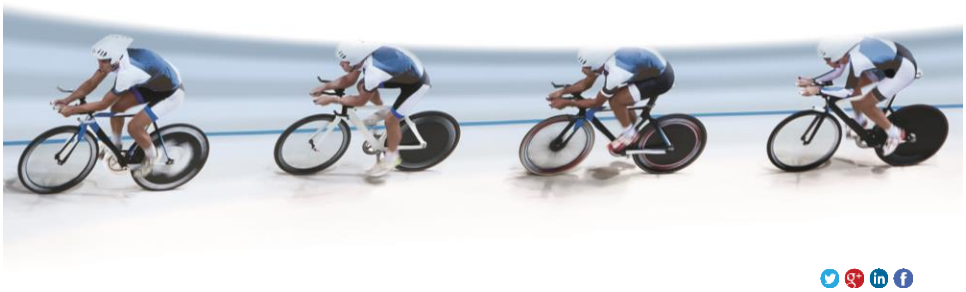
Barnett Waddingham
a true partnership approach

UK Actuarial Advisory Firm of the Year

CIPFA Actuarial Summit 2014

Actuarial Session 2: Assumptions and Risks

graeme.muir@barnett-waddingham.co.uk



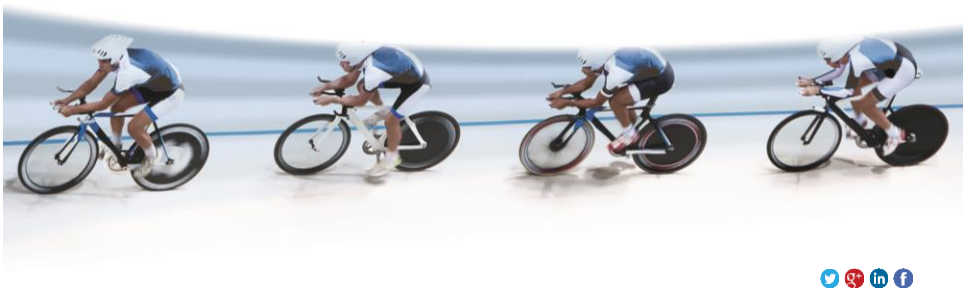
Agenda

- Why do we need an actuary?
- How do we do valuations?
- Why don't we all take the same route?
- Key risks going forward

Barnett Waddingham
a true partnership approach

UK Actuarial Advisory Firm of the Year

Why do we need an actuary ?



Costing the pension promise

Employer makes benefit promise when employment commences

Cost of benefit promise not known in advance

Need to assess the cost of the promise made

Two stage process

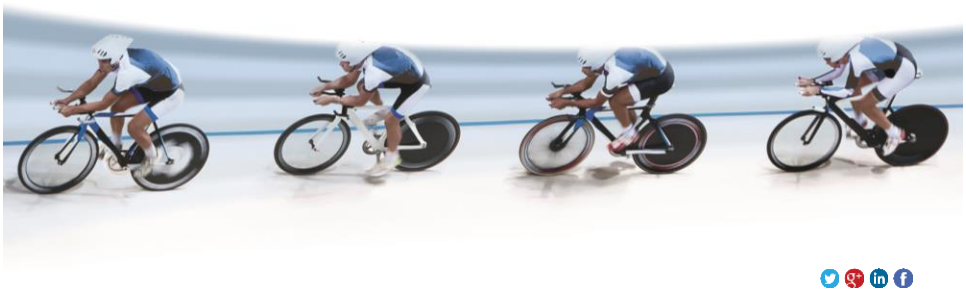
- **Estimate the future pension liabilities**
- **Place a value of them**

More than one valuation possible!

Barnett Waddingham
a true partnership approach

UK Actuarial Advisory Firm of the Year

How do we do valuations?



