

Home Production and Retirement in Couples: A Panel Data Analysis

Eric Bonsang, Univ. Paris Dauphine & Netspar
Arthur van Soest, Tilburg University & Netspar

Overview

- Motivation
- GSOEP data on time use
- Retirement and time use in couples
- Panel data models
- Estimation Results
- Does home production compensate for the income loss at retirement?
- Conclusions

Existing studies

- Retirement consumption puzzle: Consumption expenditures fall at retirement (Banks, Blundell, Tanner 1998)
- Possible solution: Increase in home production at retirement (Hamermesh 1984; Aguiar & Hurst 2005, 2007; Hurd & Rohwedder 2008; Battistin et al. 2009)
- Effect of retirement on time use of the spouse (Szinovacz 2000; Stancanelli & van Soest 2012)
- Endogeneity of retirement can be tackled using regression discontinuity (Battistin et al. 2009; Stancanelli & van Soest


This paper

- Panel data on time spent on home production in couples (German SOEP, 1993 – 2013)
- Can study changes at the household level when one of the partners retires
- Can look at time use 1, 2, 3, ... years before and after retirement
- Mitigates endogeneity problem using fixed effects models explaining home production from retirement and other variables
- Also uses an alternative identification strategy with regression discontinuities (FE-IV)

Data: German Socio-Economic Panel

- Same questions on time use since 1993: We use 11 waves of data, 1993, 1995, 1997, ..., 2013
- These waves also have information on time use in weekends
- Heterosexual couples ages 45 – 75
- Exclude special samples of high income households and immigrants
- Drop observations with missing or unreliable values on time use
- Approximately 8,900 couples and 32,400 observations (unbalanced panel)

62. What does a typical weekday look like for you?
How many hours per day do you spend on the following activities?

 Please give only whole hours.
Use zero if the activity does not apply!

**Number
of hours**

Job, apprenticeship, second job
(including travel time to and from work)

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Errands (shopping, trips to government agencies, etc.)

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Housework (washing, cooking, cleaning)

--	--

Child care

--	--

Care and support for persons in need of care

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Education or further training (also school, university)

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Repairs on and around the house, car repairs, garden work

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Hobbies and other free-time activities

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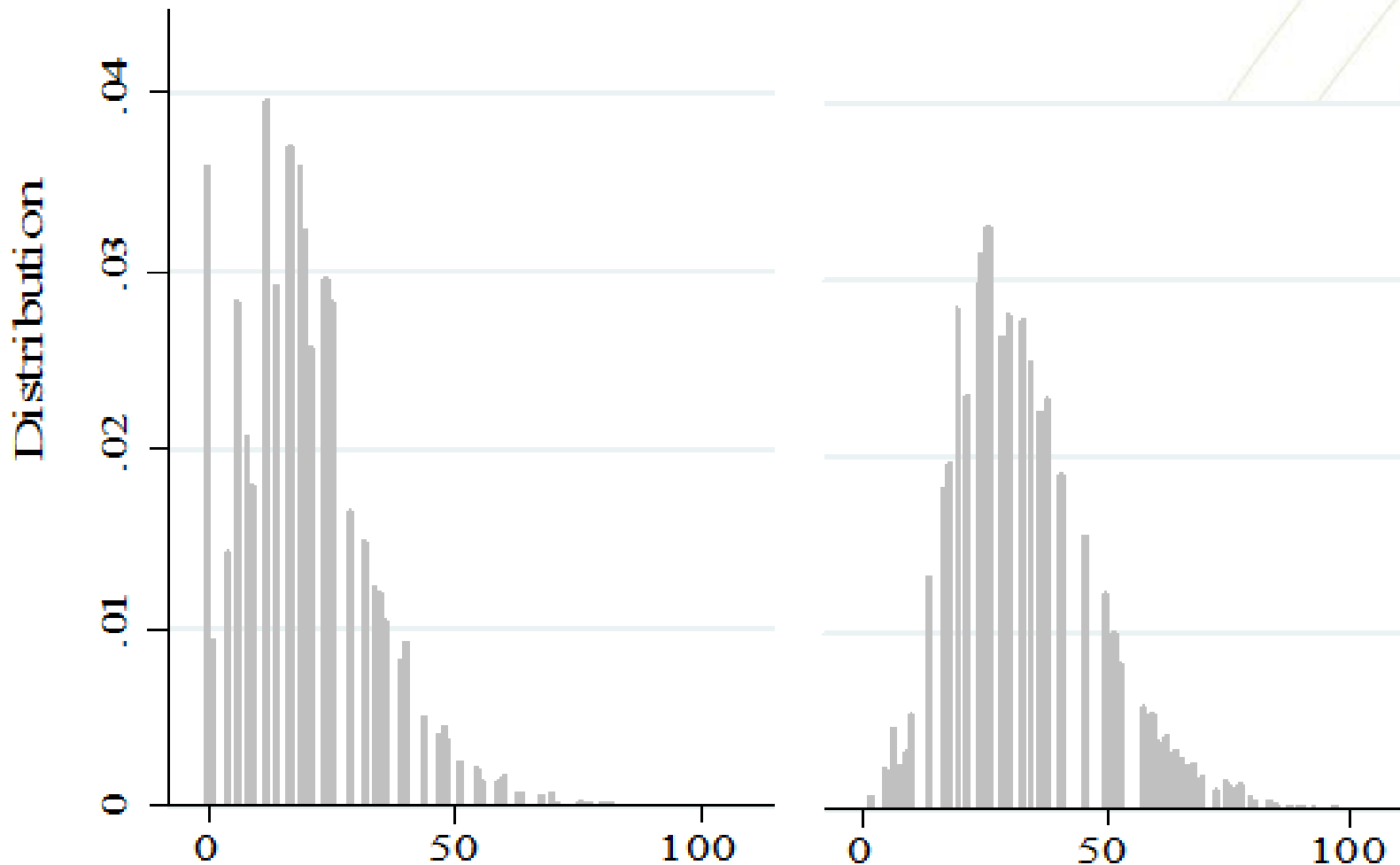
Home production per week

