

Pintao Lyu

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EDUCATION

- Ph.D. Econometrics and Operations Research, Tilburg University, 2020 (exp.)
M.Phil. Economics *with distinction*, Tilburg University, 2017
Key courses: The economics and finance of the pension (9.5/10.0), Life cycle investment and pension systems (9.0/10.0), Asset liability management (8.5/10.0), Valuation and risk management (8.5/10.0)
B.S. Economics *with honor*, Central University of Finance and Economics, 2015

RESEARCH AREAS

Household finance, Risk management, Actuarial science

PAPERS

Job market paper

- 2019- Lyu, P., "Heterogeneous survival expectations and wealth inequality"

Abstract:

Using new survey evidence in Heimer et al. (2019, Journal of Finance), I show how subjective life expectancy leads to wealth inequality. Agents with higher educational attainment switch from underestimating to overestimating survival earlier in life, which results in higher saving motives when young and slower asset drawdown when old. Educational attainment positively correlates with living conditions, causing various degrees of agents' overreaction to rare events in the vicinity. I characterize a standard stochastic life cycle model to these subjective mortality beliefs and demonstrate 20-25 % of retirement wealth inequality comes from heterogeneous survival expectations.

Key skills:

Processed surveys (incl. Panel Study of Income Dynamics and Heath Retirement Study) and estimated reduced-form econometrics models using Stata. Simulated the life cycle model and matched to the data moments using Fortran and MATLAB. Streamlined the simulations using the parallel computing environment in the Lisa Cluster.

Articles in Peer-Reviewed Journals

- 2020 Lyu, P., De Waegenare, A., & Melenberg, B. (2020) "A multi-population approach to forecasting all-cause mortality using cause-of-death mortality data." *North American Actuarial Journal*, 1-36.

Key skills:

Processed a large-scale WHO and World Bank database using SQL and summarized the data via visualization in R. Constructed statistical tests and foretasted time series using MATLAB.

Working papers

- 2018- Lyu, P., De Waegenare, A., & Melenberg, B. "A quantitative comparison of simulation strategies for longevity risk management."

Key skills:

Assessed the asymptotic validity of various bootstrap schemes using a simulation study in MATLAB.

- 2019- Lyu, P., Zhou, K. Q., & Li, J. S. H. "Incorporating the association between socioeconomic status and mortality into index-based longevity hedges."

Key skills:

Evaluated the hedge effectiveness of the newly proposed index-based hedges in Python.

PROFESSIONAL EXPERIENCE

- 2016- Nationale-Nederlanden Life, Quantitative Researcher, 2 days a week

Involved projects:

Longevity Redesign: built a partial internal model for reserving approx. €2 bn longevity trend risk jointly with Anastasios Bardoutsos, supervised by Wilbert Ouburg.

Mortality Differentiation: built a mortality model to price pension contracts differently for various salary thresholds jointly with Ahmad Salahnejhad, supervised by David Schrager.

CONFERENCE AND SEMINARS

- 2019 Fifteenth International Longevity Risk and Capital Markets Solutions Conference (Longevity 15).
- 2018 22nd International Congress on Insurance: Mathematics and Economics, Fourteenth International Longevity Risk and Capital Markets Solutions Conference, European Actuarial Journal Conference 2018, Netspar International Pension Workshop '18, The Asia-Pacific Risk and Insurance Association Conference 2018, Invited seminar at The University of Melbourne.
- 2017 Thirteenth International Longevity Risk and Capital Markets Solutions Conference (Longevity 13).

GRANTS AND AWARDS

Awards and Honors

- 2018 Kyobo Life Travel Scholarship

Grants

- 2019 Longer life, longer in good health, working longer? Implications of educational differences for the pension system, Netspar Thema grant. Project member.
- 2018 Modeling and forecasting Chinese population dynamics in a multi-population context (\$10,000). Society of Actuaries China research grant. Co-PI with Hong Li and Yang Lu.
- 2017 Investigation into Differentiated longevity trends within the Dutch population. Netspar Ph.D. grant with Nationale-Nederlanden Life and Tilburg University. Supervisor: Bertrand Melenberg and David Schrager.

TEACHING EXPERIENCE

Tilburg University

Econometrics (B.Sc. Econometrics and Operations Research), 2018

Evaluations: 4.42/5.00 (peer average: 4.00/5.00)

REFeree SERVICE

North American Actuarial Journal

PROGRAMMING SKILLS

MATLAB, R, Stata, SQL, Python

Updated May 2020