

Mortality Assumptions used in the Calculation of Company Pension Liabilities in the EU

The Actuarial Profession

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Executive Summary

Analysts, accountants, auditors and actuaries are all interested in corporate pension liabilities as they represent a material item in the balance sheets of many companies. Changes in accounting rules have meant that key assumptions must be disclosed. Discount rates and inflation assumptions are already subject to detailed scrutiny but to date, little attention has been given to mortality assumptions.

Research at Cass Business School has examined current practice regarding mortality assumptions in the EU with a view to recommending improvements. The research has compared the mortality assumptions used in corporate pension liability calculations across the countries of the EU, as well as with the population mortality tables within each country. The countries chosen are those in the pre-2004 EU, with the US and Canada added for comparison. This two way comparison enables us to allow for variations in mortality from country to country when assessing the tables generally used in calculating pensions liabilities. The aims of the research are:

- To assess the appropriateness of the mortality assumptions generally used in each country for pensioners in company pension schemes
- To make a broad comparison between countries of underlying population mortality for pensioners
- To consider whether recommendations should be made about appropriate assumptions to use in pension valuation calculations
- To consider whether a single statistic could be used as a measure of the strength of the mortality assumptions used in calculating the pension liabilities.

The following four Figures highlight some of the important results from this research project.

Figure 1 shows the variation in observed population life expectancy for a man aged 65 within this group of countries. There is a difference of slightly more than two years between Switzerland with the longest life expectancy and Denmark with the shortest.

Figure 2 shows the variation in typical assumed life expectancy for a male 65-year-old member of a company pension scheme. Note that the variations in assumed life expectancy are much wider than in observed population life expectancy.

Figure 3 illustrates this by showing the difference within each country between observed national population life expectancy and assumed life expectancy for pensioners in company pension schemes. The range of differences is very wide: in Denmark it is about zero while in France it is about 7½ years.

Pension liabilities are driven by the discounted value of annuity payments. **Figure 4** shows that the liabilities based on the mortality assumptions used in France are higher than in the UK, and that the difference is equivalent to a reduction of about 0.5% in the discount rate. Similarly, the liabilities based on the mortality assumptions used in the Netherlands are lower than if based on the assumptions used in the UK, and the difference is equivalent to an additional 1.2% on the discount rate.

