Happy Together: A Structural Model of Couples' Joint Retirement Choices

Maria Casanova
UCLA

QSPS 2015 Summer Workshop

05/29/2015

Introduction

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Main contribution of the paper is analysis of retirement at the couple level.

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graph

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This paper aims to bridge the gap between the two strands

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- Retirement is not an absorbing state
- Benefit receipt is an absorbing state

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Discrete choices: $d_t^j \in D^j = \{R, PT, FT\}, \quad \text{for } j = m, f$

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$$z_t = \{A_t, E_t^m, E_t^f, w_t^m, w_t^f, B_t^m, B_t^f, agediff\}$$

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$$\varepsilon_t = \{\varepsilon_t(d_t) | d_t \in D\}$$

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Household utility

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Household utility

$$U(d_t, s_t; z_t, \varepsilon_t, \theta_1) = \phi U^m(c_t, l_t^m) + (1-\phi)U^f(c_t, l_t^f) + \varepsilon_t(d_t)$$

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Individual utility

$$U^j = \frac{1}{1-\rho}\left(c_t^{\alpha_1^j}(l_t^j)^{1-\alpha_1^j}\right)^{1-\rho}$$

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$$l_t^j = L - h_t^j(d_t^j) + \alpha_2 I(d_t^m = R, d_t^f = R)$$

Model

BUDGET CONSTRAINT

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$$c_t + s_t = A_t + Y(rA_t, w_t^m h_t^m, w_t^f h_t^f, \tau) + B_t^m \times ssb_t^m + B_t^f \times ssb_t^f + T_t$$

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Next period's asset:

$$A_{t+1} = s_t + hc_t$$

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Liquidity constraint:

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Liquidity constraint:

$$s_t \geq 0$$

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Social Security Function:

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- Workers retiring at 62 receive 80% of PIA

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- Workers retiring after 65 receive 5.5% increase per year

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- Benefits are indexed to CPI
- Earnings test

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- Benefits are indexed to CPI
- Earnings test
- Dependent spouse benefit
- Surviving spouse benefit

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STOCHASTIC PROCESSES

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$$\upsilon_{it} = \upsilon_{it-1} \qquad + \xi_{it}$$

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STOCHASTIC PROCESSES (contd.)

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$$E(hc_t|age_t^m, age_t^f) = E(hc_t|age_t^m, age_t^f, hc > 0)P(hct > 0|age_t^m, age_t^f)$$

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Survival:

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Survival:

$$s_{t+1}^j = s(age_t^j)$$

Model Solution

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- Extend framework in order to account for continuous decisions.

Model Solution

Households choose a series of decision rules $\Pi = \{\pi_0, \pi_1, ..., \pi_T\}$, where $\pi_t(z_t, \varepsilon_t) = (d_t, s_t)$, to maximize:

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The expectation is taken with respect to the controlled stochastic process $\{z_t, \varepsilon_t\}$ with probability distribution:

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$$f(z_{t+1}, \varepsilon_{t+1} | d_t, s_t, z_t, \varepsilon_t, \theta_2, \theta_3) =$$

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$$q(\varepsilon_{t+1} | z_{t+1}, \theta_2) g(z_{t+1} | z_t, d_t, s_t, \theta_3)$$

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$$V_t(z_t, \varepsilon_t, \theta) = \max_{d_t} \left\{ \max_{s_t} \{ u(k, s_t, z_t, \theta_1) + \beta E_t V_{t+1}(z_{t+1}, k, s_t, \theta) | d_t = k \} + \varepsilon_t \right\}$$

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Inner maximization yields choice-specific value functions:

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Inner maximization yields choice-specific value functions:

$$r(k, z_t, \theta) = \max_{s_t} \{[u(k, s_t, z_t, \theta_1) + \beta E_t V_{t+1}(z_{t+1}, k, s_t, \theta)] | d_t = k\}$$

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Outer maximization is random-utility model:

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Outer maximization is random-utility model:

$$\max_{d_t} \{r(z_t, d_t, \theta) + \varepsilon_t(d_t)\}$$

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Assumption: ε follows multivariate extreme value distribution

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Conditional choice probabilities:

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Conditional choice probabilities:

$$P(k|z_t, \theta) = \frac{\exp\{r(z_t, k, \theta)\}}{\sum_{k \in D} \exp\{r(z_t, k, \theta)\}}$$

graph

Estimation

Vectors of parameters to be estimated: θ_1 and θ_3

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  This yields $\hat{\theta}_3$.

