Cause-of-Death Mortality: A Study of a Heterogeneous Portfolio Dynamic

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Abstract

Two major risks life insurance companies have to face are the mortality and longevity risks. The exposure to these risks for the company depends on the profil of its insured portfolio. Indeed, age, gender and socio-economic category are risk factors for mortality, and thus for mortality by cause of death. For this project, we are interested in studying the cause-of-death mortality for an insurance portfolio. As causes of death are not equally represented among different subpopulations, we are trying to assess the impact on the dynamic of the insurance portfolio of a cause-of-death mortality reduction. For that purpose, we study the portfolio dynamic with a stochastic individual-based model, including arrivals of new individuals with their own characteristics. We apply this model to a case study with English data on cause-of-death mortality by age, gender and socio-economic category.

Keywords: Cause-of-Death Mortality, Population Dynamics, Individual-Based Model, Socio-Economic Variable