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On the dual risk model with tax payments. (English) Zbl 1141.91481
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Summary: We study the dual risk process in ruin theory [see e.g. *H. Cramér*, *Collective risk theory: a survey of the theory from the point of view of the theory of stochastic processes*. Stockholm: AB Nordiska Bokhandeln (1955); *L. Takács* [*Combinatorial methods in the theory of stochastic processes*. New York etc.: John Wiley (1967; [Zbl 0162.21303](#)) and *B. Avanzi et al.*, *Insur. Math. Econ.* 41, No. 1, 111–123 (2007; [Zbl 1131.91026](#))] in the presence of tax payments according to a loss-carry forward system. For arbitrary inter-innovation time distributions and exponentially distributed innovation sizes, an expression for the ruin probability with tax is obtained in terms of the ruin probability without taxation. Furthermore, expressions for the Laplace transform of the time to ruin and arbitrary moments of discounted tax payments in terms of passage times of the risk process are determined. Under the assumption that the inter-innovation times are (mixtures of) exponentials, explicit expressions are obtained. Finally, we determine the critical surplus level at which it is optimal for the tax authority to start collecting tax payments.

MSC:

91B30 Risk theory, insurance (MSC2010)

Cited in **37** Documents

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