Ageing Europe – An Application of National Transfer Accounts for Explaining and Projecting Trends in Public Finances

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Household Consumption at Retirement:

A Regression Discontinuity Study on French Data[1]

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Abstract

Previous literature has investigated the drop in household consumption after the retirement of the household head, referred to as the so-called 'retirement consumption puzzle'. This article expands on these studies by taking the retirement of the wife into consideration, thus distinguishing between 'dual-earner' households and those in which the wife is a 'housewife'. A regression discontinuity approach is used to estimate the effect of each partner's retirement on household consumption. The analysis data are derived from the 2001 French Consumer Budget Survey that collected two-week expenditure diaries. The findings indicate a significant and sizable decrease in clothing expenditure upon the retirement of the male partner.

Keywords: Consumption, Ageing, Retirement, Regression Discontinuity

JEL classification: D12, J22, J14, C1

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Contents

1 Introduction

Retirement is an important field of research in economics. Dramatic changes in household consumption upon retirement are well documented in the literature. Previous studies concluded that consumption declines dramatically at retirement (e.g., Hamermesh [1984]; Banks et al. [1998]; Bernheim et al. [2002]. This empirical evidence, however, appears to contradict the standard model of life-cycle consumption according to which households use savings to smooth the effects on consumption of predictable income discontinuities. As Hurd and Rohwedder [2008] explain, 'because the mechanisms underlying this observed drop in consumption at retirement are not well understood, it has been referred to as the retirement-consumption puzzle' (p. 1).

More recent research has allowed a better comprehension of household expenditure patterns at retirement age. Hurd and Rohwedder [2008] and Hurst [2008], for instance, provided a comprehensive survey and enlightening discussion on the issue. Firstly, it is possible that households behave optimally and maximise their welfare by opting for a lower consumption level after retirement, while consuming more while still in the workforce (e.g., Laitner and Silverman [2005]; Skinner [2007]; Blau [2008].[4] The fall in consumption at retirement may also be partially explained by increased home production and reduced work-related expenditure (Aguiar and Hurst [2005, 2007]; Hurd and Rohwedder [2007, 2008]; Hurst [2008], and possibly by the impact of children leaving home (Battistin et al. [2009]). Health shocks and involuntary retirement may also explain the drop in consumption. Secondly, the decline in expenditure mostly relates to work-related items and food, which may not affect all households equally.

However, these empirical studies all focus on the retirement of the male household head. This article expands on previous research by taking the retirement of the wife into consideration, thus distinguishing between 'dual-

[4] We would like to thank an anonymous referee for bringing several of these articles to our attention.

earner' households and those in which the wife is a 'housewife'. Older individuals often live in couples, and many women nowadays are active in the labour market. For this reason, it is relevant to study the effect of female retirement on household consumption. This article therefore uses the legal retirement age in France to identify the effect of each partner's retirement on household consumption using a regression discontinuity approach (see, for instance, Battistin et al. [2009]). This is also the first study to investigate the effects of retirement on household consumption in France. To date, most of the literature on the relationship between (male) retirement and consumption relates to the United States (e.g., Hamermesh [1984]; Aguiar and Hurst [2013]; Fisher et al. [2008]; Lundberg et al. [2003]); the United Kingdom (e.g., Banks et al. [1998]), and Italy ((Battistin et al. [2009]; Miniaci et al. [2010]). It therefore seems relevant to contribute to this body of literature by producing comparable evidence for France.

The data for the analysis are derived from the 2001 French Consumer Budget Survey based on two-week expenditure diaries. The individual retirement probability is found to increase significantly at the age of 60, which supports our identification approach. Further, the retirement of the male partner has a significant negative effect on household clothing expenditure, with the results being robust to all specification checks. Moreover, clothing consumption does not decrease upon the "wife"[5]'s retirement, perhaps because she is often the second earner in the household. Finally, the extent of the decline in household food and clothing consumption after the husband's retirement is much greater in our study than that documented in previous research. This is perhaps explained by the earnings distribution in France, which is much more compressed than in other Organisation for Economic Cooperation and Development (OECD) countries.