Purpose of valuations

Approach depends on question being asked	• Many questions!
Ongoing triennial funding valuation	• How much do employers need to pay in future to have enough assets to pay benefits?
Annual accounting valuations (IAS19/FRS17)	• Help accountants compare • If we were a plc how much would we need to borrow to finance liabilities?
Cessation valuations	• Have we enough assets to meet liabilities? • How much risk do we leave on the table? • Different approaches depending on employer situation

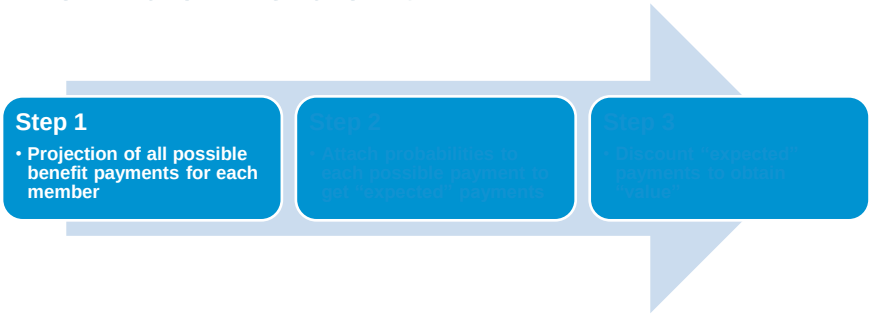
Triennial Funding Valuation

Set out in LGPS Regulations	• to *certify* levels of employer contributions to secure the *solvency* of the Fund
Also have to look at Funding Strategy Statement	• As determined by administering authority • With some actuarial help!
Actuary to "have regard to desirability of maintaining as nearly constant a contribution rate as possible"	• Function of Funding Model / investment strategy • Spreading and stepping
Different approaches possible for different employer types	• Statutory/non statutory bodies • Open or closed admission agreements

Annual Accounting Valuations

FRS17 or IAS19	• Essentially the same
Key objective is consistency of measurement	• Help accountants compare
Some hard (ish) coding of assumptions	• Discount rate
Inconsistent asset and liability valuations	• Lots of volatility • Some counter intuitive results sometimes

How do we do it?



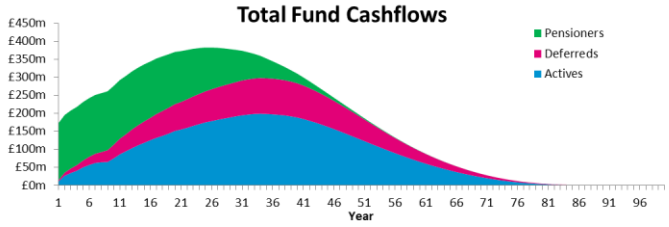
How do we do it?

How do we do it?

Step 1
- Projection of all possible benefit payments for each member

Step 2
- Attach probabilities to each possible payment to get "expected" payments

Step 3
- Discount "expected" payments to obtain "value"



What affects cashflow projection?

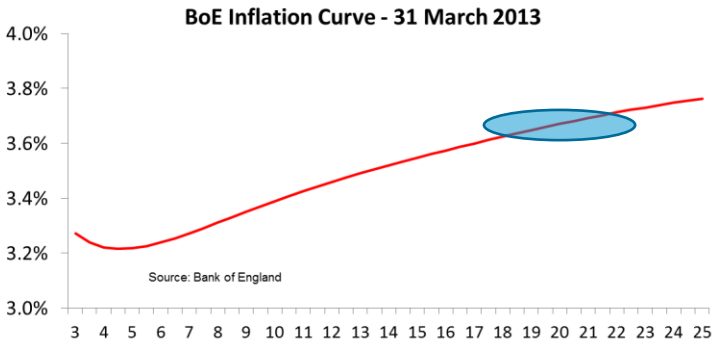
The assumptions of course!

Inflation - pay and price inflation
- How big?

