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Theoretical Sensitivity Analysis for Quantitative Operational Risk Management

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We study the asymptotic behaviour of the difference between the Value at Risks VaR(L) and VaR(L+S) for heavy tailed random variables L and S as an application to the sensitivity analysis of quantitative operational risk management in the framework of an advanced measurement approach (AMA) of Basel II. Here the variable L describes the loss amount of the present risk profile and S means the loss amount caused by an additional loss factor. We have different types of results according to the magnitude of the relationship of the thicknesses of the tails of L and S. Especially if the tail of S is sufficiently thinner than that of L, then the difference between prior and posterior risk amounts VaR(L+S) - VaR(L) is asymptotically equivalent to the component VaR of S (which is equal to the expected loss of S when L and S are independent).

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