5 For simplicity, throughout the paper, 'husband' and 'wife' respectively denote the male and female in a couple, even though our sample also includes unmarried couples (see Section 2 for details of the data selection steps).

The remainder of the paper is structured as follows. Section 2 describes the data and sample selection, while Section 3 presents the empirical model. An exploratory graphical analysis follows in Section 4, with Section 5 discussing the results of estimation. Finally, Section 6 summarises the main conclusions of the study.

2 Analysis Data

The data for the analysis are taken from the 2001 French Consumer Budget Survey ('Enquête Budget des Familles') based on two-week expenditure diaries in addition to household and individual questionnaires (see Donni and Moreau [2007] for a discussion of the data and their application to household economics). Three personal interviews were conducted at the respondents' houses to collect household and individual information in addition to the main expense items. Moreover, all individuals aged above 14 years in the household were asked to complete a two-week expense diary by recording their expenditure or attaching receipts. The overall response rate was high: 62% of all households contacted completed the expense diary as well as the household and individual questionnaires.

Sample Selection

In this study, participants were selected using the following criteria:

1. Cohabiting or married couples;

2. Couples in which both partners were aged between 50 and 70 years.

The first criterion is applied to avoid sample selection bias, as dual-earners tend to cohabit more often than married couples.[6] In addition, due to the small number of cohabiting couples in the older age bracket, it is not possible to analyse the two groups separately. The second criterion sets a range of plus or

[6] For example, BLOEMEN AND STANCANELLI [2013], using a sample of couples drawn from the French Labour Force Surveys, observe that cohabitation is positively associated with dual earning.

minus 10 years from age 60, which is the legal minimum retirement age for most workers in France. As certain individuals may retire earlier due to special early retirement schemes or later due to delayed entry into the labour market, a fuzzy regression discontinuity design is used to allow for a discrete increase, though less than one, in the probability of retirement at age 60 (see Section 3).

Two distinct samples are then compiled, selecting couples based on the activity status of each partner in the following manner:

- The first sample (hereafter, Sample A) includes couples in which the husband is employed or retired and the wife reports any type of economic activity (employed, retired, or other inactive). This sample of 1567 observations, similar to those found in previous studies, is used to estimate the effect of the husband's retirement on household consumption.

- The second sample (Sample B) comprises couples in which each partner is employed or retired from work. This results in a sample of 1067 couples to estimate the effect of each partners' retirement on household consumption.

Retirement Status, Employment, and Age

Retirement status is defined using individual subjective responses to questions regarding an individual's main economic activity. Retirees are considered to be individuals reporting to be retired or early retired from work. Employment is similarly defined based on responses to the same question. The survey collected information on the month and year of birth, which, combined with information on the survey date, enables us to construct an approximately continuous measure of the partners' age at the time of the survey. This is important since age is the running variable in the regression discontinuity model (see Section 3).

Consumption

The survey collected detailed expenditure data based on two-week food consumption diaries as well as other non-durable and durable consumption over a larger time scale. The fortnightly expenditure in euros was transformed by the survey collectors into annual amounts in euros, which was then used for our analysis (this being a matter of scale). We focus here on total non-durable household expenditure as well as on the following non-durable consumption items, all of them derived from the expenditure diary:

- Food expenditure, excluding alcohol;
- Expenditure on clothes and shoes.

These items were analysed in the majority of prior studies.

Descriptive Statistics

Descriptive statistics of the sample are provided in Table 1. The proportion of retired men is between 54 and 58%, while that of retired women is much lower, ranging from 31 to 45%. Over 93% of the partners are French nationals. In terms of education,[7] elementary education or lower (reference category) is the most common; note that the sample comprises older couples and that education levels have since increased, especially for women. Around 95% of the couples are married. The number of children having left home is approximately two, and only a small proportion of households still have children living at home (the average number being just over 0.32). Finally, over 15% of couples reside in the Paris region (*Ile-de-France*). The average household expenditure varies slightly between the two samples; it is equivalent to about 20,400 euros per year in current prices for Sample B versus19,286 euros per year for the larger Sample A. Food expenditure represents about a quarter of total household expenditure on average, while clothing accounts for about 7%.

