In this paper, we study the effect of network structure between agents and objects on measures for systemic risk. We model the influence of sharing large exogeneous losses to the financial or (re)insurance market by a bipartite graph. Using Pareto-tailed losses and multivariate regular variation, we obtain asymptotic results for conditional risk measures based on the Value-at-Risk and the Conditional Tail Expectation. These results allow us to assess the influence of an individual institution on the systemic or market risk and vice versa through a collection of conditional risk measures. For large markets, Poisson approximations of the relevant constants are provided. Differences of the conditional risk measures for an underlying homogeneous and inhomogeneous random graph are illustrated by simulations.

Stichworte:
Bipartite network, multivariate regular variation, Value-at-Risk, Conditional Tail Expectation, Expected Shortfall, systemic risk measures, conditional risk measures, Poisson approximation.

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