



31 May - 03 June 2016
at
ISEG- Lisbon School of Economics
and Management

If you intend to submit a paper for the ASTIN COLLOQUIUM LISBOA 2016, you need to provide a **Synopsis** (using the template on the next page), complete this **Submission Form** and submit both to astincolloquium2016@gmail.com by **Saturday 7 May 2016**. Synopses and submission forms must be sent as MSWord attachments, please do not supply them in the body of an email. You will be advised of the outcome and, if accepted, your abstract will be uploaded to the website.

SUBMISSION FORM

Name: Joanna Dębicka

Company: Wrocław University of Economics, Poland

T: +48 713680360

M: -

E: joanna.debicka@ue.wroc.pl

Title of Paper / Presentation / Session to appear in program:

A matrix approach to pricing marriage insurances with mortality dependence

Author/s:

1. Joanna Dębicka

2. Stanisław Heilpern

3. Agnieszka Marciniuk

What will your final submission be? Presentation and Paper Presentation Only

If selected, what level of knowledge will delegates attending your session require? (please select only) one

No prior knowledge General industry knowledge assumed Technical/specific industry knowledge assumed

Note: If you are asked to present at ASTIN COLLOQUIUM LISBOA 2016, it will still be necessary for you to register and pay to attend the Colloquium. IAP does not subsidize, discount, pay for, or extend special registration offers for presenters or delegates.

IAP: Instituto dos Atuários Portugueses

Campo Grande 28, 8 C 1700-093 Lisboa
Portugal

TEL: + 351 21 846 38 82

Email: astincolloquium2016@gmail.com

<http://www.actuaries.org/lisbon2016/>



31 May - 03 June 2016
at
ISEG- Lisbon School of Economics
and Management

ABSTRACT

A matrix approach to pricing marriage insurances with mortality dependence¹

(Joanna Dębicka, Stanisław Heilpern, Agnieszka Marciniuk)

Key words:

dependent lifetimes, modified multistate model, marriage insurance, copula, joint-life status, last surviving status, stochastic interest rate.

Purpose of your paper:

We derive a matrix representation for formulas of actuarial values for marriage insurance contract. We assume that the interest rate is random and the lengths of the spouses' lives are dependent. We model such a dependent structure by copulas.

Abstract:

In the literature, the analysis of marriage insurance contracts is usually based on the assumption of the independence between the insured. This classical model will be extended by taking into account that future lifetimes of the insured depend on each other. We model the dependent structure of the length of the spouses' lives by copulas.

We focus on a discrete-time model, where insurance payments are made at the ends of time intervals. Moreover, actuarial values are considered under the assumption of stochastic interest rate. A uniform approach to the analysis of all types of future cash flows arising from the marriage insurance contract will be developed. The appropriate accommodation of the modified multiple state model will enable obtaining matrix formulas for actuarial values of multilife insurance contract under consideration of dependence between the insured. Matrix notation allows for an efficient analysis of the stochastic structure of the model and cash flows resulting from the realization of contracts and it provides a compact form for both the joint-life status and the last surviving status. In particular, this tool will facilitate the analysis of the impact of the probabilistic structure of the model (with dependence and independence) of marriage insurance for actuarial values, such as premiums and reserves.

¹ The support of the grant scheme NON-STANDARD MULTILIFE INSURANCE PRODUCTS WITH DEPENDENCE BETWEEN INSURED 2013/09/B/HS4/00490 is gladly acknowledged.