[7] Information on the highest completed education level is used to construct a series of education dummy variables.

3 Estimation Model

To identify the effect of each partner's retirement on household consumption, we follow the French legislation that sets 60 years (720 months) as the minimum retirement age for most workers. This creates a discontinuity in the probability of retirement as a function of age, which enables us to apply a regression discontinuity approach. Literature reviews of regression discontinuity methods are provided by Lee and Lemieux [2010], van der Klaauw [2008], and Imbens and Lemieux [2007] for example. Battistin et al. [2009] apply regression discontinuity to the retirement decision of the household head to investigate the effect of retirement on private household consumption expenditures.

Identifying the effect of retirement on consumption (outcome variable) may be achieved due to the sudden and large increase in retirement (treatment) at the point of discontinuity (age 60) in the running variable (age). Individuals cannot manipulate their age, which is one of the requirements for using a regression discontinuity approach (e.g., Lee and Lemieux [2010]). In our data, the month and year of birth were collected in the survey, while the day, month and year of the interview were noted. Therefore, age is assumed to be measured continuously. In France, no other policy measures affect individuals at the age of 60. The duration of retirement was likewise measured at the time of the interview.

It is also necessary to account for the fact that some people may retire before 60 years—due to special early retirement schemes or specific employment sector rules—while others may do so later.[8] Therefore, we used a so-called fuzzy regression discontinuity design in which the jump in the probability of retirement at age 60 is greater than zero but less than one. In France, periods of

[8] For more details of the French pension system, see Blanchet and Pele [1997]. In 2010, the legal age of retirement was increased to 62 years, effective from 2018 onwards. Hairault, Langot, and Sopraseuth [2010] modelled the employment effect of the distance to the French legal retirement age in a theoretical job search framework and concluded that increasing the legal retirement age was likely to increase the employment rates of older workers. See also Duguet and Simmonet [2007] and Sedillot and Walraet [2002].

unemployment, maternity leave, and sick leave are fully covered by pension rights, meaning that interrupted labour market trajectories do not translate into smaller pension benefits or a longer working life.

The discontinuities in a couple's retirement probabilities at age 60 are used to instrument the effect of retirement on leisure hours. Let R_{ij} be a dummy variable for retirement equal to one if partner *j* (*j=f,m*) in household *i* has retired from professional work, and zero otherwise. Let D_{ij} be a dummy equal to one when individuals have reached age 60, and zero otherwise. Finally, let C_i be household consumption. Firstly, in line with previous studies, we account for the retirement of the husband. The fuzzy regression discontinuity design can be estimated by specifying a two-stage least-square (2SLS) model for the effect of retirement—instrumented with a dummy variable for an age of at least 60 years (≥720 months) and the full interactions of this dummy with an individual age polynomial—on household consumption. The standard errors of the model are also adjusted as recommended in the regression discontinuity literature, and robust standard errors used.

$$C = \alpha^{cj} + R_j\beta^{cj} + f(Age_j\text{-}720)\gamma^{cj} + Z_j\beta^{cj} + v_j^c \qquad (1)$$

$$R_j = \alpha^{rj} + D_j\gamma^{rj} + D_j f(Agej\text{-}720)\delta^{rj} + f(Age_j\text{-}720)\gamma^{rj} + Z_j\beta^{rj} + v_j^r \qquad (2)$$

Equation 1 depicts the outcome equation, and equation 2 the first-stage equation for retirement in our 2SLS fuzzy regression discontinuity model (the subscript i for the household was suppressed for simplicity, while j=m here). The function f is a flexible polynomial in age, which is specified here as a quadratic: $f(Age_j\text{-}720) = (Age_j\text{-}720) + (Age_j\text{-}720)^2$. Recall that the threshold of *720 months* corresponds to the minimum legal retirement age for most workers in France. [9] We assume that the covariates other than age (denoted by Z here) are not discontinuous at age 60 (tested in Section 4 below).The vector Z contains other individual and household characteristics, such as education, marital status,

[9] We also accounted for full interactions of D_j with f(Agej-*720*) in the outcome equation. They never appeared to be significant and, therefore, were not included.

