Buy-ins and buy-outs
Doing deals in extreme market conditions
Agenda

Doing a deal in extreme market conditions

- Historical Transaction Timing
- Timeline
  - Feasibility
  - Pricing drivers
  - Structuring
  - Execution
  - Post trade
- Maximising Value
Historical Transaction Timing

Source: Rothesay Life

Source of Transaction Information: Public Announcements, Past performance is not a reliable indicator of future results
Barriers to Successful Execution

- History indicates transactions only complete when market conditions are favourable to that pension scheme
- Many transactions have successfully executed when well structured despite apparent “Extreme Market Conditions”
  - e.g. taking advantage of Gilts vs LIBOR
- Many have not
  - Pension schemes were not ready
  - Market conditions usually blamed
- No clear view on price target
- Therefore clear requirement to understand drivers of pricing
A typical bulk annuity process has a number of key stages; the period from initial interest through to execution can therefore be material...

Stage 1: Feasibility
- Feasibility
- Detailed Data Preparation

Stage 2: Quotations
- Insurers Prepare Quotations

Stage 3: Structuring
- Further Data Preparation
- Structuring
- Agreement of Roll-Forward
- Data Risk Due Diligence?
- Governance/ Legal

Stage 4: Execution
- “Go/ No Go” Decision
- Provider Selected
- Final Negotiation
- Documentation
- Administration Transition

Stage 5: Business as Usual
- Data Cleansing & Final True-up
- Inception Date
- Price Certainty: Data

6 - 7 Months?

Often determined as the day when the process comes to an end

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Stage 1: Feasibility

- **Stakeholder buy in**
  - Who are the key decision makers?

- **Data quality**
  - Is raw admin extract good enough?
  - Pre-empt data queries / clarify inconsistencies

- **Benefit specification**
  - Leave nothing to the imagination
  - Legal review?

- Important that quotes between providers are comparable
Stage 2: Quotations – Pricing Inputs

Pension Scheme

Premium and Full Liability Transfer

Insured Benefits

Operational Risk

Insurer

Investment Risk

Data/Legislative Risk

Extensive due diligence and interpreting legislation

Demographic Risk

Underwriting the mortality basis and other demographic assumptions

Interest Rate & Inflation Risk

Costs associated with removing/reducing interest and inflation rate exposure

Administration burden and costs associated with running the contract

Locking in illiquidity premium through credit risk management

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Stage 2: Quotations – Mortality Experience

- Relatively immature scheme – anything wrong?
- Good credible data ensures lowest possible longevity risk premium

**Number of deaths by year**

- Year 2005:
  - Males: 10
  - Female Pensioners: 20
  - Female Dependents: 10

- Year 2006:
  - Males: 20
  - Female Pensioners: 30
  - Female Dependents: 20

- Year 2007:
  - Males: 30
  - Female Pensioners: 40
  - Female Dependents: 30

- Year 2008:
  - Males: 40
  - Female Pensioners: 50
  - Female Dependents: 40

- Year 2009:
  - Males: 50
  - Female Pensioners: 60
  - Female Dependents: 50

- Year 2010:
  - Males: 60
  - Female Pensioners: 70
  - Female Dependents: 60

- Year 2011:
  - Males: 70
  - Female Pensioners: 80
  - Female Dependents: 70

- Year 2012:
  - Males: 80
  - Female Pensioners: 90
  - Female Dependents: 80

Source: Rothesay Life
Stage 2: Quotations – Mortality Experience

- Allowing for convexity effects can increase PV
- Consistency between lives and deaths data important

**Experience Factor**
(percentage of base table)

**PV of a Pension Scheme vs Experience Factor used**

True price is the average of the two homogeneous blocks £215mm

Naive price using average Experience Factor £210mm
Stage 2: Quotations – Mortality Experience

- Check table shape is appropriate for population to be insured
- Potential for miss-pricing where fit is not appropriate

![Graph showing Actual / Expected Deaths by Wealth Band Fit vs 100% S1PMA](image)

Source: Rothesay Life
Stage 2: Quotations – Other Demographic Risk

• Is a “standard” assumption appropriate?
Stage 2: Quotations – Other Demographic Risk