Figure 1

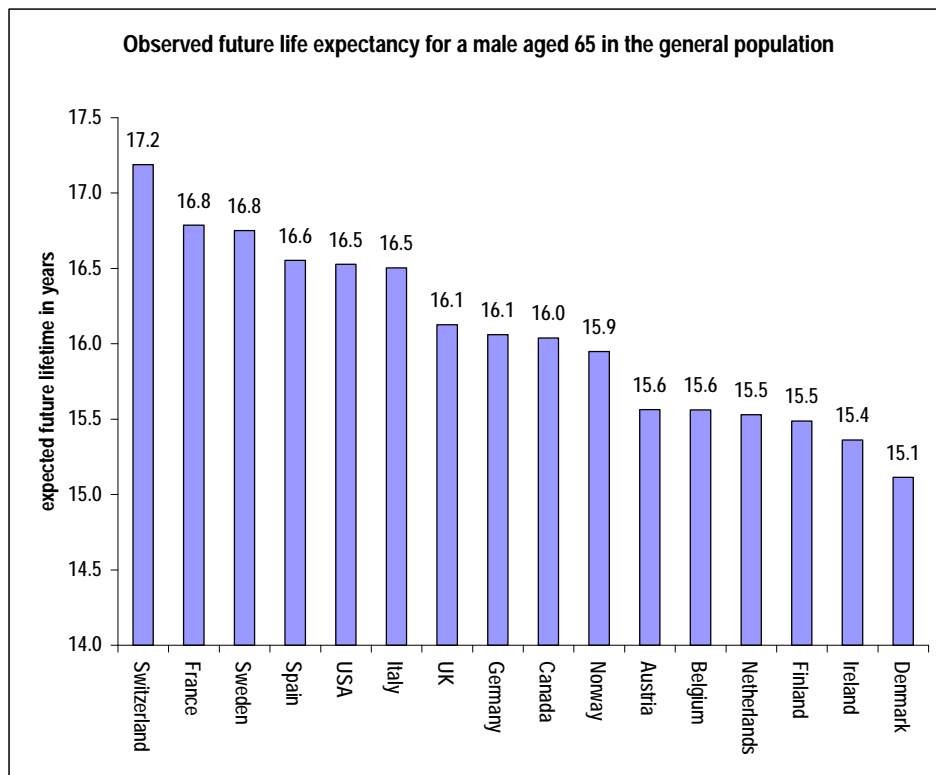


Figure 2

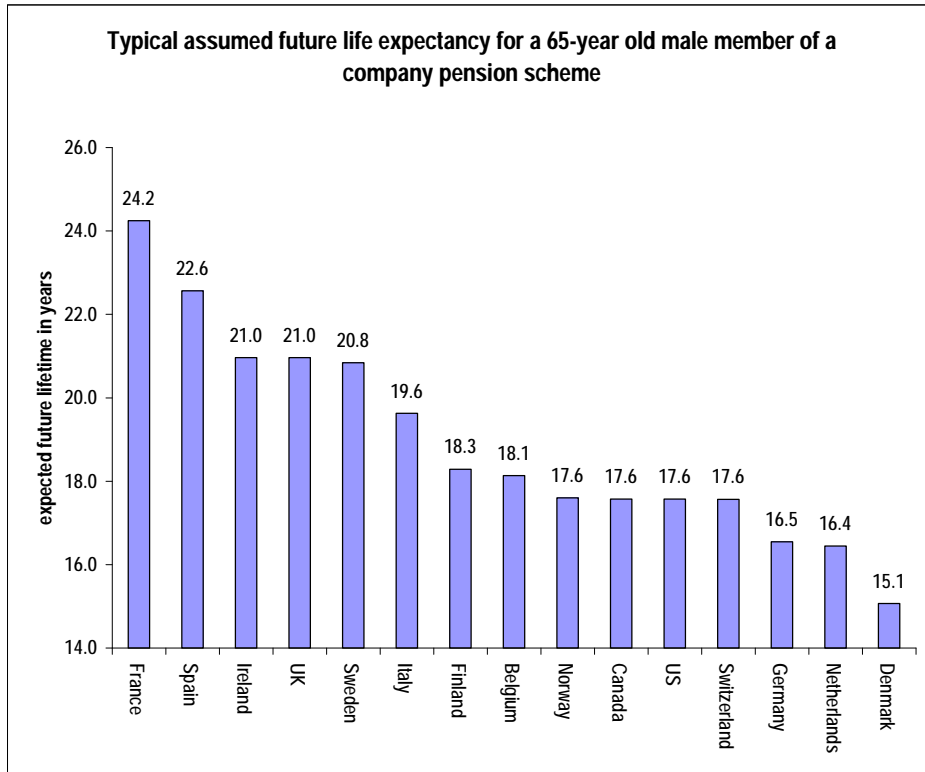