French nationality, number of children still living at home, number of children having left home, and area of residence.

The effect of *both* partners' retirement on household consumption is then studied. The regression discontinuity model is specified as a 2SLS model allowing for two first-stage regressions to instrument the effect of the wife and husband's retirement on household consumption, respectively. [10] Again, robust standard errors are specified:

$$C = \alpha^c + R_f\beta^{cf} + R_m\beta^{cm} + f(Age_f\text{-}720)\gamma^{cf} + f(Age_m\text{-}720)\gamma^{cm} + Z_m\beta^{cm} + Z_f\beta^{cf} + v^c \quad (3)$$

$$R_f = \alpha^f + D_f\gamma^{rff} + D_m\eta^{rmf} + D_f f(Age_f\text{-}720)\delta^{rff} + D_m f(Age_m\text{-}720)\delta^{rmf} + \\ + f(Age_f\text{-}720)\gamma^{rff} + f(Age_m\text{-}720)\gamma^{rmf} + Z_m\beta r^{mf} + Z_f\beta^{rff} + v^f \quad (4)$$

$$R_m = \alpha^m + D_f\gamma^{rfm} + D_m\eta^{rmm} + D_f f(Age_f\text{-}720)\delta^{rfm} + D_m f(Age_m\text{-}720)\delta^{rmm} + \\ + f(Age_f\text{-}720)\gamma^{rfm} + f(Age_m\text{-}720)\gamma^{rmm} + Z_m\beta r^{mm} + Z_f\beta^{rfm} + v^m \quad (5)$$

As mentioned above, these models are used to estimate total non-durable consumption and two sub-categories of non-durable consumption, namely food and clothing (clothes and shoes) expenditure. However, for clothing expenditure, 11.9% of Sample A and 10.6% of Sample B report no clothing consumption in the two-week diary.[11] As it seems reasonable to assume that most of these zero expenditure cases capture 'infrequencies' (i.e., new clothes and shoes are not bought every day) rather than 'censoring' (i.e., a kind of selection process determining who buys new clothes and shoes), linear specification is similarly used for clothing consumption (for a discussion, see Stewart [2009].

[10] Interaction terms between D_f and $f(Age_f\text{-}720)$ and D_m and $f(Age_m\text{-}720)$ in the outcome equation were taken into account. They never appeared to be significant and, therefore, were not included.

[11] We do not observe any zero expenditure in non-durable consumption, while a few observations (less than five in total) reporting no food consumption are excluded from the sample.

4 Exploratory Graphical Analysis

Firstly, an exploratory graphical analysis is conducted.[12] Figure 1 illustrates the age distribution of partners.[13] Figure 2 depicts the raw distribution of retirement probabilities by age using bins of 10 months for partnered women and men as is the norm in the regression discontinuity approach. Large jumps are observed at age 60 (720 months) in the retirement probabilities of both the husband and wife, which lends support to our identification strategy.

Secondly, consumption outcomes are plotted against each partner's age in Figure 3, which respectively depicts total, food, and clothing expenditure as a function of each partner's age. Noticeable drops in total, food, and clothing expenditure are observed at the early retirement age of the husband, while the patterns are less definite for the wife. Figure 4 depicts the partners' predicted retirement probabilities as a function of covariates other than age in order to identify any possible breaks in retirement patterns due to other covariates that may similarly vary at age 60. Retirement probabilities are firstly determined as a

[12] For want of space, only the exploratory graphical analysis performed on Sample B is reported here. Sample A exhibits similar patterns.

