

Public Sector Pension Cost Comparison

Report prepared for ICTU Public Services Committee

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1. Introduction

In 2007, Life Strategies prepared a report for the Public Service Benchmarking Body entitled “Independent study of pension provisions in the Irish Public Service relative to pensions arrangements in the private sector in Ireland”. In our report, we refer to this as “the 2007 Report”.

We have been asked by the ICTU Public Services Committee to review the methodology and assumptions used in the 2007 Report and highlight areas where the results may differ if a similar report were to be prepared today.

2. Review of the 2007 Report

The 2007 Report essentially approached the issue by comparing the estimated cost of public service pensions with the estimated cost of private sector pensions.

1. Estimated cost of public service pensions

The estimated cost was calculated for various cohorts and categories of public servant as the estimated employer cost net of employee contributions. The estimated cost was calculated as a long term cost assuming contributions to fund pension benefits are paid over the working life time of the public servant. The report concluded that the estimated cost should be calculated using discount rates based on the expected returns from a funded private sector pension scheme. As a result, the basis and assumptions used to calculate the estimated cost were similar to a long term funding basis that might be used if the same benefits were provided in a funded scheme in the private sector. The key financial assumptions used can be summarised as follows:

Assumption	Absolute Level	Level relative to salary inflation (net discount rate)
General Salary Inflation	4.25% p.a.	n/a
Discount Rate Pre-Retirement	6.25% p.a.	2.0% p.a.
Discount Rate Post-Retirement	4.25% p.a.	0.0% p.a.

In addition to general salary inflation, an allowance was made for salary scales and promotional increases which ranged from 0.9% p.a. to 2.3% p.a. above general salary inflation, depending on the cohort and category of public servant.

2. Estimated cost of private sector pensions

The estimated cost of private sector pensions was calculated separately for defined benefit pension schemes and defined contribution pension schemes.

The estimated cost of defined benefit pensions was calculated using the same method and assumptions as above, but using a notional level of benefits based on an average level of benefits compiled from industry surveys.

The estimated cost of defined contribution pensions was taken directly from industry surveys as the average employer contribution indicated by the surveys.

The overall estimated cost of private sector pensions was then calculated assuming various portions of the private sector were in a defined benefit scheme, a defined contribution scheme and without a pension scheme at all.

Comments on methodology

In broad terms, the methodology used by Life Strategies in their 2007 report seems reasonable. In particular, we would agree with the rationale of using a long term funding basis to calculate the estimated costs of defined benefit pension in both the public sector and the private sector.

The “new entrant” approach was reasonable in conjunction with assumptions used at the time. However, it is questionable whether it remains appropriate for the pre-2004 category since the minimum service in this category is now over 13 years and a large proportion of the salary scale increases are in the past.

Comments on assumptions

When reviewing the financial assumptions, it is important to focus on the difference between the absolute level of the assumptions rather than the individual assumptions in isolation.

The 2007 Report uses a discount rate pre-retirement of 6.25% and general salary inflation of 4.25% p.a. Therefore, the net discount rate used is 2% p.a. pre-retirement.

The discount rate post-retirement is 4.25% p.a. and pension increases are assumed to be in line with general salary inflation of 4.25% p.a. Therefore, the net discount rate post retirement is 0% p.a.

In this report, all references to net discount rate refer to the discount rate above assumed general salary inflation.

In addition to the salary inflation assumption of 4.25% p.a., salary scales and promotional increases were assumed to add between 0.9% p.a. to 2.3% p.a. to general salary inflation. Therefore, the actual salary inflation assumed pre-retirement was between 5.15% p.a. and 6.55% p.a. and the actual net discount rate was assumed to be between 1.1% p.a. and -0.3% p.a.

This means that in some cases, after allowance for salary scale / promotion the net discount rate was negative. A negative net discount rate means that the calculated cost of pension benefits expressed as a % of salary reduces as employees get older. For example, using the assumptions from the 2007 Report, the cost of benefits for the first year of service, expressed as a % of salary, could be 13% higher than the cost of benefits for the last year of service (assuming a 40 year career). Traditionally, pensions were assumed to increase in cost as employees got older.

As the negative net discount rate only applied to a small portion of the cohorts used, this was not a very material issue. However, if negative net discount rates are used more generally, it would call into question the methodology used.

As noted above, if we ignore the impact of salary scales and promotional increases, the net discount rates used were 2% p.a. pre-retirement and 0% p.a. post retirement. There are a range of assumptions that could reasonably be used, and our view is that these assumptions are within this range of reasonable assumptions.

