Modeling the total loss distribution based on dependent operational risk frequency counts

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Basel regulations require banks to assess operational risk for different business lines and event types to build up appropriate risk capital buffer for operational losses. These are recorded over time in frequency and severity. In this project, we build a statistical model for the total loss. We suggest to capture the dependency among frequency counts using multivariate copulas. In particular, we utilize the class of regular vines resulting from pair copula constructions to allow for flexible dependencies patterns for different pairs of variables. The frequency counts require then a discrete version of regular vines. Marginal time effects in addition to zero inflation effects are to be taken into account as well. The resulting joint loss model allows then a more realistic and appropriate assessment of the required risk capital.

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