Equity Release Working Party

Pricing & Risk Capital In the
Equity Release Market

27 March 2008

Who are we?

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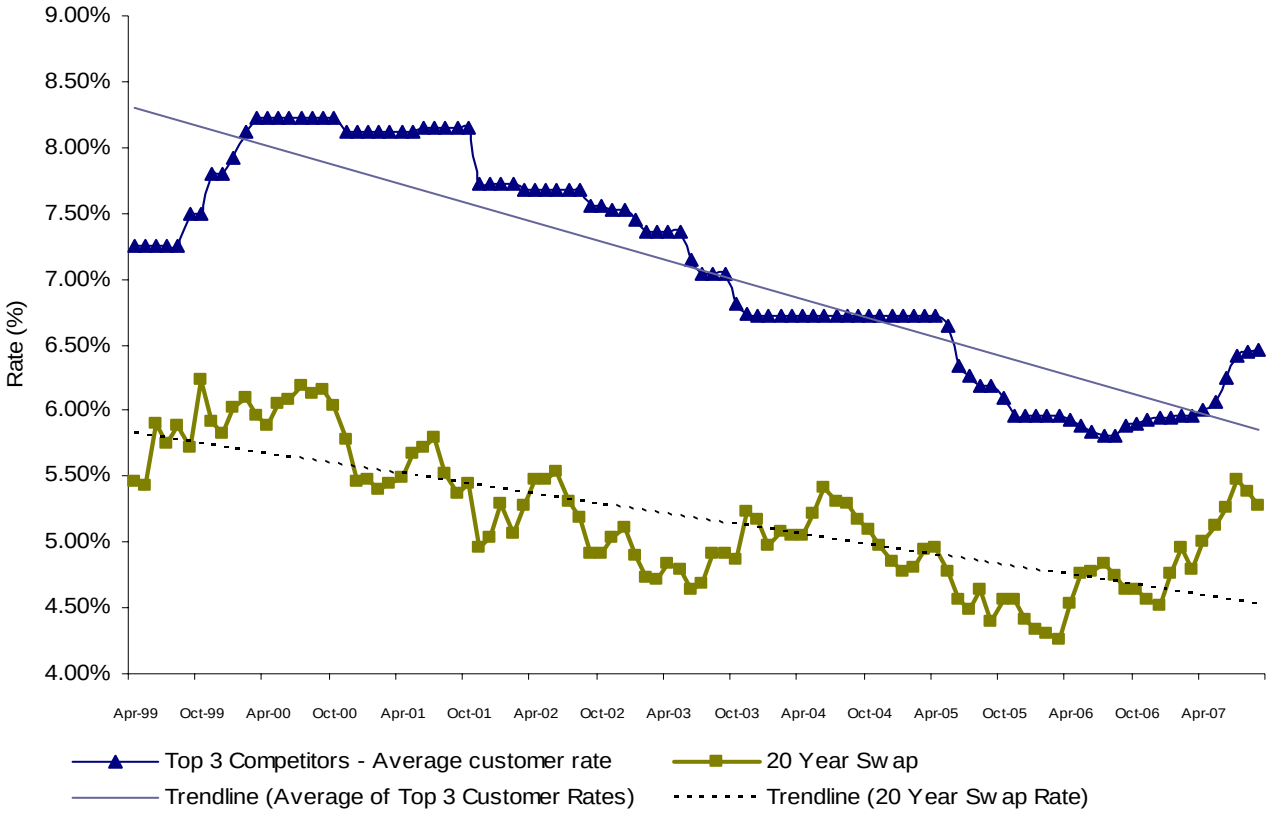
Agenda

- Introduction
- Types of product
- Assumptions
- Modelling House Price Inflation
- Cost of Funds
- Expenses
- Cost of “No Negative Equity Guarantee”
- Results
- Summary

Health Warning

- All work based on sample products
- Results could change significantly with change in assumptions/product types
- Product providers need to examine their own business carefully and generate their own assumptions