However, we believe that the sensitivity of the assumptions could have been explored in more detail. The sensitivity results shown in the appendix to the report mostly showed the impact of choosing more conservative assumptions which increased the costs. The sensitivity results should have shown a range on both sides of the central assumptions. For example, the discount rate post retirement could have been increased, which would have reduced the costs shown in the report.

3. Estimated Cost of Public Sector Pensions

In order to estimate the cost of public sector pensions today, we have used a Civil Servant as a proxy for the public sector as a whole. The reason for this is that the estimated cost calculated in the 2007 report for a pre 2004 Civil Servant, was very close to the estimated cost used for the public sector as a whole, which was 20% of salary. We are assuming that this relativity will be similar today.

We have looked at the estimated cost for three cohorts – pre 2004 benefits, post 2004 benefits and post 2013 benefits (Single Scheme).

The proxy Civil Servant has the following characteristics:

	Pre 2004 Cohort	Post 2004 Cohort	Post 2013 Cohort
Age at entry	24	25	28
Age at retirement	60	65	68
Years of service at retirement	36	40	40
Salary at entry*	€32,100	€32,100	€32,100
Salary at retirement*	€56,700	€56,700	€56,700
Effective Salary Scale / Promotional Increases assumed	1.6% p.a.	1.4% p.a.	1.4% p.a.

*The salary at entry and the salary at retirement are both expressed in current monetary amounts.

All members are assumed to survive until retirement. At retirement 90% of members are assumed to be married, with the male spouse on average 3 years older than the female spouse. Life expectancy from retirement age is assumed to be in line with life expectancy used in the statutory basis set out by the Pensions Authority for calculation of statutory transfer values from defined benefit pension schemes.

In setting our financial assumptions, we have assumed that a long term funding basis is used to calculate the estimated costs of defined benefit pensions.

Current funding bases used within the pensions industry would have general salary inflation of in the range of 0% p.a. to 1% p.a. above inflation. We have assumed that general salary inflation will be 1% p.a. above inflation.

Net discount rates above inflation would be in the range 1% p.a. to 3% p.a. Therefore, net discount rates could be anywhere from 0% p.a. to 3% p.a. above general salary inflation.

We have assumed that increases to pensions in payment will be in line with general salary increases for the pre 2004 and post 2004 cohorts. For the post 2013 cohort, we have assumed that increases to pensions in payment will be in line with inflation (which is assumed to be 1% below general salary inflation).

Finally, we have assumed that the state pension will increase in line with general salary inflation. This is the same as the assumption used in the 2007 Report. Changing this assumption will have a material impact on the estimated costs set out below. We have set out in Appendix 1 the estimated costs if the state pension is assumed to increase in line with inflation (which is assumed to be 1% p.a. below general salary inflation).

To summarise, the inflation related assumptions we have used are as follows:

	Pre 2004 Cohort	Post 2004 Cohort	Post 2013 Cohort
General Salary Inflation	Inflation + 1% p.a.	Inflation + 1% p.a.	Inflation + 1% p.a.
State Pension Inflation	Inflation + 1% p.a.	Inflation + 1% p.a.	Inflation + 1% p.a.
Pension Increases	Inflation + 1% p.a.	Inflation + 1% p.a.	Inflation.

The matrices below outline the estimated employer costs (as % of salary, net of employee contributions) for a Civil Servant using a range of net discount rates pre and post retirement. The net discount rates are expressed as a % above the assumed salary inflation.

Pre 2004 Cohort

Net Discount Rate	Pre-Retirement						
	0.0%	0.5%	1.0%	1.5%	2.0%	3.0%	
Post-Retirement	0.0%	30%	27%	25%	22%	20%	16%
	0.5%	28%	25%	23%	21%	19%	15%
	1.0%	26%	23%	21%	19%	17%	14%
	1.5%	24%	21%	20%	18%	16%	13%
	2.0%	22%	20%	18%	17%	15%	12%
	3.0%	20%	18%	16%	15%	13%	10%

Post 2004 Cohort

Net Discount Rate		Pre-Retirement					
		0.0%	0.5%	1.0%	1.5%	2.0%	3.0%
Post-Retirement	0.0%	25%	23%	21%	18%	16%	13%
	0.5%	24%	22%	19%	17%	15%	12%
	1.0%	22%	20%	18%	16%	14%	11%
	1.5%	21%	19%	17%	15%	13%	10%
	2.0%	20%	18%	16%	14%	12%	9%
	3.0%	18%	16%	14%	12%	11%	8%

Post 2013 Cohort (Single Scheme)

Net Discount Rate		Pre-Retirement					
		0.0%	0.5%	1.0%	1.5%	2.0%	3.0%
Post-Retirement	0.0%	10%	9%	8%	7%	6%	4%
	0.5%	9%	8%	7%	6%	5%	3%
	1.0%	9%	8%	7%	6%	5%	3%
	1.5%	8%	7%	6%	5%	4%	3%
	2.0%	8%	7%	6%	5%	4%	3%
	3.0%	7%	6%	5%	4%	3%	2%

As can be seen from the above matrices, the estimated costs reduce in line with the changing benefit structures for the cohorts, as you would expect.

