On the Depletion Problem for an Insurance Risk Process: New Non-ruin Quantities in Collective Risk Theory

The field of risk theory has traditionally focused on ruin-related quantities. Although interesting in their own right, ruin related quantities do not seem to capture path-dependent properties of the reserve. In this presentation we aim at presenting the probabilistic properties of drawdowns and the speed at which an insurance reserve depletes as a consequence of the risk exposure of the company. This type of quantities has never been proposed before as measures of riskiness in insurance. We derive expressions for the distribution of drawdowns and the Laplace transform for the speed of depletion. These expressions are given for some examples of Levy insurance risk processes for which they can be calculated, in particular for the classical Cramer-Lundberg model.