

Retirement and Home Production: A Regression Discontinuity Approach

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Online Appendix

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Table 1. Descriptive Statistics Estimation Sample

	<i>Male partner</i>		<i>Female partner</i>	
	<i>Mean</i>	<i>standard deviation</i>	<i>Mean</i>	<i>standard deviation</i>
Age (in years)	60.72	5.50	58.60	5.61
Age 60 or older	0.57	0.49	0.43	0.47
Retired	0.64	0.48	0.67	0.47
Housewife	0	0	0.35	0.46
Employed	0.36	0.48	0.32	0.47
Born in France	0.96	0.18	0.97	0.16
High School (12 years schooling)	0.12	0.32	0.10	0.30
College and more (over 12 years of schooling)	0.15	0.36	0.11	0.31
Bad health	0.03	0.18	0.05	0.23
		<i>Household characteristics</i>		
		<i>Mean</i>	<i>standard deviation</i>	
Number of children at home		0.15	0.51	
Cohabiting		0.04	0.19	
Resides in Paris		0.02	0.15	
Regional Unemployment rate (percent)		11.45	2.46	
Weekend diary		0.23	0.42	
<i>Observations</i>	<i>1043</i>			
Note: Sample selection steps and variables are discussed in Section II of the paper.				

Table 2. Participation Rates and Mean (median) Time Spent on Various Activities

	<i>Male partner</i>			<i>Female partner</i>		
	<i>Participation rate (percent)</i>	<i>Mean time spent in minutes per day (st. dev.)</i>	<i>Median time spent (minutes per day)</i>	<i>Participation rate (percent)</i>	<i>Mean time spent in minutes per day (st. dev.)</i>	<i>Median time spent (minutes per day)</i>
Market work	29.82	137.83 (235.46)	0	21.67	86.04 (182.88)	0
House work	86.77	183.70 (152.56)	160	99.04	310.60 (147.40)	310
House work , excluding 'semi- leisure'	70.18	77.19 (88.64)	40	98.85	264.85 (123.81)	260
'Core' Housework (excludes a, b, and c below)	50.81	36.38 (59.05)	10	96.07	145.04 (90.28)	140
Cooking, a	29.63	11.40 (24.09)	0	93.38	81.67 (49.15)	80
Shopping, b	40.84	29.42 (47.97)	0	52.06	38.14 (49.96)	10
'Semi- leisure', chores, c	61.74	106.51 (128.64)	60	43.72	45.75 (75.36)	0
Caring for children and/or adults	14.67	17.66 (66.12)	0	21.76	24.31 (65.13)	0
Observations	1043					
<p>Note: Activities are measured in minutes on the diary day. The sample includes week and weekend day diaries (the same day for both partners. House work does not include caring for children and/or adults. See Section II of the paper for more details.</p>						

Chart 1. Retirement status and market work (in minutes per day): discontinuities at age 60



