

# **THE SOCIETY OF ACTUARIES IN IRELAND**

## **Investigation into State Annuity Options**

**April 2009**

## 1. Introduction

- 1.1 The Society of Actuaries in Ireland (SAI) and Irish Association of Pension Funds (IAPF) recently made a series of proposals to An Taoiseach's office, the Department of Finance and the Department of Social and Family Affairs. The proposals recommend changes to pension legislation which are deemed necessary given the current level of deficits in defined benefit schemes and the high risk, in the current economic climate, of employer insolvencies. The recommendations include changes to the priority rankings in the event of scheme wind-up, allowing changes to scheme benefit rules, introduction of employer debt and a state annuity option for insolvent schemes of insolvent employers.
- 1.2 The SAI and IAPF met the Department of Finance and the Department of Social and Family Affairs to discuss the proposals. Following the meeting, the SAI offered to explore the state annuity options in some more detail. The Working Party was formed to carry out this work. The members of the Working Party were David Harney, Dave Roberts, Paul Victory, Gerry O'Carroll, Thomas Farrell, James Maher and Yvonne Lynch. Aisling Kennedy also provided input.
- 1.3 The state annuity option is proposed for insolvent schemes of insolvent employers. Such schemes are in a distressed state, and often the bulk of the assets are required to secure the pensioner liabilities, resulting in shortfalls for deferred and active members. A cheaper state annuity would leave more assets for deferred and active members. It is believed that, currently, a state annuity could be up to 20% cheaper than an annuity purchased from an insurance company.
- 1.4 The Working Party investigated the following:
  - What savings might be achieved through a state annuity option;
  - Possible options or mechanisms for a state annuity;
  - Possible barriers or obstacles to state annuities.
- 1.5 This report comments on aspects of different options for delivering state annuities – or achieving similar objectives through other mechanisms - but does not make recommendations. The report does not explore implications for the Minimum Funding Standard (MFS) although it is accepted that the MFS could be impacted by the introduction of state annuities or comparable mechanisms. Nor does the report explore the other changes recommended by the SAI and IAPF. However, we make some separate comments on these at the end of the report.

## 2 Main Findings

- 2.1 The introduction of a state annuity option could reduce annuity costs by up to 20% depending on the yield available on Irish Government bonds. Approximately 15% of the saving is due to the additional spread currently available on Irish Government bonds. This saving is based on a yield of 5.3% against pricing yields of 3.9% at the time of the report. The remaining 5% is due to the removal of the capital and profit costs of the insurance companies.

- 2.2 There are a number of mechanisms through which state annuities could be offered or similar objectives achieved. The Exchequer could simply take pension funds in exchange for annuity payments. Alternatively, the funds taken could be retained and managed by the NTMA. Another alternative is that the NTMA could issue long-dated bonds which the insurance companies would use in offering annuities to the market. Variants of these options or even combinations of these options could also be considered.
- 2.3 It is important to point out that state annuities do not represent a cost to the Government, provided that longevity assumptions in their pricing are borne out in practice. Effectively, they combine borrowing from the pension funds with a transfer of longevity exposure. Once the funds are borrowed at market terms and the annuity payments are calculated using best estimate longevity assumptions, state annuities should be cost neutral. The transfer of longevity risk does bring some additional risk in that the actual experience may turn out to be better or worse than the best estimate assumptions. We assume the Government has access to longevity expertise to price the longevity risk. We also assume that the Government does not need to hold capital for this additional risk and that the frictional costs of supporting the risks are lower than would be required in the private sector.

### **3 Insurance Market Efficiency**

- 3.1 The Working Party compared insurance market annuity rates against annuity rates calculated using mortality assumptions derived by the SAI Demography Committee<sup>1</sup>. Both sets were calculated using a yield of 5%. The “SAI annuities” allowed for an annual administration fee of €60. The “insurance company annuities” were calculated on a nil commission basis with normal allowance for expenses, cost of capital, profit etc. The rates were compared for a series of model points.
- 3.2 Appendix 1 sets out a comparison of the rates. The differences in the rates vary over age and sex. Overall, the comparison shows that the market is reasonably efficient and does not appear to be taking an overly prudent view on mortality or an overly excessive charge for cost of capital and profit. The difference between the rates looks to be of the order of 5%.
- 3.3 This difference is less than had been expected as previous analysis and reports suggested differences in excess of 10%. Part of the narrowing of the gap is due to a convergence of views on mortality assumptions following the findings of the Demography Committee. Part of the narrowing is also due to reduced capital costs in the insurance market arising from greater competition among the reinsurers.

