

**The Actuarial Profession**  
making financial sense of the future

**Developing a Framework for the use of Discount Rates in Actuarial Work  
Current issues in Pensions, March 2011**



© 2010 The Actuarial Profession • www.actuaries.org.uk

---

## **Agenda**

---

- Introducing the Project**
- Summary of Research**
- Framework and Recommendations**
- Next Steps**

© 2010 The Actuarial Profession • www.actuaries.org.uk

---

## Introducing the Project

---

Charles Cowling, Chairman	(Pensions)
Robert Hails	(Management Board)
Andrew Smith	
Ralph Frankland	(Life assurance)
James Orr	(General insurance)
Malcolm Kemp	(Investment and ERM)
Ruth Loseby	(Research Manager)
Maria Lyons	(Research Assistant)

---

## Introducing the Project

---

- A survey of current practices
- A survey of existing research and debate
- Developing a common language for communicating discount rates and risk
- **Developing a common framework for the future where appropriate**
- Considering the impact of any changes

---

## Developing a common framework for the future

---

### Using the common language to:

- Develop/propose additional material for informing and influencing debate with regulators and standard setters
- Support actuaries to communicate impartially and effectively
- Consider options for reducing diversity of practice
- Consider extent to which risk might be included more explicitly and transparently in discount rates, recognising there are different purposes
  - Capital requirements
  - Accounting requirements
  - Shareholders
  - Management
- But still allowing for diversity of practice at a detailed level

© 2010 The Actuarial Profession • www.actuaries.org.uk

4

---

## Summary of Research

---

© 2010 The Actuarial Profession • www.actuaries.org.uk

5

---

## Summary of Research

---

- Current practice and existing research (Section 2)
- Matching calculations (Section 3)
- Budgeting calculations (Section 4)
- Comparison of matching and budgeting calculations (Appendices and part of Section 5)
  - The prototypical budgeting calculation
  - When objectivity is needed
  - A plea for transparency

© 2010 The Actuarial Profession • www.actuaries.org.uk

6

---

## Wide range of discount rates are / have been used in practice

---

- Prudent vs. realistic vs. smoothed
  - What is the purpose of the valuation?
  - Discount rates not the only elements in valuations
- Some not directly related to asset markets, e.g. Social Time Preference Rate
  - Based on comparisons of utility through time
- Utility considerations introduce debate on price vs. value
- Consistent valuation of asset and liability cash flows
- Classify between matching and budgeting – is choice binary?

© 2010 The Actuarial Profession • www.actuaries.org.uk

7

## Matching calculations (1) Rationale

- If asset and liability cash flows exactly match then would expect them to be given the same value
  - Law of One Price / Principle of No Arbitrage / Law of Contemporaneous Value Continuity
    - Nearly identical cash flows should have nearly identical values
- $$V(k(A+B)) = kV(A) + kV(B)$$
- If we decline to hold the matching asset portfolio, because there is one we think has a higher expected return
    - Does / should this reduce the value of the liabilities?

© 2010 The Actuarial Profession • www.actuaries.org.uk

8

## Matching calculations (2) Building blocks

- Include (see Section 3.2.1 and Appendix A)
  - Selection of instruments used to construct discount curves
  - Default risk, premiums for liquidity
  - Allowance for taxation and other expenses
  - More subjective than sometimes thought
- N.B.
  - (a) Discount rates are not the only elements of liability cash flows that may be 'matched'
  - (b) Often need clarity over what is 'risk-free'

© 2010 The Actuarial Profession • www.actuaries.org.uk

9

## Budgeting calculations - Rationale

- Measurement of liability approached from viewpoint of how the liability is going to be financed
  - Discount rates set by reference to expected returns from pre-determined investment strategy
- Usually greater embedded risk, and therefore greater level of uncertainty attaching to a plan achieving its objectives
  - Less precise, so may be expressed as a single rate rather than a curve
- Main current use: DB pension scheme funding 'valuations'
  - Also shareholder / enterprise appraisal (but N.B. MCEV)

© 2010 The Actuarial Profession • www.actuaries.org.uk

10

## Comparison of matching and budgeting calculations – the prototypical budgeting calculation

- In what circumstances would the two calculations produce:
  - The same answer
  - Different answers (and, if so, extent of objectivity in answers)
- Prototypical example of a 'budgeting', aka 'planning', exercise
  - Analyst expressing a view on whether a given asset or liability (or component) is under or over valued by the market
  - Advising *one* party to a transaction (the one following his/her advice)
  - To what extent should that party/others take credit in advance for this view being correct?