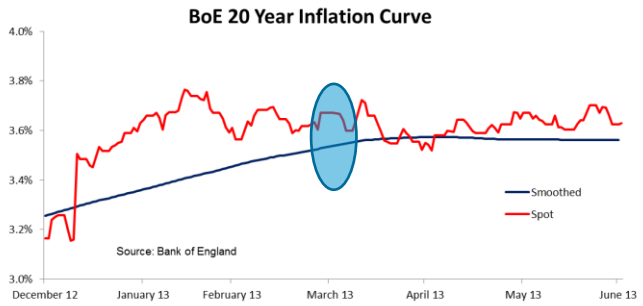
Retirement age and longevity
- How long?

All about size and duration

Assumptions – Inflation RPI



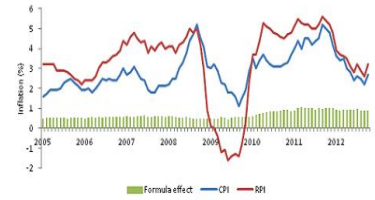
Assumptions – Inflation RPI



Spot inflation number was 3.60% and the smoothed number was 3.54%

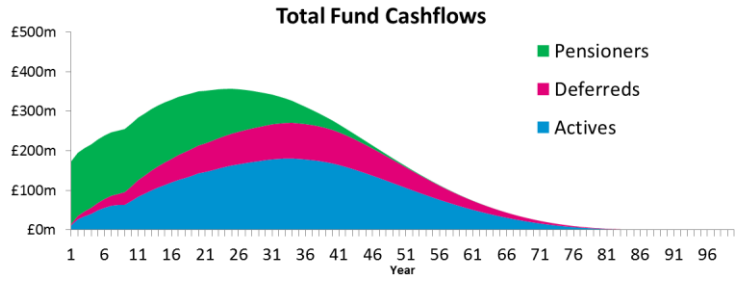
Assumptions – Inflation (CPI)

RPI usually less than CPI	• Formula effect and what's in the basket
Formula effect	• 0.5% until 2010 • 0.8% since then • "ladies clothing effect"
RPI and CPI "baskets" expected to converge	• Formula effect only
Assumed 0.8% less than RPI	• Consistent with CPI swap market