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<sup>1</sup> In October 2008, the Demography Committee published a report titled “Review of Rates of Mortality Improvement”. The Committee proposed certain mortality assumptions for the valuation of pension liabilities in transfer value calculations, having regard to:

- The rates of mortality improvement experienced in Ireland in recent years;
- Comparative experience for other countries; and
- The projected rates of mortality improvement proposed by various expert groups and agencies both within and outside of Ireland.

3.4 While there has been a convergence of views on mortality, there are still different views on mortality at different ages and on the level of improvements. Differing views on mortality will add to or subtract from the charges for the cost of capital and profit.

## 4 Pricing Yields

- 4.1 Insurance companies price annuities based on the yields available on German and French government bonds of appropriate duration. The yield used for market pricing was 3.9% at the time of this report.
- 4.2 Appendix 1 compares the market rates based on a yield of 5% to the market rates based on the yield of 3.9%. The difference varies from just less than 10% for the oldest ages to just over 20% for the youngest joint life cases. The average difference across all the model points is 15%.
- 4.3 Under a state annuity scheme, the Irish government combine borrowing and the transfer of longevity risk from the pension funds. Appendix 2 sets out the current yields available on Irish, French and German government bonds. The Irish government does not currently borrow beyond 10 years but the analysis suggests that yields continue to rise for terms up to 15 years and then flatten out for longer durations. Based on this analysis, one could expect the government to borrow at a rate somewhere between 5.25% and 5.5%.

## 5 Possible Options for State Annuities

- 5.1 The Working Party considered 4 different mechanisms that could be used to offer state annuities.
- 5.2 The first option considered is the **State Annuity – Funds Managed by NTMA**, as originally envisaged by the SAI and IAPF. The Government receives the money from the insolvent scheme and in return undertakes a liability to pay the annuities. The annuities are calculated based on the current borrowing costs of the government and mortality assumptions advised by the Department of Finance or the Department of Social and Family Affairs (possibly with assistance from the SAI). The NTMA manages the funds borrowed and pays the annuities from these funds. Note that the pricing of the annuities is based on the prevailing Government bond yields. It makes no assumption on where the funds are invested and does not anticipate any equity risk premium as any mismatch profits or losses will fall to the Government.
- 5.3 The second option is a slight variant of the first option and we call it the **State Annuity – Funds retained by Exchequer**. Again the Government receives the money from the insolvent scheme and in return pays the annuities. The annuity is calculated in the exact same way based on the current cost of borrowing and mortality assumptions advised. However, with this option, the funds borrowed are simply transferred to the Exchequer and the annuities are paid on a pay-as-you-go basis. This is similar in some ways to the recent re-capture of some public sector pension liabilities by the State, except that the transfer is at no cost to the State (subject to correct pricing of longevity risks – see paragraph 2.3).

5.4 We called the third option **Insurance Annuities using Irish Government Bonds**. This is not really a state annuity option – rather, it is an alternative mechanism to achieve the same objectives. It is a variant of the first option under which the NTMA simply issues coupon-only bonds, based on market yields, which the insurance companies then use to price their annuities. As indicated in Appendix 3, coupon-only bonds provide a good cashflow match for annuities.

Under the first 2 options, the annuitants have an exposure to the government's ability to pay. The insurance companies would need to pass on this exposure if they are to pass on the full yield differential in their pricing.

This option effectively splits the borrowing and the transfer of longevity risk. There are a number of other ways this could be organised. For example, the Government could take on the annuity liability, outsource the annuity payment and reinsure the longevity risk. It is believed there is significant capacity in the insurance market at the moment for longevity risk.

5.5 We called the last option the **Direct Subsidy Option**. The annuities are purchased as normal from the insurance companies based on current rates. The Government then pays a direct subsidy equal to (say) 20% of the cost of the annuities to the insolvent scheme. The scheme uses the subsidy for deferred and active members, assuming the pensioner liabilities are fully covered. This option is unlikely to be considered, because it is hard to see how a direct subsidy could be justified. We feel it is useful to contrast this option against the other options in the report.

