

UWM Math Colloquium

Tuesday, February 19, 2008, 12:45 PM, EMS E495A

"Optimal Reinsurance for Insurers with the Possibility of Borrowing and Investment"

presented by

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Abstract:

Assume that the surplus of an insurer follows a Markov jump process with state-dependent income and the insurer is allowed to invest his positive surplus and to borrow money at a debit interest rate when the surplus is negative. In such a risk model, absolute ruin will occur when the negative surplus attains a critical level, at which the income per unit time can not cover the debt per unit time. We assume that the insurer uses a dynamic reinsurance strategy to control his risks. In this paper, we study the optimal reinsurance strategy for the insurer, which minimizes the absolute ruin probability. We first show that under a diffusion approximation to the Markov jump process, dynamic excess-of-reinsurance is the optimal type of reinsurance among a class of general reinsurance strategies. The result provides a method to consider optimal reinsurance in a general reinsurance strategies class for dynamic control problems. We then obtain both the explicit expression of the optimal reinsurance strategy and the explicit solution for the absolute ruin probability under the optimal reinsurance strategy by solving the HJB equation. At last, some numerical calculations are given in the cases of exponential claims and uniform claims.

Refreshments: 12:30 - 12:45 pm, EMS E495B