[13] It may be that retirees are more likely to participate in a survey than the employed are. If the unobserved willingness to spend is correlated with the unobserved propensity to participate in the survey, then we may face a selection problem. To test for the occurrence of non-response according to the retirement status and age of individuals, the initial sample weight was compared with the adjusted weight. A large discrepancy between the two weights would imply that the individuals were represented to a greater or lesser extent than the average, thus signalling the possible non-random selection of the sample. However, the French Consumer Budget Surveys do not exhibit such variations between the initial and adjusted individual weights for retirement status or the legal minimum retirement age. Following the approach proposed by McCrary [2008] to verify possible breaks in the age distribution of a sample, the McCrary test was performed, with the results being equal to 0.130 with a standard error of 0.182 for partnered men and 0.559 with a standard error of 0.222 for partnered women. Thus, there is a statistically significant break at age 60 in the age distribution for partnered women in the sample, while there is no significant discontinuity for men. This finding, however, does not appear to be related to the manipulation of the running variable (age) for women or to women over the age of 60 dropping out of the sample, as their husbands did not drop out.

function of covariates other than age, and then the predicted probabilities are plotted against age. By comparing Figures 2 to 4, it is evident that no covariates other than age emerge at age 60 for either partner. The covariates considered here correspond to those included in the subsequent parametric models: the dummy variables of education and nationality, area of residence, marital status, number of children having left the household and number of children still living at home.[14]

Finally, Figures 4 and 5 produce similar graphical evidence as Figures 2 and 3, respectively, using age polynomials to the left and right of the discontinuity point to predict retirement and household expenditures, as is typical in regression discontinuity analysis. The jumps in retirement probabilities for either partner at age 60 (720 months) are rather large (Figure 5). Total household consumption and food expenditure appear to fall when the husband turns 60, whereas no sharp drops in consumption emerge when the wife turns 60 (Figure 6). Similar patterns are observed for clothing expenditure (Figure 7) with a drop when the husband is aged 60 and above, although consumption does not fall substantially when the wife is aged 60 and above.

5 Results of Estimation

Regression discontinuity models are estimated for the effect of each partner's retirement on total non-durable household consumption in addition to food and clothing expenditure (see Section 3 for details of the model). The covariates included (or excluded) from the models comprise six education dummies, French nationality, marital status, and area of residence dummies, as well as the number of children still living at home or having left home. The model was first estimated in the case of only the husband retiring (Sample A) and then for both partners retiring (Sample B).

[14] These two categories of children are distinguished since Battistin et al.[2009] show that the departure of children from the family home explains most of the drop in household consumption following the retirement of the household head.

First-stage regressions for these models are provided in Table 2. These estimations relate to the probability of retirement using the linear probability model of equations (see Section 3), by considering either Sample A (model 1) or Sample B (model 2). Robustness checks restricting the age boundaries in the sample are given in Table 3. Table 4 provides the 2SLS estimates for the effect of retirement on total household consumption, while Tables 5 and 6 present the results for food and clothing expenditure, respectively. Finally, Table 7 shows comparable estimates when excluding covariates from the models.

Firstly, the parametric analysis confirms the exploratory graphical findings depicting the significant jumps in the retirement probability for both the husband and wife upon reaching the age of 60. The husband's retirement probability increases by 0.22 in model 1 and 0.17 in model 2 at the age of 60 (see columns 1 and 2, respectively, in Table 2), while the wife's retirement probability increases by a comparable amount when she turns 60, being 0.23 (see column 2 of Table 2). These estimates are generally robust when excluding other covariates from the model (Table 2) or restricting the sample boundaries on the two sides of the discontinuity (Table 3). However, the cross effect of spousal retirement (instrumented with the dummy variable for the spouse turning 60) on one's own retirement is not significant in any of the specifications.

No significant effect is detected at the 5% level for the retirement of either partner in terms of total household consumption for any of the specifications and sample cuts used (Table 4). However, the retirement of the husband leads to a reduction in total household expenditure—significant only at the 10% level—only for the larger Sample A and when excluding all covariates other than age (Tables 7 and 8).

