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Title: Potential measures and expected discounted operating costs until ruin in renewal risk models

Abstract:

In this talk, we consider a renewal risk process with arbitrary interclaim time distribution. Quantities in relation to the expected present value of total operating costs until ruin (first proposed by Cai et al. (2009) in the classical compound Poisson model) are analyzed. In principle, these can be applied to find e.g. (i) the insurer's expected accumulated utility until ruin; and (ii) the expected discounted aggregate claim amounts until ruin. When claim amounts are distributed as a combination of exponentials, explicit results for the ruin-related quantities are first obtained using the ruin theoretic approach of conditioning on the first drop via discounted densities (e.g. Willmot (2007)). On the other hand, without any distributional assumption on the claims, we show that the same quantities can be expressed in terms of some potential measures, which are common tools in the literature of Levy processes (e.g. Kyprianou (2014)). These potential measures are then identified in terms of the discounted distributions of ascending and descending ladder heights. This is joint work with Runhuan Feng.