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VaR and ruin probabilities for the Geometric Brownian motion with jump model

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Value-at-risk (VaR) is an important risk measure for financial and insurance firms. In fact, EU Solvency II sets a solvency capital requirement (SCR) of 1-year 99.5% VaR of liabilities. In this paper, we model an insurer's surplus as a Geometric Brownian motion with Poisson jumps. By comparing one-year VaR to ruin probability, especially the ruin probability with a relatively long time horizon, we concluded that the ruin probability could provide additional information to the insurers and can complement VaR as a useful risk measure.