

Analysis of a drawdown-based regime-switching Lévy insurance model

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Abstract

In this talk, we analyze a drawdown-based regime-switching (DBRS) Lévy insurance model in which the underlying drawdown process is used to model an insurer's level of financial distress over time, and to trigger regime-switching transitions. By some analytical arguments, we derive explicit formulas for a generalized two-sided exit problem and further examine the conditions under which the survival probability is not trivially zero (which corresponds to the positive security loading conditions of the proposed model). As a special case of the DBRS model, we investigate a jump diffusion model with regime-switching premiums and build connections with other existing risk models in the literature.

Keywords Drawdown; Exit time; Two-sided exit problem; Lévy process; Regime-switching