Moreover, the retirement of the husband significantly reduces food expenditure, but only when considering the larger Sample A (see column 1 in Tables 5 and 7). This is in line with the findings of previous studies that included all households in the analysis and focused on retirement of the household head. In particular, food consumption declines by about 18% in Sample A, which is a sizable drop (Table 5). This effect is robust when omitting covariates from the model (Table 7).

However, when restricting the sample on the two sides of the age discontinuity, the decline in food consumption only remains significant in the specification that excludes all covariates other than age (Table 8). These findings suggest that restricting the sample to couples in which both partners actively participated in the labour force leads to a non-significant drop in food expenditure following the retirement of the husband or wife.

As to clothing expenditure, the retirement of the husband leads to a significant reduction for all specifications and sample cuts (Tables 6, 7, and 8), while the retirement of the wife has no effect on household clothing expenditure. This may be partly explained by the decrease in work-related clothing expenditure and the fact that the husband is more likely than the wife to hold a job necessitating the purchase of expensive formal clothing. Another explanation maybe that the husband is the primary earner, and thus clothing expenditure responds largely to his retirement. Clothing expenditure decreases by between 831 and 968 euros per year after the husband's retirement (see columns 1 and 3 of Table 6). As the average annual clothing expenditure for couples in which both partners are aged between 55 and 59 years (both approaching the age discontinuity, which is the usual reference group to interpret the estimates of the model in regression discontinuity analysis) is equal to 1,600 euros, this represents a dramatic decline of 52 to 60%.

Lastly, we estimated the same models found in Tables 4, 5 and 6, while restricting the analysis to Sample B, first allowing for the husband's retirement, then for the wife's, and finally, for both partners'. The findings provide no evidence that food consumption declines following the husband's retirement (see Appendix, Tables A, B and C). As a result, the drop in food consumption upon husband's retirement alone is only observed when including couples in which the wife is a housewife (Table 5). Since Sample A is much larger than Sample B, this difference in significance may be explained by the sample size, although this cannot be verified with the data at hand. It may also be that the effect of the husband's retirement on household consumption varies according to his wife being a housewife or being a wage-earner.

Finally, many of the covariates controlled for are statistically significant and in the expected direction (though they are not discussed here for lack of space). In particular, children leaving home have a negative and significant effect on non-durable consumption. In this respect, our findings are in line with those from earlier studies.

Battistin et al. [2009] find that non-durable consumption drops by 9.8% following the retirement of the household head—significant only at the 10% level—based on data for Italy. Furthermore, Hurst [2008] report that spending on clothing falls by 18% and food expenditure by 7% based on American data.Thus, the drop in clothing expenditure is two to three times greater than food expenditure in the United States, which is similar to our findings for France. However, the declines observed in our French data are about three times greater than in the American data, which could be explained by the well-documented fact that the average earnings distribution is more compressed in France than in the United States (e.g., Organization for Economic Cooperation and Development [1998]). It is also likely that, on average, French men wear more formal and expensive clothes than Americans. Likewise, French households may well spend more money on food than their American counterparts, at least on average. Therefore, these elements may explain the greater effects observed for France compared to the United States.

7 Conclusions

Previous studies concluded that household expenditure, especially food and clothing consumption, falls dramatically at retirement, which may be partially explained by increased home production, reduced work-related expenditure, and the departure of children from the family home. However, only the retirement of the household head was considered in the literature to date. In this article, we study changes in household consumption in the case of one or both partners retiring from the work force, thus distinguishing 'dual-earners' from couples in which one partner may be inactive, typically a housewife. Moreover, this is the first study to investigate the decline in consumption upon retirement in France.

To identify the effect of each partner's retirement on household consumption, we draw from French legislation that sets 60 years as the minimum retirement age for most workers. This creates a discontinuity in the probability of retirement as a function of age, thus enabling us to apply a regression discontinuity approach. A fuzzy regression discontinuity approach is used to allow for the fact that some individuals may retire before 60 years and others later on due to the different rules in employment sectors.