- Home production: Errands, housework, repairs on and around the house, including car repairs and garden work (following Schwerdt 2005 and Frazis and Stewart 2011)
- Exclusion of care and support to persons in need for care, and child care.
- Home production per week: 5 x home prod. on a normal weekday + home prod. on a normal Saturday + home prod. on a normal Sunday.

Hours of home production per week

men

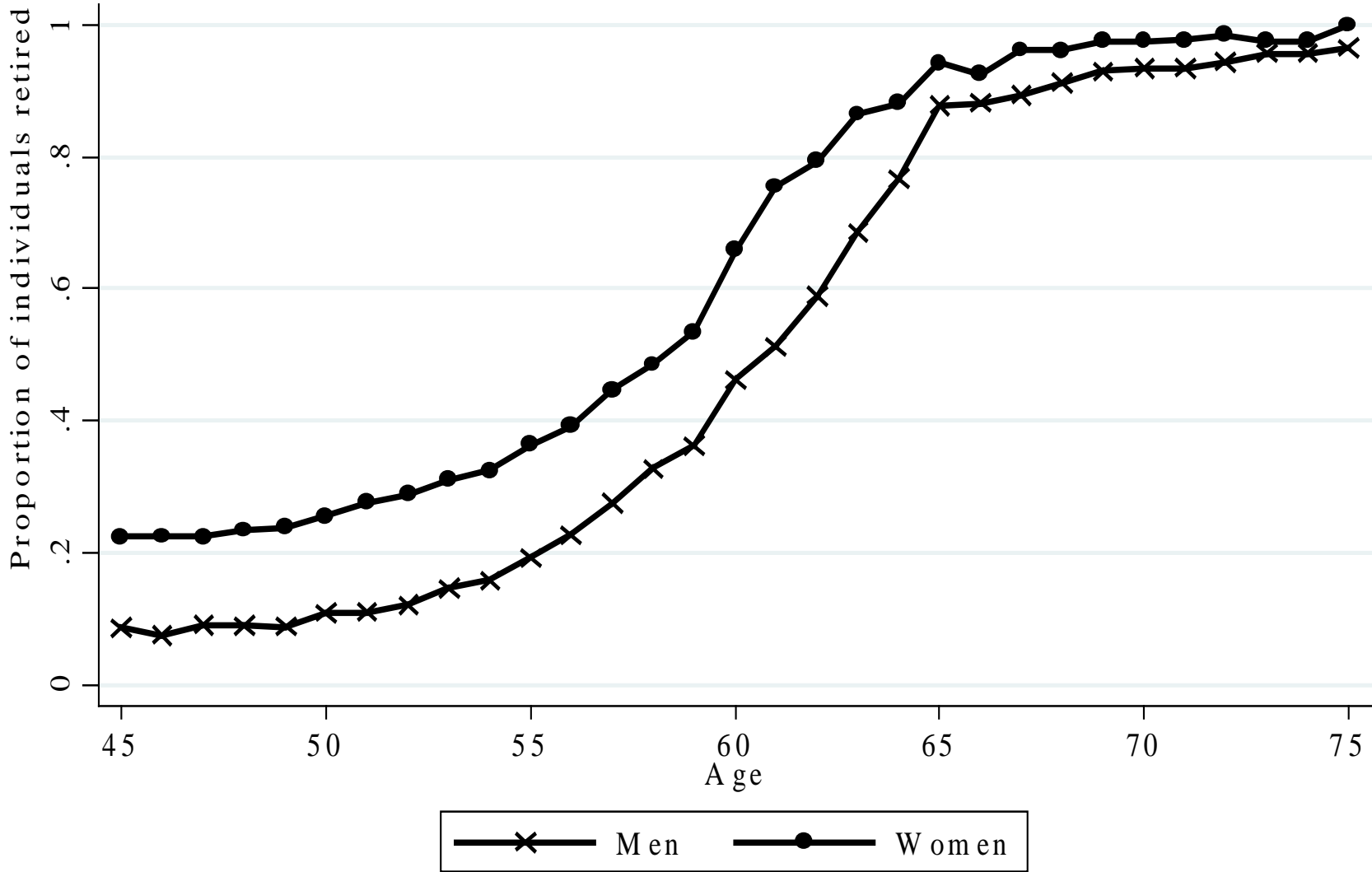
women



Retirement

- Definition of retirement: Retired if definitively out of the labour force (Lazear, 1986).
- An individual is defined as “Working” if he/she reports working for pay and “Retired” if he/she reports not working. (following Bonsang, Adam, and