Pension risk disclosures by FTSE 100 companies

Christopher O'Brien, Margaret Woods and Mark Billings
Pension risk disclosures by FTSE 100 companies

by

Christopher O’Brien
Nottingham University Business School

Margaret Woods
Aston Business School

Mark Billings
Nottingham University Business School

Published by

The Institute of Chartered Accountants of Scotland
CA House, 21 Haymarket Yards
Edinburgh EH12 5BH
Contents

Foreword ........................................................................................................ 1

Acknowledgements ..................................................................................... 2

Executive summary .................................................................................... 3

1. Background ............................................................................................. 8

2. Research approach .................................................................................. 11

3. Research findings .................................................................................... 12

4. Recommendations and policy implications ........................................ 37

References .................................................................................................. 44

About the authors ....................................................................................... 47

About SATER ............................................................................................... 49
Foreword

There is an increasing recognition that annual reports need to better disclose the risks facing a company. Provision of a defined benefit scheme poses one of these risks as companies take on uncertain long term obligations to make future pension payments. This report addresses the issue of how companies should report this risk so that stakeholders can understand a company's exposure to pension risk.

As well as providing an analysis of current defined benefit pension scheme risk disclosures by FTSE 100 companies, the report provides examples of current practice and suggests best practice for the future. The authors also make recommendations to the International Accounting Standards Board (IASB) on its current IAS 19 exposure draft and to the UK Accounting Standards Board (ASB).

This project was funded by the Scottish Accountancy Trust for Education and Research (SATER) (for further details see page 49). The Research Committee of The Institute of Chartered Accountants of Scotland (ICAS) has also been happy to support this project. The Committee recognises that the views expressed do not necessarily represent those of ICAS itself, but hopes that the project will assist the standard setters in their deliberations on pension risk reporting requirements and guidance.

Ian Robertson
Convener, Research Committee

September 2010
Acknowledgements

The authors would like to thank Nerijus Visockas and Adomas Malaiska for assistance in carrying out this research.

Finally, the Research Committee and the researchers are grateful for the financial support of the Scottish Accountancy Trust for Education and Research, without which the research would not have been possible.
Executive summary

The reporting of the risks of defined benefit pension schemes (DBPSs) is an issue of direct relevance to accounting standard setters, policy makers, investors, employers and trustees. In their discussion paper on the Financial Reporting of Pensions, EFRAG (2008) emphasised the economic significance of privately funded pension plans in many economies and the resulting need to ensure confidence in the associated financial reporting by the companies offering post employment benefits.

The International Accounting Standards Board (IASB) and the United States Financial Accounting Standards Board (FASB) are committed to a long-term review of the financial reporting of pensions and in April 2010 the IASB published an exposure draft on a number of proposed amendments to IAS 19 in respect of defined benefit plans (IASB, 2010, referred to hereafter as ‘the ED’). The research reported here addresses one specific element of the proposals contained in the ED: those relating to the disclosure of the risk arising from defined benefit plans.

In a DBPS the company is responsible for funding its employees’ pension benefits, with their value commonly linked to the length of service and average or final salary of each scheme member. By operating a DBPS a company therefore takes on long term obligations for scheme members, but the current value and the timing of those obligations are subject to some uncertainty, and hence a source of potential risk.

Accounting regulators in the UK, the USA and the IASB (under SFAS 158 & IAS 19) have all taken the view that balance sheet recognition of the funded status of a pension fund should be mandatory, and measured as the difference between the fair value of the fund’s assets and the related pension obligations. Pension risk arises from a DBPS and is highlighted when the fund is in deficit, the primary causes of which include:

- Market-driven asset price volatility.
- A mismatch in the duration of the assets relative to the liabilities.
- Increased life expectancy of individuals leading to increased liabilities.
There is also a potential cash flow risk to the company if it has to provide funds to reduce a deficit in the DBPS.

This research summary outlines the findings of a survey of the information included in the annual reports of FTSE 100 companies concerning the risks associated with their provision of a DBPS. The analysis covers all 88 companies in the FTSE 100 on 31st December 2009 which operate a DBPS, of which 80 have a UK based scheme. The aim was to gain a better understanding of current disclosure practice in relation to pension scheme risks, and use that knowledge to provide informed comment upon the ED, thereby using academic research as a tool to inform policy making.

Analysis of the narrative disclosures revealed the following:

- Narrative information can be extremely useful, but this is not always the case, particularly if it is company specific and therefore not comparable.
- The variability and multiple locations within a report for narrative information do not help comparability.
- The usefulness of narrative disclosures may be impaired, unless accompanied and complemented by a range of quantitative disclosures.

Analysis of the quantitative disclosures revealed the following:

- An aggregate deficit for the FTSE 100 DBPSs of £53.5 billion, made up of liabilities of £409.8 billion offset by assets of £356.3 billion.
- Widespread variation in both the size of the schemes and the extent to which they are fully funded across different companies.
- Only ten companies disclosed the sensitivity of the DBPS's liabilities to all four actuarial assumptions, as recommended in the UK Accounting Standard Board’s suggested guidelines on best practice (2007).
- Thirty-five companies disclosed no sensitivities to changes in actuarial assumptions.
• Disclosures increase with both scheme size and strength.
• Comparing industry sectors, banks have the highest levels of pension risk disclosure.
• There is limited variation across different companies in the assumptions about the rate of future price inflation.
• Salary growth assumptions range from 1.8% per year to 5.9% per year.
• There is significant variation between companies in the time frame being covered by life expectancy forecasts – anything from 5 to 25 years in the future.

In light of the analysis, the following comments are made in relation to the proposals contained in the ED:

• The IASB’s proposals may help readers understand the extent to which there is point in time estimation risk in those assets for which there is no quoted market price. The proposals do not, however, require the provision of any additional detail on asset allocations, despite the fact that this may assist in understanding the level of risk exposure from different investment strategies.
• The IASB proposes that companies disclose the effect on pension liabilities and service cost of ‘reasonably possible’ changes in each significant actuarial assumption. This can be conveniently and helpfully done by sensitivity tests. The research findings demonstrate that UK companies have experience in such tests and a number have followed ASB best practice guidelines on the reporting of such sensitivities.
• The exposure draft proposes a narrative description of the extent of the risks to which the plan exposes the entity and of:
  a. any concentrations of risk;
  b. asset-liability matching strategies used by the plan, including the use of annuities and other techniques, such as longevity swaps, to manage longevity risk; and
  c. a narrative discussion of factors that could cause contributions over the next five years to differ significantly from current service cost over that period.
This exposure draft requirement is welcomed as it embraces the reporting of the broader enterprise risk, or the risks to the entity arising out of its pension obligations, and how such risk is managed.

The research findings also indicate that the IASB may wish to consider the introduction of a requirement for companies to disclose DBPS sensitivity to risks via a tabular format that includes standardised measures of sensitivity for the key variables, as illustrated below:

<table>
<thead>
<tr>
<th>Risk variable</th>
<th>Change</th>
<th>Assets</th>
<th>Liabilities</th>
<th>Service cost</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
</tr>
<tr>
<td>Price inflation &amp; salary growth</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real salary growth</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rates</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity prices</td>
<td>20.0%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expectation of life</td>
<td>1 year</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The proposed format is justified on the following grounds:

- On the basis that price inflation and salary growth are linked economically, it is suggested that they are combined for disclosure purposes.
- A 0.5% change in the financial risk variables is selected because this is reasonably possible over a period of 5 years, and more fairly reflects enterprise risk than a smaller change.
- A change in equity values is an important risk as scheme assets typically include a large proportion of equities, and may also include derivatives where the value depends on equity prices.
- A one year change in the expectation of life is reasonably possible over a period of 5 years.
If the table is completed in monetary amounts rather than percentages, it would be broadly consistent with UK companies’ practice, although percentage values would be more useful for comparability.