Chart 2. House work and care time (minutes per day): discontinuities at age 60

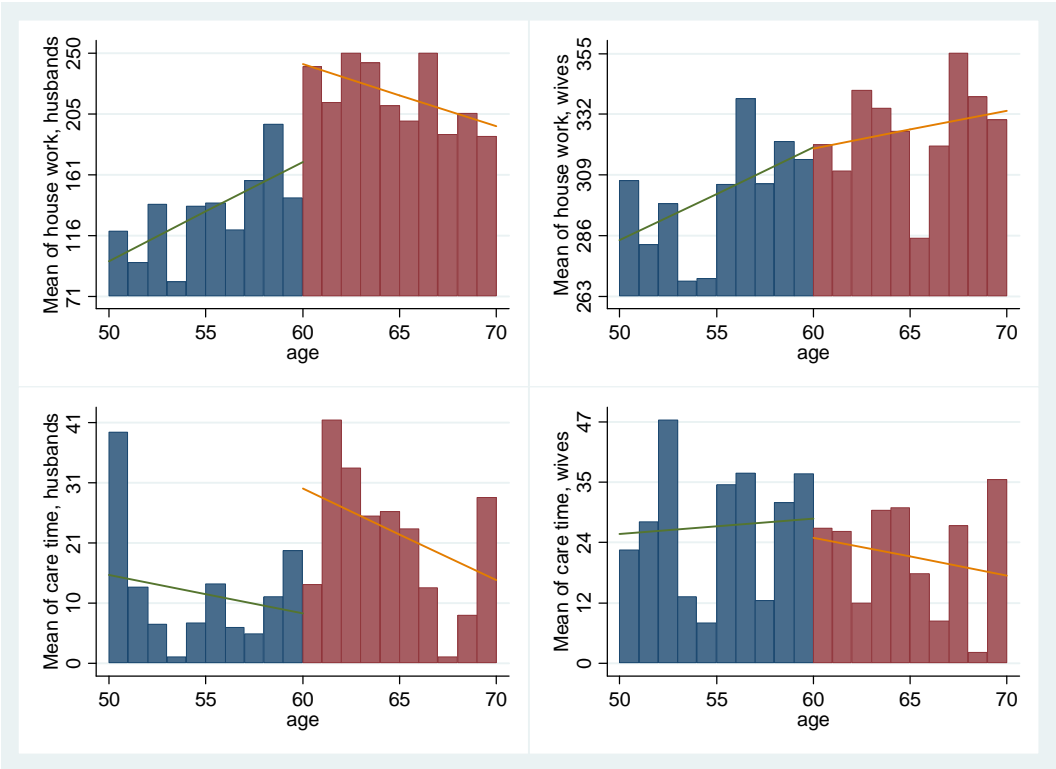


Table 3. Results of estimation of retirement and house work of partners: marginal effects

	He retired	She retired	His Housework	Her Housework
Paris	-0.377*** (0.384)	-0.106** (0.326)	-79.57** (33.26)	-13.42 (30.96)
Unemployment rate	-0.003 (0.0265)	0.003 (0.0198)	-0.192 (1.817)	-2.032 (1.735)
He high school	-0.059 (0.202)	0.031 (0.155)	0.930 (14.57)	-8.850 (13.88)
He college and more	-0.115** (0.229)	-0.037* (0.163)	-5.911 (16.78)	-27.25* (15.70)
She high school	0.103** (0.233)	-0.016 (0.165)	22.77 (16.38)	-38.92** (15.53)
She college and more	-0.009 (0.267)	-0.095*** (0.182)	-16.11 (19.85)	-36.94* (18.95)
Children number	-0.009 (0.130)	0.018* (0.0841)	9.100 (9.433)	19.92** (9.008)
Cohabitant	0.014 (0.290)	0.036 (0.269)	-23.04 (23.23)	-55.50** (22.20)
He age 60 or over	0.233*** (0.396)	-0.040 (0.341)		
She age 60 or over	-0.108 (0.453)	0.128*** (0.369)		
He retired			188.1*** (61.17)	47.38 (45.63)
She retired			-107.0** (49.10)	159.4*** (46.60)
Weekend Diary			59.81*** (18.37)	89.57*** (18.00)
He retired*weekend diary			-129.0*** (23.49)	-10.41 (22.96)
She retired*weekend diary			7.309 (23.93)	-131.9*** (23.41)

Notes: The four equations are estimated simultaneously by simulated maximum likelihood, with 100 draws. The explanatory variables of the retirement equations also include left and right cubic polynomials in age of the two partners interacted with the dummy for being 60 or older (see Section I). The time use equations include cubic polynomials in age of each partner. Retirement equations are specified as probit, the house work equations are linear. Marginal effects for the retirement equations are calculated at the mean value of the continuous explanatory variables and, for dichotomous ones, assuming less than high school (the reference category) for both partners, no residence in Paris, formally married (not cohabiting) and that both are aged 60 years or more. House work is measured in minutes per day and it includes all subcomponents (see Section II). Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 4. Results of estimation of market and house work of partners

	His market work	Her market work	His House Work	Her House Work
Paris	135.8*** (35.31)	52.50 (33.79)	-50.99* (29.77)	-26.58 (27.85)
Unemployment rate	1.376 (2.124)	-3.770* (2.032)	0.503 (1.849)	-1.622 (1.722)
He high school	-10.01 (17.09)	-1.244 (16.35)	-7.598 (13.67)	-1.913 (12.80)
He college and above	22.36 (18.61)	-24.30 (17.80)	-11.14 (15.71)	-25.55* (14.66)
She high school	-0.634 (19.02)	40.25** (18.19)	18.45 (16.88)	-28.43* (15.70)
She college and above	28.53 (20.87)	76.44*** (19.96)	-3.045 (19.60)	-41.81** (18.19)
Children number	-11.08 (10.83)	-13.93 (10.36)	5.130 (8.828)	19.17** (8.259)
Cohabitant	11.29 (27.52)	-13.55 (26.34)	-17.46 (21.92)	-47.02** (20.52)
He age 60 or over	-173.0*** (41.90)	18.00 (39.39)		
She age 60 or over	41.04 (40.10)	-129.9*** (38.98)		
Weekend Day	-263.7*** (18.03)	-147.6*** (17.21)	-60.31*** (14.92)	-50.99*** (13.87)
He age 60*weekend day	224.7*** (32.75)	59.67* (31.14)		
She age 60*weekend day	25.45 (33.46)	76.71** (32.21)		
His market work			-0.437*** (0.1000)	-0.0901 (0.0915)
Her market work			0.253 (0.180)	-0.313* (0.163)
His market work* weekend			0.118 (0.0740)	0.0927 (0.0689)
Her market work* weekend			0.209** (0.0873)	0.117 (0.0813)