Perelman (2012), Bonsang and Klein (2012), Coe and Zamarro (2011), Mazzonna and Peracchi (2012), and Rohwedder and Willis (2010)).
- Exclusion of observations for individuals who are not working but observed going back to work in later waves.

Proportion retired by age



Home production and retirement status (standard deviations in parentheses)

		Men			
Individual:	Working	Working	Retired	Retired	
Partner:	Working	Retired	Working	Retired	
Home production	16.2 (10.2)	14.4 (10.4)	27.3 (15.5)	25.0 (14.5)	

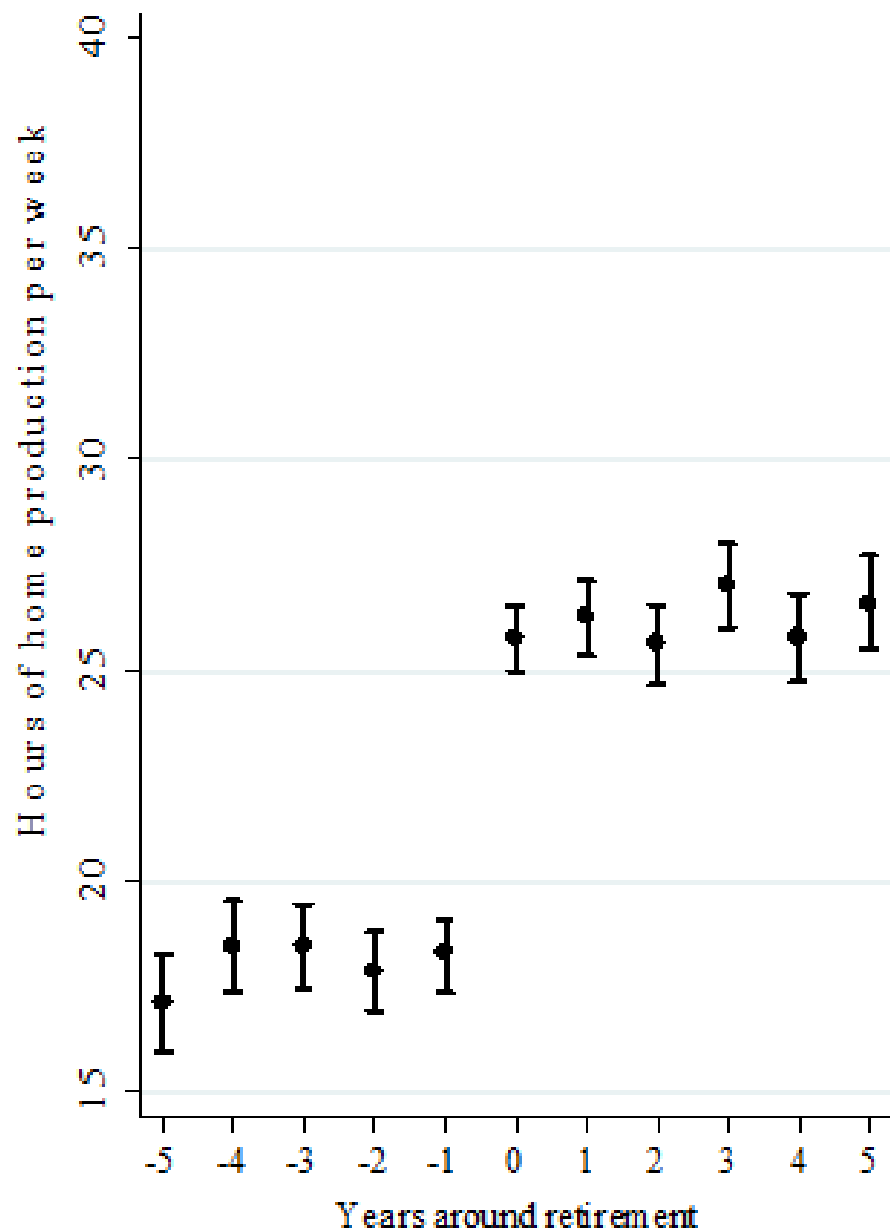
		Women			
Individual:	Working	Working	Retired	Retired	
Partner:	Working	Retired	Working	Retired	
Home production	28.7 (12.2)	26.6 (12.5)	41.3 (16.4)	36.5 (15.4)	

