

## Model Ruin dengan Premi Compound Poisson dan Dependensi Antara Besar Klaim dan Jarak Antarklaim = Ruin Model with Compound Poisson and Dependencies Between Claim Size and Claim Interval

Nainggolan, Ester Vania, author

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### Abstrak

<p>Perusahaan asuransi perlu memastikan bahwa mereka memiliki dana yang cukup untuk membayar segala biaya dan kewajibannya, agar terhindar dari gagal bayar. Teori ruin dapat membantu dalam memahami kerentanan perusahaan mengalami peristiwa gagal bayar tersebut. Dalam compound Poisson ruin model digunakan asumsi bahwa premi diterima dalam jumlah konstan, dan besar klaim dengan jarak antarklaim saling bebas. Skripsi ini mengembangkan model ruin tersebut dengan menggunakan asumsi yang lebih sesuai dengan keadaan di dunia nyata, yaitu premi yang diterima mengikuti proses compound Poisson dan terdapat dependensi antara besar klaim dan jarak antarklaim. Kemudian, ditelaah pula fungsi discounted penalty dari model ruin yang baru tersebut. Fungsi discounted penalty merupakan fungsi yang cukup penting dalam teori ruin karena dapat menjadi ekspresi dari kuantitas penting dalam teori ruin, termasuk probabilitas ruin. Setelah itu, dilakukan contoh perhitungan probabilitas ruin melalui fungsi discounted penalty yang telah ditelaah dan dilakukan juga analisis pengaruh rate distribusi waktu antarklaim  $\delta_1$  dan  $\delta_2$  terhadap probabilitas ruin. Diperoleh bahwa semakin kecil rate  $\delta_1$  dan  $\delta_2$ , waktu antarklaim semakin besar sehingga probabilitas ruin semakin kecil. Sedangkan untuk rate  $\delta_1$  dan  $\delta_2$  yang semakin besar, waktu antarklaim semakin kecil sehingga probabilitas ruin semakin besar.</p><hr /><div>Insurance companies need to

ensure that the company have sufficient funds to pay all its cost and obligations to cover losses. The ruin theory can help in understanding the company's vulnerability to ruin. In the compound Poisson ruin model, there are assumptions used such as that premiums are received in a constant amount, and that the claim size and claim interval are independent with each other. This final paper develops the compound Poisson ruin model by using new assumptions that are more in line with the real conditions in daily life. The assumptions used in this final paper are that the premiums are received following the compound Poisson process, and that there are dependencies between claim size and claim interval. Then, the discounted penalty function of this new ruin model is also studied, because discounted penalty function can be used as an expression of some quantities in the ruin theory including the probability of ruin. Furthermore, the illustration of calculating the probability of ruin through the studied discounted penalty function is presented and analysis of the effect of claim interval rate distribution  $\delta_1$  and  $\delta_2$  with respect to ruin probability. As the result, the smaller the claim interval rate  $\delta_1$  and  $\delta_2$ , the claim interval is bigger so that the ruin probability is smaller. On the other hand, for a bigger  $\delta_1$  and  $\delta_2$  value, the claim interval is smaller so that the ruin probability is bigger.</div>