There is a marked reduction in estimated costs for the post 2013 cohort.

The matrices also show quite starkly the impact of changing the net discount rate assumed for pre and post retirement.

As noted previously, the discount rate should reflect the expected returns on a portfolio of assets that could reasonably be used to fund the pension liabilities. The discount rates will depend on the expected returns on the assets held in the portfolio. There are many methods of constructing estimated returns and there can be a wide variation in the estimates produced by each method.

Current pension legislation requires trustees of defined contribution schemes to provide members with projected fund values and projected benefits from their scheme. This is called a Statement of Reasonable Projection (SORP). The Society of Actuaries in Ireland has published guidance for actuaries producing calculations under a SORP. This SORP guidance sets out the range of assumptions that can be used in a SORP.

The SORP guidance sets inflation at 1.5% p.a. and salary inflation at 2.5% p.a. The SORP guidance also sets out the maximum returns that can be used for various asset classes, gross of fees. These maximum returns are set out in the table below. We have assumed that the fees on equity/property investments will be 0.4% p.a. and bonds will be 0.1% p.a.

	Maximum Gross Return p.a.	Return Net of Fees p.a.	Real return above inflation p.a.	Return above salary inflation p.a.
Equities	5%	4.6%	3.1%	2.1%
Property	5%	4.6%	3.1%	2.1%
Bonds	2.5%	2.4%	0.9%	-0.1%

The above real return figures (above inflation) seem to be relatively prudent when compared against long term market averages. The Credit Suisse Global Investment Returns Yearbook 2016 shows real returns on equities and bonds to be 5.0% p.a. and 1.8% p.a. respectively over the period 1900 to 2015. These figures are in respect of a globally diversified index of countries. The figures for Ireland are 4.4% p.a. and 1.5% p.a. respectively, materially higher than the respective figures of 3.1% p.a. and 0.9% p.a. in the above table.

Using the returns in the above table, and assuming a simplified asset portfolio of real assets comprising equities and property and nominal assets comprising bonds, the expected returns on various asset portfolios would be as follows:

	Maximum Gross Return p.a.	Return Net of Fees p.a.	Net return above salary inflation p.a.
80% real / 20% nominal	4.5%	4.16%	1.66%
50% real / 50% nominal	3.75%	3.5%	1.0%
20% real / 80% nominal	3.0%	2.8%	0.3%

The net return above salary inflation equates to a net discount rate you might use to value pension liabilities in a funded scheme with the above asset portfolios.

Any asset portfolio used to fund public sector pension benefits is likely to have an unconstrained mandate. Therefore, it is reasonable to assume that the exposure to real assets would be relatively high. Based on the above analysis, it would be reasonable to assume a net discount rate pre-retirement of between 1% p.a. and 1.5% p.a. and a net discount rate post-retirement in the region of 0.5% p.a. This results in estimated employer costs of 21% to 23% for pre 2004 cohort, 17% to 19% for the post 2004 cohort and 6% to 7% for the post 2013 cohort.

For comparison purposes, the estimated employer cost for the pre 2004 cohort using the same net discount rates as used in the 2007 Report (i.e. 2% p.a. pre-retirement and 0% p.a. post retirement) is 20% of salary. This is in line with the employer costs calculated in the 2007 Report.

We believe that in an exercise such as this, it is important to use assumptions that are reasonable over the medium to long term and are not impacted by short term market fluctuations.

We are aware that another firm of independent actuaries, Trident Consulting, have carried out an independent review of the costs of the Single Public Service Pension Scheme for teachers. The net discount rates above salary inflation used in that report were 1.75% p.a. pre-retirement and 0.75% p.a. post retirement. For comparison purposes, the estimated employer cost for the pre 2004 cohort using these assumptions is 19% of salary.

As noted above, the net discount rate pre-retirement has been adjusted for the impact of salary scales and promotional increases. Where the net discount rate pre-retirement is below 1.5% p.a., the effective net discount rate allowing for salary scale and promotional increases is negative. For example, using a net discount rate of 0.5% p.a. pre-retirement will result in an effective net discount rate of -1.0% p.a. pre-retirement when allowance is made for salary scale and promotional increases. This will result in the estimated pension costs falling as employees get closer to retirement. The “new entrant” rates consequently overstate the cost of pensions for somebody mid-career.