Control variables

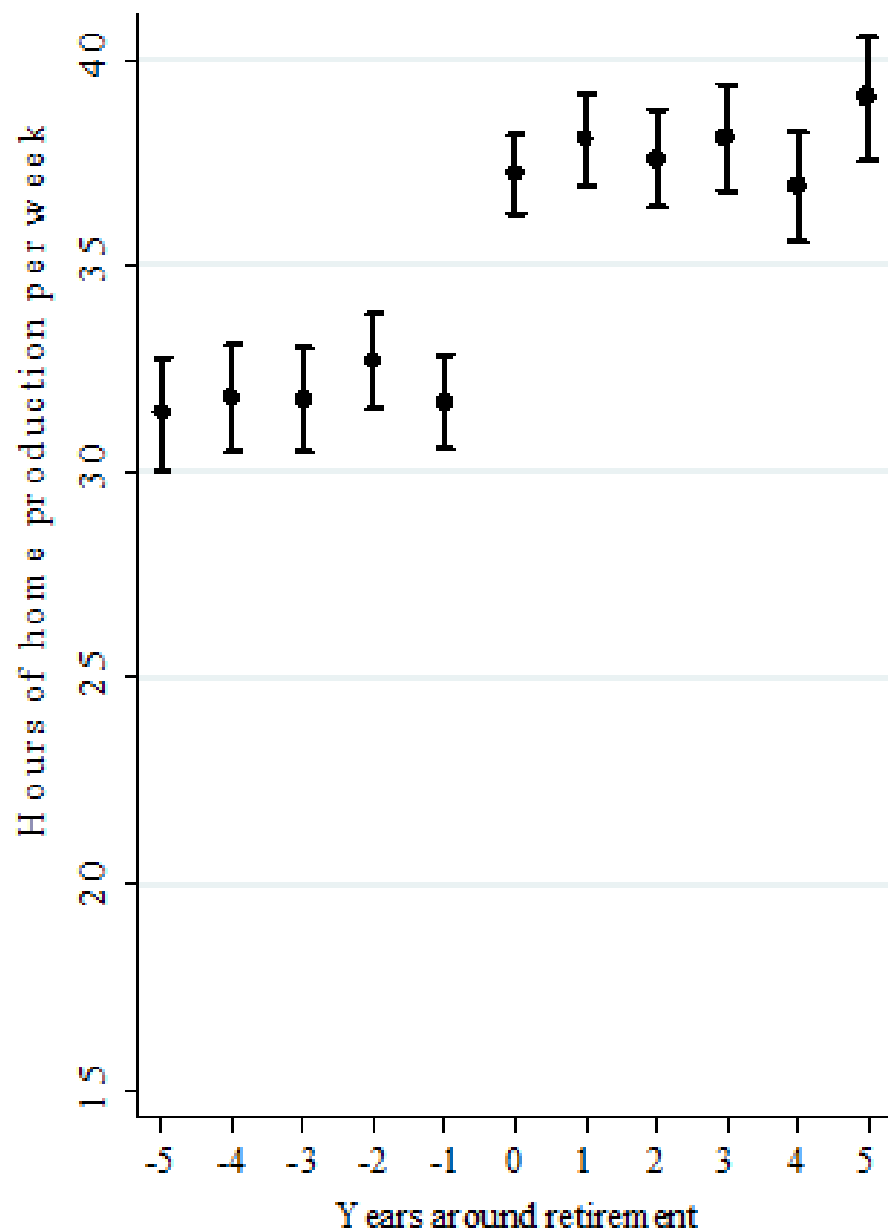
- Third order polynomial in age of the individual and age of the partner.
- Number of adults and number of children in the household.
- Self-assessed general health for each partner.

