

Title: Modelling Dependent Lives

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Abstract: In this thesis, we model the dependence between the remaining lifetimes of a husband and wife using a specific Markov model. We examined the impact of the dependence on the net single premium using the specific Markov model that captures the long-term dependence between lifetimes of the two considered lives. Using this model we have calculated 10-year joint-life annuity due and 10-year last-survivor annuity due considering the age range (37, 80) in case of dependence and also independence of the two considered lives. The calculations were based on the dataset related to the Czech population in 2015. The impact of the dependence between the remaining lifetimes of the husband and wife was found to be not significant.

Keywords: positive quadrant dependence, multiple life insurance premiums, dependent lifetimes, joint-life annuity, last-survivor annuity, joint-life and last-survivor models