

RESEARCH NOTE

FUTURE LIFE EXPECTANCY IN AUSTRALIA, EUROPE, JAPAN AND NORTH AMERICA

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Human life expectancy has risen in most developed countries over the last century, causing the observed demographic shifts. Babel, Bomsdorf and Schmidt (forthcoming) introduce a stochastic mortality model using panel data procedures which distinguishes between a common time effect and a common age effect of mortality evolution. Using this mortality model, the present paper provides forecasts of future life expectancy for 17 countries divided into 12 regions: Australia, Alps, Bene, Canada, England and Wales, France, Germany, Italy, Japan, Spain, Scandinavia and the United States of America. We consider (traditional) period life expectancies as well as cohort life expectancies, the latter being a more realistic approach but less common. It turns out that a continuing increase of life expectancy is expected in all considered countries. Further, we show that the probabilistic uncertainty of forecast life expectancies is different if either period life expectancies or cohort life expectancies are considered and, moreover, the uncertainty increases substantially if the error of parameter estimation is included.

Keywords: life expectancy, life table, stochastic mortality, forecasts, cohort analysis, period analysis

The magnitude of mortality is typically described using death rates. The assessment of its probabilistic future behaviour is important for the (financial) stability of social security systems and the life insurance and pension industry. Bomsdorf and Trimborn (1992) propose an extrapolative projection model for future death rates. In their approach, projections of one-year death rates $m_x(t)$ depend log-linearly on the individual age x and observation year t as follows:

$$m_x(t) = m_x(t_0) \cdot \exp\{\beta_x(t-t_0)\}, \quad (1)$$

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