5.6 We assessed each of these options under the following headings and have summarised the assessment in the grid overleaf.

- **Legal Issues, including Competition Rules** –The feeling of the Working Party was that a state annuity could be constructed in such a way that it would not breach competition rules or fall subject to prudential requirements for insurance funds. However, the State would need to take legal advice on these matters and any other legal considerations arising. In this regard, it may be useful to examine the legal structure of the Pension Protection Fund in the UK.
- **Financial Risk** – Under options 1, 2 and 3, if the government “borrows” from pension schemes, or issues debt, at market rates, there is no cost to the State.
- **Longevity Risk** – Under options 1 and 2, there is some risk to the State around the longevity assumption. This should be mitigated by setting appropriate assumptions at the time of transfer/purchase. This will entail some initial advice and expertise and introduce some logistical and resource requirements. Variations in actual experience would not be a significant risk for the State.
- **Scope Creep Risk** – There are some scope creep risks. Would there be pressure on the Government in the future to “borrow” at worse than market terms? Would the Government come under pressure in the future to take assets in respect of liabilities for active and deferred members? Would the

Government come under pressure in the future to extend state annuities to insolvent schemes of solvent employers? Defined Contribution scheme members may also consider that their funds have been similarly distressed in the current crisis and generate significant political/social pressures to have similar options available to them. Scope creep risk may be considered less of an issue with the use of Option 3, issue of appropriate coupon-only bonds by the NTMA, allowing all pensioners, both Defined Benefit and Defined Contribution, to benefit from the increased yields.

- **Logistical Issues** – There are a number of logistical issues to consider for options 1 and 2. The first is how are the annuities paid? Are they paid through the State apparatus in some way or are they outsourced to an annuity provider? Under option 1, the payments will be charged against the assets with any shortfall, if investment experience or longevity experience is worse than expected, having to come from some other source. This does not arise under option 2 but the annuities would still need to be paid from some budget. Option 3 would present some logistical issues but we believe these are manageable. If this option is chosen, we recommend further discussion with the life industry to ensure that the logistical issues are ironed out and that additional yields are fully passed on to pensioners.
- **Implications for MFS** – The state annuity option is suggested for insolvent schemes of insolvent employers. However, if it is structured so that there is no financial cost to the state, then it could potentially be offered to all schemes. The Government is unlikely to do this for options 1 and 2 as it would leave itself open to take on all private sector annuity liabilities. However, it is fairly straightforward to extend Option 3 to all schemes, as this is a form of borrowing and the Government has a high borrowing requirement at the moment. Options 1, 2 and 4 are therefore likely to be available to only insolvent schemes of insolvent employers. However, cheaper annuities could still be possibly be factored into the MFS if accompanied with employer debt. Option 3, if available to all schemes, could be factored into the MFS without employer debt.
- **Attractiveness to trustees** – Options 1, 2 and 4 are simple options for trustees in the event of wind-up. Trustees are unlikely to be concerned with the credit risk for the annuitants in respect of the State-provided annuities under options 1 and 2. Trustees will not see option 3 as straightforward because the insurance companies will reserve the right to adjust payments in the event of partial default by the State. However, this is effectively the same credit risk for annuitants as that in options 1 and 2. There is also a credit risk in respect of the insurer under option 3, but this is the same credit risk as exists under annuity options currently available to trustees.
- **Possible wider use** – Options 1, 2 and 4 are restricted to insolvent schemes of insolvent employers. Option 3 could be used for any annuity or could be taken up as a direct investment by a pension scheme.
- **Permanency of solution** – Options 1, 2 and 3 only result in cheaper costs as long as there is a yield pick-up on Irish bonds. Option 4 is a permanent solution. It is also a real subsidy in the current environment because there is no credit risk attached for the pension schemes.