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- Second stage:

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  Estimate parameters which can be identified without specific reference to dynamic model.

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- Second stage:

  Estimate θ_1 using method of simulated moments.

Data

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- Extensive information on:
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  - Retirement
  - Demographics
- HRS data can be linked to Social Security Administration records which provide information on covered earnings and benefits.

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Estimation sample:

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- For individuals with no private pension, Social Security provides main age-specific incentives for retirement.
- The same is true for individuals with defined contribution pensions.
- Defined benefit pensions give very strong incentives for retirement at particular ages, usually different from the Social Security ages.

Estimation: Second Stage

Table: Preference and Wage Process Parameter Estimates

Parameter and definition		(1)	(2)
α_1^m	Consumption share, male U function	0.5102	
α_1^f	Consumption share, female U function	0.4295	
α_2	Value of shared retirement		
	Male's wage depreciation per year PT	0.9051	
	Female's wage depreciation per year PT	0.8933	
	Male's wage depreciation per year R	0.8092	
	Female's wage depreciation per year R	0.7795	
GMM criterion		0.2058	0.1404

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			(0.0043)
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	Male's wage depreciation per year PT	0.9051	
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α_2	Value of shared retirement		0.0891
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	Male's wage depreciation per year PT	0.9051	0.9258
			(0.0383)
	Female's wage depreciation per year PT	0.8933	0.9219
			(0.0334)
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			(0.0334)
	Male's wage depreciation per year R	0.8092	0.8609
			(0.0436)
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			(0.0436)
	Female's wage depreciation per year R	0.7795	0.7841
			(0.0336)
GMM criterion		0.2058	0.1404

Figure: Simulated vs. actual age profiles for total participation, men.

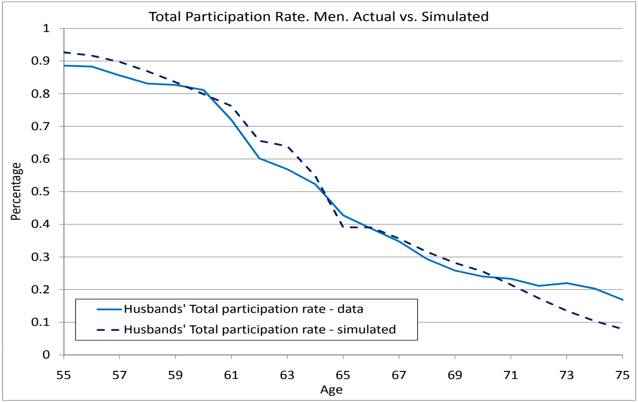


Figure: Simulated vs. actual age profiles for total participation, women.

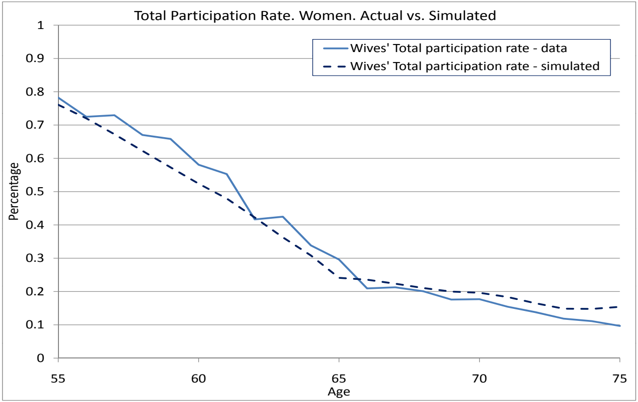


Figure: Simulated vs. actual age profiles for FT/PT participation, men.

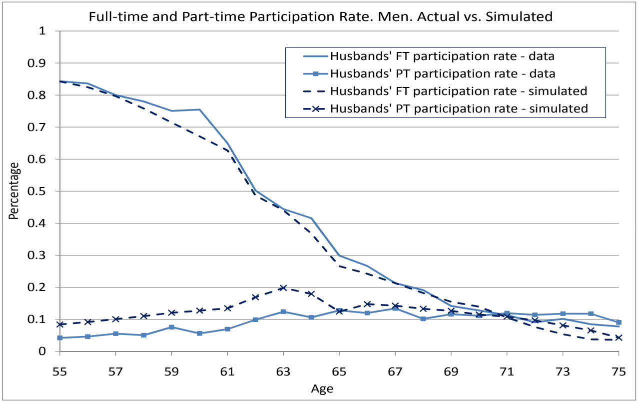


Figure: Simulated vs. actual age profiles for FT/PT participation, women.

