

Coherent Projections of Age, Period, and Cohort Dependent Mortality Improvements

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Abstract

The projection of future mortality experience constitutes a challenge for both actuaries and demographers. Some of the currently used projections have several shortcomings which may pose a serious threat to insurers and social security systems. In this paper, we propose a new projection methodology which overcomes these shortcomings. Our model allows mortality improvements to depend on age, period, and cohort and provides highly plausible forecasts. Moreover, it is very flexible with respect to the level of future mortality improvements. This allows us to derive coherent projections for several populations simultaneously, e.g. males and females of the same country or populations from closely related countries. We observe that the incorporation of information about the mortality experience of other populations can have a significant impact on the projection for a given population. In order to illustrate our methodology, we derive fully specified projections for German males and females as members of a large reference set of European populations.