Notes: The four equations are estimated simultaneously by simulated maximum likelihood, with 100 draws. They are four linear equations. The explanatory variables of the market work equations also include left and right cubic polynomials in age of the two partners interacted with the dummy for being 60 or older (see Section I of the paper). The house work equations include cubic polynomials in age of each partner.

Market work and house work are measured in minutes per day. House work includes all subcomponents but not caring for children and/or adults (see Section II of the paper). Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 5. Correlations of the errors in the model of Table 3

	She is retired	His housework	Her housework
He is retired	0.256*** (0.0918)	-0.025 (0.025)	-0.318 (0.206)
She is retired		0.386* (0.218)	-0.093 (0.218)
His housework			0.239*** (0.0442)

Table 6. Correlations of the errors in the model of Table 4

	Her market work	His house work	Her house work
His market work	0.342*** (0.0310)	-0.0573 (0.219)	0.262 (0.212)
Her market work		-0.276 (0.289)	-0.114 (0.266)
His house work			0.341*** (0.0987)

Table 7. Coefficients on the left and right age polynomials interacted with dummy age ≥ 60

	Retirement model (Table 3)		Market Work Model (Table 4)	
	He is retired	She is retired	His market work	Her market work
Dm = Husband is age 720 months (age 60)	1.060*** (0.396)	-0.311 (0.341)	-173.0*** (41.90)	18.00 (39.39)
Dm * (Husband's age in months -720)	0.357 (0.332)	0.179 (0.229)	-12.16 (23.48)	-9.244 (22.27)
Dm * (Husband's age in months -720) ²	-0.0438 (0.0940)	-0.0259 (0.0580)	2.452 (5.505)	1.171 (5.244)
Dm * (Husband's age in months -720) ³	0.00254 (0.00715)	0.00128 (0.00410)	-0.142 (0.364)	-0.0379 (0.347)
(1-Dm) * (Husband's age in months -720)	-0.250 (0.270)	0.477** (0.225)	-16.06 (28.60)	-56.63** (26.78)
(1-Dm) * (Husband's age in months -720) ²	-0.193*** (0.0710)	0.0979* (0.0529)	6.111 (6.780)	-10.85* (6.360)
(1-Dm) * (Husband's age in months -720) ³	-0.0157*** (0.00501)	0.00551 (0.00353)	0.664 (0.454)	-0.485 (0.427)
Df = Wife is age 720 months (age 60)	-0.493 (0.453)	1.001*** (0.369)	41.04 (40.10)	-129.9*** (38.98)
Df * (Wife's age in months -720)	0.572* (0.340)	0.151 (0.338)	-38.77 (23.58)	-6.402 (23.47)
Df * (Wife's age in months -720) ²	-0.0742 (0.0940)	-0.0509 (0.106)	6.651 (5.753)	1.016 (5.645)
Df * (Wife's age in months -720) ³	0.00202 (0.00695)	0.00642 (0.00928)	-0.316 (0.396)	-0.0722 (0.384)
(1-Df) * (Wife's age in months -720)	-0.0817 (0.282)	-0.256 (0.175)	-1.701 (23.61)	69.35*** (22.13)
(1-Df) * (Wife's age in months -720) ²	-0.0197 (0.0607)	-0.0682* (0.0389)	1.371 (5.182)	18.28*** (4.889)
(1-Df) * (Wife's age in months -720) ³	-0.00132 (0.00383)	-0.00399 (0.00247)	0.0920 (0.327)	1.137*** (0.309)

Notes: Estimates of the coefficients of the other covariates are provided in Tables 3 and 4.
Standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

Table 8. Models of retirement and house work: estimated effects of retirement

	His house work ¹	Her house work ¹	His + Her house work ²
He is retired	211.8** (89.57)	61.46 (39.62)	287.0*** (78.43)
She is retired	-118.0*** (45.56)	115.6*** (42.93)	71.13 (117.7)
He is retired weekdays	188.1*** (61.17)	47.38 (45.63)	276.4*** (94.22)
She retired weekdays	-107.0** (49.10)	159.4*** (46.60)	116.2 (115.2)
He is retired weekends	59.09 (64.97)	36.97 (49.52)	139.7 (101.1)
She retired weekends	-99.71* (52.66)	27.47 (40.50)	-9.725 (117.2)

Notes:

(1) The four equations of partners' retirement and house work are estimated simultaneously by simulated maximum likelihood.