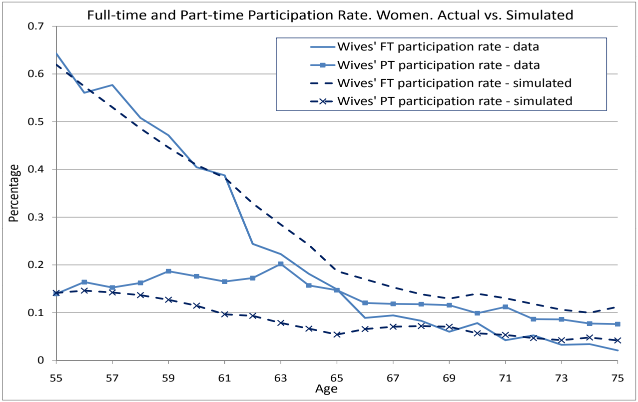


Figure: Simulated vs. actual retirement frequencies, men.

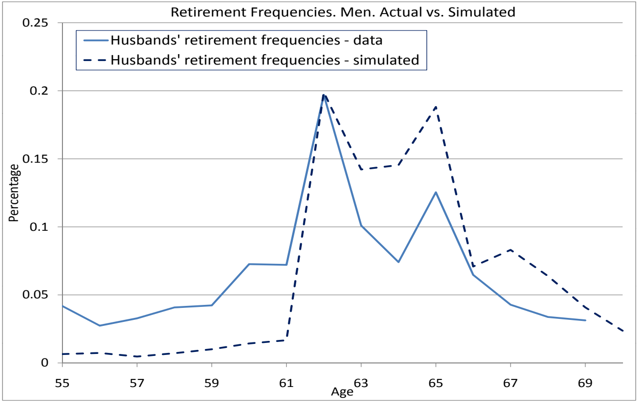


Figure: Simulated vs. actual retirement frequencies, women.

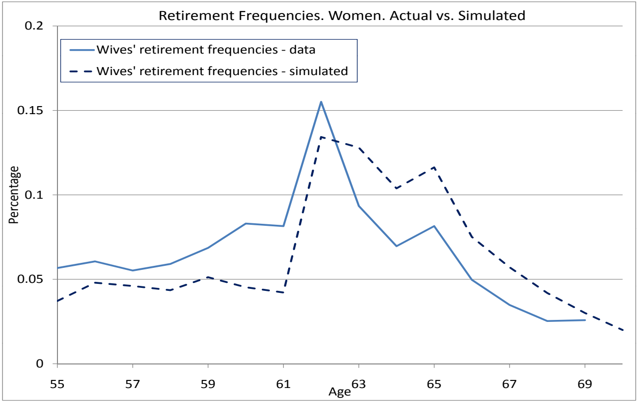
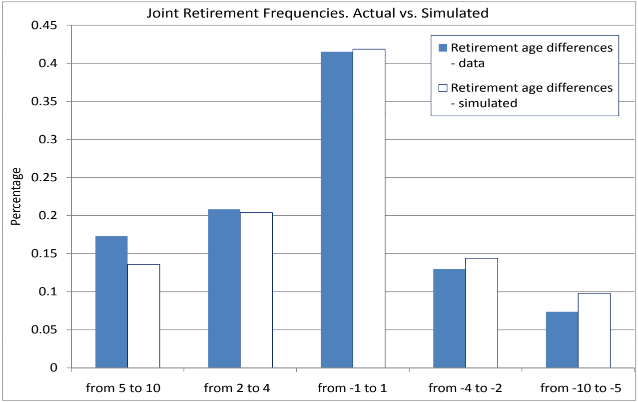


Figure: Simulated vs. actual joint retirement frequencies.



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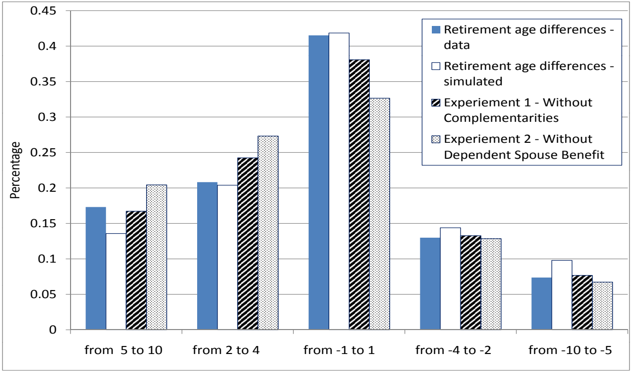

Conclusions

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- Results show that positive complementarity parameters explain 8% of joint retirements...
- ...while social security's spousal benefit accounts for another 13%.