Home production and own retirement

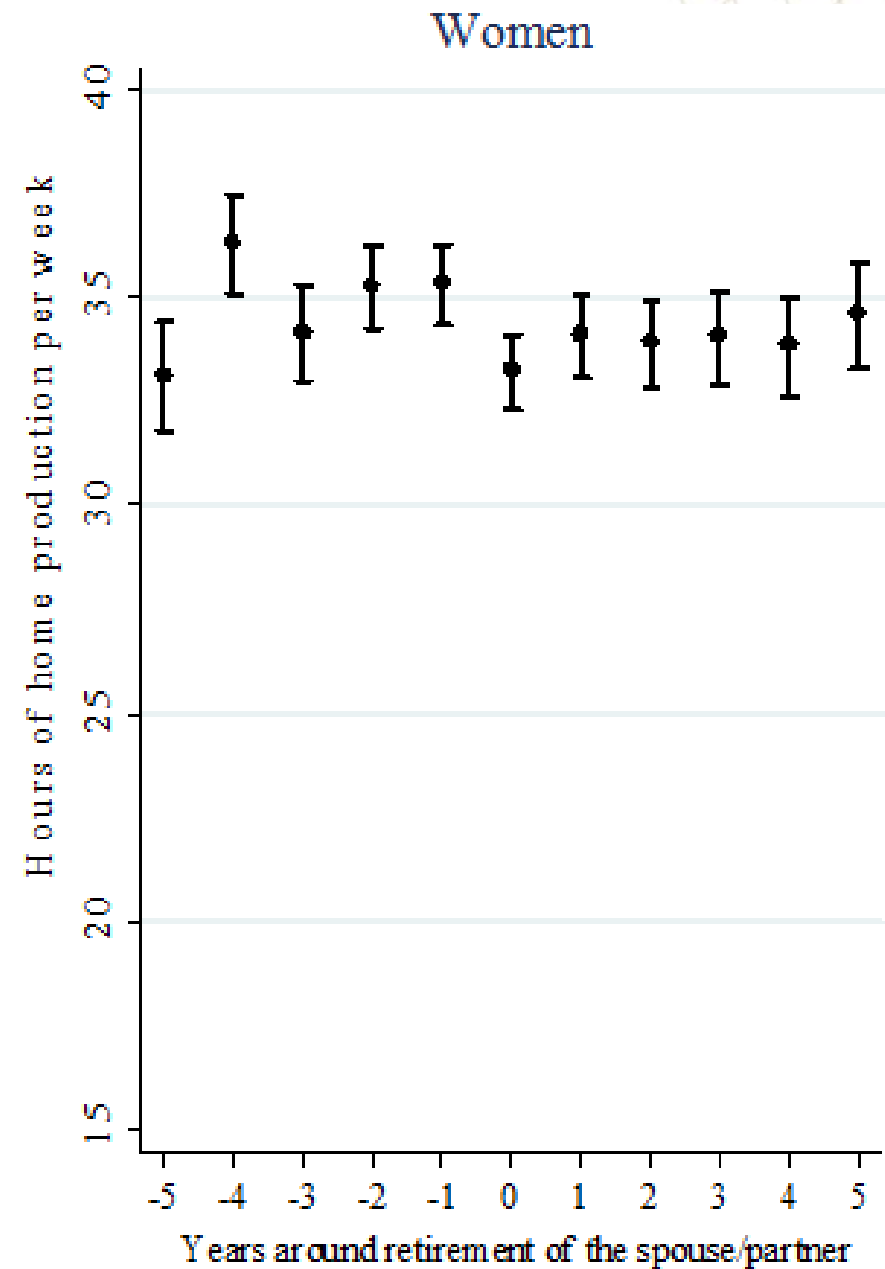
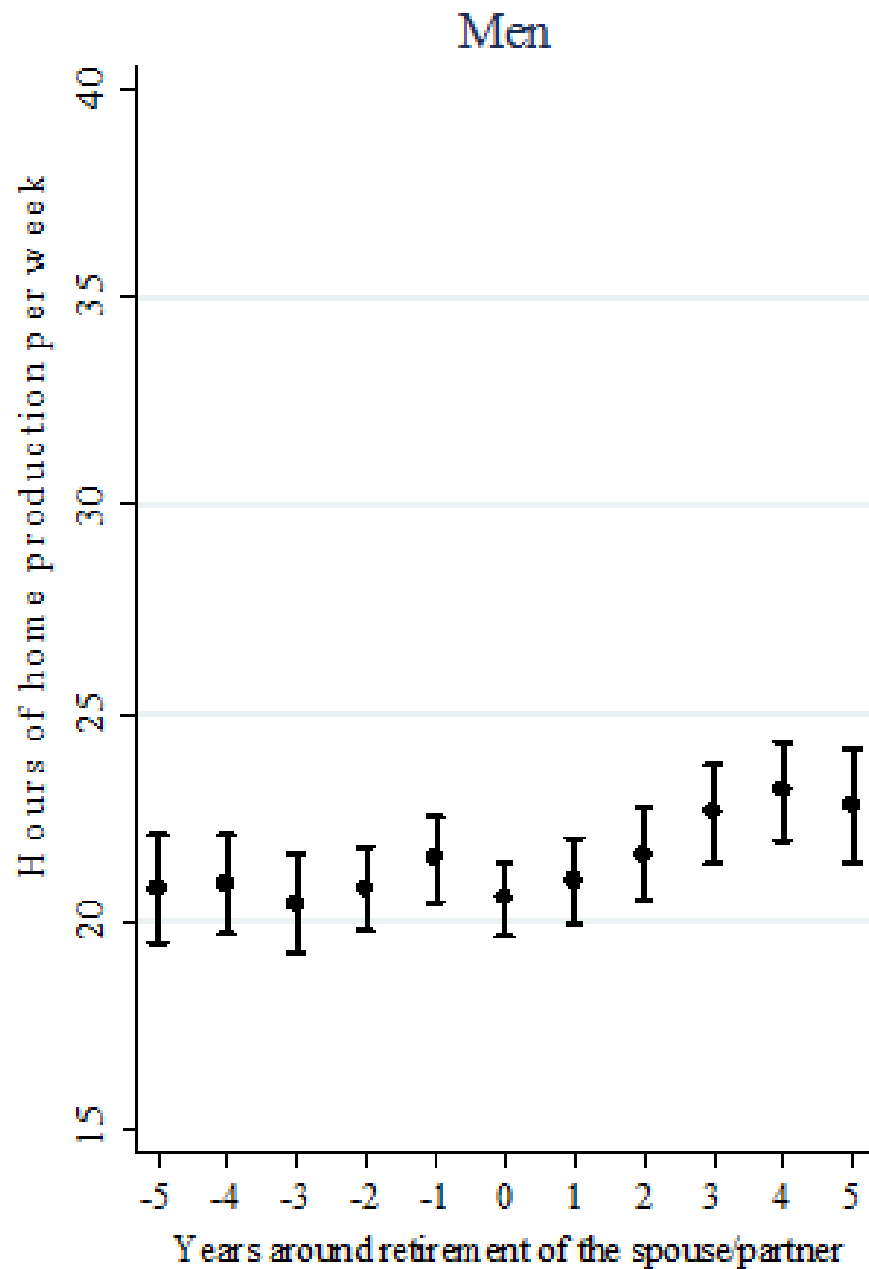
Men



