

PHELIM BOYLE, School of Accountancy, University of Waterloo  
*Modeling long term embedded options: Actuarial finance in action*

Contemporary life insurance products often include embedded options. These options are markedly different from standard financial options in that they are long term and their value depends on financial variables and policyholder behaviour. They are difficult to price and their risk management is challenging. Not surprisingly, consumers find it hard to evaluate their worth. In this introductory talk we will discuss the modeling issues involved in the pricing, valuation and risk management of these options. Their valuation requires not only an analysis of the relevant financial variables but also an analysis of how the actuarial assumptions (such as lapse behaviour) affect the risk. Each of these presents a challenge, but the problem is exacerbated by an interaction of these factors. Policyholder behaviour is influenced to some extent by economic conditions but we do not have good theories on exactly how policyholders will behave and there is a paucity of published experience data.