	<b>State Annuity Funds Managed by NTMA</b>	<b>State Annuity Funds Retained by Exchequer</b>	<b>Insurance Annuities using Irish Government Bonds</b>	<b>Direct Subsidy</b>
<b>Competition Rules</b>	Legal advice required. Does State become an insurer?	Legal advice required. Does State become an insurer?	No issues	No issues
<b>Financial Risk</b>	No cost to the State.	No cost to the State.	No cost to the State.	Cost equal to payments made.
<b>Longevity Risk</b>	Some longevity risk to the State but not significant.	Some longevity risk to the State but not significant.	None.	None.
<b>Scope Creep Risk</b>	Risks will exist to extend scope.	Risks will exist to extend scope.	Maybe pressure to borrow at worse than market terms.	Greatest risk to extend scope.
<b>Logistical Issues</b>	Need to figure out how to price and how to track annuity payments against assets transferred. Also need to figure out how to pay.	Need to figure out how to price and how to pay and from what budget.	Coupon-only bond is a new type of bond issue. Discussions needed to co-ordinate with the life industry.	Simple to execute.
<b>Implications for MFS</b>	Could possibly extend to MFS with Employer Debt.	Could possibly extend to MFS with Employer Debt.	Could possibly extend to MFS without Employer Debt.	Could possibly extend to MFS with Employer Debt.
<b>Attractiveness to Trustees</b>	Would be attractive option for Trustees	Would be attractive option to Trustees	Cost approx 5% more and niggles will exist on right of insurance companies to adjust in event of Government default	Would be attractive to Trustees
<b>Potential Use</b>	Insolvent schemes of insolvent employers	Insolvent schemes of insolvent employers	All schemes	Insolvent schemes of insolvent employers
<b>Permanency of solution</b>	Driven almost fully by yield differential on Irish gilts	Driven almost fully by yield differential on Irish gilts	Driven fully by yield differential on Irish gilts	Permanent solution

## 6 Other Observations

- 6.1 The main motivation behind the state annuity option is to make more money available for active and deferred members. The Working Party felt that the best way to tackle this in a meaningful way is to change the priority rules in the event of wind-up. This is also proposed by the SAI and IAPF in their overall package of measures. However, it is a concern that while the state annuity is being investigated, there seems to be a reluctance to look at the priority rules, beyond de-prioritising pension increases.
- 6.2 We also considered credit risk as part of our discussions. The benchmark for risk-free return in the Eurozone is the yield available on German bonds. Additional yields on other bonds reflect additional credit risk. In the case of the Irish government, this risk arises in 3 ways. The first risk is a voluntary partial or full default by the Irish government. The second risk is a partial or full default by the Irish government imposed by an outside agency such as the IMF. The last is an exit from the Euro with an effective devaluation of the currency. These are all risks for foreign lenders. Devaluation is not a risk for domestic lenders with domestic liabilities. However, it is likely that devaluation would lead to inflation which reduces the purchasing power of pensions.
- 6.3 The credit risk creates some interesting considerations for potential domestic lenders such as insurance companies and pension funds. Traditionally these entities view Irish government debt as risk free but this is now at odds with the market view. It is important that any options that emerge around state annuities or insurance annuities backed by government bonds are upfront about this risk and upfront about who takes the risk and who benefits from the risk. It is also important to note that any given pensioner liability, at the moment, is likely to be backed by a mixture of bonds including a high proportion of non-Irish government bonds. As State annuities are effectively a single investment type, they reduce diversification and therefore increase risk.
- 6.4 The Working Party also briefly considered whether cheaper annuity options could be factored into liability calculations for the MFS.

The state annuity is proposed for insolvent schemes of insolvent employers. The cheaper annuities would not therefore be available to solvent schemes or solvent employers. However, cheaper annuities could still be sensibly included in all MFS calculations if accompanied with employer debt. Employers who voluntarily sign up to “debt on employer” could adopt a weaker standard as they would effectively create a form of contingent asset.

Insurance annuities backed with Irish Government bonds would potentially be available to all schemes and therefore could be included in all MFS calculations without any employer debt. The funding standard, in this instance, effectively ignores the additional credit risk.

Obviously, there are lots of factors that need to be taken into account before considering any changes to the MFS. Furthermore, the SAI's view<sup>2</sup> is that the Funding Standard needs to be strengthened, not weakened, and any changes made in response to the current financial crisis must be carefully considered in terms of their long-term impacts and robustness.

- 6.5 Finally, if any of the options considered in this report are introduced, consideration should be given to combining them with measures to prevent abuse, e.g. through corporate restructurings.