Figure 3

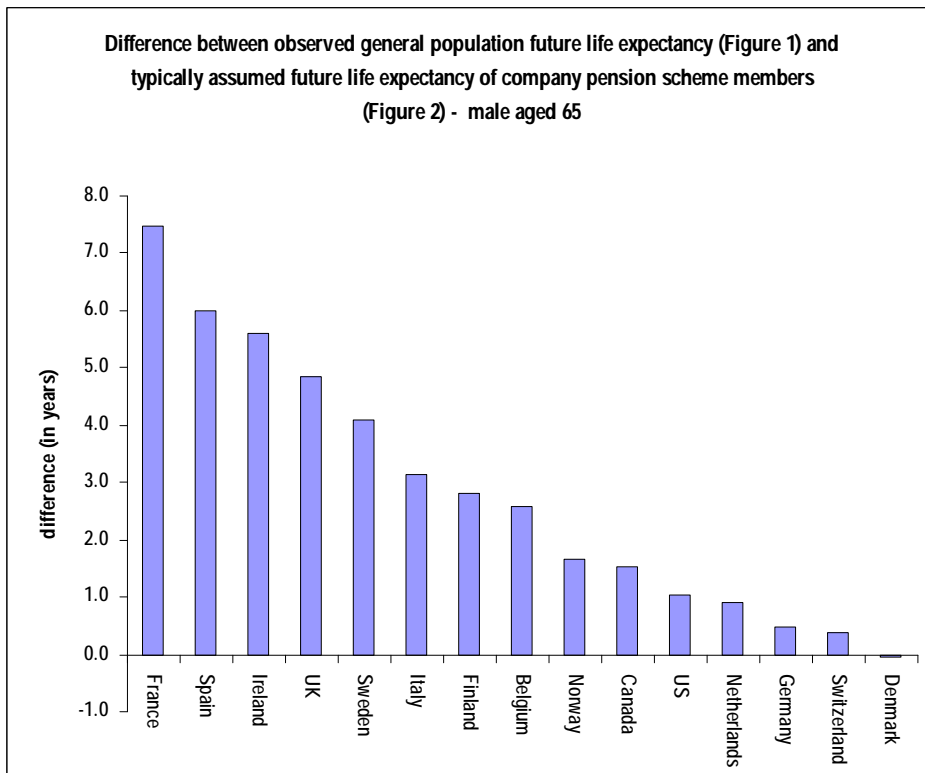
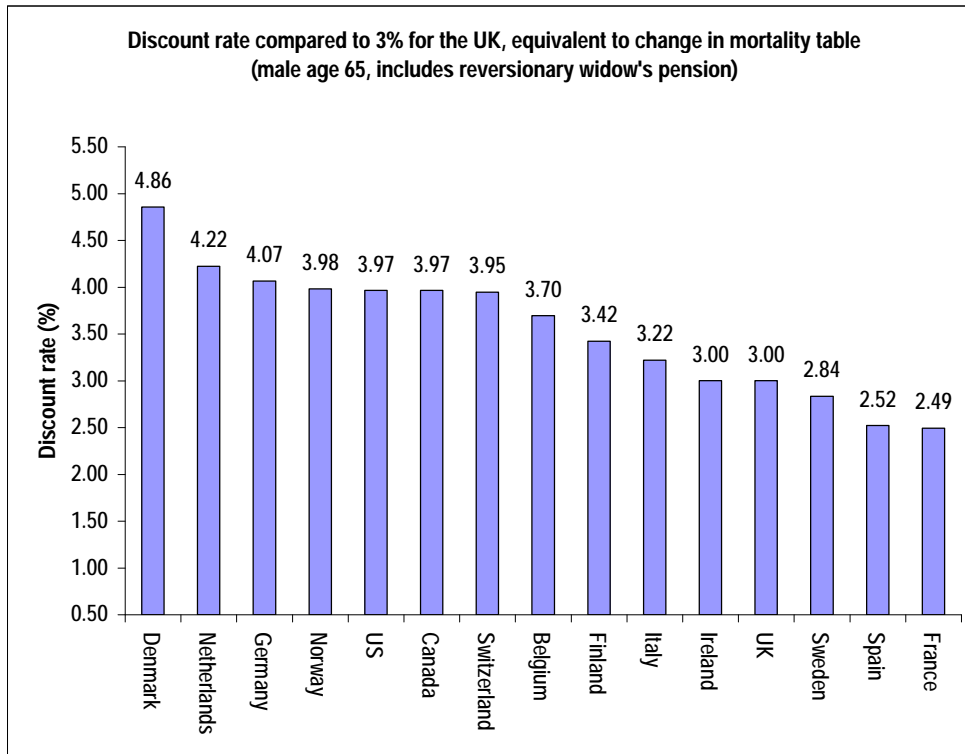


