CCSU
DEPARTMENT OF MATHEMATICAL SCIENCES
COLLOQUIUM

Tuesday, December 18
1:00 – 2:00 PM
Maria Sanford Hall, Room 103

LIFETIME WITHDRAWAL BENEFIT RIDER: STATISTICAL CONCEPTS FOR RESERVING AND PRICING

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(Data Mining MS Thesis Presentation)

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Abstract: New riders with guaranteed options continue to be developed for inclusion with variable annuity contracts. One of the more recent ones is the Lifetime Withdrawal Benefit Rider. This rider allows the policyholder to lock in an annual withdrawal amount for life regardless of the performance of the fund investments in the variable annuity contract. As with other guaranteed options, this rider presents risks to the provider. One risk is the impact on the guaranteed amounts caused by the movement of the equity markets. In this paper, I propose an Excel-based model for assessing the profitability of this rider, determining appropriate reserves, and for measuring the sensitivity to changes in key assumptions, such as the withdrawal percentage and the guaranteed interest rate. One key aspect of the proposed model is the process used to project future equity returns. I employed a simplified version of the equity return process proposed by Hardy in order to develop the interest rate scenarios used in the rider modeling. The first running of the model using the initial assumptions for withdrawal percentages and guaranteed interest rates resulted in a significant number of scenarios in which the provider would realize losses. The profitability of the rider improves as some of the assumptions are changed to ones that are not as favorable to the policyholder.

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