© 2010 The Actuarial Profession • www.actuaries.org.uk

11

---

## A plea for transparency

---

- Main difference appears to boil down to extent to which advance credit should be or is being taken of a favourable outcome from an investment view which might or might not come good
  - Magnitude of view; and
  - How much of the view is taken credit for in advance (i.e. level of prudence)
  - Two approaches should produce essentially same answer if 'expected' relates to matching / replicating portfolio
- How do any differences affect different interested parties?
- And is this clear to them?

---

## Conclusions and Recommendations

---

---

## Conclusions and Recommendations

---

### Discount rates developed within two alternative approaches

- “Matching” (i.e. “Market Consistent”) using discount rates consistent with current market value of assets that replicate the future economic behaviour of the liabilities
- “Budgeting” using discount rates consistent with the expected future returns on the assets held to provide for the cash flows as they fall due

### Practical constraints limit extent of pure “matching”

- But, market consistency principle is well established
- Deviations from perfect matching have consequences for risk and solvency of financial firm or organisation

---

## Applications of the Two Approaches

---

### “Matching”

- Transactions, avoiding arbitrage
- Adequacy of assets, knowing that these can secure liabilities in market if perfect matching can be achieved

### “Budgeting”

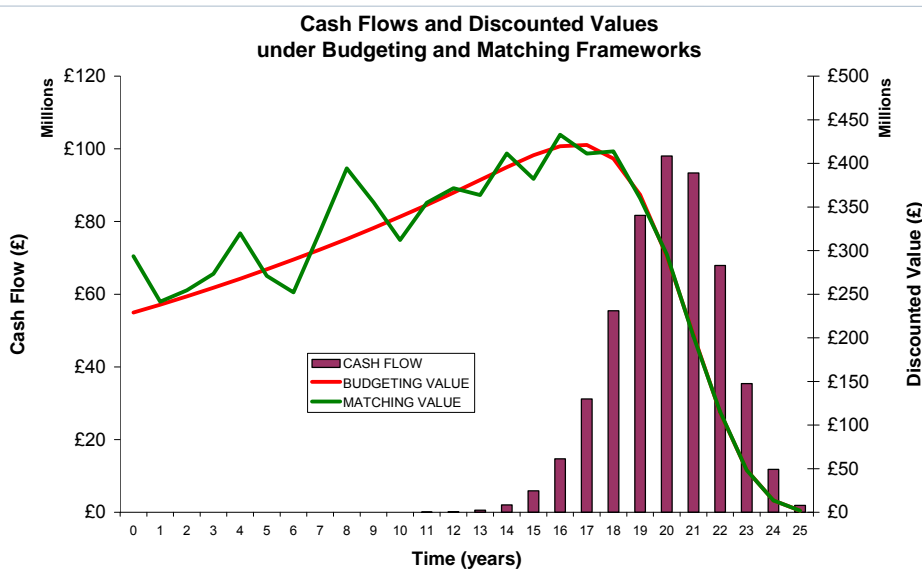
- Planning, based on assumed rates of return
- Funding, where market transactions or market comparisons are neither required nor anticipated



## Cash Flow Example – Framework Comparison

- Hypothetical cash flow stream
  - mean term ~20 years
  - smooth build-up from 12 years and diminution to 25 years
- Valuing under two frameworks
  - budgeting using long-term (risk-free) average of 4%
  - matching reflects consistent but variable yield-curve
- Gap between two discounted values varies over time
  - Budgeting Value  $\equiv$  funding required under long-term assumptions
  - Matching Value  $\equiv$  “buy-out” cost

