Mathematical Statistics
Stockholm University
Bachelor Thesis **2026:4**
http://www.math.su.se

A Comparison of Different Reinsurance Contracts: Stop-Loss, Excess-of-Loss and Proportional Reinsurance

Anton Pinet Magnusson*

May 2026

Abstract

This thesis compares proportional reinsurance, stop-loss reinsurance, and per-claim excess-of-loss reinsurance from the cedent's perspective. The comparison is made in a collective risk model where annual losses are simulated using different claim frequency and claim severity distributions. The contracts are calibrated with an equal-risk approach and compared by their expected ceded loss. The results show that stop-loss is generally the most cost-efficient contract at the main 80% retained-risk target. Proportional reinsurance is usually the most expensive alternative, while excess-of-loss becomes more competitive when claim sizes are heavy-tailed.

*Postal address: Mathematical Statistics, Stockholm University, SE-106 91, Sweden. E-mail: anton.p.magnusson123@gmail.com. Supervisor: Leo Levenius and Ola Hössjer.