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

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SUBMISSION FORM

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Title of Paper / Presentation / Session to appear in program: Semi-parametric extensions of the Cairns-Blake-Dowd model: a one-dimensional kernel smoothing approach

Author/s:

1. Han Li **2.** Colin O'Hare

3. **4.**

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

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ABSTRACT

Semi-parametric extensions of the Cairns-Blake-Dowd model: a one-dimensional kernel smoothing approach

Han Li and Colin O'Hare

Key words: Mortality, Semi-parametric, Time-varying coefficients, Kernel smoothing, Forecasting.

Purpose of your paper: We aim to combine the good characteristics of existing mortality models with good model calibration methods to improve forecasting performance of the model. We follow the model structure of M7 and apply a one-dimensional kernel smoothing approach along the time dimension. The proposed time-varying coefficient (TVC) mortality models can be seen as semi-parametric extensions of the CBD model which also allow for flexibilities in model design.

Abstract: Over the past few decades, there has been an enormous growth in mortality modeling as the field of mortality risk and longevity risk has attracted great attention from academic, government and private sectors. In this paper, we propose a time-varying coefficient mortality model aiming to combine good characteristics of existing models with efficient model calibration methods. Nonparametric kernel smoothing techniques have been applied in the literature of mortality modeling and based on the findings from Li et al.'s study (2015), such techniques can significantly improve the forecasting performance of mortality models. Thus, in this study we follow the same path and adopt a kernel smoothing approach along the time dimension. Since we follow the model structure of the Cairns-Blake-Dowd (CBD) model, the TVC model we propose can be seen as semi-parametric extensions of the CBD model and it gives specific model design according to different countries' mortality experience. The fitting and forecasting results from empirical studies have shown superior performances of the model over a selection of well-known mortality models in the current literature.

Note: If you are not presenting a paper for this Colloquium, please include as much detail as possible in your Abstract (maximum three pages) to enable delegates to prepare for your session.