Figure: Retirement frequencies for married men and women

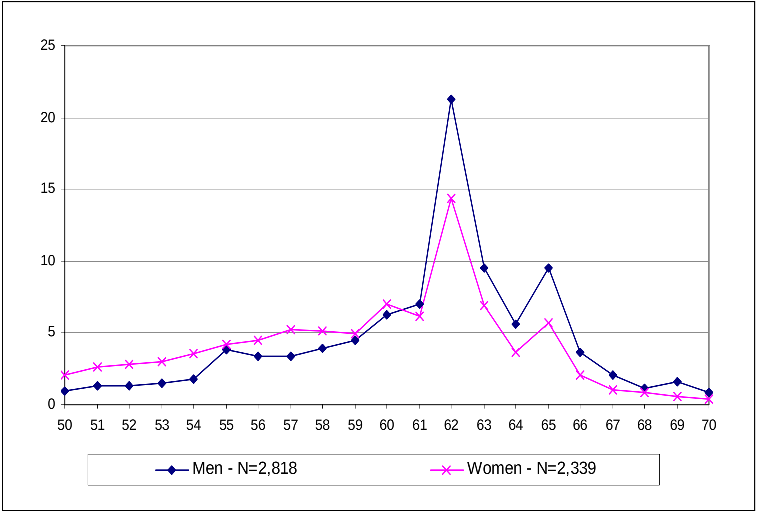

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Figure: Optimal participation choices as a function of E^m, E^f

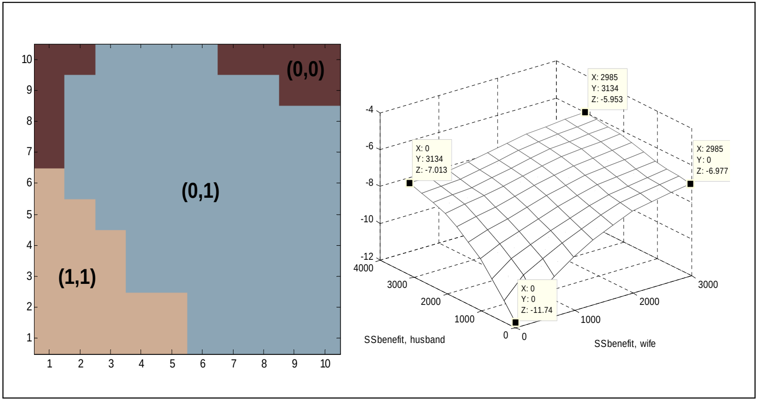

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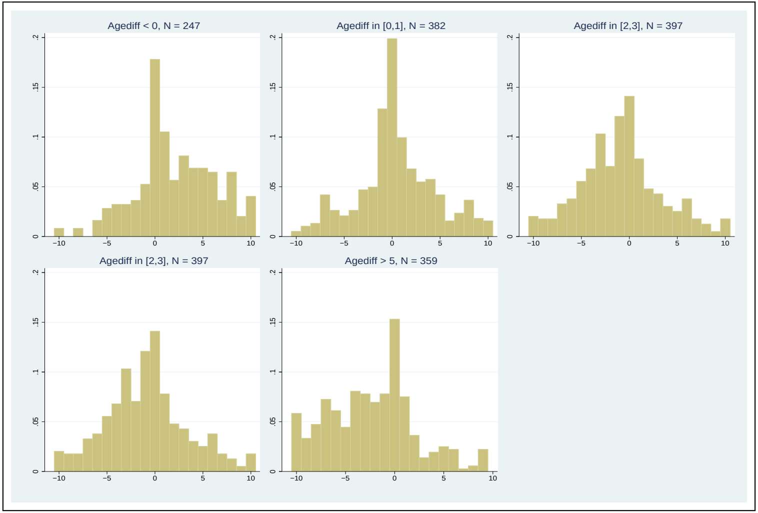
Figure: Differences in retirement dates by age difference between spouses



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Introduction

Leisure Complementarities

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