
The finite-time Gerber-Shiu function as a risk measure

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Abstract

The Gerber-Shiu (G-S) function defined over a finite-time horizon can be used to hedge insurance risk processes, see Kocetova and Siaulyš (2010), Trufin, Albrecher and Denuit (2011), Kuznetsov and Morales (2014) and Garrido and Cojocaru (2014).

In this paper we study the properties of the G-S function, evaluated for a risk process over a short-term and compare them to those of well accepted risk measures. The bridge we are proposing is via a generalization of ruin probabilities introduced by Gerber and Shiu (1998), the expected discounted penalty function for an insurance surplus, now known as the Gerber-Shiu function. The original G-S function is defined over an infinite horizon, but finite-time formulations have been studied recently.

We present the properties of a modified G-S function, evaluated on a risk process rather than a surplus process, over a short-term. In particular, this modified G-S function is presented as a risk measure and its properties are compared to those of well accepted risk measures.