Introduction



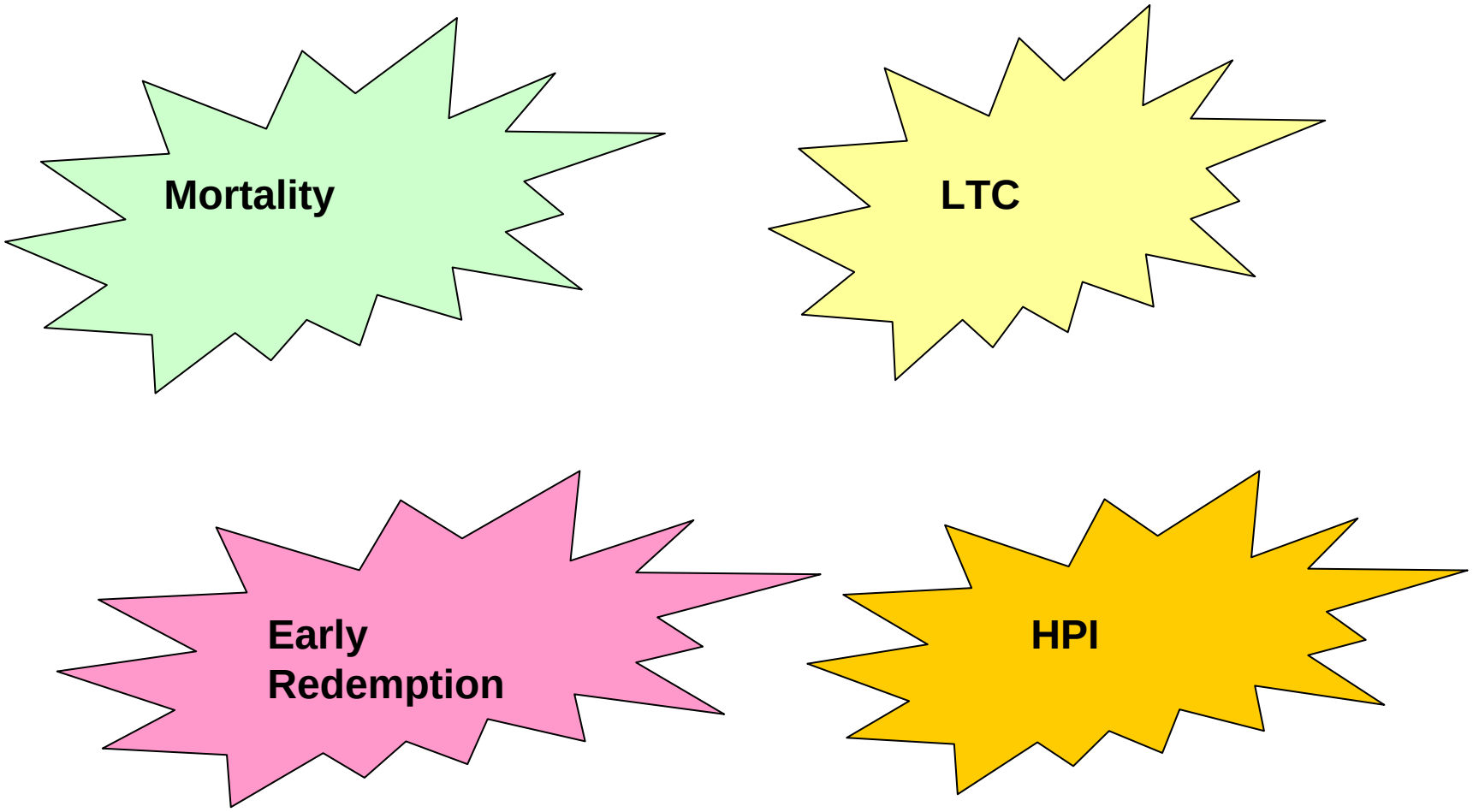
Product Types

- Lifetime Mortgages
  - Lump sums
  - Drawdown
  - Fixed rate/Variable rate
  - Protected equity
  - Higher LTVs/Interest rates
  - Fixed Repayments

Product Types

- Reversions
  - Cash
  - Income
  - Stepped
- Impaired lives

“Interesting” Risks



Mortality

- Little experience
- No reinventing the wheel
- Heavily dependent on factors such as sales channel, marketing, product features
- Used PNXA (U=2007) (with early selection)
- Adjusted for social class
- Improvements at P-Sac

Long Term Care

- No further data over the last 2 years.
- Assumptions unchanged from last ERWP report.
- Males addition of 2% to 5% to mortality
- Females addition 3% to 13% to mortality