The advantages of the sensitivity analysis above are:

- It focuses on the main potential risks to companies.
- It enables readers to understand the significance of the risks and the extent to which they are being managed.
- While geared to enterprise risk, it also enables readers to understand the potential point in time estimation risk for the liabilities.
- It expresses succinctly the extent to which companies have adopted asset-liability management by indicating the impact of changes in interest rates and other variables on both the assets and the liabilities of the scheme. For example, if there is a reduction in interest rates, this means the discount rate falls and there is an increase in the value of the liabilities - this amount is shown in the table. However, the table also shows the change in assets resulting from the reduction in interest rates. If the firm manages its choice of assets by holding bonds and derivatives that increase in value in response to lower interest rates, the table will show an increase in asset values and hence the effectiveness of asset-liability management. While narrative disclosures will help supplement this, such disclosures alone may be vague and difficult to interpret; the sensitivity test disclosures should enable narrative disclosures to be shorter. This is explained further in the later section on ‘suggested sensitivity disclosures’.

The table is put forward as an illustration of what appears appropriate in the context of large UK pension schemes. It may not be appropriate for small schemes that are not as material to the company’s financial position.
1. Background

The reporting of the risks of defined benefit pension schemes (DBPSs) is an issue of direct relevance to accounting standard setters, policy makers, investors, employers and trustees. In their discussion paper on the Financial Reporting of Pensions, EFRAG (2008) acknowledged the economic significance of privately funded pension plans in many economies and the resulting need to ensure confidence in the associated financial reporting by the companies offering post employment benefits.

In a DBPS the company is responsible for funding its employees’ pension benefits, with their value commonly linked to the length of service and average or final salary of each scheme member. By operating a DBPS a company therefore takes on long term obligations for scheme members, but the current value and the timing of those obligations are subject to some uncertainty.

The current value of the pension scheme’s liability or future obligations is an accounting estimate determined by four key assumptions relating to:

- future price inflation rates;
- salary inflation;
- mortality rates/life expectancy; and
- the discount rate used to compute the present value of the liabilities.

The assumptions are selected by management on the basis of expert actuarial advice but are subject to varying levels of uncertainty, and changes in any of the assumptions will affect the liability value. The combined effects of rising life expectancies and volatile economic conditions meant that in June 2010 the total liabilities of FTSE 100 companies reached £389 billion (Lane Clark & Peacock, 2010). Many companies have sought to limit the growth of their pension liabilities by, for example, closing schemes down to new and even existing members. Despite closing its UK defined benefit scheme to new members in 1997,
Barclays Bank announced in June 2010 that it planned also to close the scheme to existing members, albeit with the right to retain all benefits accrued to date.

Pension fund assets are valued using an arm’s length market value. For assets less frequently traded, or illiquid, then a model based fair value can be applied. Lane Clark & Peacock (2010) note a growing trend for funds to change their asset mix away from equities and in favour of bonds. Whilst the current narrative disclosures on asset composition are limited, some pension funds also choose to invest in hedge funds, property, commodities and other potentially difficult to value assets.

Companies operating a DBPS therefore face uncertainties surrounding the point in time valuations of both the scheme’s assets and liabilities, the future returns available on the assets and the resulting annual cash flows which may need to be paid into the scheme in order to support the forecast liabilities. It is perhaps not surprising, therefore, that Blake et al. (2008) emphasise the uncertainty in DBPSs, suggesting that “the defined benefit pension asset or liability that appears in a balance sheet is a hypothetical construct; an unreal number” (p.4).

Accounting regulators in the UK, the USA and the International Accounting Standards Board (IASB) have all taken the view that balance sheet recognition of the funded status of a pension fund should be mandatory, and measured as the difference between the fair value of the fund’s assets and the related pension obligations. Pension risk arises from a DBPS and is highlighted when the fund is in deficit, the primary causes of which include:

- Market-driven asset price volatility.
- A mismatch in the duration of the assets relative to the liabilities.
- Increased life expectancy of individuals leading to increased liabilities.

There is a potential cash flow risk to the company if it has to provide funds to reduce any such deficit in the DBPS.

The IASB and the United States Financial Accounting Standards Board (‘FASB’) are committed to a long-term review of the financial
reporting of pensions and in April 2010 the IASB published an exposure draft on proposed amendments to IAS 19 in respect of defined benefit plans (IASB, 2010, hereafter the ‘ED’).

The research reported here addresses one specific element of the proposals contained in the ED: those relating to the disclosure of the risk arising from defined benefit plans.

The subject can be seen in the context of wider discussions on risk disclosures. Solmon et al. (2000) found that institutional investors wanted to understand more about companies’ risks. The Institute of Chartered Accountants in England and Wales (2002) recommended that companies disclose the risks involved in implementing their strategy, the actions they are taking to manage these risks and how they measure this.
2. Research approach

The research analysed the annual reports and financial statements published for 2009, for companies listed in the FTSE 100 on 31 December 2009. Eighty-eight companies were found to operate a DBPS for their employees, of which 80 have a UK based scheme.

Both narrative and quantitative data relating to DBPSs were collected and analysed from each annual report, in addition to core financial statistics from the consolidated accounts. All the quantitative data was then entered onto a spreadsheet in order to facilitate the statistical analysis. All data entries were fully checked for accuracy against the original material by a second member of the research team.
3. Research findings

Narrative disclosures

In June 2009 the IASB issued an exposure draft on the Management Commentary. Alternative names given to the general content of the management commentary include management’s discussion and analysis (MD&A), operating and financial review (OFR), or management’s report. Whilst the IASB has no plans to publish an accounting standard on the management commentary, its aim in issuing the exposure draft was to suggest a framework for the preparation of a management commentary that provides readers with historical and prospective commentary to aid understanding of the context within which to interpret the financial position, performance and cash flows of an entity. The final document is thus intended to be best practice guidance and the IASB is suggesting that companies disclose their principal risk exposures, their plans and strategies for bearing or mitigating those risks, and the effectiveness of their risk management strategies.

For many of the companies, relevant narrative material was found in a number of different locations even within the single annual report. AstraZeneca, for example, has general information about its pension schemes including some information on accounting policy, within a section on critical accounting policies and estimates that forms part of the financial review. Additionally, the Directors’ Report lists principal risks and uncertainties, including a short paragraph on pension risk which cross references the relevant note to the financial statements, where further detail can be found. It was also noted that the extent of detail contained in the narrative varied widely from company to company, although it is recognised that individual scheme or company circumstances may explain some of this variation.

Some companies such as Reed Elsevier and BT already include their funding obligations for one or more DBPSs as one of their principal risks. Such risks are seen as significant because of the sensitivity of the assets and obligations associated with DBPSs to changes in the market values
of assets and the market related assumptions used to value scheme liabilities.

In addition to simply acknowledging the risk of pension fund provision within the OFR, MD&A or management commentary, some companies also now include some narrative information about both the scale and nature of their pension risks and/or how they are managed (Lane Clark & Peacock, 2009). In the absence of direct guidance on what to include, companies are developing their own practices, and the result is a variety of alternative approaches. The examples below (Figures 1-3) are included as they are particularly helpful in enabling the reader to understand at least one aspect of the company’s approach to risk:

- AstraZeneca comments about its risk appetite;
- Rolls Royce includes information on how its investments have been chosen to match the liabilities; and
- Resolution describes the risks and how they are managed.

All three categories of information are potentially useful, but sadly no current disclosures encompass all of these issues.

**Figure 1 Extract from financial statements of AstraZeneca**

The Group has a fundamental belief in funding the benefits it promises to employees.

The pension funds are not part of the Group’s core business. Pension funds may take rewarded risks with the investments underlying the funding, subject to adequate controls and the expected rewards out weighing the risks. The Group recognises that deciding to hold certain investments may cause volatility in the funding position. The Group would not wish to amend its contribution level for relatively small deviations from its preferred funding level, because it is expected that there will be short-term volatility, but it is prepared to react appropriately to more significant deviations.
The revised investment strategies are designed to hedge the risks from interest rates and inflation on an economic basis. A reduction of 0.25 percent in the discount rates would increase the obligations of the principal UK defined benefit schemes by approximately £243 million. An equivalent movement in interest rates would increase the fair value of the assets by approximately £290 million. The difference arises largely due to differences in the methods used to value the obligations for accounting and economic purposes. On an economic basis the correlation is in excess of 80 percent.