Women



Home production and partner's retirement



Empirical model

$$h_{it}^m = \beta_1^m R_{it}^m + \beta_2^m R_{it}^f + X_{it} \beta^m + \alpha_i^m + v_{it}^m$$

$$h_{it}^f = \beta_1^f R_{it}^f + \beta_2^f R_{it}^m + X_{it} \beta^f + \alpha_i^f + v_{it}^f$$

h_{it}^j Home production by either the man or woman

R_{it}^m and R_{it}^f Retirement dummies for the man and woman

X_{it} Control variables

v_{it}^j iid and independent of all $R_{it}^m, R_{it}^f, X_{it}$

α_i^j fixed (no assumption)

or

α_i^j random ($\sim N(0, \sigma_\alpha^{j2})$) and independent of all $R_{it}^m, R_{it}^f, X_{it}, v_{it}^j$

Model using regression discontinuity (IV) approach

$$h_{it}^m = \mu^m + \beta_1^m R_{it}^m + \beta_2^m R_{it}^f + X_{it} \beta^m + \varepsilon_{it}^m$$

$$h_{it}^f = \mu^f + \beta_1^f R_{it}^f + \beta_2^f R_{it}^m + X_{it} \beta^f + \varepsilon_{it}^f$$

$$R_{it}^m = \mu_R^m + X_{it} \gamma_0 + \gamma_1 1[\text{age}_{it}^m \geq 60] + \gamma_2 1[\text{age}_{it}^m \geq 63] + \gamma_3 1[\text{age}_{it}^m \geq 65] \\ + \gamma_4 1[\text{age}_{it}^f \geq 60] + \gamma_5 1[\text{age}_{it}^f \geq 63] + \gamma_6 1[\text{age}_{it}^f \geq 65] + \eta_{it}^m$$

$$R_{it}^f = \mu_R^f + X_{it} \gamma_0 + \gamma_1 1[\text{age}_{it}^f \geq 60] + \gamma_2 1[\text{age}_{it}^f \geq 63] + \gamma_3 1[\text{age}_{it}^f \geq 65] \\ + \gamma_4 1[\text{age}_{it}^m \geq 60] + \gamma_5 1[\text{age}_{it}^m \geq 63] + \gamma_6 1[\text{age}_{it}^m \geq 65] + \eta_{it}^f$$

Estimation Results

* RE models rejected against FE models

* Independence of error terms and retirement not rejected

	Men		
	RE model	FE model	FE-IV
Retired	9.843*** (0.187)	9.460*** (0.216)	8.920*** (1.904)
Spouse retired	-1.867*** (0.178)	-1.815*** (0.221)	-3.258** (1.335)
	Women		
	RE model	FE model	FE-IV
Retired	9.779*** (0.205)	7.897*** (0.248)	8.224*** (2.257)
Spouse retired	-2.345*** (0.201)	-2.273*** (0.236)	-2.602** (1.177)