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<sup>2</sup> As set out in the Society's 2008 Submission on the Government's Green Paper on Pensions – see:  
<http://www.actuaries.ie/Press%20Office/Submissions/080528%20SAI%20Reponse%20to%20Green%20Paper%20on%20Pensions.pdf>.

## Appendix 1 – Annuity Comparison @ 14-4-2009

Annuity Type	Age	Esc.	Market, current yields 3.9%	Market, 5% yield	Gap	SAI-Lives, 5% yield	Gap: SAI-Lives v. "market, current"	Gap: SAI Lives v. "market at 5%"	SAI Amounts, 5% yield	Gap: SAI Amounts v. "market, current"	Gap: SAI Amounts v. "market at 5%"
Male – Single	60	0%	3,013	3,475	15%	3,722	24%	7%	3,587	19%	3%
Male – Single	60	2%	2,339	2,723	16%	2,925	25%	7%	2,797	20%	3%
Male – Single	65	0%	3,500	3,936	12%	4,107	17%	4%	3,934	12%	0%
Male – Single	65	2%	2,827	3,218	14%	3,309	17%	3%	3,149	11%	0%
Male – Single	70	0%	4,243	4,673	10%	4,630	9%	0%	4,420	4%	0%
Male – Single	70	2%	3,563	3,967	11%	3,828	7%	0%	3,635	2%	0%
Male – Single	75	0%	5,434	5,883	8%	5,363	0%	0%	5,132	0%	0%
Male – Single	75	2%	4,733	5,163	9%	4,548	0%	0%	4,338	0%	0%
Female – Single	60	0%	2,743	3,239	18%	3,535	29%	9%	3,459	26%	7%
Female – Single	60	2%	2,067	2,474	20%	2,752	33%	11%	2,678	30%	8%
Female – Single	65	0%	3,063	3,562	16%	3,889	27%	9%	3,786	24%	6%
Female – Single	65	2%	2,392	2,803	17%	3,111	30%	11%	3,013	26%	7%
Female – Single	70	0%	3,522	3,962	12%	4,392	25%	11%	4,254	21%	7%
Female – Single	70	2%	2,849	3,240	14%	3,611	27%	11%	3,481	22%	7%
Female – Single	75	0%	4,203	4,670	11%	5,105	21%	9%	4,925	17%	5%
Female – Single	75	2%	3,518	3,924	12%	4,318	23%	10%	4,145	18%	6%
Joint Life	60	0%	2,495	2,998	20%	3,162	27%	5%	3,111	25%	4%
Joint Life	60	2%	1,838	2,251	22%	2,405	31%	7%	2,353	28%	5%
Joint Life	65	0%	2,747	3,244	18%	3,403	24%	5%	3,334	21%	3%
Joint Life	65	2%	2,105	2,514	19%	2,662	26%	6%	2,595	23%	3%
Joint Life	70	0%	3,114	3,583	15%	3,739	20%	4%	3,655	17%	2%
Joint Life	70	2%	2,483	2,890	16%	3,013	21%	4%	2,929	18%	1%
Joint Life	75	0%	3,664	4,116	12%	4,221	15%	3%	4,114	12%	0%
Joint Life	75	2%	3,036	3,432	13%	3,504	15%	2%	3,400	12%	0%
Average:					<b>15%</b>		<b>21%</b>	<b>6%</b>		<b>17%</b>	<b>3%</b>

- SAI Lives: 108% of the '00 series lives tables, with CSO mortality improvements applied from 2006 onwards
- SAI Amounts: 105% of the '00 series amounts tables, with CSO mortality improvements applied from 2006 onwards
- SAI Demography Committee recommended use of the Lives Basis as appropriate for calculating minimum transfer values because these are a minimum payment calculation.
- The Amounts Basis would be a more appropriate basis for calculating best estimate costs of annuities in payment. This gives a difference of 17% based on a yield of 5%. This increases to 20% using a yield of 5.3%.

### Annuity Quotes:

Purchase price €50,000

Nil commission; "SAI" annuities assume expenses of €60p.a.