The Trustee has established a separate Risk and Investment Subcommittee (RISC) which is responsible for assisting the Trustee in investment policy and monitoring the Scheme’s investments. The RISC seeks advice from the investment adviser and believes it has sufficient skills and expertise to make investment decisions based on this advice...

The Trustee has set performance and risk targets for the Investment Manager on non-insured assets...

The fund adopted a Liability-Driven Investment (LDI) strategy in 2003 to reduce exposure to interest rate and inflation risk. This strategy has been carried out more recently through investing in a pooled LDI product managed by F&C, and through investing in an insured bulk annuity buy-in contract.

F&C’s LDI product is designed to hedge the Fund against inflation and interest rate movements, based on the liability to pay the future benefits promised to members, and to provide an investment return similar to cash, benchmarked against three months’ LIBOR.
Market risk

The Trustee with the full support of the Group has agreed and implemented a strategic asset allocation to return seeking assets of 25% of the non-insured fund.

Longevity risk

The Trustee, with the full support and involvement of the Group, invested 37% of the Scheme’s assets in a bulk annuity contract with Aviva Annuity UK Limited as a buy-in investment in 2008 with a further 4% in 2009. The contract between the Trustee and Aviva reassures benefits for pensioners in payment up to 1 July 2009 and includes a facility for the Trustee to invest further tranches of benefits up to 30 June 2013.

Currency risk

From December 2009 the Trustee has invested its return seeking assets through two new managers, Aberdeen Unit Trust Managers Limited and Walter Scott & Partners Limited in their global equity pooled funds. These managers take account of currency risks within their pooled fund vehicle.

Operational risk

The Investment Managers do not directly hold the Scheme’s securities for non-insured assets. These non-insured assets are held in separate accounts with custodians, as appointed by the Investment Manager for pooled vehicles or by the Trustee for non-pooled investments. Special arrangements noted above apply to insured assets under the Aviva contract.
The provision of commentary outside the annual report is also becoming increasingly common, particularly if changing events mean that pension risks alter mid-year. For example, in a letter to staff in June 2010, John Varley, the Chief Executive of Barclays, unveiled plans to shut its final salary pension scheme to existing members. Whilst affected members will retain benefits already accrued, future contributions will be paid into a defined contribution scheme, saving the company around £150 million in annual servicing costs. The justification given by Varley was that the scheme had a £2.2 billion deficit in September 2009 that “is likely to have worsened”. The challenges of trying to stem rising pension scheme deficits has led to the suggestion by independent pensions consultant John Ralfe that “we have entered the third phase in the long death of defined-benefit pension schemes” (Telegraph, 2009).

In relation to narrative disclosures on pension risks, we conclude that:

- Such information can be extremely useful, but this is not always the case, particularly if they are company specific and therefore not comparable.
- The variability and multiple locations within a report for narrative information do not help comparability.
- The usefulness of narrative disclosures may be impaired, unless accompanied by a range of quantitative disclosures as discussed below.

Quantitative disclosures

The majority of the DBPSs are funded i.e. the company has set aside assets from its own and (usually) employees’ contributions in order to meet the liabilities. Unfunded liabilities are common in countries such as Germany where there is no statutory funding requirement and pensions are paid directly by the company as they fall due. In cases where a company reports unfunded obligations, they are small in size relative to the funded elements. The 2009 annual report for Thomas Cook plc
reports, for example, that it has funded pension obligations amounting to £784.1 million plus unfunded obligations of £208.9 million. Similarly, Cable and Wireless plc report funded obligations of £1,964 million as at 31st March 2009, compared with unfunded liabilities of £24 million.

The figures reported in the companies’ financial statements reveal an aggregate deficit for the FTSE 100 DBPs of £53.5 billion, made up of liabilities of £409.8 billion offset by assets of £356.3 billion. The survey findings mirror those of the actuarial consultants Lane Clarke Peacock, who estimated the net aggregate liabilities for the FTSE 100 at £96 billion in mid 2009, reducing to £51 billion by the end of June 2010 (Lane Clark & Peacock, 2009 & 2010).

Table 1 compares the size of assets, liabilities and the funding ratio across individual company schemes in the FTSE 100. The table reveals widespread variation in both the size of the schemes and the extent to which they are fully funded across different companies.

**Table 1 Scheme-by-scheme data**

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pension assets (£m)</td>
<td>8.0</td>
<td>36,802</td>
</tr>
<tr>
<td>Funded pension liabilities (£m)</td>
<td>10.0</td>
<td>36,929</td>
</tr>
<tr>
<td>Total pension liabilities (£m)</td>
<td>0.6</td>
<td>38,841</td>
</tr>
<tr>
<td>Funding ratio</td>
<td>44.6%</td>
<td>116.9%</td>
</tr>
</tbody>
</table>

Note: Funding ratio = pension assets × 100%/funded liabilities.

The funding ratio is a useful tool for comparison of the risks that may be faced by companies in respect of their pension schemes. A fund with high liabilities which are well funded via a large asset base offers a lower level of risk than an equivalent fund which has a substantial shortfall of assets relative to liabilities.

Companies in the lowest quartile in terms of the value of their liabilities include ICAP and Aggreko. Companies in the highest quartile include BT, BAE Systems and Royal Dutch Shell.
Amongst the company schemes with relatively low funding ratios are:

- Thomas Cook, which in their annual report for 2009 report total funded liabilities of £784.1 million against assets valued at £621.9 million, resulting in a funding ratio of 79.3%.
- Sage (annual report 2009), with funded obligations of £31.7 million against assets of £19.9 million giving a funding ratio of 62.7%.

Companies in the highest quartile in terms of funding ratios include some with substantial surpluses, including Prudential, with assets of £5,512 million and funded liabilities of £4,951 million i.e. a surplus of £561 million and a funding ratio of 111.3%:

**Differences in actuarial assumptions**

Under IAS 19, a DBPS’s liability value is determined by four key assumptions which are selected by management on the basis of expert actuarial advice. The assumptions are described in IAS 19 (IASB, 2004, para.73) as “an entity’s best estimates of the variables that will determine the ultimate cost of providing post-employment benefits” and they relate to:

- future price inflation rates;
- salary inflation;
- mortality rates/life expectancy; and
- the discount rate used to compute the present value of the liabilities.

IAS 19 requires the disclosure of the financial assumptions, but not the mortality rate, although the latter is commonly disclosed on the grounds of materiality. Given its dependence upon such financial and demographic assumptions, the valuation process is challenging and made more so because the obligations are long-term; consequently, small changes in assumptions can lead to large changes in estimates (Glaum,
There is also research evidence that companies use the discretion available to them to manipulate the assumptions to their advantage. In the UK, for example, companies with weaker pension schemes have tended to choose more optimistic assumptions (lower price inflation and salary growth and higher discount rate: see the review by Glaum, 2009; and also Billings et al., 2009).

The assumptions will vary depending on the balance sheet date and the country covered by the scheme. To aid comparability, the analysis reported here is restricted to the 45 companies with a balance sheet date of 31 December 2009 and to schemes that cover UK employees. The findings are summarised in Table 2.

