

# Systematic longevity risk: The willingness to pay

Anne G. Balter <sup>\*1,2</sup>, Malene Kallestrup-Lamb <sup>†1</sup>, and Mathias D. Plovst <sup>‡2,3</sup>

<sup>1</sup>Tilburg University and Netspar

<sup>2</sup>Aarhus University and PeRCent

<sup>3</sup>Aarhus University

## Abstract

Increasing life expectancy has led to a global transition in pension systems towards more variable annuity products in which risk is explicitly borne by the participants, necessitating a thorough understanding of systematic longevity risk. This risk is explicitly transferred to policyholders contrasting with earlier implied hedges. Our goal is to quantify longevity risk through its impact on welfare, i.e., the willingness to pay. Longevity risk can be categorized into idiosyncratic and systematic, with the latter, representing changes in life tables, being the focus of our study. The risk is determined as life expectancy changes over time beyond the already incorporated projected increase. To address the gap in quantifying systematic longevity risk, we are the first to introduce a multiple-horizon approach in which we calculate the realized unexpected deviations in best estimated survival rates due to arrival of new observations in the mortality model. Our findings unveil that the willingness to pay to avoid the systematic longevity risk, i.e., the risk premium required to bear this risk, is substantial. We conduct extensive sensitivity analyses, exploring cross-country variations, different stochastic longevity models, and gender differentials, among others, contributing novel insights to the literature on the size of systematic longevity risk.

**Keywords:** systematic longevity risk; variable annuities; risk premia; defined contributions; defined benefits.

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\*E-mail address: [a.g.balter@tilburguniversity.edu](mailto:a.g.balter@tilburguniversity.edu)

†E-mail address: [mkallestrup@econ.au.dk](mailto:mkallestrup@econ.au.dk)

‡E-mail address: [mdp@econ.au.dk](mailto:mdp@econ.au.dk)