Yearly in arrear, no overlap or minimum guarantee

Joint life: 100% reversion; first life male; same ages for both lives

"Market" annuities are based on the lower price from 2 providers which, between them, have more than 50% market share

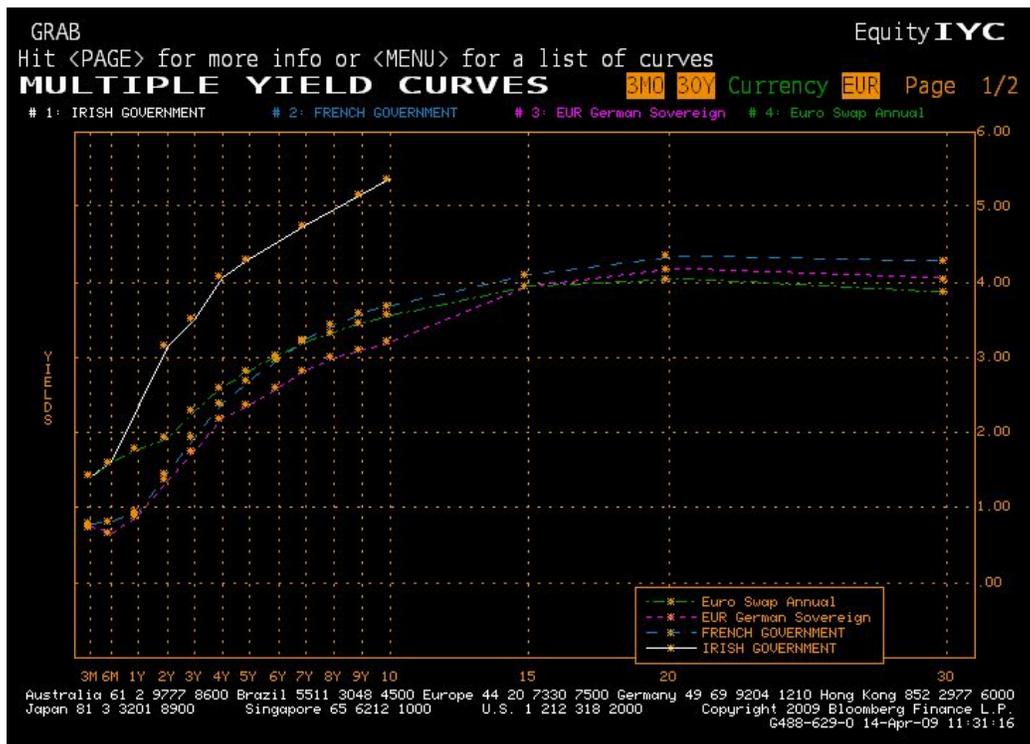
"Market" annuities for one insurer looked cheap at older ages, possibly because very little business written at these ages - gap shown as zero for these cases.

## Appendix 2 – Yields on Government Bonds @ 14-4-2009

### Yields on Irish Bonds

Coupon	Maturity	Yield To Maturity
4.5	18/04/2020	5.455
4.4	18/06/2019	5.366
4.5	18/10/2018	5.16
4.6	18/04/2016	4.764
8.25	18/08/2015	4.548
4	15/01/2014	4.312
5	18/04/2013	4.046
8.75	30/09/2012	3.752
3.9	05/03/2012	3.467
4	11/11/2011	3.167
8.5	01/10/2010	2.856
4	18/04/2010	2.186

### Comparison with France & Germany



### Appendix 3 – Duration analysis of annuities and bonds

	<b>DMT</b>
65 year old male – level annuity	11 years
10-year government bond	8 years
20-year government bond	13 years
30-year government bond	16 years
20-year coupon-only bond	9 years
35-year coupon-only bond	13 years

- The table above shows the discounted mean term (DMT) for different bonds and a level 65year old male annuity.
- As can be seen from the table the DMT of a typical 20-year bond is longer than the 65year old male annuity DMT. Females cases, early retirements and escalating annuities will have longer DMTs.
- A bond is not a particularly good cashflow match for an annuity because all the capital is repaid at the end. A coupon-only bond provides a much better cashflow match.
- A portfolio of annuities could be reasonably well matched with a combination of 20-year and 35-year coupon only bonds.
- It is believed the NTMA may not wish to borrow over such long terms. The DMT of a 35-year coupon-only bond is equivalent to the DMT of a 20-year conventional bond.