

## The Price to Pay for Enhanced Annuities

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### The Price to Pay for Enhanced Annuities... Agenda

- Market development
- Market overview
- Enhanced annuity pricing
- Financial reporting
- The future for enhanced annuities

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### Market Development ... the start of the enhanced annuity market?

Letter to The Times, 11 February 1995:

"I will be 70 next birthday, am 6 ft 6 in, weigh 18½ stone and have had high blood pressure for 15 years (I'm on the maximum daily dose of my drug). I have had malaria three times, cancer of the larynx five years ago and now have apnoea, which surgery in 1993 has relieved but not cured. So, I am a low health prospect, according to life offices. I agree. But let me seek an annuity – and hey presto! I am a normal life with an expectation in line with the standard tables. Nobody can – or wishes to – explain this paradox. Can you? Is there a provider of annuities for impaired lives?"

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## Market Development ... what is an enhanced annuity?

- Certain people have heavy mortality
- Enhanced annuities pay more because of heavier mortality
- Various types of enhanced annuities:
  - Smoker
  - Where you live
  - Health / impaired
  - Severely impaired - "care annuities"

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## Market Development ... growth of market from inception to today

- From a standing start in 1995 to £640m in 2005
- Under £200m in 1998/1999
- "Real" market inception was 2000/2001
- Peaked at nearly £700m in 2003
- Britannic announcement in Q3'03...
- ...but sales increasing again
- Consistently around 20% of external sales

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## Market Development ... overview of current market

- Limited number of providers
  - some household names...but not all!
  - few specialist providers
  - new entrants expected in 2006
  - product developments - VPA
- Relatively small market awareness amongst consumers
- Higher commission levels

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## Today's Main Theme...Pricing Enhanced Annuities

- Enhanced annuity pricing
  - mortality – setting and using the assumptions
  - risks, benefits
  - an aside – the impact on standard product pricing

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## Pricing Enhanced Annuities ... setting mortality assumptions

- Rules-based approach
  - general insurance approach
  - considerations for rating factors
- Underwriting
  - specialist staff
- Which approach?
  - pros and cons
  - complement each other

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## Pricing Enhanced Annuities ... technical considerations

- Technical considerations can be de-coupled
  - base table
  - future improvements
- But do so with care!
  - it's the combination that matters

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## Pricing Enhanced Annuities ... base table

- Generic Model:  $q^*(x+t) = M(x, t) \cdot q(x+t+Y) + A(x, t)$ 
  - $q$  is the healthy mortality table
  - $M(x, t)$  is a multiple of mortality, depending on  $x$  and  $t$
  - $Y$  is a years-to-age addition
  - $A(x, t)$  is an addition to mortality, also depending on  $x$  and  $t$
  - $t$  is time, i.e. duration in-force
- Choose parameters appropriate to:
  - disease
  - shape of survival curve – convex-up? convex-down?

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## Pricing Enhanced Annuities ... base table

- Heart Disease:  $q^*(x+t) = M \cdot q(x+t)$
- Cancer / Stroke:  $q^*(x+t) = q(x+t) + A(x, t)$  5-year survival
- Alzheimer's / MND:  $q^*(x+t) = q(x+t) + A(x, t)$  n-year survival
- Mortality convergence
  - enhancements generally decrease with increasing age

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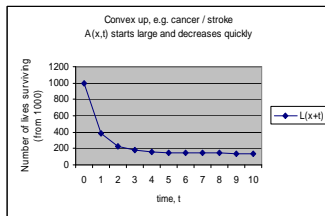
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## Pricing Enhanced Annuities ... base table

- Cancer / Stroke:
- $q^*(x+t) = q(x+t) + A(x, t)$
- 5-year survival patterns



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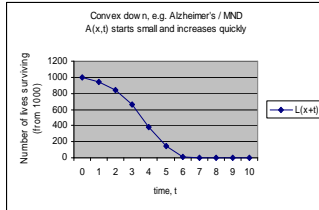
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## Pricing Enhanced Annuities ... base table

- Alzheimer's / MND:
- $q^*(x+t) = q(x+t) + A(x, t)$
- N-year survival patterns



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## Pricing Enhanced Annuities ... mortality improvements

- Always at least consider
- Minor impairments - lots of allowance
- Major impairments - maybe little or none
  - but beware the risks!
- Major uncertainty ... so always add a margin!

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## Pricing Enhanced Annuities ... using the mortality assumptions

- Once we have them, then what?
- Example 1: use mortality assumptions directly
- Pros
  - more accurate, e.g. guarantees, VPA
- Cons
  - system build

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## Pricing Enhanced Annuities ... using the mortality assumptions

- Example 2: convert to “years-to-age” addition
- Pros
  - conceptually familiar
  - easy to implement - stand-alone “converter”
- Cons
  - could mis-price guarantee periods and value protection
  - more difficult to model improvements based on year of birth

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## Pricing Enhanced Annuities ... the risks

- Pricing **standard** annuities is inherently risky
- Mortality risk
- Risky present
  - stochastic uncertainty
  - generational uncertainty
- Risky future
  - social and economic
  - medical

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## Pricing Enhanced Annuities ... the risks

- Pricing **enhanced** annuities is even riskier:
  - harder to estimate current mortality rates
    - less data
    - greater risk of anti-selection, e.g. exaggeration
  - future mortality improvements are even more uncertain
  - less access to reinsurers cf. protection products
  - no industry data, e.g. CMI don't analyse
- Mitigants:
  - price allowing for the additional risks
  - limit exposure
  - expert advisers, e.g. CMO

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## Pricing Enhanced Annuities ... the benefits

- Lots of risks - so why bother?
  - large market
  - if you don't someone else will
  - an investment in the future?

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## Pricing Enhanced Annuities ... an important aside – the impact on standard annuities

- Major selective effect – can't be ignored
- Pricing
  - no CMI data
  - build your own model
- Typical impact - could increase price by 5% or more
- Everyone must make an explicit allowance

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## Pricing Enhanced Annuities ... other assumptions

- Expenses
  - initial
  - renewal
- Interest rates
  - cash flow matching
  - credit quality
  - less reinvestment worry!
  - good for the overall portfolio
- Profit loading

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## Financial Reporting

- Getting the experience bases right
  - especially mortality
  - allow for the run-off of the select period
- Monitoring
  - do we have enough, credible data?
  - how good has underwriting been?
- Risk margins shouldn't be allowed to flow through to profit immediately
  - care needed in setting assumptions
- Volatility of experience
  - could lead to short-term capital strain

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## The Future

- Here to stay
- Expect market to grow
- A winner from the increasingly competitive standard market?

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## The Price to Pay for Enhanced Annuities

- Questions

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