The Pyrenees International Workshop on Statistics, Probability and Operations Research, SPO 2011 Jaca, September 13–16th 2011

MODELING OPERATIONAL RISK WITH BAYESIAN EXTREME VALUE THEORY

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SUMMARY

Modeling of operational risk has emerged as important risk component for financial and insurance institutions due to the severe losses that it has produced in the last years. One of the main problems in the study of operational risk is the availability of data since many operational losses are not recorded or simply because of their low frequency. However, some data sets have become available and have allowed to analyze operational risk. In this study, an analysis of financial institutions internal loss data is performed using the Generalized Pareto Distribution by considering the uncertainty about the threshold. The proposed model considers the form of the distribution below and above the threshold, combining a parametric estimation with a Bayesian approximation to perform inference about the unknown parameters in both cases. The estimation is carried out using Markov Chain Monte Carlo (MCMC) methods, allowing posterior inference. After this, it is possible to determine the minimum capital requirements for operational risk.

Keywords: Operational Risk, Bayesian, Extremes

AMS Classification: 60G70, 62G32

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