**Table 2  Range of assumptions for companies with a UK scheme, balance sheet date 31 December**

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Lower quartile</th>
<th>Median</th>
<th>Upper quartile</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price inflation</td>
<td>3.1%</td>
<td>3.5%</td>
<td>3.6%</td>
<td>3.7%</td>
<td>3.9%</td>
</tr>
<tr>
<td>Salary growth</td>
<td>1.8%</td>
<td>4.1%</td>
<td>4.6%</td>
<td>5.2%</td>
<td>5.9%</td>
</tr>
<tr>
<td>Discount rate</td>
<td>5.5%</td>
<td>5.7%</td>
<td>5.7%</td>
<td>5.7%</td>
<td>6.0%</td>
</tr>
<tr>
<td>Life expectancy for current retirees*</td>
<td>24.0</td>
<td>26.1</td>
<td>27.3</td>
<td>27.7</td>
<td>29.4</td>
</tr>
<tr>
<td>Life expectancy for future retirees **</td>
<td>26.0</td>
<td>28.4</td>
<td>29.0</td>
<td>29.0</td>
<td>32.5</td>
</tr>
</tbody>
</table>

* The comparison is for males retiring at 60.
** The comparison is for males retiring at 60 in 20 years’ time.

**Price inflation**

The assumption about future price inflation is important for two reasons:

- Pension payments are commonly inflation-linked, although inflation adjustment may be capped under scheme rules.
• It is reasonable to assume that the rate of price inflation will influence the company’s assumed rate of salary inflation.

Inflation therefore increases the cost of both current and future pension obligations.

From Table 2, whilst the variation between the minimum and maximum inflation assumptions appears to be quite small in absolute terms (0.8%), the effect upon the liability valuation can be dramatic. Take, for example, a liability currently valued at £200 million that is expected to become payable in twenty years’ time. Assuming the lowest rate of 3.1% inflation (as is done by Reed Elsevier and Unilever) for example, the liability would rise to £368.3 million after 20 years, compared with £429.9 million at an inflation rate of 3.9%. In other words, selecting a lower inflation rate reduces the balance sheet value of the pension liability and therefore potentially improves the funding ratio. A lower inflation rate may be accompanied by a lower discount rate, although there can be times where the link becomes less close than normal.

The outcome is a ‘point in time estimation risk’ resulting in users of the financial statements finding it difficult, if not impossible, to compare the risk of changes in inflation rates on the size of the pension liabilities faced by different companies. The difficulty of comparing across companies is compounded further if variations in assumptions relating to salary growth are also taken into account.

**Salary growth**

Table 2 shows salary growth assumptions ranging from 1.8% per year to 5.9% per year, although it remains a matter for debate as to whether or not it is right to include future salary growth in the estimation of the pension liability (PAAinE 2008); is there a constructive obligation to increase pensions if salaries are increased? The ED refers to the suggestion that salary growth should not be included, but it is currently common practice to do so. For the sake of completeness, therefore, Table 2 also shows the variations in salary growth assumptions across the 45 companies. This indicates some significant differences.
Rising salaries will often result in higher future pension payments resulting in a higher present value of liabilities. If reporting practice shifts towards the exclusion of salary growth from the assumptions, it may therefore result in the pension liabilities failing to reflect the burden arising on those companies facing the prospect of higher than average salary increases.

**Discount rate**

IAS 19 requires the use of high grade corporate bond yields (commonly interpreted as AA grade) as the rate of discount in computing the present value of future pension liabilities. Table 2 shows that there are still, however, variations in the discount rate from company to company, although the range is narrower than for the other assumptions. The table shows a range of 0.5%, which may seem small, but in practice can have a significant impact on the present value of the pension liabilities. Discounting over twenty years for example, a liability of £500 million falls by almost 9% from £171 million when discounted at the lowest rate of 5.5% to a present value of £156 million when discounted at the higher rate of 6%.

Such shifts in liability values arise despite the fact that average bond yields are completely outside the control of any individual company. This situation worsened when reported liabilities fell as a result of the increase in corporate bond yields in the global financial crisis, a situation described by the UK Pensions Regulator, David Norgrove, as bizarre (Cohen, 2008) and Elwin (2009) similarly described it as absolute nonsense.

To alleviate the sensitivity of pension liability valuations to shifts in market sentiment, PAAinE (2008) put forward arguments in favour of discounting liabilities using a risk-free rate, but this continues to be a matter of great debate within both the academic and practitioner literature.
Mortality assumptions

The disclosure of mortality assumptions is not explicitly mandatory under either IAS 19 or FRS 17, but both standards may be interpreted as requiring their disclosure on the grounds that they have a material impact on the valuation of liabilities. Mortality rate predictions are essential for estimating future pension payments - the longer pensioners live, the greater such liabilities will be. It is estimated that a one year increase in employees’ life expectancy will increase pension liabilities by 3-4% (Coughlan et al., 2007; Blake et al., 2008). Companies rely on actuarial advisers in determining appropriate mortality rates, and commonly use a standard set of tables.

Mortality assumptions are not straightforward to disclose. Most companies reported the mortality tables used as the basis for their assumptions; for the UK this was typically a table issued by the Continuous Mortality Investigation (CMI) of the UK actuarial profession. The mortality rates were adjusted to reflect the characteristics of scheme members, and included some assumption regarding future reductions in mortality rates. In summary it was found that:

• Seventy-six of the 88 companies partially or fully adopted the disclosure recommended in the Accounting Standard Board’s 2007 reporting statement (ASB, 2007) i.e. the expectation of life for a male and a female member retiring on the balance sheet date and of members retiring at some future date. Partial adopters failed to include estimates for female life expectancy. In most cases the assumptions were simply and clearly presented, as illustrated below in the extract from Morrisons Annual Report (p.68).
The average life expectancy in years of a member who reaches normal retirement age of 65 and is currently aged 45 is as follows:

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2008</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>23.5</td>
<td>23.5</td>
<td>19.9</td>
</tr>
<tr>
<td>Female</td>
<td>25.8</td>
<td>25.8</td>
<td>22.8</td>
</tr>
</tbody>
</table>

The average life expectancy in years of a member retiring at the age of 65 at balance sheet date is as follows:

<table>
<thead>
<tr>
<th></th>
<th>2009</th>
<th>2008</th>
<th>2007</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>22.2</td>
<td>22.2</td>
<td>19.9</td>
</tr>
<tr>
<td>Female</td>
<td>24.7</td>
<td>24.7</td>
<td>22.8</td>
</tr>
</tbody>
</table>

• As in the example above, 56 companies also disclosed the expectation of life at retirement age for members retiring at some future date.

• Amongst the companies operating schemes in different countries, some companies gave a weighted average of life expectancy assumptions, or a range of the figures used, but this did not facilitate comparability.

• A number of companies had separate disclosures for each country in which the pension liabilities are significant – this is a useful additional disclosure.

• Unhelpful reporting practice included:
  » one case, where the retirement age was not given, so that the information was effectively meaningless; and
  » two cases where one figure covered both males and females.
• One company took an alternative approach and disclosed the expectation of life for pensioners aged 70 at the balance sheet date. If this is around the average age of pensioners receiving pensions, then that is helpful and arguably more relevant but as the practice is uncommon it does not aid comparability.

Given the potential impact of changes in life expectancy upon the liabilities, it was worrying to note that:

• There was significant variation in the time frame being used to give life expectation forecasts for scheme members retiring in the future – anything from 5 to 25 years in the future (20 years was the most common).

• Ten companies failed to say how far in the future their figures related to, making them nearly impossible to interpret.

Reporting the sensitivity of pension scheme risks using quantitative disclosures

Accounting standard-setters have been alert to the benefit of disclosure of information about financial risks but the rules on reporting of pension scheme risks remain somewhat limited.

IAS 1 requires companies to disclose information about the assumptions they make about the future and other major sources of estimation uncertainty, and the standard refers specifically to pension scheme obligations as involving estimation uncertainty.

IAS 19 currently has very limited requirements on disclosure of pension risks. On the asset side, paragraph 120(j) requires companies to disclose the value, or percentage, of pension fund assets in each major category, including but not limited to equities, debt instruments, property and other assets. As already noted, the investment return on assets is important in enabling companies to meet their liabilities but that return may be lower than anticipated. Changes in the asset mix may therefore impact upon the anticipated capacity of a scheme to fulfil its
future payment obligations, but IAS 19 does not require any disclosure of how pension scheme assets are managed and monitored.

