

Dependent Renewal Risk Model With Archimedean Copulas

Patrick Senn

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Traditionally, insurances have used the assumption of independence in their models. But often this assumption does not reflect the reality. At the latest, since the financial crisis in 2008, dependence plays an increasingly important role in ruin theory. A popular approach, to include dependence in ruin theory, is to use the help of copulas. The present master's thesis focuses on the renewal risk model and presents a possibility to include dependence in it. In doing so, the dependence structure is defined by an Archimedean copula.

This paper provides a detailed explanation of how to implement such a dependence structure in a renewal risk model. Furthermore, a formula to calculate the ruin probability is provided. It is illustrated in some examples, considering various claim size and claim time distributions. In doing so, the dependent renewal risk model were compared with the independent one. This comparison shows clearly, that the dependence structure has an effect on the ruin probability.

Prof. Dr. Christian Mazza