First stage results FE-IV approach

Men

Women

	Retired	Spouse retired	Retired	Spouse retired
1[Age \geq 60]	0.100*** (0.009)	0.003 (0.009)	0.132*** (0.009)	0.007 (0.009)
1[Age \geq 63]	0.101*** (0.009)	0.011 (0.008)	0.053*** (0.009)	-0.001 (0.009)
1[Age \geq 65]	0.070*** (0.009)	-0.001 (0.009)	-0.004 (0.009)	-0.010 (0.009)
1[Spouse's Age \geq 60]	0.017** (0.008)	0.173*** (0.008)	0.010 (0.007)	0.156*** (0.008)
1[Spouse's Age \geq 63]	0.004 (0.009)	0.073*** (0.008)	0.020** (0.008)	0.134*** (0.008)
1[Spouse's Age \geq 65]	-0.011 (0.009)	0.005 (0.009)	0.006 (0.008)	0.097*** (0.008)



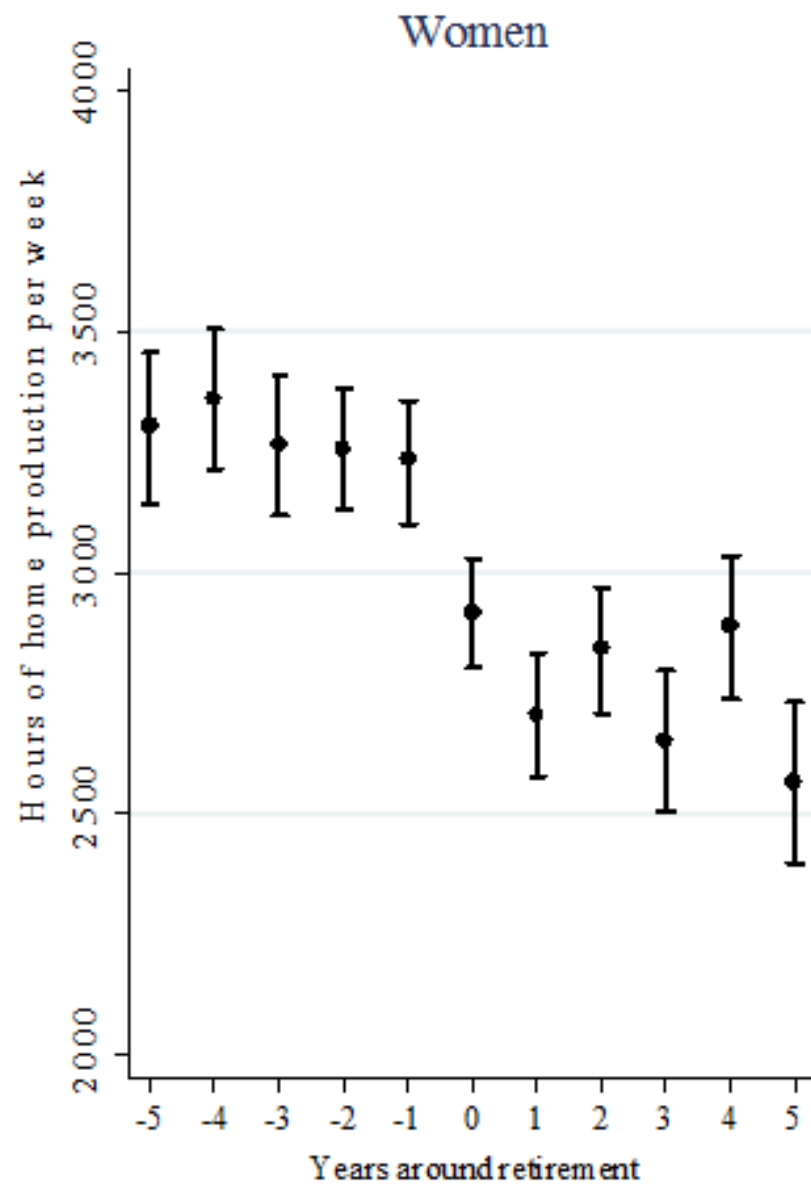
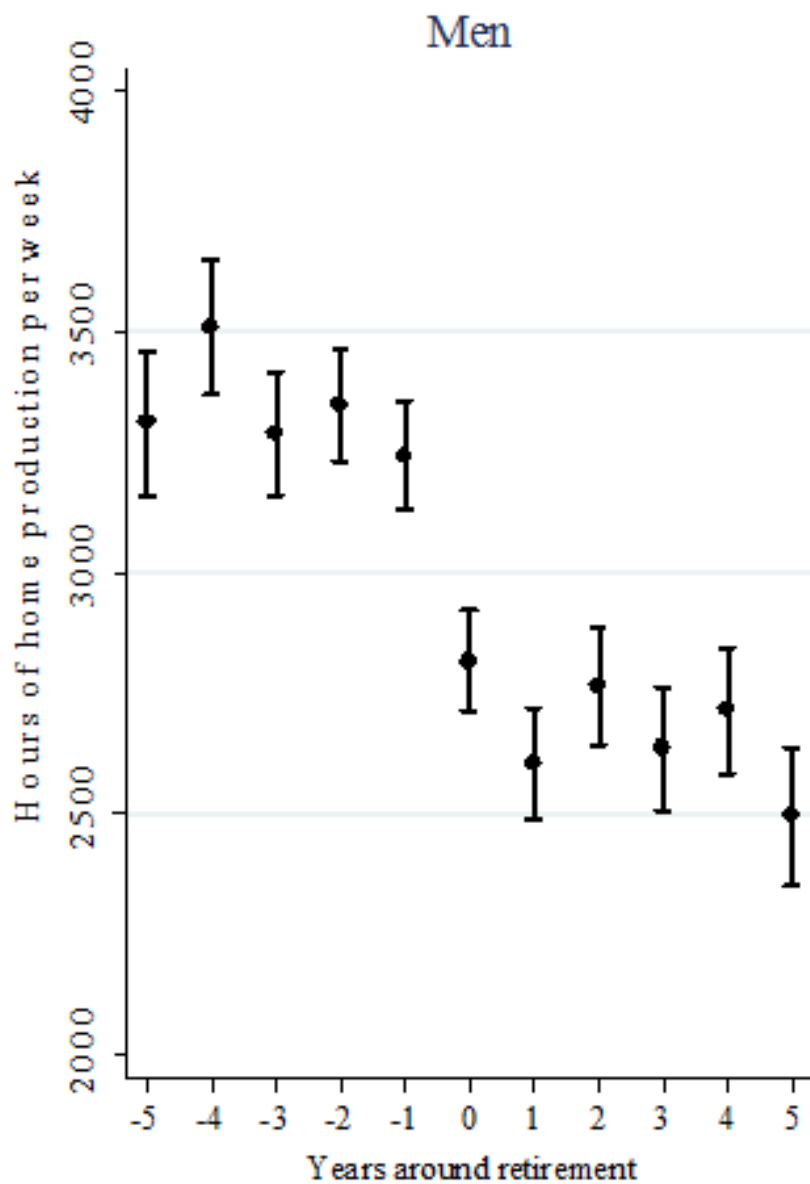
Using hours of paid work instead of retirement status

