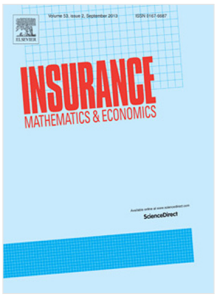

Multiple risk factor dependence structures: Distributional properties

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Multiple risk factor dependence structures: Distributional properties

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Abstract. We introduce a class of dependence structures that we call the Multiple Risk Factor (MRF) dependence structures. On the one hand, the new constructions establish a factor model framework for analysing default risk within a risk portfolio in which the components are exposed to an arbitrary number of risk factors having dependent occurrence times. On the other hand, the MRF structures can be seen as an encompassing family of multivariate probability distributions with the univariate margins distributed Pareto of the 2nd kind, and in this role, they can be used to model dependent and heavy tailed insurance losses. In both cases, the MRF dependencies provide a transparent and technically convenient basis for measuring and managing interdependent risks in the presence of predetermined sets of background risk factors that are of interest to risk managers.

Keywords and phrases: Multivariate distributions, dependence, Pareto distributions, default risk, factor model, weighted risk measures.

JEL Classification: C02, C46.

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