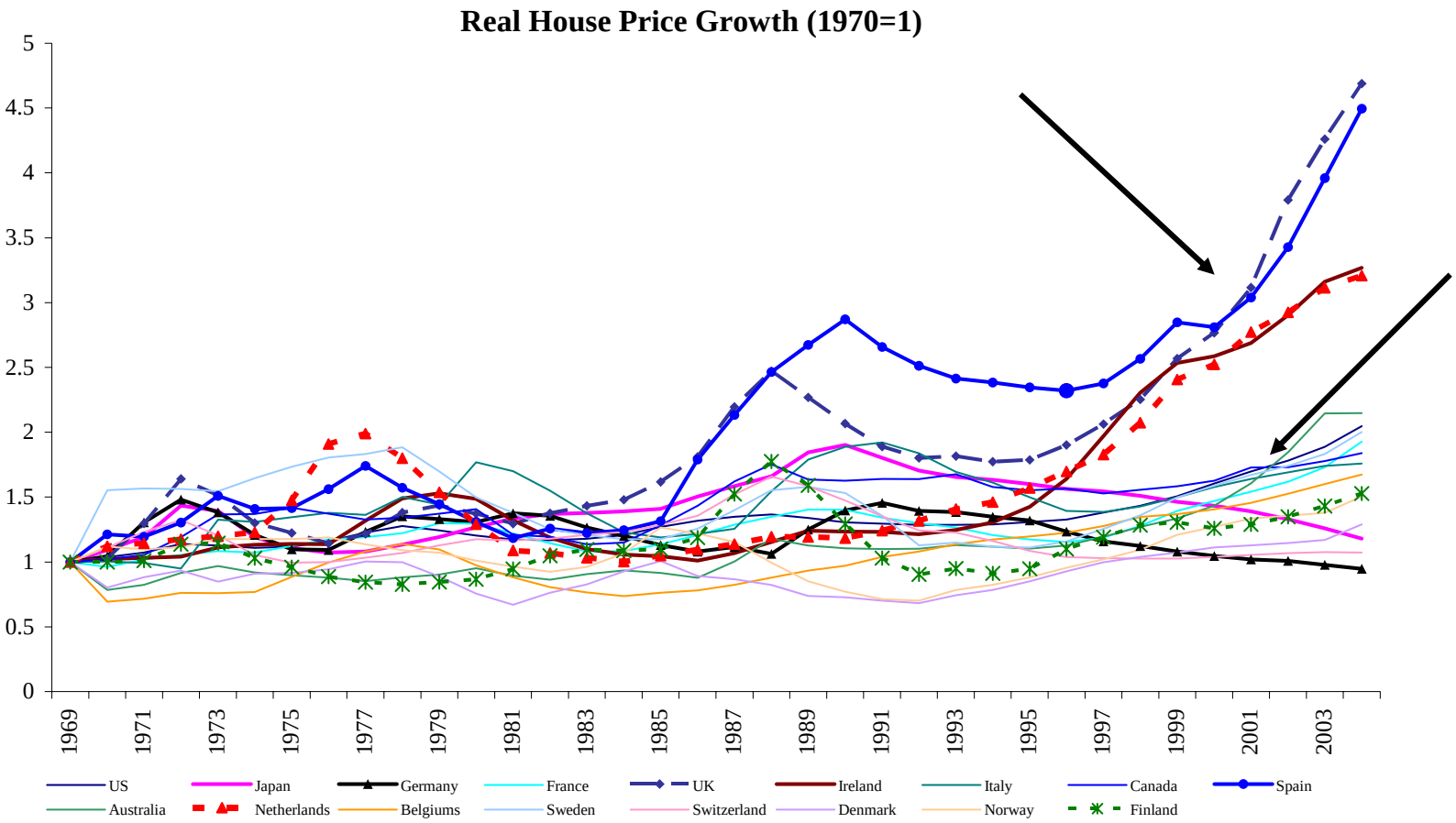
Early redemptions

- Little experience (Norwich Union)
- Some are LTCs in disguise
- Flat redemption charges are “one way bet” on interest rates
- Need to consider
  - Redemption charge scale
  - Prevailing interest rate
  - Distribution channel
  - Product design
  - Competitive positioning
- Assumed rates
  - 1%-2% in years 1 to 2
  - Rising to 2.5% in years 4-5
  - Reducing to 0.5% by year 11
  - 0.25% by year 20

