

Joint Life Insurance Pricing Using Extended Marshall-Olkin Models

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Abstract: Bivariate copula functions have been widely used to model the dependence structure between the residual lifetimes of the two individuals in a couple. However, considered copulas are absolutely continuous and do not allow for the case of a simultaneous death due to some catastrophic event. In this talk we will analyze the Extended Marshall-Olkin model (introduced in Pinto and Kolev, 2015) which is based on the combination of two approaches: the absolutely continuous copula approach, where the copula is used to capture dependencies due to environmental factors shared by the two lives, and the classical Marshall-Olkin model, where the association is given by accounting for a fatal event causing the simultaneous death of the two lives. Important properties of the Extended Marshall-Olkin model will be analyzed and applied to a sample of censored residual lifetimes of couples of insureds extracted from a dataset of annuities contracts of a large Canadian life insurance company.

The talk is based on a joint work with Fabio Gobbi (Department of Statistics, University of Bologna, Italy) and Nikolai Kolev (Institute of Mathematics and Statistics, University of São Paulo, Brazil)

References

- [1] Pinto J., Kolev N. (2015): Extended Marshall-Olkin Model and Its Dual Version, In U. Cherubini, F. Durante, S. Mulinacci (eds.) Marshall-Olkin Distributions-Advances in Theory and Applications. Springer Proceedings in Mathematics and Statistics. Springer International Publishing Switzerland (2015), 87-113.