IAS 19 similarly includes no requirement for companies to show the impact of changes in the assumptions used to determine pension liabilities. For UK companies, however, the ASB’s Reporting Statement (2007) indicates that to follow best practice:

*The financial statements should disclose a sensitivity analysis for the principal assumptions used to measure the scheme liabilities, showing how the measurement of scheme liabilities would have been affected by changes in the relevant assumption that were reasonably possible at the balance sheet date. For the purposes of this disclosure, all other assumptions should be held constant.*

The statement included illustrative examples such as “a 0.5% increase/decrease in the discount rate would increase/decrease the liabilities by 9.5%”. Similar examples were given relating to price inflation and salary growth and the effect of a one year increase in life expectancy. The ED thus appears to build on the suggestions made by the ASB in that it proposes that companies should be required to disclose the effect of a reasonably possible change to each significant actuarial assumption on the value of pension liabilities and service cost.

**Which, if any, sensitivities are reported?**

Two key questions posed in the research were:

- Do FTSE 100 companies currently disclose the sensitivity of specific income statement and/or balance sheet items to changes in risk variables?
- What types and levels of sensitivity are currently disclosed?

The findings of this analysis are summarised in Table 3.
Table 3 Number of companies disclosing sensitivities

<table>
<thead>
<tr>
<th>Number of sensitivities</th>
<th>Liabilities</th>
<th>Income statement</th>
<th>Assets</th>
<th>Equity</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>34</td>
<td>69</td>
<td>82</td>
<td>87</td>
</tr>
<tr>
<td>1</td>
<td>7</td>
<td>4</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>2</td>
<td>14</td>
<td>2</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>4</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>5</td>
<td>4</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>3</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>&gt;=1</td>
<td>54</td>
<td>19</td>
<td>6</td>
<td>1</td>
</tr>
</tbody>
</table>

In summary:

- Fifty-four companies included the sensitivity of their liabilities to a change in at least one risk variable.
- Nineteen companies also disclosed the sensitivity of an item in the income statement to risk variables. For example, some companies indicated how the annual service cost would be affected by a different assumption regarding salary growth.
- Six companies indicated the sensitivity of the value of the scheme assets to one or more risk variables or changes in economic conditions. For example, Smiths Group report that a 0.25% rise in inflation would result in an increase in the value of scheme assets of £7 million, offset by a £66.8 million rise in the scheme’s liabilities. Including both the asset and liability impacts allows assessment of the net impact upon the company of a change in the variable.
- One company (Diageo) disclosed the sensitivity of the company’s equity to changes in risk variables, taking into account changes in assets and liabilities, and the associated change in tax.
Using the ASB’s 2007 Reporting Statement as a template for which sensitivities should be disclosed, Table 4 shows the breakdown of sensitivity disclosures in terms of both the risk variable and the size of the DBPS. Small schemes are defined as those where the pension liabilities are less than the median.

**Table 4 Number of companies disclosing sensitivities according to risk variable**

<table>
<thead>
<tr>
<th>Risk variable</th>
<th>All disclosers</th>
<th>Small schemes</th>
<th>Large schemes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price inflation</td>
<td>28</td>
<td>11</td>
<td>17</td>
</tr>
<tr>
<td>Salary growth</td>
<td>18</td>
<td>6</td>
<td>12</td>
</tr>
<tr>
<td>Discount rate</td>
<td>52</td>
<td>21</td>
<td>31</td>
</tr>
<tr>
<td>Expectation of life</td>
<td>43</td>
<td>18</td>
<td>25</td>
</tr>
</tbody>
</table>

There is clearly a high degree of variation in the extent of sensitivity disclosures. The discount rate is the only risk variable where a majority of companies disclosed the sensitivity, and the extent of disclosure is greater for large rather than for small schemes.

Table 5 shows that only ten of the 88 companies included all four sensitivities, and 35 companies disclosed none of them. Again, the distinction between large and small schemes is apparent.

**Table 5 Number of companies disclosing sensitivities according to size of pension liabilities**

<table>
<thead>
<tr>
<th>No. of sensitivities</th>
<th>&lt; £75m</th>
<th>£75m-£500m</th>
<th>£500m-£1000m</th>
<th>£1000m-£2000m</th>
<th>£2000m-£5000m</th>
<th>&gt;£5000m</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>11</td>
<td>5</td>
<td>5</td>
<td>9</td>
<td>3</td>
<td>1</td>
<td>35*</td>
</tr>
<tr>
<td>1</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>7</td>
</tr>
<tr>
<td>2</td>
<td>0</td>
<td>2</td>
<td>1</td>
<td>7</td>
<td>0</td>
<td>4</td>
<td>14</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>10</td>
<td>22</td>
</tr>
<tr>
<td>4</td>
<td>0</td>
<td>1</td>
<td>2</td>
<td>1</td>
<td>2</td>
<td>4</td>
<td>10</td>
</tr>
<tr>
<td>Total</td>
<td>12</td>
<td>12</td>
<td>11</td>
<td>22</td>
<td>10</td>
<td>20</td>
<td>88*</td>
</tr>
</tbody>
</table>

* Including one company where the pension liabilities are not stated.
A small minority of companies chose to provide additional disclosures about the sensitivity of liabilities to other factors, not suggested by the ASB (2007), as shown in Table 6.

**Table 6 Number of companies disclosing sensitivities of liabilities using additional risk variables**

<table>
<thead>
<tr>
<th>Risk variable</th>
<th>No. of disclosers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rate of increase of pensions in payment</td>
<td>6</td>
</tr>
<tr>
<td>Rate of increase in deferred pensions</td>
<td>3</td>
</tr>
<tr>
<td>Real discount rate</td>
<td>2</td>
</tr>
<tr>
<td>Rate of increase of pensions in payment and in deferred pensions</td>
<td>2</td>
</tr>
<tr>
<td>Price inflation and salary growth</td>
<td>1</td>
</tr>
<tr>
<td>Minimum annual reduction in mortality rates</td>
<td>1</td>
</tr>
<tr>
<td>Market value of assets</td>
<td>1</td>
</tr>
</tbody>
</table>

Interpretation of this additional information can be difficult. For example, obligations to increase pensions are likely to be scheme specific and so quantitative disclosures really need supplementary explanatory narrative disclosures to become meaningful. Furthermore, it is not clear how sensitivity to increased payments also interacts with the sensitivity to the price inflation assumption.

**What size of changes in risk variables are reported?**

The ASB’s reporting statement recommended disclosures of the impact of changes of 0.5 percentage points for the financial variables and one year for the expectation of life. Table 7 shows that, in practice, many companies use a variation of less than 0.5% for the financial variables, and a few use more.
Table 7  Number of companies using specified magnitude of change in risk variables

<table>
<thead>
<tr>
<th>Risk variable</th>
<th>0.10</th>
<th>0.20</th>
<th>0.25</th>
<th>0.50</th>
<th>1.00</th>
<th>All</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price inflation</td>
<td>7</td>
<td>2</td>
<td>9</td>
<td>9</td>
<td>1</td>
<td>28</td>
</tr>
<tr>
<td>Salary growth</td>
<td>4</td>
<td>0</td>
<td>5</td>
<td>7</td>
<td>1</td>
<td>17*</td>
</tr>
<tr>
<td>Discount rate</td>
<td>17</td>
<td>2</td>
<td>15</td>
<td>14</td>
<td>4</td>
<td>52</td>
</tr>
</tbody>
</table>

* In addition, one company had a nil sensitivity.

Not surprisingly, when small changes of 0.1% were used, the resulting impact on the pension liabilities was very small. For example, Land Securities report a 0.1% change in the discount rate leading to a £2 million shift in the liability. Similarly, Johnson Matthey report a £3 million rise in the liability as a result of a 0.1% rise in the rate of salary growth. The small figures involved raise questions about the extent of materiality of such disclosures.