- Is +/- 3 years an appropriate assumption?
- Average age difference drifts up as population ages
- Impact on pricing of young spouse reductions
Stage 2: Quotations – Inflation

- Flat rates vs curves
- Inflation vol is expensive to hedge
- Be prepared for differences between “Black Scholes” models and insurer costs

Zero Coupon inflation rates

![Graph showing zero coupon inflation rates for different terms](source)

- Floored RPI
- RPI
- Bank of England 20yr Spot Rate

Source: Goldman Sachs, Bank of England 15Nov2012
Stage 2: Quotations – Interest Rate

- Flat rate vs curves
- Typically Technical Provisions discount rates gilt based (and some flat rates)
- Most insurers swap based

**Gilts vs Libor**

Source: Goldman Sachs, Bank of England 16Nov2012
Stage 2: Quotations – Investment Risk
Determining the Liability Discount Rate

- Liability discount rate is chosen through the insurer taking a view on how much of the “bond spread” relates to illiquidity.
- As spreads widen, annuity providers must decide whether their view on default risk has changed:

  - Liabilities: £100m
  - Assets: £100m

  - Risk Free Rate
  - Spread widens

  - Bond yield
  - Fixed default assumption
  - Spread-based assumption
  - Liability Discount Rate is judged to have increased

- £94m
- £89m
- £94m
- £89m

- £100m
- £89m
- £100m
- £89m

- £5m additional reserves required
Stage 2: Quotations – Investment Risk
An Approach to Improving Stability

- Under a credit-hedged strategy, the illiquidity premium is fixed at inception through the purchase of credit risk protection.
- If spreads widen, the annuity provider receives collateral to reflect increased risk of default.

No requirement to reserve for credit default

<table>
<thead>
<tr>
<th>Liabilities:</th>
<th>£100m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Assets:</td>
<td>£100m</td>
</tr>
</tbody>
</table>

- £89m + £11m

Protection through credit hedging

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Stage 2: Quotations – Data/Legislative Risk

- Mortality due diligence
- Accuracy of Data provided
  - Onsite review of files
  - Check against payroll
- Benefit due diligence
  - Review Trust Deed and Rules
  - Member Announcements
  - Valuation Reports
  - Scheme Accounts
  - Identify any equalisation issues
- Serious problems with data and administration of Trust Deed and Rules not uncommon
Stage 3: Structuring

- Key Commercials
- Roll Forward of Premium
- Documentation
- Asset Transition

Decision to Proceed

Ready to Execute

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Stage 4: Execution

- Focus on capturing optimal yield
- Trigger Based Execution based on
  - a specific portfolio of assets
  - a technical provisions funding level
  - a fixed shortfall amount
  - an accounting shortfall
- Execute when contracts agreed
  - Take risk on market conditions prior to execution
  - May be able to mitigate by using a transparent roll-forward but assets held unlikely to move exactly in line
  - Risk that trade doesn’t happen
### Stage 5: Business As Usual

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Involvement with Insurer</th>
</tr>
</thead>
<tbody>
<tr>
<td>True-up/Premium Adjustment</td>
<td>• Timing of calculations</td>
</tr>
<tr>
<td></td>
<td>• Items to be covered – Amount changes, pre-trade deaths, benefit changes…</td>
</tr>
<tr>
<td></td>
<td>• Basis to be used</td>
</tr>
<tr>
<td>Factors &amp; Individual Calculations</td>
<td>• Frequency of Calculations</td>
</tr>
<tr>
<td></td>
<td>• Basis to be used and frequency of update for market conditions</td>
</tr>
<tr>
<td>Longevity Reviews</td>
<td>• Agreeing the methodology – Base Table &amp; Improvements</td>
</tr>
<tr>
<td></td>
<td>• How to allow for changes in methodology over time</td>
</tr>
</tbody>
</table>
Achieving Best Value

- Data Preparation
- Benefit Specification Preparation
- Realistic Feasibility
  - Add in a buffer to cover unexpected issues
- Understand the risks taken early on
- Execution is important
  - Identify target early on
  - Monitor changes over time
  - Move fast, markets change rapidly
Questions or comments?

Expressions of individual views by members of The Actuarial Profession and its staff are encouraged. The views expressed in this presentation are those of the presenter.