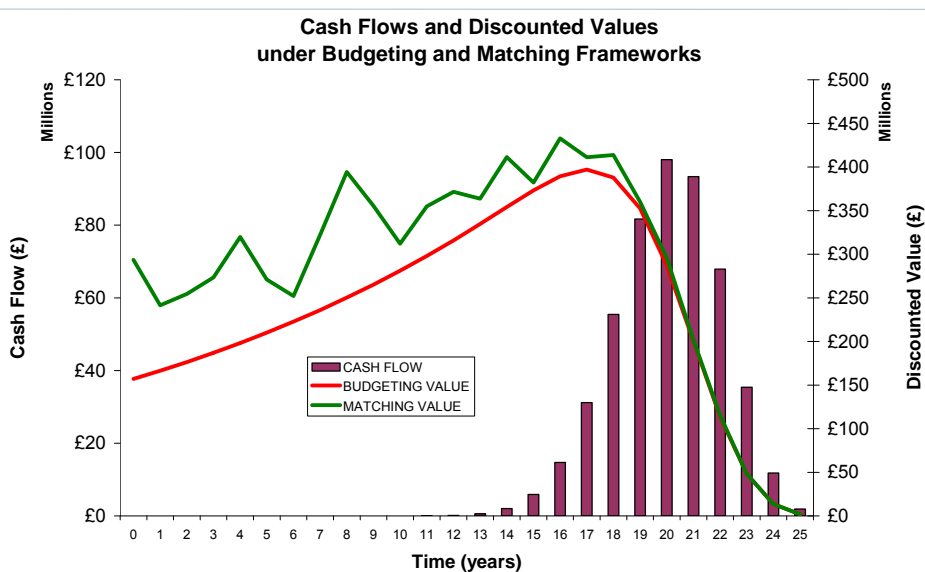
## Cash Flow Example - Framework Comparison



## Cash Flow Example – “Equity Premium”

- Same hypothetical cash flow stream
- Still valuing under two frameworks
  - budgeting using expected average equity return of 6%
  - matching reflects consistent but variable yield-curve
- Gap between two discounted values varies over time
  - Budgeting Value  $\equiv$  funding required under long-term assumptions
  - Matching Value  $\equiv$  “buy-out” cost
- Investing in equities will create further risk

## Cash Flow Example – “Equity Premium”



---

## Recommendations – Generic

---

1. Actuaries should seek to determine discount rates (and be able to justify their choice of discount rate) within a matching framework and / or budgeting framework as described in Section 5.
2. Where practical, any material divergence between the values placed on contractual asset or liability cash flows and their market or market consistent values should be highlighted in actuarial work, together with an explanation of the main contributors to this divergence.
3. In presenting advice based on the use of discount rates actuaries should communicate clearly the framework, building blocks and level of embedded risk they have used to determine the discount rate(s). Moreover, actuaries should take great care over the terminology they use making every effort to promote understanding by users.

---

## Recommendation – Generic

---

### Recommendation 3

- *In presenting advice based on the use of discount rates actuaries should communicate clearly the framework, building blocks and level of embedded risk they have used to determine the discount rate(s). Moreover, actuaries should take great care over the terminology they use making every effort to promote understanding by users.*

### Reflects importance of communication of key issues

- The appropriateness of the framework and the building blocks to the issues addressed.
- The risks associated with the chosen framework and building blocks.
- The factors relevant to the specific application.

---

## Recommendations – Pensions

---

4. Actuaries and the Actuarial Profession should be clear (to their clients and to regulators) that the use of a budgeting calculation alone in the assessment of Technical Provisions will not provide adequate information on the assessment of the security of members' benefits.
5. In assessing what is a "prudent" discount rate for the purposes of calculating Technical Provisions under UK regulations, consideration should be given primarily to the current or evolving pension scheme investment strategy, it being noted that there may then need to be other explicit elements of prudence included in the liability calculation if the overall result is to be sufficiently prudent as far as the Pensions Regulator is concerned.