(2) The three equations of each partner's retirement and total house work at the household level (his plus her house work) are estimated simultaneously by simulated maximum likelihood.

The bottom blocks in the table show the effects for week and weekend days.

For both models, the explanatory variables of the retirement equations include dummies for age 60 and older and left and right cubic polynomials in age of the two partners interacted with the age 60 dummies (see Section I). The house work equations include cubic polynomials in age of each partner. Other regressors included in all equations are: an indicator for whether the couple resides in Paris; a cohabiting dummy; the regional unemployment rate; the number of children; and indicators for whether each partner has high school or college and more education.

House work is measured in minutes per day and it includes 'semi-leisure' chores, 'core' chores, cooking and shopping but not caring for children and/or adults.

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 9. Models of market hours and home production: estimated effects of market hours on house work time

	His total housework ¹	Her total housework ¹	His + Her Total Housework ²
His market work	-0.361** (0.157)	-0.150 (0.141)	-0.528** (0.251)
Her market work	0.323 (0.238)	-0.295 (0.207)	0.0140 (0.377)
His market work weekdays	-0.437*** (0.1000)	-0.0901 (0.0915)	-0.529*** (0.158)
Her market work weekdays	0.253 (0.180)	-0.313* (0.163)	-0.0589 (0.286)
His market work weekends	-0.319** (0.129)	0.00258 (0.118)	-0.319 (0.203)
Her market work weekends	0.463** (0.199)	-0.195 (0.180)	0.268 (0.314)

Notes:

(1) The four equations of partners' market work and house work are estimated simultaneously by simulated maximum likelihood.

(2) The three equations of each partner's market work and total house work at the household level (his plus her house work) are estimated simultaneously by simulated maximum likelihood.

House work and market work are measured in minutes per day.

The bottom blocks in the Table show the effects for week and weekend days.

For both models, the explanatory variables of the market work equations include dummies for age 60 and older, and left and right cubic polynomials in age of the two partners interacted with the age 60 dummies a weekend day dummy also interacted with the age 60 dummies (see Section I).

The house work equations include cubic polynomials in age of each partner. Other regressors included in all equations are: an indicator for whether the couple resides in Paris; a cohabiting dummy; the regional unemployment rate; the number of children; and indicators for whether each partner has high school or college and more education.

House work is measured in minutes per day and it includes 'semi-leisure' chores, 'core' chores, cooking and shopping but not caring for children and/or adults.

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 10. Models of retirement and 'core' chores : estimated effects of retirement

	His core chores ¹	Her core chores ¹	His + Her Core chores ²
He is retired	-15.09 (12.34)	7.463 (28.04)	-36.53 (31.31)
She is retired	51.00*** (10.67)	53.08** (21.42)	91.69** (37.38)
He is retired weekdays	-13.20 (11.94)	17.41 (25.96)	-31.94 (30.96)
She is retired weekdays	51.21*** (10.25)	59.34*** (20.94)	105.9*** (36.00)
He is retired weekends	-34.97** (14.60)	17.03 (29.61)	-55.73 (34.55)
She is retired weekends	60.97*** (13.06)	-5.021 (24.03)	49.97 (37.54)

Notes:

(1) The four equations of partners' retirement and house core chores are estimated simultaneously by simulated maximum likelihood.

(2) The three equations of each partner's retirement and total (his + her) core chores time at the household level are estimated simultaneously by simulated maximum likelihood.

The bottom blocks in the Table show the effects for week and weekend days.

For both models, the explanatory variables of the retirement equations include dummies for age 60 and older, and left and right cubic polynomials in age of the two partners interacted with the age 60 dummies (see Section I of the paper). The core chores equations include cubic polynomials in age of each partner. Other regressors included in all equations are: an indicator for whether the couple resides in Paris; a cohabiting dummy; the regional unemployment rate; the number of children; and indicators for whether each partner has high school or college and more education.

'Core' chores are measured in minutes per day and include cleaning, washing up dishes, doing the laundry and the ironing.