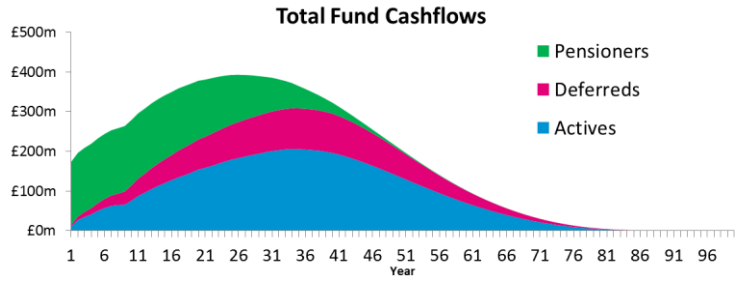


Source: Office for National Statistics

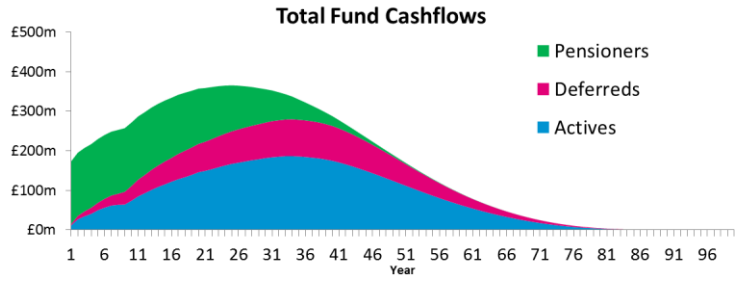
Actuary A



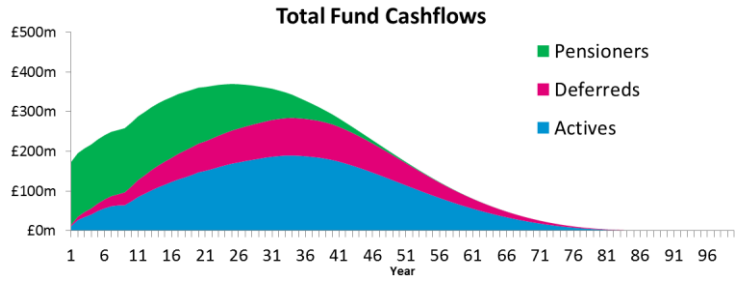
Actuary B



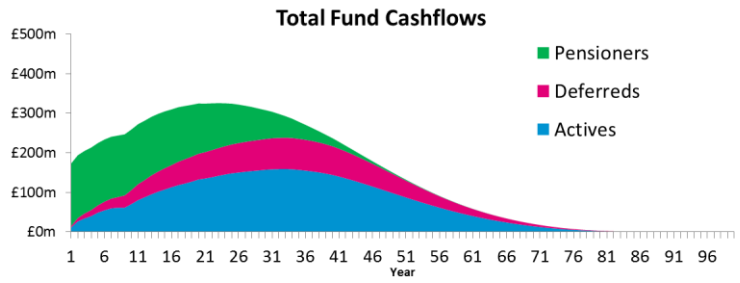
Actuary H



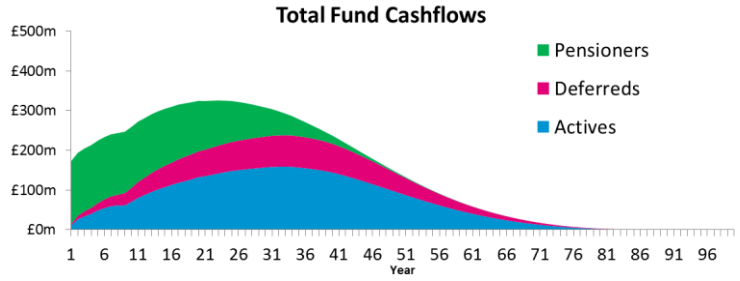
Actuary M



Actuary G



Actuary G



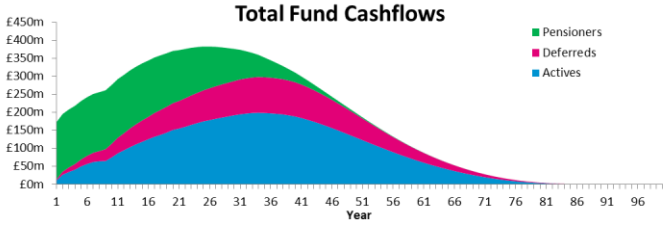
Total Cashflows in the range £14.5bn to £17bn
Or about £16bn to £17bn if we exclude actuary G
Assets of £4bn

How do we do it?

Step 1
- Projection of all possible benefit payments for each member

Step 2
- Attach probabilities to each possible payment to get "expected" payments

Step 3
- Discount "expected" payments to obtain "value"

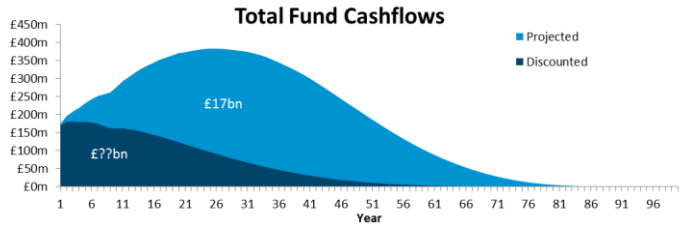


How do we do it?

Step 1
- Projection of all possible benefit payments for each member

Step 2
- Attach probabilities to each possible payment to get "expected" payments

Step 3
- Discount "expected" payments to obtain "value"



Discount Rates

First half of 20th century – book value approach	• Assets at book value • Discount rate = income yield on book cost
Second half of 20th century – discounted income approach	• Long term assumptions • Assets at discounted income value
Both approaches essentially long term	• Focus on stability of valuation • But not "marked to market"
Move to market related approach in last 10 - 15 years	• More for accounting reasons • But has also influenced approach to funding

Discount Rates

Choice of discount rate depends on the question being asked

Funding valuation

- What contributions are required to build up a fund of assets to meet pension liabilities for a given investment strategy?

