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**On the Markov-modulated insurance risk model with tax.** (English) Zbl 1195.91071  
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**Summary:** In this paper, we consider the Markov-modulated insurance risk model with tax. We assume that the claim inter-arrivals, claim sizes and premium process are influenced by an external Markovian environment process. The considered tax rule, which is the same as the one considered by *H. Albrecher* and *C. Hipp* [Bl. DGVFM 28, No. 1, 13–28 (2007; [Zbl 1119.62103](#))], is to pay a certain proportion of the premium income, whenever the insurer is in a profitable situation. A system of differential equations of the non-ruin probabilities, given the initial environment state, are established in terms of the ruin probabilities under the Markov-modulated insurance risk model without tax. Furthermore, given the initial state, the differential equations satisfied by the expected accumulated discounted tax until ruin are also derived. We also give the analytical expressions for them by iteration methods.

**MSC:**

**91B30** Risk theory, insurance (MSC2010)  
**60K10** Applications of renewal theory (reliability, demand theory, etc.)

Cited in **11** Documents

**Full Text:** [DOI](#)

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