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Dickson, David C. M.
On the distribution of the claim causing ruin. (English) Zbl 0783.62083
Insur. Math. Econon. 12, No. 2, 143-154 (1993).

Summary: We extend the work of *F. Dufresne* and *H. U. Gerber* [ibid. 7, No 3, 193-199 (1988; Zbl 0674.62072)] by developing expressions for the distribution function of the claim causing ruin in the classical compound Poisson process. We consider the special case when the initial surplus is zero, as well as illustrating results when the initial surplus is positive. We also consider a discrete time risk model and show how the distribution can be calculated by a recursive method.

MSC:

62P05 Applications of statistics to actuarial sciences and financial mathematics
62E15 Exact distribution theory in statistics
62E20 Asymptotic distribution theory in statistics

Keywords:

probability of ruin; surplus prior to ruin; numerical examples; tables; claim causing ruin; compound Poisson process; initial surplus; discrete time risk model; recursive method

Full Text: DOI

References:

[1] De Vylder, F.; Goovaerts, M.J., Recursive calculation of finite time ruin probabilities., Insurance: mathematics and economics, 7, 1-8, (1988) · Zbl 0629.62101

[2] Dickson, D.C.M., On the distribution of the surplus prior to ruin, Insurance: mathematics and economics, 11, 191-207, (1992) · Zbl 0770.62090

[3] Dickson, D.C.M.; Waters, H.R., Recursive calculation of survival probabilities, Astin bulletin, 22, 199-221, (1991)

[4] Dickson, D.C.M.; Waters, H.R., The probability and severity of ruin in finite and in finite time, Astin bulletin, 23, 177-190, (1992)

[5] Dufresne, F., Distributions stationnaires d'un système bonus—malus et probabilité de ruin, Astin bulletin, 18, 31-46, (1988)

[6] Dufresne, F.; Gerber, H.U., The surpluses immediately before and at ruin, and the amount of the claim causing ruin, Insurance: mathematics and economics, 7, 193-199, (1988) · Zbl 0674.62072

[7] Gerber, H.U., An introduction to mathematical risk theory, (1979), S.S. Huebner Foundation Monograph Series No. 8 Homewood, IL, Distributed by R. Irwin · Zbl 0431.62066

[8] Gerber, H.U., Mathematical fun with the compound binomial process, Astin bulletin, 18, 161-168, (1988)

[9] Hogg, R.V.; Klugman, S.A., Loss distribution, (1984), Wiley New York

[10] Panjer, H.H., Recursive evaluation of a family of compound distributions, Astin bulletin, 12, 22-26, (1981)

[11] Wolfram, S., Mathematica — A system for doing mathematicss by computer, (1991), Addison-Wesley Publishing Co Redwood City, C.A