In relation to potential changes in life expectancy, 42 of the 43 companies disclosing this sensitivity used the one year variation, with one choosing instead to use 0.1 years. As illustrated below, the impact of a one year increase varies from scheme to scheme, reflecting different age and gender profiles of members. As such the monetary value of changes in life expectancy needs to be analysed in relation to the overall figure for the liability, or the net surplus or deficit of the scheme.

Figure 5  Impact of one year increase in life expectancy on pension liability

**British Telecom: £1.3bn increase.** This equals 3.9% of the present value of the liability.

**Smiths Group: £87.9m increase.** This equals 2.8% of the present value of the liability.
Upside or downside risk?

The best practice guidelines from the ASB recommend the inclusion of the effect of an upward/downward change in a financial risk variable eg. a 0.5% increase/decrease in the price inflation assumption leads to a 9.5% increase/decrease in the liabilities. Some companies reported the effect in just one direction, though several showed the effect of both an increase and decrease i.e. providing additional information. One company also confirmed that the results were not sensitive to salary growth. Table 8 summarises the results, also covering the expectation of life, where the guidelines illustrate the effect of an increase only.

**Table 8 Number of companies disclosing upside and/or downside risk in the Reporting Statement sensitivities**

<table>
<thead>
<tr>
<th>Risk variable</th>
<th>Decrease</th>
<th>Increase</th>
<th>Increase/decrease</th>
<th>Increase and decrease</th>
<th>Nil sensitivity</th>
<th>All disclosers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price inflation</td>
<td>2</td>
<td>8</td>
<td>11</td>
<td>7</td>
<td>0</td>
<td>28</td>
</tr>
<tr>
<td>Salary growth</td>
<td>1</td>
<td>5</td>
<td>6</td>
<td>5</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Discount rate</td>
<td>7</td>
<td>13</td>
<td>16</td>
<td>16</td>
<td>0</td>
<td>52</td>
</tr>
<tr>
<td>Expectation of life</td>
<td>1</td>
<td>27</td>
<td>7</td>
<td>8</td>
<td>0</td>
<td>43</td>
</tr>
</tbody>
</table>

For small changes in the risk variables the reported relationship between the risk variable and the liabilities is almost linear but this is not the case as the scale of change increases.

**Examples:**

Alliance Trust: 0.1% rise in discount rate reduces liabilities by 2.2%
0.1% fall in discount rate increases liabilities by 2.25%

BP: 1% rise in discount rate reduces liabilities by $4,778m
1% fall in discount rate increases liabilities by $6,084m
Whilst the ASB reporting statement illustrated the effect of changes in the risk variables on the liabilities in percentage terms, about 70% of the 88 companies surveyed chose to report the sensitivities in nominal terms.

How risky are schemes in practice?

At any single point in time, the risk of a DBPS may be assessed purely in terms of the size of the liabilities relative to the assets, so that companies operating schemes which have high levels of deficit are seen as facing greater risk. This view is, however, a little simplistic, because of the potential for changes in the values of the financial and mortality variables. Consequently, the risk of a scheme may be more usefully evaluated by evaluating the sensitivity to such variables on a common basis.

Table 9 shows the percentage impact upon the DBPS liabilities of the companies in our sample, using a ‘standard’ basis, illustrated in the ASB (2007) reporting statement i.e. the change in liabilities arising from a 0.5% change in financial variables or a one year increase in the expectation of life. We assume that the sensitivities are linear in the relevant range.

<table>
<thead>
<tr>
<th>Risk variable</th>
<th>Liability sensitivity on Reporting Statement ‘standard’ basis</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Minimum</td>
</tr>
<tr>
<td>Price inflation (0.5%)</td>
<td>1.9%</td>
</tr>
<tr>
<td>Salary growth (0.5%)</td>
<td>0.0%</td>
</tr>
<tr>
<td>Discount rate (0.5%)</td>
<td>5.4%</td>
</tr>
<tr>
<td>Expectation of life (1 year)</td>
<td>1.8%</td>
</tr>
</tbody>
</table>

The differences between companies are significant, and indicate that there is merit in companies disclosing their pension risks.

The risk to a company from changes in assumptions may not, however, affect only the size of the pension liability. Pension liabilities are a form of corporate debt, and so changed assumptions may be
expected to impact upon the level of corporate liabilities and the book value of a company’s equity (i.e. net assets). Assuming a 0.1% reduction in the discount rate, the survey results revealed relatively modest levels of risk in this regard. The rise in company liabilities was estimated to be in the range of 0% for the lower quartile to 0.6% for the higher quartile. The resulting decrease in company equity ranged from 0.1% to 1.4%. In other words, small changes in the discount rate have only a small impact on the balance sheet of most companies. This finding may influence the volume of disclosure that is thought appropriate.

What appears to be a much more significant risk to companies is the potential effect of a greater magnitude of change in interest rates. Assuming interest rates on both government and corporate bonds fall by 0.5 percentage points, the liabilities will increase in value, but the bond component within the fund’s assets is also interest rate sensitive. In the absence of information about the duration of the bonds that are held, we estimated (on the basis of typical bond durations) that the resulting increase in bond value is 5%.

Table 10 shows the results, covering the 81 companies where the value of bond assets is disclosed. Where the interest-sensitivity of liabilities is not disclosed, it is assumed that the average sensitivity applies. A recent report by Pension Capital Strategies (2010) showed that six FTSE 100 companies had over 80% of their pension assets allocated to bonds, but there were still ten companies with bond allocations of below 30%.

The table expresses the net effect of changes in pension assets and liabilities as a percentage change in the company’s total liabilities and equity.

Table 10 Effect of a 0.5 percentage point reduction in interest rates

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Lower quartile</th>
<th>Median</th>
<th>Upper quartile</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage increase in company liabilities</td>
<td>0.0</td>
<td>0.2</td>
<td>1.2</td>
<td>2.5</td>
<td>14.3</td>
</tr>
<tr>
<td>Percentage decrease in company equity</td>
<td>0.0</td>
<td>0.4</td>
<td>1.9</td>
<td>4.9</td>
<td>787.9</td>
</tr>
</tbody>
</table>
Table 10 clearly shows that interest rate movements can hugely affect the book value of equity for a very small number of companies. However, the overall results do not indicate accurately the impact of interest rate changes because many schemes have other assets such as derivatives or specific liability-driven investment portfolios. Their interest-sensitivity is unknown and hence ignored in the calculations reported in Table 10.

As indicated above, many pension funds retain significant proportions of assets in the form of equities, and so Table 11 shows the effect of a 20% drop in the value of equities on a company’s total liabilities and company equity. The information is derived from 81 firms where the value of equity investments is disclosed, without taking into account any offset from changes in the value of derivatives, on which no information was available.

**Table 11 Effect of a 20% fall in the value of equities**

<table>
<thead>
<tr>
<th></th>
<th>Minimum</th>
<th>Lower quartile</th>
<th>Median</th>
<th>Upper quartile</th>
<th>Maximum</th>
</tr>
</thead>
<tbody>
<tr>
<td>Percentage increase in company liabilities</td>
<td>0%</td>
<td>0.2%</td>
<td>1.6%</td>
<td>3.8%</td>
<td>11.4%</td>
</tr>
<tr>
<td>Percentage decrease in company equity</td>
<td>0%</td>
<td>0.6%</td>
<td>2.5%</td>
<td>6.1%</td>
<td>775.4%</td>
</tr>
</tbody>
</table>

The average impact of on the value of a company’s equity is around 2-3% although like an interest rate change, the effect is much more marked in particular cases.

