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Title: Modeling Trades in the Life Market as Nash Bargaining Problems: Methodology and Insights

Abstract: Longevity risk, that is, the risk of unexpected longevity improvements, poses huge burdens on pension plan sponsors and annuity writers. Since about ten years ago, institutions that are subject to longevity risk have started to consider securitization as a solution to the problem, leading to the formation of the `Life Market', in which securities linked to future mortality are traded. In this paper, we model the trade of a longevity security as a two-player bargaining game, and use Nash's bargaining solution to determine the outcome of it. Our model can be used by practitioners to estimate the price of a newly introduced longevity security. Relative to the existing pricing methods, the method we propose has two advantages. First, it does not require the competitive market assumption, which is not satisfied by today's Life Market. Second, it does not require any market price data, which are not readily available from the public domain. We illustrate the theoretical results with a hypothetical trade of a longevity bond between a pension plan sponsor and an investor. This is a joint work with Johnny Li (University of Waterloo) and Rui Zhou (University of Manitoba).