Accounting valuation

- How much would a corporate body need to borrow to finance their pension liabilities?

Cessation valuation

- How much cash would we need to buy gilts to fund liabilities?

Discount Rates

Accounting valuation

- Corporate bond yields / cost of borrowing

Minimum risk cessation

- Gilt yields

Ongoing funding valuation

- Expected future investment returns from actual (or notional) investment strategy

Gilts and bonds – easy….

- Redemption yields

Equities – less easy….

- Gilt plus model
- Economic model

Property/alternatives – keep it simple

- Somewhere between equities and gilts

Discount Rates / Equity Returns

Gilt Plus models

"Risk based" approach based on alleged tPR approach

- Doesn't apply to LGPS

Value liabilities on minimum risk gilts basis

- Increase risk factor via fixed risk premium
- Discount rate then gilts plus something
- "Something" depends on asset strategy and employer covenant

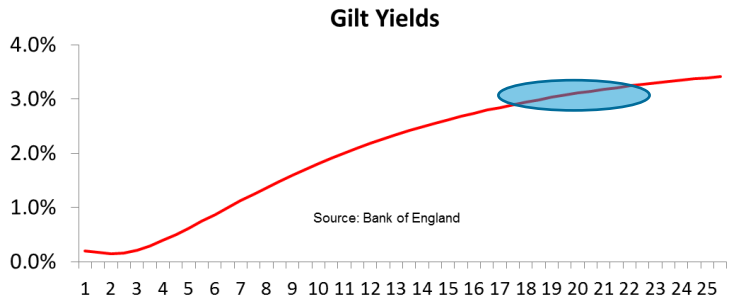
But liability values then behave like gilts

- Potential for lots of volatility
- Equities and gilts not well correlated especially in short term

Problems with quantitative easing

- BoE making pensions "more expensive"
- Gilt yields 2% less than they might have been?
- Gilts yielding less than equities

Gilt Yields at 31 March 2013



Gilt Yields at 31 March 2013

Spot yield was 3.1% and the smoothed number was 3.3%

Discount Rates / Equity Returns

Economic model	• Top down rather than bottom up
Assumes equity returns function of	• Dividend income plus • Economic/shareholder value/dividend growth
Possible of course to then express as a "dynamic" risk premium	• Varies with market conditions • Essentially saying expected relative returns change with market conditions

Summary

Similar cashflow projections

- Inflation assumption depends on indices used and CPI adjustment
- Similar mortality tables but should be Fund specific anyway

Discount rates

- More variation
- Differing gilt plus risk premiums reflecting different asset strategies / risk budgets / funding models ?

As at 31 March 2013

- Economic model producing higher (but still prudent) discount rates
- Not heroic but also not self harming or “recklessly prudent”

Summary

As at 31 December 2013

- Economic model discount rates stable
- Gilt yields up 0.5%

Some 2013 valuation contribution rates too high?

- Increase in gilt yields may have been factored in
- Different assumptions maybe used for setting contributions to calculating funding levels
- Some actuarial judgement is still allowed

Conclusions

Need to assess all assumptions as a package

- It's not all about the discount rate
- Overall funding strategy is the key issue
- Alternative routes are available

Understand how contribution rates are set

- Underlying assumptions may be different to published discount rate

Discount rates only determine the timing of contributions

- Liabilities (cashflows) don't depend on discount rates

Low / high discount rate

- More / less now – possibly less / more later

As always

- Balance of prudence and affordability
- No correct contribution rate or funding level

Key risks going forward

Liability/cashflow risks

- Inflation higher than anticipated
- Longevity improves faster than expected

Inflation 0.5% higher and life expectancy 1 year longer

- Cashflows increase by 20%

Investment risks

- Investment returns less than hoped for
- 1% less means - costs 20% more

Actuarial model risks

- Slavishly following output from flawed marked to market models
- Not enough sensible actuarial judgement!


Any questions?