provides a continuing source of emergency capital in the share market account which can be accessed if necessary. While some life offices issue annuities with 100 percent (or some nominated percentage) return of capital, the capital is not usually available until the termination of the annuity, and is designated in nominal terms.

Advantage of using a long-term guaranteed annuity
Australian Stock Exchange (ASX) accumulation index (‘the All Ordinaries Index’) returns are volatile in the short-term, but long-term accumulations are smoothed, with expected returns in excess of 12 percent p.a. in ASX index funds. This means that if the national share market ‘has a good run’ in early annuity years, use of a twelve-year term provides retirees with the opportunity to move investment assets out of the market prior to annuity termination into more defensive investments. Conversely, if the market performs poorly in early years, the twelve year term provides the prospect of the long-term market yield still being realized.

Probable availability of bequest capital
Since on death the original real capital is expected to be intact, pensioners with a strong sense of bequest are accommodated. There is generally no capital available on the death of the life annuitant (and if applicable the death of the reversionary annuitant) when a life annuity is purchased from an insurance company.

ORIS is less risky than drawdown
The strategy is much less risky than direct drawdown i.e. investing the entire lump sum in a share market account and paying the indexed pension by drawdown, i.e, in Australia by use of a New Pension. The relative risks of the two strategies in the Australian context are compared quantitatively in Gay (2008).

ORIS a better option than use of a balanced fund
Under the mean-variance criterion, ORIS is a better income option than seeking to manage volatility by using regular drawdown from a less volatile fund , such as a balanced fund (Gay, 2008, p.119).

The role for government: issue and control of annuity bonds
The Commonwealth Government is the Australia’s highest credit-ranked borrower. No Australian investor has any serious concerns about the creditworthiness of Treasury securities. The problem is that securities currently on issue – coupon bonds with semi-annual coupons - are not especially helpful to retiree needs.

If the optimal conversion strategy were to be endorsed and implemented by government, Treasury would issue fixed term annuity bonds or indexed annuity bonds, with instalments of interest and capital payable at least monthly, which could be purchased by retirees on issue, and traded on the ASX at market rates. Costly inefficiencies in the current commercial...
annuity market (often low yields on annuity purchase price, less than ideal credit-ranking, attendant financial planning fees) could be by-passed.

Further, it is open to government to offer inducements (tax concessions, issuance of bonds at a discount to market prices) to retirees to adopt the ORIS strategy. This would enable them to impose conditions (e.g. retention of bonds to maturity or near maturity) and exert some control over the scheme. Government pension infrastructure development would necessarily be accompanied by an education program explaining the scheme to lump sum retirees.

In economic terms, since ORIS offers the highest expected return for each level of risk, governments benefit in that retirees long-term are providing for their own income streams in the most efficient way given their retirement lump sum, thus reducing the extent of their dependence on government. The precise nature (term, rate of indexation, frequency of issue) of such bonds would be a matter for national treasuries in different countries.

The scheme will not always be feasible in all countries at all times. If official interest rates are too low, annuities unless subsidised by government, may be too expensive. Practicability at any point in time must be assessed on a country-by-country basis.

**Conclusion**

The existence of a ‘best’ way to convert a retirement lump sum to an income stream, provides a means by which governments can extend their involvement in private pension accumulation schemes into the pension phase. The infrastructure proposed – government provision of annuity bonds - would enable retirees to bypass inefficiencies in commercial annuity and financial planning markets, and would enable governments to retain some control over the private pension scheme throughout each of its phases.
Appendix

Note 1
From traditional mathematics of finance, the accumulated value AV of an n-year indexed annuity of $1.00 per year (split into p equal parts and contributed at the end of the intra-year periods $t = 1/p, t = 2/p, \ldots, t = 1$ (i.e. ‘payable pthly in arrears’) is given by:

$$AV = \frac{(1 + r)^n - (1 + g)^n}{(r - g)}$$

where $r^{(p)} = p \{ (1 + r)^{1/p} - 1 \}$.

Here $r$ is the long-term compound annual earning rate on an n-year investment, $g$ is the indexing rate of the annual dollar.

For a retiree with starting salary $55,000 which increases in line with AWOTE (average weekly ordinary time earnings) of about 4 percent p.a. a proportion of 9 percent p.a. of gross earnings is contributed into the fund, less tax of 15 percent. Assuming the contributions to be made quarterly in arrears by an employer, the 40-year accumulation using (A1) is $2.06m. if the fund achieves a net yield 8.5 percent p.a. If this is deflated at the Reserve Bank’s inflation target of 3 percent p.a. over the 40-year term, the purchasing power is about $0.64m.

Note 2
The purchase price (PP) of an n-year annuity starting at $1.00 per year payable pthly in arrears indexed at compound rate $g$ per annum in each new year is:

$$PP = \frac{(1 + r)^{n} - \left(1 + \frac{g}{1 + r}\right)^{n}}{(r - g)}$$

where $r$ is the yield obtained on the annuity purchase price.

Thus if $n = 12, i = 0.06, p = 12, g = 0.03$ then $PP = 9.979027 \ldots$.

An annuity of $30,000 per annum, payable monthly in arrears and indexed at 3 percent per annum at the start of each new year would cost $299,370.81.
References


ASX, 2009, ‘Long-term Australian Share market Returns; 109 years of Australian Share market returns’
(Accessed 22/08/2009)

Clare, R. 2007, ‘Coping with the burden of longevity – do superannuation fund members really need or want new financial products?’ Paper presented to 15th Annual Colloquium of Superannuation Researchers, July, 2007 held at University of New South Wales Centre for Pensions and Superannuation
(Accessed 20/08/2009)


OECD Newsletter, Pension Markets in Focus, 2005, June, Issue 1
(Accessed 22/08/2009)

OECD Pension Markets in Focus, 2007, November, Issue 4
(Accessed 22/08/2009)

Trott, M. 2005, ‘Various Options to Choose from’, Pensions Management, June, 2005,
(Accessed 22/08/2009)