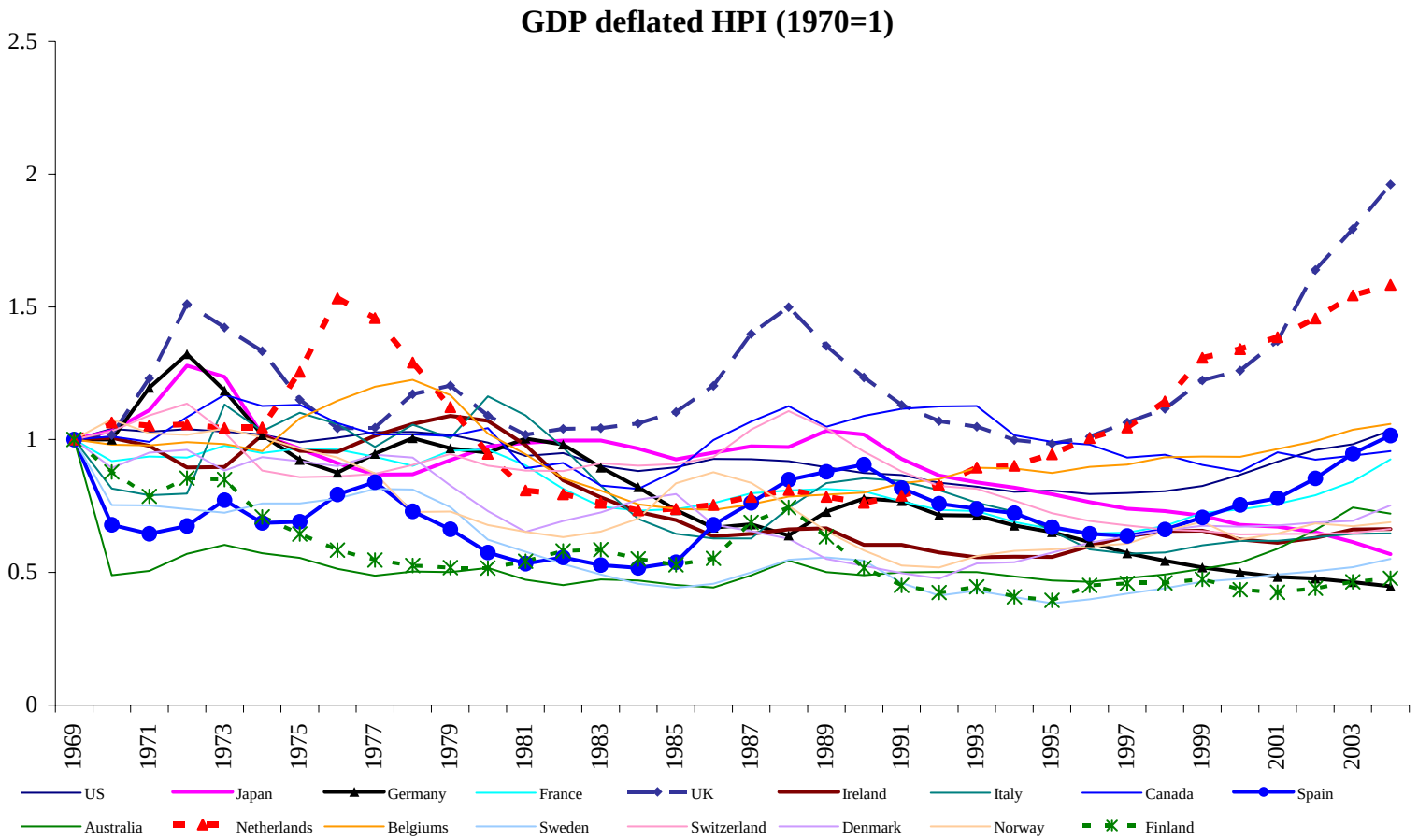
House price inflation

- Reviewed OECD data (min/max long term)
- Analysed UK data
  - Regional data
  - Autocorrelations
  - Desmoothed
- Derived range assumptions for pricing
- Not predicting house prices!