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 11. Models of retirement and ‘semi-leisure’ chores : effects of retirement

	His semi-leisure ¹	Her semi-leisure ¹	His + Her semi-leisure chores ²
He is retired	162.7*** (33.60)	19.69 (26.89)	196.4*** (48.98)
She is retired	-131.6*** (23.70)	22.53 (16.26)	-102.2* (54.26)
He is retired weekdays	170.9*** (34.32)	18.99 (26.40)	199.0*** (50.02)
She retired weekdays	-117.9*** (15.87)	30.33* (9.97)	-78.21 (58.67)
He is retired weekends	106.0*** (38.83)	11.63 (28.91)	125.8** (56.31)
She retired weekends	-138.2*** (29.67)	9.158 (19.35)	-118.8* (62.28)

Notes:

(1) The four equations of partners’ retirement and semi-leisure chores are estimated simultaneously by simulated maximum likelihood.

(2) The three equations of each partner’s retirement and total (his + her) semi-leisure chores at the household level are estimated simultaneously by simulated maximum likelihood.

The bottom blocks in the table show the effects for week and weekend days.

For both models, the explanatory variables of the retirement equations include dummies for age 60 and older, and left and right cubic polynomials in age of the two partners interacted with the age 60 dummies (see Section I of the paper). The semi-leisure chores equations include cubic polynomials in age of each partner. Other regressors included in all equations are: an indicator for whether the couple resides in Paris; a cohabiting dummy; the regional unemployment rate; the number of children; and indicators for whether each partner has high school or college and more education.

‘Semi-leisure’ chores are measured in minutes per day and include gardening, house repairs, knitting, sewing, doing jams, care of pets.

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 12. Models of retirement and cooking: estimated effects of retirement

	His cooking ¹	Her cooking ¹	His + Her cooking ²
He is retired	-18.36*** (3.550)	5.624 (9.084)	3.965 (16.37)
She is retired	0.0558 (10.90)	66.85*** (11.63)	63.38*** (11.95)
He is retired weekdays	-16.28*** (3.509)	6.583 (8.676)	5.059 (16.35)
She retired weekdays	2.548 (8.563)	67.69*** (11.54)	64.64*** (11.86)
He is retired weekends	-31.70*** (4.661)	8.851 (10.55)	-7.151 (17.59)
She retired weekends	17.74* (9.172)	41.98*** (13.34)	53.84*** (13.59)

Notes:

(1) The four equations of partners' retirement and cooking are estimated simultaneously by simulated maximum likelihood.

(2) The three equations of each partner's retirement and total cooking at the household level (his plus her cooking) are estimated simultaneously by simulated maximum likelihood.

The bottom blocks in the table show the effects for week and weekend days.

For both models, the explanatory variables of the retirement equations include dummies for age 60 and older, and left and right cubic polynomials in age of the two partners interacted with the age 60 dummies (see Section I of the paper). The time spent on cooking equations include cubic polynomials in age of each partner. Other regressors included in all equations are: an indicator for whether the couple resides in Paris; a cohabiting dummy; the regional unemployment rate; the number of children; and indicators for whether each partner has high school or college and more education.

Cooking is measured in minutes per day.

Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1

Table 13. Models of retirement and time spent on caring: estimated effects of retirement

	His care ¹	Her care ¹	His + Her Care ²
He is retired	34.30*** (11.47)	13.97 (15.89)	51.20** (20.04)
She is retired	13.63 (15.50)	30.49** (12.60)	39.43* (23.94)
He is retired weekdays	37.79*** (11.82)	15.23 (16.26)	55.45*** (20.53)
She retired weekdays	13.08 (15.34)	31.75** (12.92)	40.12* (24.25)
He is retired weekends	18.22 (14.47)	9.986 (18.56)	30.64 (24.61)
She retired weekends	20.09 (17.40)	26.12* (15.32)	41.44 (27.47)
<p>(1) The four equations of partners' retirement and care work are estimated simultaneously by simulated maximum likelihood.</p> <p>(2) The three equations of each partner's retirement and total care work at the household level (his plus her care work) are estimated simultaneously by simulated maximum likelihood.</p> <p>The bottom blocks in the Table show the effects for week and weekend days.</p> <p>For both models, the explanatory variables of the retirement equations include dummies for age 60 and older, and left and right cubic polynomials in age of the two partners interacted with the age 60 dummies (see Section I). The care equations include cubic polynomials in age of each partner. Other regressors included in all equations are: an indicator for whether the couple resides in Paris; a cohabiting dummy; the regional unemployment rate; the number of children; and indicators for whether each partner has high school or college and more education.</p> <p>Care is measured in minutes per day and it includes the provision of unpaid child and adult care, to individuals from the same or from other households.</p> <p>Standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1</p>			