

COMPARATIVE STUDY OF MORTALITY FORECASTING MODELS

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Abstract

A number of mortality forecasting models have been proposed in the literature in recent years. We consider the age-period model proposed by Lee and Carter (1992) and the age-period-cohort extension proposed by Renshaw and Haberman (2006) as well as the range of age-period-cohort models put forward by Cairns et al (2007, 2008). We investigate the properties of 6 models from these families and then, using a dataset relating to the mortality experience of England and Wales (1961-2007), undertake a comparative investigation of the goodness of fit of the 6 models, the resulting predictions and measures of uncertainty. The results will be of interest to insurance companies and others with significant annuity and defined benefit pension liabilities.

Keywords: binomial response model; mortality forecasting; age-period-cohort effects; back-fitting; model comparisons.

Theme 1: biometric risks and their securitisation.