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Extremal events in a bank operational losses

Operational losses are true dangers for banks since their maximal values to signal default are difficult to predict. This risky situation is unlike default risk whose maximum values are limited by the amount of credit granted. For example, our data from a very large US bank show that this bank could suffer, on average, more than four major losses a year. This bank had seven losses exceeding hundreds of millions of dollars over its 52 documented losses of more than \$1 million during the 1994-2004 period. The tail of the loss distribution (a Pareto distribution without expectation whose characteristic exponent is 0.95 !!! 1) shows that this bank can fear extreme operational losses ranging from \$1 billion to \$11 billion, at probabilities situated respectively between 1% and 0.1%. The corresponding annual insurance premiums are evaluated to range between \$350 M and close to \$1 billion.

Keywords: Bank operational loss, value at risk, Pareto distribution, insurance premium, extremal event.

Joint work with H. Dahren and G. Dionne (Journal of Operational Risks, 2010)

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