This confirms the view that pension risk disclosures are particularly significant in terms of the potential impact of changes upon the overall risks of the enterprise. The point in time estimation risk impacts largely upon the liability value. However, assets, while largely not leading to point in time estimation risk, do not match the liabilities precisely and still give rise to risks to the company.
Inter-company variations in disclosure levels

A number of studies have used content analysis to examine companies’ risk disclosures and attempt to link this with company characteristics (Linsley & Shrives, 2006; Linsley et al., 2006; Abraham and Cox, 2007; Woods, Humphrey & Dowd, 2009). Using a similar approach the researchers constructed an index which attributed a score of one for each disclosure of the sensitivities and asset categories shown, plus one if the duration information or buy-out cost was disclosed. The results revealed a range of values for the risk disclosure index from 0 to 19, with a mean of 6.93. The term ‘small scheme’ refers to a company with pension assets lower than the median; similarly for weak scheme (using funding ratio), low investment risk (using equities as a proportion of pension assets), and market to book ratio (using ratio of market capitalisation to book value of equity).

Table 12 Disclosures (average index score) by category of company

<table>
<thead>
<tr>
<th>Category</th>
<th>Number of companies</th>
<th>Risk disclosure index</th>
</tr>
</thead>
<tbody>
<tr>
<td>All schemes</td>
<td>88</td>
<td>6.93</td>
</tr>
<tr>
<td>Small schemes</td>
<td>44</td>
<td>5.52</td>
</tr>
<tr>
<td>Large schemes</td>
<td>44</td>
<td>8.34</td>
</tr>
<tr>
<td>Weak schemes</td>
<td>43</td>
<td>6.70</td>
</tr>
<tr>
<td>Strong schemes</td>
<td>42</td>
<td>7.64</td>
</tr>
<tr>
<td>Low investment risk</td>
<td>41</td>
<td>7.24</td>
</tr>
<tr>
<td>High investment risk</td>
<td>40</td>
<td>7.32</td>
</tr>
<tr>
<td>Low market/book ratio</td>
<td>44</td>
<td>6.63</td>
</tr>
<tr>
<td>High market/book ratio</td>
<td>44</td>
<td>7.23</td>
</tr>
</tbody>
</table>

The key findings revealed in Table 12 are as follows:
• The average disclosure score is low: 6.93 against a potential score of 19, suggesting there is scope for improvement.

• Disclosures increase with both scheme size and strength.

• Asset composition does not seem to affect levels of risk disclosure.

• The market to book ratio appears to be positively related to disclosure levels.

Table 13 shows similar results by sector, showing all sectors with five or more companies in the sample.

Table 13  Mean disclosures by sector

<table>
<thead>
<tr>
<th>Sector</th>
<th>Number of companies</th>
<th>Risk disclosure index</th>
</tr>
</thead>
<tbody>
<tr>
<td>Banks</td>
<td>5</td>
<td>12.0</td>
</tr>
<tr>
<td>Utilities</td>
<td>6</td>
<td>8.2</td>
</tr>
<tr>
<td>Retailers</td>
<td>8</td>
<td>7.5</td>
</tr>
<tr>
<td>Insurance</td>
<td>7</td>
<td>7.1</td>
</tr>
<tr>
<td>Travel &amp; leisure</td>
<td>7</td>
<td>5.9</td>
</tr>
<tr>
<td>Support services</td>
<td>7</td>
<td>5.4</td>
</tr>
<tr>
<td>Financial General</td>
<td>5</td>
<td>5.2</td>
</tr>
<tr>
<td>Real estate</td>
<td>6</td>
<td>4.7</td>
</tr>
<tr>
<td>Mining</td>
<td>7</td>
<td>3.9</td>
</tr>
</tbody>
</table>

Using multiple regression analysis and robust statistical testing to analyse the impact of different factors upon the disclosure index score more carefully, we found that the following factors result in higher levels of disclosure at the levels of statistical significance given in brackets:

• Size of pension scheme (1%)
• Financial strength of the pension scheme (5%)
• Banks (5%)
• Market to book value (10%)
In other words, if the pension scheme is large and well-funded and if the company is a bank then the quantitative risk disclosures tend to be greater.
4. Recommendations and policy implications

Helpful and less helpful practice

The research revealed the following quantitative risk disclosures to be helpful in understanding a company’s exposure to risk from pensions provision:

- Disclosure of the change in liabilities resulting from a different assumption regarding the expectation of life.
- Disclosure of the impact on the pension scheme assets of changes in risk variables.
- Disclosure of the effect of changes of risk variables on items in the income statement. This would be even more helpful if the statement was changed (as proposed by the IASB) so as to exclude use of the assumed investment return and if there was consistency regarding the item in the income statement to be used. The IASB proposal to use the service cost would lead to such consistency.

The following were less helpful:

- Sensitivities in relation to assumed increases in pensions in payment or in deferment. As already noted, these are difficult to interpret and it is suggested that such sensitivities be dropped.
- Disclosures of the impact of small magnitudes of change in risk variables.

The following risk disclosures could be changed to improve their usefulness:

- A sensitivity to the discount rate could instead be a sensitivity to interest rates. This would enable the impact on the value of both assets and liabilities to be shown, so that the reader understands the asset-liability management that is in place.
• Since price inflation and salary growth typically go together, a sensitivity to a change in both would be helpful.
• The disclosure of the sensitivity of liabilities to a change in the rate of real salary growth (i.e. after price inflation).

IASB Exposure Draft April 2010

The ED proposes changes in pension risk disclosures as summarised below:

Companies will be required to:

• include a narrative description of the extent of the risks to which the plan exposes the entity and of any concentrations of risk;
• disaggregate the fair value of plan assets;
• disclose the effect of a reasonably possible change to each significant actuarial assumption on the value of pension liabilities and service cost;
• disclose details of any asset-liability matching strategies; and
• provide a narrative discussion of factors that could cause contributions over the next five years to differ significantly from current service cost over the past year.

In light of the analysis outlined in this report it is observed that:

1. The ED makes no mention of disclosure of ‘value at risk’ or other probabilistic risk measures. This is consistent with the lack of take-up of such disclosure by UK companies, and criticism of probabilistic risk measures in the global financial crisis.

2. The IASB’s proposals may help readers understand the extent to which there is point in time estimation risk in those assets for which there is
no quoted market price. The proposals do not, however, require the provision of any additional detail on asset allocations, despite the fact that this may assist in understanding the level of risk exposure from different investment strategies. Further research is needed on the extent to which schemes hold such assets and the degree of associated estimation risk in those assets.

3. The IASB proposes that companies disclose the effect on pension liabilities and service cost of ‘reasonably possible’ changes in each significant actuarial assumption. This can be conveniently and helpfully done by sensitivity tests. The research findings demonstrate that UK companies have experience in such tests and a number have followed ASB best practice guidelines on the reporting of such sensitivities.

4. The ED proposes a narrative description of the extent of the risks to which the plan exposes the entity and of:

   a. any concentrations of risk;
   b. asset-liability matching strategies used by the plan, including the use of annuities and other techniques, such as longevity swaps, to manage longevity risk; and
   c. a narrative discussion of factors that could cause contributions over the next five years to differ significantly from current service cost over that period.

   We welcome the ED requirement as it embraces the reporting of the broader enterprise risk, or the risks to the entity arising out of its pension obligations, and how such risk is managed.

Recommendation

The ED wording may be more effective and succinct if it were rephrased as follows:
Companies are required to disclose the risks to the entity arising from its pension obligations and how the risks are being managed. Entities should include a narrative explanation and a sensitivity analysis showing what the pension assets, liabilities and service cost would be if there was a change in each of the main risk variables, where the change is one that is reasonably possible over the next five years. The narrative explanation should, where appropriate, cover risks to the entity’s cash flow plans in operating the business.