	Men		
	RE model	FE model	FE-IV
Hours of work/week	-0.231*** (0.004)	-0.232*** (0.004)	-0.239*** (0.044)
Spouse's hours of work/week	0.068*** (0.004)	0.060*** (0.005)	0.077** (0.034)
	Women		
	RE model	FE model	FE-IV
Hours of work/week	-0.274*** (0.005)	-0.240*** (0.006)	-0.190*** (0.054)
Spouse's hours of work/week	0.057*** (0.004)	0.055*** (0.005)	0.053** (0.024)

FE Results for components of home production (linear models; FE tobits give similar results)

		Men		
		FE model		
		Housework	Errands	Repairs/Garden
Retired		3.344*** (0.110)	2.236*** (0.085)	3.880*** (0.139)
Spouse retired		-1.361*** (0.112)	-0.360*** (0.087)	-0.093 (0.142)
		Women		
		FE model		
		Housework	Errands	Repairs/Garden
Retired		4.757*** (0.171)	1.482*** (0.090)	1.659*** (0.110)
Spouse retired		-1.674*** (0.162)	-0.419*** (0.086)	-0.180* (0.105)

Does home production compensate for the income loss?



The value of home production

- Following Frazis and Stewart (2011) and Frick, Grabka & Groh-Samberg (2012), we use the replacement cost approach to value home production.
- Simple and transparent method: uniform imputed wage for home production.
- Following Frick et al. (2012), we impute a wage of 4 Euros/hour to approximate the hourly wage for informal employment in the private sector.
- We also use an alternative measure of 8.5 Euros/hour corresponding to the recently introduced legal minimum wage.

Does home production compensate for the income loss?

Effect of retirement on \ln (total hhold resources)

Fixed effects model

	No home production	Home production valued at 4/hour	Home production valued at 8.50/hour
Man retired	-0.165*** (0.005)	-0.078*** (0.004)	-0.031*** (0.004)
Woman retired	-0.101*** (0.005)	-0.037*** (0.004)	-0.003 (0.004)

Conclusions

- Substantial effects of own retirement on home production.
- Smaller significant effects of partner's retirement.
- FE and RE models give similar results.
- IV/RD results are also largely similar but are less precise.
- Despite spill-over effect of spouses, home production largely compensates for the loss of income at retirement.