

Modeling Differential Mortality Trends Across Groups and Countries Using the Wang Transform

Piet De Jong

Department of Actuarial Studies
Macquarie University

Abstract:

A new method for analyzing and projecting mortality is discussed and examined. The method takes observed time series of survival probabilities, finds the corresponding z-scores in the standard normal distribution and forecasts the z-scores. The z-scores appear to follow a simple linear progression in time and hence forecasting is straightforward. The z-score scale facilitates the implementation and use of linear vector time series models. Examples illustrate the testing and estimation of differential trends across ages and groups (eg. countries, sexes or ethnic origins). Methods and extensions are used to derive mortality projections through to the year 2100 in both survival probabilities and the expectation of life.