This is appropriate for the following reasons:

- It is consistent with the ASB Operating and Financial Review and the IASB proposed Management Commentary.
- Some UK companies have already voluntarily disclosed this type of information. For example, Rolls Royce includes sensitivity information as part of their narrative description. Other companies such as Smiths Group include information on the sensitivities of asset values to changes in risk variables.
- A survey by the Association of Corporate Treasurers and Mercer (2010) found that 49% of respondents would like to see greater disclosure of the sensitivity of results to assumptions.
- It focuses on the more significant enterprise risk rather than point in time estimation risk.
- A five year perspective on reasonably possible changes is appropriate, given the long duration of pension liabilities, and is consistent with the IASB recognition of the five year period in its proposals on disclosure of the risks to cash flows.
- Expected cash flows can be disrupted by unexpected demands for higher pension contributions and should be considered in the disclosure. Boyle (2009) indicated that companies should consider whether their disclosures about the likely future cash flows were adequate to convey a realistic view of the risks which they face.
Suggested sensitivity disclosures

The table of sensitivities suggested below (Table 14) is one in which the impact of standardised increases and decreases in risk variables are reported, and is consistent with the IASB’s view that it is “particularly important for disclosures to be clear, concise and relevant” (IAS 19: BC82(c)). A standardised format for disclosure is suggested because this would enhance decision usefulness on the basis that it would be easier for a private investor to interpret and facilitate investment analysis by eliminating the need to adjust to standard sensitivity levels.

Three risk variables - price inflation, salary growth, expectation of life – are specified because they mirror the ASB’s recommendations on best practice and also typically represent major risks. For similar reasons, the effect of both an increase and a decrease in the risk variables should be shown. Additionally, such a requirement matches that of the risk disclosures required under IFRS 7 and the research evidence indicates a willingness by companies to make such disclosures.

On the basis that price inflation and salary growth are linked economically, it is suggested that they are combined for disclosure purposes. The effect of real salary growth would still be shown separately. A change in inflation would be shown as affecting not only liabilities but also the assets where these include inflation-linked bonds or derivatives which depend on price inflation.

Table 14  Suggested table of sensitivities

<table>
<thead>
<tr>
<th>Risk variable</th>
<th>Change</th>
<th>Assets</th>
<th></th>
<th>Liabilities</th>
<th></th>
<th>Service cost</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td>Decrease</td>
<td>Increase</td>
<td>Decrease</td>
</tr>
<tr>
<td>Price inflation &amp; salary growth</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Real salary growth</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Interest rates</td>
<td>0.5%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Equity prices</td>
<td>20.0%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Expectation of life</td>
<td>1 year</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
In order to assess enterprise risk, the impact of changes in interest rates is disclosed in preference to a change in the discount rate. A 0.5% change in interest rates would be assumed to be a parallel shift in the yield curve applying to both government and corporate bonds, so that the change in the pension assets would depend on the investment mix, including any derivatives. The resulting 0.5% change in the discount rate would affect the value of liabilities.

A change in equity values is an important risk as scheme assets typically include a large proportion of equities, and may also include derivatives where the value depends on equity prices.

A 0.5% change in the financial risk variables is selected because this is reasonably possible over a period of five years, and more fairly reflects enterprise risk than a smaller change. As the sensitivities are generally reasonably linear over small ranges, the reader can readily approximate the effect of a smaller change (for example, the changes that may be appropriate for point in time estimation risk), although further research may be helpful in establishing a suitable magnitude of possible changes to be disclosed.

A one year change in the expectation of life is selected as this appears to be reasonably possible over a period of five years. The value of liabilities would change to reflect, where applicable, scheme rules that lead to lower pension amounts or a later retirement age where the expectation of life increases. The value of assets would reflect any insurance policies, longevity bonds or swaps.

If the table is completed in monetary amounts rather than percentages, it would be broadly consistent with UK companies’ practice, although percentage values would be more useful for comparability.

The advantages of the sensitivity analysis above are:

- It focuses on the main potential risks to companies.
- It enables readers to understand the significance of the risks and the extent to which they are being managed.
- While geared to enterprise risk, it also enables readers to understand the potential point in time estimation risk for the liabilities.
• It expresses succinctly the extent to which companies have adopted asset-liability management. While narrative disclosures will help supplement this, such disclosures may be vague and difficult to interpret; the sensitivity test disclosures should enable narrative disclosures to be shorter.

The table is put forward as an illustration of what appears appropriate in the context of large UK pension schemes. It may not be appropriate for small schemes that are not material to the company’s financial position. An abbreviated version that may be suitable for some companies would illustrate sensitivities to downside risks only. Further, the table may not be appropriate in other jurisdictions where scheme rules and financial circumstances may differ.

While the suggested sensitivity analysis may be unnecessary for a company where the pension liabilities are small, the analysis may nevertheless be helpful when presenting the results of the pension scheme itself, and may therefore be valuable for the scheme trustees although it is recognised that this is outside the scope of IASB’s review of IAS 19.

Additionally, the ASB may wish to consider giving guidance to UK companies on:

• a sensitivity analysis that appears appropriate in a UK context, taking into account the suggestion above; and
• how the provision in IAS 1 concerning the materiality of disclosures can be applied to small schemes.
References


Institute of Chartered Accountants in England and Wales (2002), *No surprises: working for better risk reporting*, Briefing note 06.02, London.


About the authors

Chris O’Brien is Director of the Centre for Risk and Insurance Studies (CRIS) at Nottingham University Business School. He is a Fellow of the Institute and Faculty of Actuaries, had 28 years’ experience of working in the life insurance industry, and was the appointed actuary for a leading life insurer. Having moved to Nottingham, he now teaches insurance and risk management, and has particular research interests in the management, regulation and risks of insurance companies; and pensions. He remains involved with committees and working parties of the actuarial profession.

Margaret Woods currently holds the position of Reader in Accounting at Aston Business School. In her early career Margaret worked as an economist but after establishing a successful manufacturing and retail business she qualified as an accountant and now specialises in teaching and research related to the management and reporting of business risks. She has published in a wide range of leading academic and practitioner journals and is Co-ordinator of the EU funded European Risk Research Network. Margaret is a Senior Research Associate of CRIS.

Mark Billings is Lecturer in Accounting and Risk, Nottingham University Business School, a member of the School’s Centre for Risk and Insurance Studies, and co-director of the University of Nottingham’s Centre for International Business History. He is a member of the Institute of Chartered Accountants in England and Wales and has previously worked in banking and business. His research interests are in financial reporting and accounting, business and financial history.
About SATER

The research project which culminated in this publication was funded by grant from The Scottish Accountancy Trust for Education & Research (SATER) – a registered Scottish Charity (SC034836). The SATER Trustees are pleased to have been able to support this project and hope that the results are of interest and relevance to a broad range of users.

SATER’s objective is to promote research into, and education of, accountancy, finance and management together with all subjects in any way related. In fulfilling its charitable objectives, it also seeks to provide public benefit by making grants for research projects which result in reliable evidence for use in the development of policy – by professional bodies, standard setters, regulators or Governments.

SATER is happy to receive grant applications for research projects from within and outwith the University sector, so long as these utilise sufficiently robust research methodology and the results from the project are likely to provide public benefit.

SATER considers a broad range of grant applications from anywhere in the world. These do not have to be solely for research projects but can be for other research or education initiatives within SATER’s specific subject areas, and must be expected to provide public benefit.

The Trustees would like to thank the ICAS Research Committee and Research Centre staff for their support, through liaison with the academic team and the provision of advice and assistance at various stages of the project. Their role in reviewing publication drafts and providing constructive comments to the authors has been invaluable in producing publications which are easily accessible and of interest to ICAS members, the interested public and policy makers.

Further details about SATER and the ICAS research programme can be found from the SATER and ICAS websites: scottishaccountancytrust.org.uk/research.html and icas.org.uk/research.

Nigel Macdonald
Chairman of SATER
September 2010
There is an increasing recognition that annual reports need to better disclose the risks facing a company. Provision of a defined benefit scheme poses one of these risks as companies take on uncertain long term obligations to make future pension payments. This report addresses the issue of how companies should report this risk so that stakeholders can understand a company’s exposure to pension risk.

As well as providing an analysis of current defined benefit pension scheme risk disclosures by FTSE 100 companies, the report provides examples of current practice and suggests best practice for the future. The authors also make recommendations to the International Accounting Standards Board and to the UK Accounting Standards Board.