Exogenous shock models: Analytical characterization and probabilistic construction

Abstract:
A new characterization for survival functions of multivariate failure-times arising in exogenous shock models with non-negative, continuous, and unbounded shocks is presented. These survival-functions are the product of their ordered and individually transformed arguments. The involved transformations may depend on the specific order of the arguments and must fulfill a monotonicity condition. Conversely, every survival function of that very form can be constructed using an exogenous shock model with independent and non-homogeneous shocks.

Stichworte:
Exogenous shock model; fatal shock model; generalized Marshall–Olkin distribution; multivariate survival function

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