---

## Recommendation – Pensions

---

### Recommendation 4

- *Actuaries and the Actuarial Profession should be clear (to their clients and to regulators) that the use of a budgeting calculation alone in the assessment of Technical Provisions will not provide adequate information on the assessment of the security of members' benefits*

### Risk communication should include consideration of

- extent of difference between matching and budgeting valuation, and its consequences for fair-value assessment and buy-out costs
- potential impact of investments deviating from budgeting (or matching) value of liabilities
- given these risks, the degree of reliance upon the sponsor's covenant

---

## Recommendations – Pensions

---

6. For the purposes of establishing a recovery plan to restore pension scheme funding up to the level of Technical Provisions a budgeting framework may be used with a realistic assessment of the expected investment return that can be anticipated during the recovery period. However, actuaries should be clear, as per Recommendation 4, that such a framework will not provide adequate information on the assessment of the security of members' benefits during and at the end of the recovery period.
7. For the purposes of calculating an estimate of pension scheme solvency a matching framework should be used (making no adjustment for sponsor default on the pension obligation).
8. For the purposes of disclosing pension scheme funding information to members, trustees and regulators should be encouraged to focus on the solvency position and how it is expected to develop under the agreed funding plan.

---

## Recommendations – Pensions

---

9. The Actuarial Profession should call for pension liabilities in company accounts to be calculated in a matching framework (making no adjustment for sponsor default), subject to this principle being consistent with all long term financial liabilities (including insurance liabilities).
10. Actuaries should advise on member options and transactions within a matching framework. Even where an alternative approach is indicated by other considerations (e.g. legislation or pension scheme rules) the matching framework calculations should be considered in any advice given.
11. Actuaries should encourage trustees to consider cash equivalent transfer values in a matching framework and the Actuarial Profession should encourage regulators to revisit the regulations on cash equivalent transfer values from a matching framework perspective.

---

## Recommendation – Life Assurance

---

### Recommendation 14

- *The Actuarial Profession should support the apparent move to a matching framework for liability valuation under Solvency II and encourages the UK regulator to preserve this principle in the UK implementing measures.*

### Reflects current practice and direction of regulatory development

- market consistency already captured within UK ICAS regime and common practice within UK life insurers
- challenges remain around interpretation of and judgements regarding the “liquidity premium” component of corporate bond yield spreads, but our recommendations do not extend to this level of detail

---

## Addition to Actuarial Reports

---

### Matching Framework Adequacy

- Does not imply Matching Framework Adequacy is satisfied throughout unless close matching is employed

### Budgeting Framework Adequacy

- Implies nothing about Matching Framework adequacy in the future

### Budgeting Framework or Volatile Matching Framework Result

- An indication of the impact of the variability should be given

---

## Open discussion

---

© 2010 The Actuarial Profession • www.actuaries.org.uk

28

---

## Next Steps

---

### Consultation on common framework

- Management Board want a full and open debate on the significant issues
- The Profession does not set standards for technical work
- The Profession has a role in initiating research
- These initial recommendations are intended to prompt debate but the goal is to support actuaries in communicating impartially and effectively on discount rates

© 2010 The Actuarial Profession • www.actuaries.org.uk

29

---

## Next Steps

---

### Consultation on common framework

- We are seeking views from inside and outside of the Profession
- Consultation during January and February 2011
- Sessional research events part of this process
- Also contact the Research Team via [ruth.loseby@actuaries.org.uk](mailto:ruth.loseby@actuaries.org.uk)

---

## Next Steps

---

### Consider impact / consult stakeholders

- Need to consider the potential impact of the initial recommendations
- Seeking the views of significant stakeholders, including regulators
- Chinu Patel and Chris Daykin will undertake this process for the Steering Committee



---

## Next Steps

---

### Finalising proposals

- Consultation stage to be completed by end Feb 2011
- DRSC will consider the results of the consultation and propose a final revised set of recommendations to the Management Board
- Management Board will consider next steps for the project