The above estimated costs make no allowance for the Pension Related Deduction (PRD). Including the PRD, public sector employees are effectively paying pension contributions of 16% or 17% of all earnings above €28,750 p.a.

4. Estimated Cost of Private Sector Pensions

To value defined benefit pensions, the 2007 Report used a notional level of benefits based on an average level of benefits compiled from industry surveys. We have valued the same notional benefits as was used in the 2007 Report.

The matrix below sets out the estimated employer costs using the same net discount rates above salary inflation as were used in Section 3.

Net Discount Rate		Pre-Retirement					
		0.0%	0.5%	1.0%	1.5%	2.0%	3.0%
Post-Retirement	0.0%	26%	23%	21%	18%	16%	13%
	0.5%	24%	22%	19%	17%	15%	12%
	1.0%	23%	21%	18%	16%	14%	11%
	1.5%	22%	19%	17%	15%	14%	10%
	2.0%	21%	18%	16%	15%	13%	10%
	3.0%	19%	17%	15%	13%	12%	9%

Using a net discount rate pre-retirement of 1% p.a. to 1.5% p.a. and a net discount rate post retirement of 0.5% p.a. results in estimated employer costs of 17% to 19% for defined benefit schemes.

The private sector employer DC cost was estimated to be 6% of salary in the 2007 Life Strategies report. This was based on an IAPF survey from 2002, a Mercer survey from 2005 and a survey carried out by the Benchmarking Body.

Mercer produced another DC survey in 2012 and according to that survey the average employer contribution rate was 7.2% of salary. This was an increase of 1.3% of salary from the average employer contribution rate in their 2005 report. This increasing trend has continued since 2012.

It is possible that the surveys could be underestimating the level of DC contribution rates as respondents may just disclose headline or base contribution rates. It may also be that respondents do not want to disclose what they consider commercially sensitive information, even on an anonymous basis.

It is also worth considering the adequacy of private sector DC contribution rates in terms of providing a reasonable level of pension benefits. There has been considerable comment from the pensions industry in the past that DC contribution rates in the private sector are inadequate and need to be significantly increased in order to provide an adequate level of pension benefits in retirement.

Based on our own experience of the pensions landscape there is upward pressure on DC contribution rates. Also, as people get older and accrue more service, age related and service related employer contributions will all have increased.

There is a relative lack of data in the public domain regarding private sector pension costs. However, there is a publicly available source of information for some companies which is the annual company accounts. We have analysed the publicly available accounts of some public companies and commercial semi states to review their pension costs.

The Public Services Committee feel that the “peer group” for pension comparison purposes should comprise of large employers who engage in collective bargaining with their employees. We have analysed the accounts of six private sector employers and six semi state employers who meet this criteria.

The table below sets out the results of analysis.

Company	Year End Accounts	P&L pension cost as % of wages & salaries	Cash contributions as % of wages & salaries
Bank of Ireland	31/12/2016	20%	36%
AIB	31/12/2016	14%	23%
eircom	30/06/2016	19%	6% (14% y/e 2015)
Glanbia	31/12/2016	6%	8%
Kerry Group	31/12/2015	5%	10%
CRH	31/12/2016	8%	9%
Coillte	31/12/2015	20% (5% after curtailment)	22%
Bord na Mona	30/03/2016	5% (-6% after curtailment)	17%
ESB	31/12/2015	10% (plus balance sheet reserves)	Not easily identifiable but averaging greater than 20%
An Post	31/12/2015	14%	12%
Bord Gais	31/12/2015	24%	12%
Dublin Port	31/12/2015	19%	67%

There are some caveats associated with the use of the above figures:

- The figures are based on one year accounts only and can be distorted by one off anomalies (benefit changes, one off capital contributions etc)
- Some companies do not operate wholly or predominantly in Ireland (e.g. Kerry Group, CRH and Glanbia) and it has not been possible to isolate the Irish related pension costs
- Some other large employers are subsidiaries of much larger multinationals and it is not possible to isolate their Irish pension costs

However, the above analysis would lead to the conclusion that pension costs for the above employers are at least in the low to mid-teens, when expressed as % of salary.

The Financial Services Union has provided estimates of the average employer pension costs in companies which employ its members. For unionised companies, they estimate the employer pension cost to be approximately 14% of salary. For non-unionised companies, they estimate the employer pension cost to be 8% of salary.