OECD Data


Real House Price Growth (1970=1)
5
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
US
Japan
Germany
France
UK
Ireland
Italy
Canada
Spain
Australia
Netherlands
Belgiums
Sweden
Switzerland
Denmark
Norway
Finland

OECD Data


GDP deflated HPI (1970=1)
2.5
2
1.5
1
0.5
0
1969
1971
1973
1975
1977
1979
1981
1983
1985
1987
1989
1991
1993
1995
1997
1999
2001
2003
US
Japan
Germany
France
UK
Ireland
Italy
Canada
Spain
Australia
Netherlands
Belgiums
Sweden
Switzerland
Denmark
Norway
Finland

UK Property

- Average annual HPI since 1974 just under 9% p.a.
- Max 9.3% p.a. in London, min 8.3% p.a. Scotland
- Volatility of 5% p.a.
- Autocorrelation (1 step) 0.66
- Desmoothing (1 step) volatility of 11% per annum.

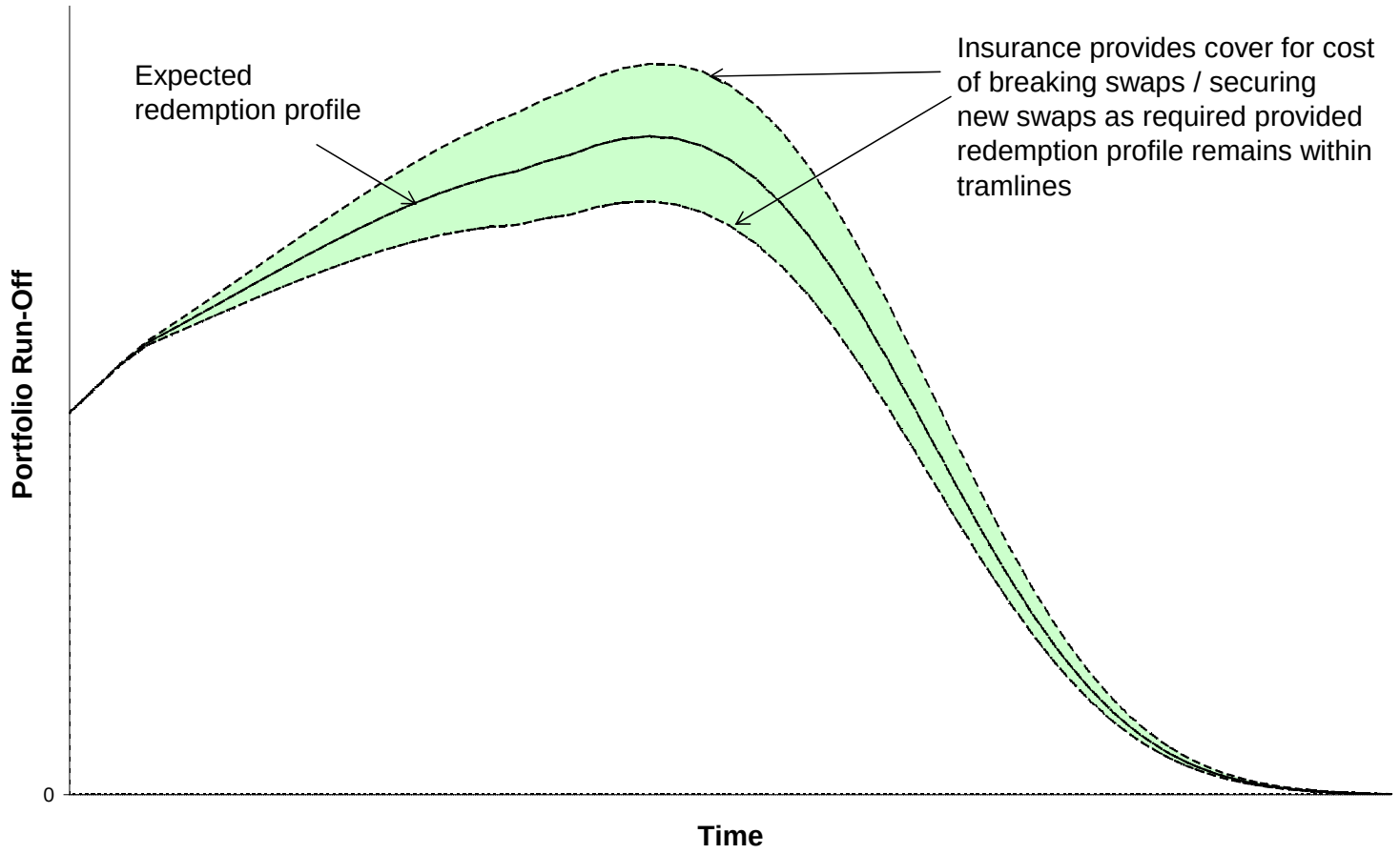
Assumption

- Min = OECD data = CPI ?
- Max =

  RPI (2.5%) + Economic Growth (2.5%) = 5% p.a.
- How much desmoothing is appropriate?
- Assumed 4.5% HPI and 8% volatility