Figure 4



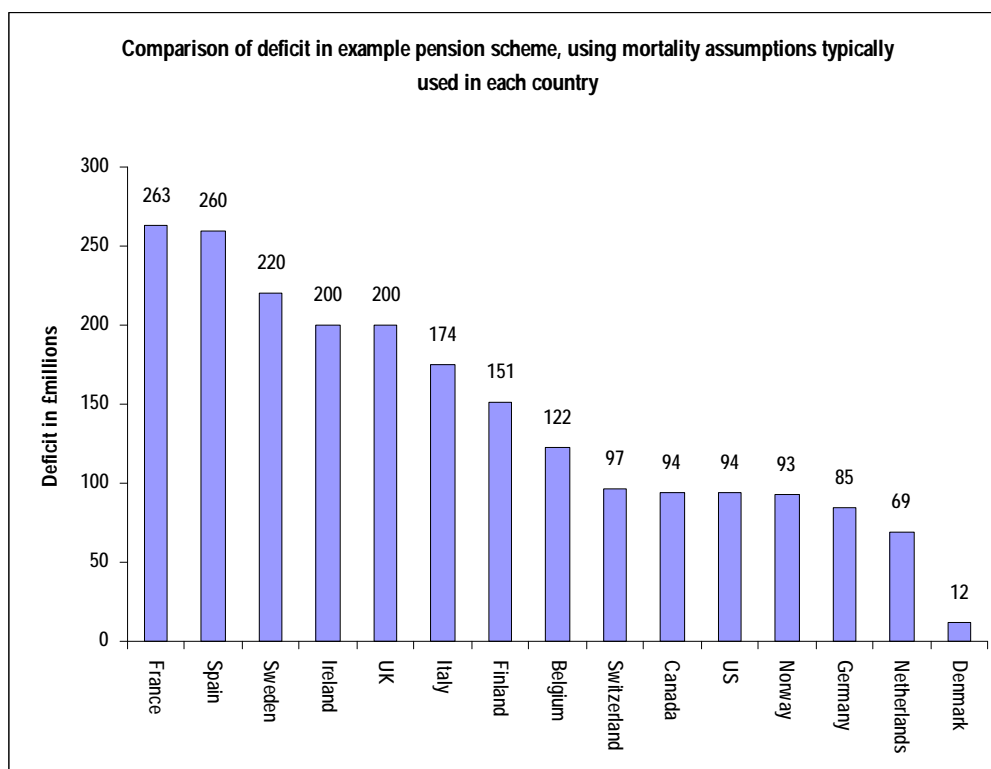
Conclusions

The results indicate that current practice varies considerably across the EU. We would expect that mortality assumptions in company pension schemes would vary from country to country, due to variations in underlying population mortality as well as in variations of the profile of typical membership of a company pension scheme, but the variations in mortality assumptions are much greater than would be justified by these factors alone.

Some of the variation is due to the fact that some countries incorporate an allowance for expected future improvements in mortality, while others use tables that relate to mortality observed over a period in the past, without allowing for the fact that life expectancy continues to increase.

The mortality assumption can have a significant impact on the liabilities in company balance sheets. In order to illustrate the impact, consider a pension scheme with assets of £800m, and liabilities of £1000m and therefore an actuarial deficit of £200m if calculated using assumptions generally used in the UK. Figure 5 below shows what the actuarial deficit would be if it were valued using the same financial assumptions, but using mortality assumptions currently used in other countries.

Figure 5



Banking and financial services group, UBS, recently calculated that the FTSE 100 companies have a combined pension deficit of more than £40 billion. If this pension liability were to be calculated using German mortality tables, the deficit would become a £3 billion surplus – a difference of £43 billion. Using Danish mortality assumptions this surplus increases to £30 billion but using French mortality assumptions the £40 billion deficit becomes a £63 billion deficit. This clearly shows the importance of a proper disclosure of the mortality assumptions.

This paper seeks to raise awareness amongst users of accounts as to the impact of different mortality assumptions on pension costs, highlighting the different underlying mortality experience in different countries and the different methodological approaches taken in measuring and reporting mortality. We have proposed a mechanism for improved disclosure of the assumptions made by company directors, actuaries and auditors on mortality.

This paper does not however seek to address the deeper question of how long we, and future generation, are going to live. Longevity is a complex subject, influenced by a range of economic, social and environmental factors - some of which we have outlined in our paper. It has, and will have, significant impact on our families, society and economies. And in terms of the focus of this particular paper, it could have a significant impact on disclosed company pension costs and insurance company solvency.

Perhaps given continual major advances in medicine, genetics and technology, the question as to how long we will all live is one that cannot be predicted with accuracy, at least not today. Tracking and reporting improving longevity may be all that is realistically achievable today. What is clear is that longevity is a subject that is taxing many professions and academics. If the question can be answered, it will take the combined effort of those different professions and academics. We at Cass Business School look forward to working with them on future research projects in this fascinating and evolving area.

Recommendations

We recommend that

- The mortality assumptions be included in the disclosure of pension expense in company accounts in as clear and informative a way as possible.
- Projected mortality tables allowing for future improvements of mortality rates be used in calculating pension liabilities for companies in all countries as far as possible
- Consideration should be given to the inclusion of a single figure to reflect the strength of the mortality assumptions used. We recommend the “Cass Index of Mortality”, based on relative annuity values, to keep the disclosure as simple as possible while remaining sufficiently informative for analysts and auditors to be able to have confidence in the results.