It should also be noted that the structure of private sector pensions gives employees a lot more flexibility when compared to public sector employees. For example, private sector employees:

- can use AVCs to fund tax free cash and still enjoy a pension of 2/3rds of salary (subject to Revenue limits)
- can have the option of availing of potentially higher tax free cash lump sums (up to 25% of the value of pension assets for members of DC schemes)
- can have flexibility in the form of benefits taken (spouses pension on death in retirement, pension increases)
- can have access to Approved Retirement Funds with flexible drawdown

There are many examples of private sector employees opting to take transfer values from defined benefit schemes in order to avail of some of the above flexibilities. This option is not open to public sector employees.

While it is difficult to put a value on this flexibility, it should be taken into account when comparing public sector and private sector pensions.

5. Summary

The results of our review indicate the following estimated employer pension costs for various cohorts of Civil Servant assuming a net discount rate pre-retirement of between 1% p.a. and 1.5% p.a. and a net discount rate post retirement of 0.5% p.a.

Cohort	Net discount rate 1% p.a. pre-retirement 0.5% p.a. post retirement	Net discount rate 1.5% p.a. pre-retirement 0.5% p.a. post retirement
Pre 2004	23%	21%
Post 2004	19%	17%
Post 2013	7%	6%

Assuming the pre 2004 Civil Servant is a proxy for the pre 2013 public sector as a whole, this would indicate a slight increase in the estimated employer cost of public sector pensions since 2007. However, with the passing of time the proportion of public sector employees who enjoy pre 2004 benefits is reducing. Therefore, you would expect the estimated employer costs to be reducing significantly over time.

The results show a quite dramatically lower estimated pension cost for the post 2013 cohort. This will, over time, significantly reduce the overall cost of public sector pensions as this cohort grows in size relative to the other cohorts.

Naturally, using more conservative assumptions will increase the estimated costs further. For example, reducing the net discount rate pre-retirement to 0.5% will increase the estimated new entrant employer cost for a pre 2004 civil servant to 25% of salary. Further, if the more conservative State Pension increases assumption as set out in Appendix 1 is used, the estimated new entrant employer cost for a pre 2004 civil servant increases to 30% of salary.

The costs of private sector pensions will also have risen since 2007. Using a “peer group” of large employers who engage in collective bargaining with their employees, it is likely that the employer pension cost is in the region of low to mid-teens as a % of salary.

Brian Murray, FIA, FSAI
31 March 2017

Appendix 1 - Sensitivity of changing state pension increase assumption

As noted in Section 3, we have assumed that the state pension will increase in line with general salary increases in the future, and changing this assumption will have a material impact on the estimated costs. We have set out below the estimated employer costs if the state pension is assumed to increase in line with inflation (which is assumed to be 1% below general salary inflation).

Pre 2004 Cohort

Net Discount Rate		Pre-Retirement					
		0.0%	0.5%	1.0%	1.5%	2.0%	3.0%
Post-Retirement	0.0%	36%	33%	30%	27%	25%	20%
	0.5%	34%	30%	28%	25%	23%	18%
	1.0%	31%	28%	26%	23%	21%	17%
	1.5%	29%	26%	24%	22%	20%	16%
	2.0%	27%	25%	22%	20%	18%	14%
	3.0%	24%	22%	20%	18%	16%	12%

Post 2004 Cohort

Net Discount Rate		Pre-Retirement					
		0.0%	0.5%	1.0%	1.5%	2.0%	3.0%
Post-Retirement	0.0%	31%	28%	26%	23%	20%	16%
	0.5%	30%	26%	24%	21%	19%	15%
	1.0%	27%	25%	22%	20%	18%	14%
	1.5%	26%	23%	21%	19%	16%	13%
	2.0%	24%	22%	20%	17%	15%	12%
	3.0%	22%	20%	17%	15%	14%	10%

Post 2013 Cohort (Single Scheme)

Net Discount Rate		Pre-Retirement					
		0.0%	0.5%	1.0%	1.5%	2.0%	3.0%
Post-Retirement	0.0%	12%	10%	9%	8%	7%	5%
	0.5%	11%	10%	8%	7%	6%	4%
	1.0%	10%	9%	8%	7%	6%	4%
	1.5%	10%	8%	7%	6%	5%	3%
	2.0%	9%	8%	7%	6%	5%	3%
	3.0%	8%	7%	6%	5%	4%	3%

The above matrices indicate a relatively significant increase in the estimated employer cost as a result of assuming the state pension will increase in line with inflation rather than in line with general salary inflation.

The impact on the pre 2004 and post 2004 cohorts is in the range of an additional employer cost of 4% of salary to 6% of salary.

The impact on the post 2013 cohort is less significant, but still somewhat material in the range of an additional employer cost of 1% of salary to 2% of salary.