  (plus 3% for binary risk)

Cost of Funds



Cost of Funds

- Cost of funds based on cost of swaps for the redemption profile
- Extra margin above swaps for “insurance”
- Base cost of funds given by:
  - Average swap rate weighted by cashflows
  - Funders margin over LIBOR
  - Margin to cover risks
  - Providers cost of hedging for residual risks
  - No negative equity guarantee
- Margin over LIBOR assumed to be 40bps plus 25 bps for tramline insurance

Cost of Solvency Capital

- FSA capital requirement is 8% of mortgage outstanding plus additional drawdown
- Weighting of 35% if projected mortgage amount is less than 80% of house value
- Cost of capital assumed to be 2% p.a.
- Annual cost 7 bps

Expenses

Heading	**Amount**
Distribution	2.5% of advance
Marketing	1.0% of advance
Administration	£500 initial £60 p.a. renewal £350 termination
Expense inflation	3% p.a.
Other costs	Passed to customer (e.g. valuation)

NNEG Cost

- Using option pricing methodology
- Two approaches
  - Quasi market consistent/risk neutral
  - “Real world”

NNEG Cost

- Quasi market consistent
- Risk free rate of 4.75% p.a.
- Current rental yield of 3.3% p.a. (net)
- Forward HPI rate of 1.5% p.a.
- Volatility of 11% p.a.

Quasi Market Consistent

Sample case	Option price as a percentage of initial mortgage	Option price as an annual percentage of the outstanding mortgage
Male 65	18%	0.73%
Female 65	19%	0.74%
Joint life 65	29%	0.90%
Male 70	12%	0.64%
Female 70	13%	0.67%
Joint life 70	20%	0.82%
Sample Portfolio	15%	0.67%

Sensitivities – 0% forward rate

Sample case	Option price as a percentage of initial mortgage	Option price as an annual percentage of the outstanding mortgage
Male 65	29%	1.22%
Female 65	31%	1.24%
Joint life 65	45%	1.45%
Male 70	20%	1.09%
Female 70	22%	1.13%
Joint life 70	32%	1.34%
Sample Portfolio	25%	1.11%

Sensitivities - Volatility

Sample case	Volatility of 14%	Volatility of 17%
Male 65	21.4% (0.9% p.a.)	24.1% (1.0% p.a.)
Female 65	22.6% (0.9% p.a.)	25.9% (1.0% p.a.)
Joint life 65	32.7% (1.0% p.a.)	36.2% (1.1% p.a.)
Male 70	14.6% (0.8% p.a.)	17.1% (1.0% p.a.)
Female 70	16.0% (0.8% p.a.)	19.2% (1.0% p.a.)
Joint life 70	23.7% (1.0% p.a.)	27.3% (1.1% p.a.)

“Real world” pricing

- Stochastic model
- Log normal distribution
- HPI at 4.5% p.a.
- Volatility of 11% p.a.

“Real world” results

Sample case	Option price as a percentage of initial mortgage	Option price as an annual percentage of the outstanding mortgage
Male 65	2.5%	0.10% p.a.
Female 65	2.6%	0.10% p.a.
Joint life 65	4.1%	0.13% p.a.
Male 70	1.8%	0.10% p.a.
Female 70	2.0%	0.10% p.a.
Joint life 70	3.2%	0.13% p.a.
Sample Portfolio	2.7%	0.12% p.a.

Results

Heading	**Amount**
Average swap rate	5.10%
Funder’s margin	0.40%
Tramline insurance	0.25%
Cost of solvency	0.07%
Cost of NNEG (?)	0.12%
Expenses	0.30%
Profit (?)	0.45%
Cost to Borrower	6.70%

Summary

- Margins getting tighter but little experience to go on.
- A lot of risks unknown (e.g. mortality, redemptions etc.)
- Pricing basis needs to be tailored to individual company and product features
- Possible that profits are being made
- If NNEG on a market consistent basis, unlikely to be profits!