LIFE INSURANCE AND RETIREMENT PRODUCT DEVELOPMENT

TUTORIAL 2 SEMESTER 1 2020: VALUATION

Question 1

You have been asked to investigate cash flows arising from a home equity release product sold by a retail bank.

The main features of the product are:

- it is sold to individuals and to couples, on a last survivor basis;
- the amount of loan depends on the age of the policyholder at outset and ranges from 20% to 50%;
- the minimum age is 60 for males and 63 for females (and you may assume this is legal);
- the loan is repaid on the death of the policyholder;
- the amount repaid is the lower of the house price, net of associated sales costs, and original loan increased daily by a variable rate of interest;
- the variable rate of interest is defined as the inflation rate plus 5%; and
- early repayment is possible but exit fees apply.

1. Sketch a few diagrams that illustrate cash flows that may arise under the contract. Provide a brief explanation below each graph.
2. By using your diagrams, or otherwise, explain how the health of policyholders affect the value of the product.

Suppose the product terms are amended so that the loan is repaid when a policyholder moves into a care home.

3. Construct a multiple decrement table assuming the appropriate mortality rates are those in the spreadsheets in Module 5 and that the rate of moving into a nursing home is 1% per annum from ages 60 – 70, 3% p.a. for ages 71-75, and increasing by 2% p.a. for each subsequent year of age.

4. What is the mean date at which the loan is repaid with the amended policy conditions and how does that compare with the mean date under the original policy conditions.

Question 2

Outline the benefits and risks to both the purchaser and the seller of no-par, par and investment linked annuities.