

INTEGRATING FLEXIBLE WORK, ENDOGENOUS RETIREMENT, AND PORTFOLIO DECISION WITH GUARANTEED LIFETIME PENSION PAYOUTS

JINGJING CHAI, WOLFRAM HORNEFF, RAIMOND MAURER,
AND OLIVIA S. MITCHELL*

September 2009

Our research integrates the decision making process of a consumer seeking to optimally select her saving, consumption, work hours, retirement age, and investment patterns in a life-cycle context, where she has access to both the capital market (stocks and bonds) and investment-linked pension annuity programs. We contribute to the finance and pension literature by making the work/retirement decisions endogenous, as the consumer can adjust both her retirement date and her employment hours during her work life. We also add value to the Social Security literature by making investment and annuitization decisions endogenous to the life-cycle work and retirement choice. From an individual's asset-liability perspective, we show how stochastic equity returns, uninsurable labor income shocks, and uncertain lifetimes help shape investment portfolio, consumption, and saving patterns.

FLEXIBLE WORK, RETIREMENT AGES, AND INVESTMENT-LINKED PENSION PAYOUT PROGRAMS WITH GUARANTEED PAYOUTS: RELEVANCE FOR THE ELDERLY

Our study shows that the best-case scenario for older workers is to let them decide when to wind down their work effort and to include payout annuities in their financial picture. This gives them the flexibility to retire earlier and participate more vigorously in investment markets during their lifetimes. Earlier retirement becomes more attractive when workers have both guaranteed Social Security benefits and investment-linked annuity payments on which to rely in old age, the researchers assert. Using a realistically-calibrated model with uncertain lifetime labor income and capital market returns, the authors extend the investment universe under analysis to include not only stocks and bonds, but also survival-contingent payout annuities. The paper derives optimal life-cycle portfolio asset allocations, consumption and saving rates, and annuity purchase trajectories for a consumer who can select her hours of work and also her retirement age.

FINANCIAL WELL-BEING FOR RETIREMENT SCENARIOS

Our research uses life-cycle economic modeling to compare key outcomes for four different scenarios:

- A moderately risk-averse worker who chooses her desired consumption, savings and investment portfolio given a fixed work week, a fixed retirement age of 65, and no access to investment linked annuity markets;
- A worker who selects her consumption, investment, and labor supply, given a fixed work week but flexible retirement age (between 62 and 70);

**Jingjing Chai and Wolfram Horneff are researchers and Raimond Maurer is the Chair of Investment, Portfolio Management and Pension Finance at the Finance Department of Goethe University, Frankfurt, Germany. Olivia S. Mitchell is the International Foundation of Employee Benefit Plans Professor of Insurance and Risk Management at the Wharton School. This Research Brief is based on MRRC Working Paper WP 2009-204.*

- A worker who can also determine her work intensity, up to a maximum of 75 working hours per week;
- A worker able to not only select her work intensity and retirement age, but who can also buy investment linked payout annuities as well as stocks and bonds.

The analysis of these retirement/investment scenarios illustrates that having both flexible work hours and flexible retirement dates are extremely valuable, using a lifetime utility analysis. Those who have this labor supply flexibility, in addition to annuitized saving with investment-linked payouts, are much better off than their more constrained counterparts. This gain in well-being is substantial, worth 7 percent of lifetime utility or more than 62 percent of the worker's first-year earnings.

OUR MODEL FITS OBSERVED BEHAVIOR

Prior studies have often assumed that retirement ages are fixed and set exogenously. Moreover, earlier research has also predicted that older people will hold unrealistically high levels of equity if they hold any investments, but most older persons will not participate in the capital market at all. These results are also incompatible with real-world evidence. By contrast, by allowing labor supply to be flexible, we find several outcomes that seem more consistent with the real world. For instance, in our model there is a substantially higher level of work effort by the young, and older persons are found to optimally hold more equities. When we introduce annuities, this then permits still earlier retirement and higher market participation by older households. Finally, the model is made more flexible by making tastes for leisure depend on age. Not only is this sensible but it fits observed behavior remarkably well. In this case, work hours and equity holdings are predicted to gradually decline at older ages. This case also generates a sensible dispersion of retirement ages peaking at age 62, consistent with real-world evidence.

INVESTMENT-LINKED PENSION PAYOUT PROGRAMS: PRICING AND RISK MANAGEMENT

Our study predicts that, as Baby Boomers move towards retirement, traditional fixed-payout annuities will gradually be replaced by investment-linked tactics (with income and/or return guarantees) for the payout phase. One way to overcome the potential risk that financially inexperienced individuals may fare poorly in such personal retirement programs, to the extent that they do not fully understand the risks associated with investments as well as spending options, would be to incorporate income or rate of return guarantees into such investment-linked pension payout programs. From the product providers (e.g., life insurance companies, pension funds, or asset managers) fair pricing (based on actuarial techniques and option theory) and prudent risk management is important in designing such guarantees.

Evidently, combining work, investment, and lifetime payouts offers better and more attractive ways to manage life's many challenges. In sum, the benefit from having access to investment-linked annuities is positive and important in the life-cycle context, as is labor market flexibility in the form of adjustable work hours and retirement ages.

UNIVERSITY OF MICHIGAN RETIREMENT RESEARCH CENTER

INSTITUTE FOR SOCIAL RESEARCH 426 THOMPSON STREET ROOM 3026 ANN ARBOR, MI 48104-2321
PHONE: (734) 615-0422 FAX: (734) 615-2180 MRRC@ISR.UMICH.EDU WWW.MRRC.ISR.UMICH.EDU

The research reported herein was performed pursuant to a grant from the U.S. Social Security administration (SSA) through the Michigan Retirement Research Center (MRRC). The findings and conclusions expressed are solely those of the author(s) and do not represent the views of SSA, any agency of the federal government, or the MRRC.

Regents of the University of Michigan: Julia Donovan Darlow, Laurence B. Deitch, Denise Ilitch, Olivia P. Maynard, Andrea Fischer Newman, Andrew C. Richner, S. Martin Taylor, Katherine E. White, Mary Sue Coleman, Ex Officio