Data are taken from the 2001 French Consumption Budget Survey based on two-week expenditure diaries to study the effect of each partner's retirement on household non-durable consumption. In the data, age is collected in months and thus assumed to be measured continuously. We observe that the individual retirement probability increased by approximately 0.20 upon reaching the legal retirement age. In line with earlier studies, a significant and sizeable drop in food and clothing expenditure occurs after the retirement of the husband. However, when excluding couples in which the wife is a 'housewife', the effect of the husband's retirement on food consumption becomes statistically insignificant. These conflicting results may suggest that the wife's labour status matters when it comes to assessing the effects of the husband's retirement on household consumption. Further research based on an empirical model of household labour supply, saving and consumption decisions over the life cycle

that accounts for individual decision-making is certainly needed (see for instance Apps and Rees [2010]).

Only the decline in clothing expenditure is significant after the husband's retirement for the entire sample, which is likely to be explained by the reduced expenditure on work-related clothing, as documented in previous studies. However, there is no evidence of clothing expenditure falling after the wife's retirement. This may be due to the fact that the husband is the main earner or that, on average, he is more likely to be employed in a job that requires more expensive, formal clothing than his wife.

Finally, the size of our estimates for the drop in food and clothing consumption upon the retirement of the husband is much greater than those observed in earlier studies. This could be explained by the fact that the earnings distribution in France is much more compressed than in other OECD countries like the United States, which is a well-documented fact.

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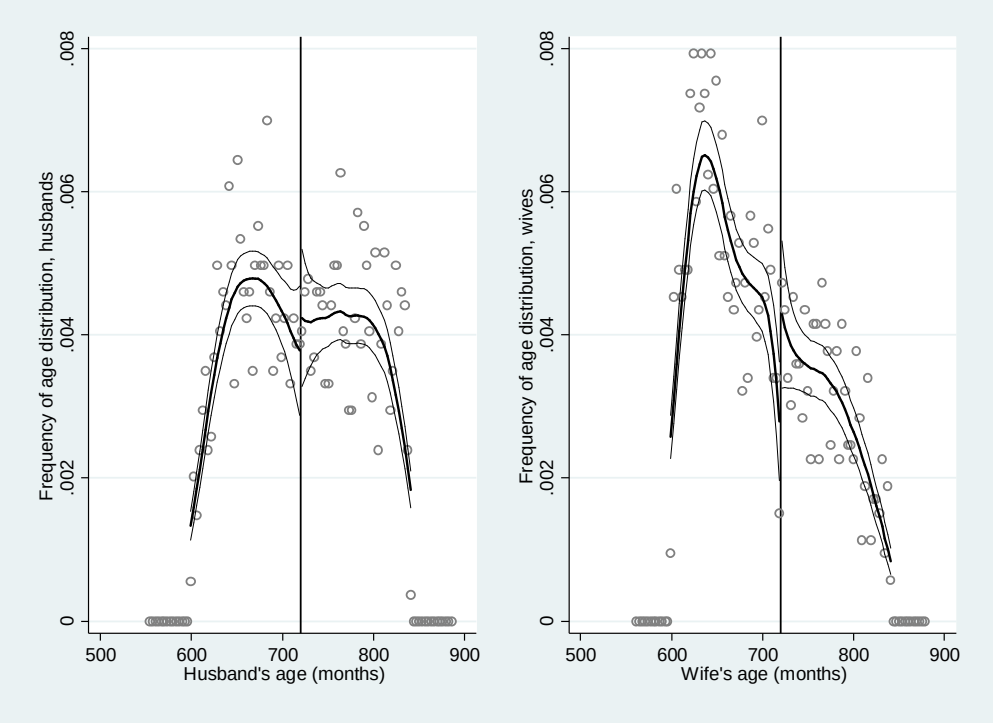

Figure 1: Age Distribution in the Sample Using Mc Crary's Approach.

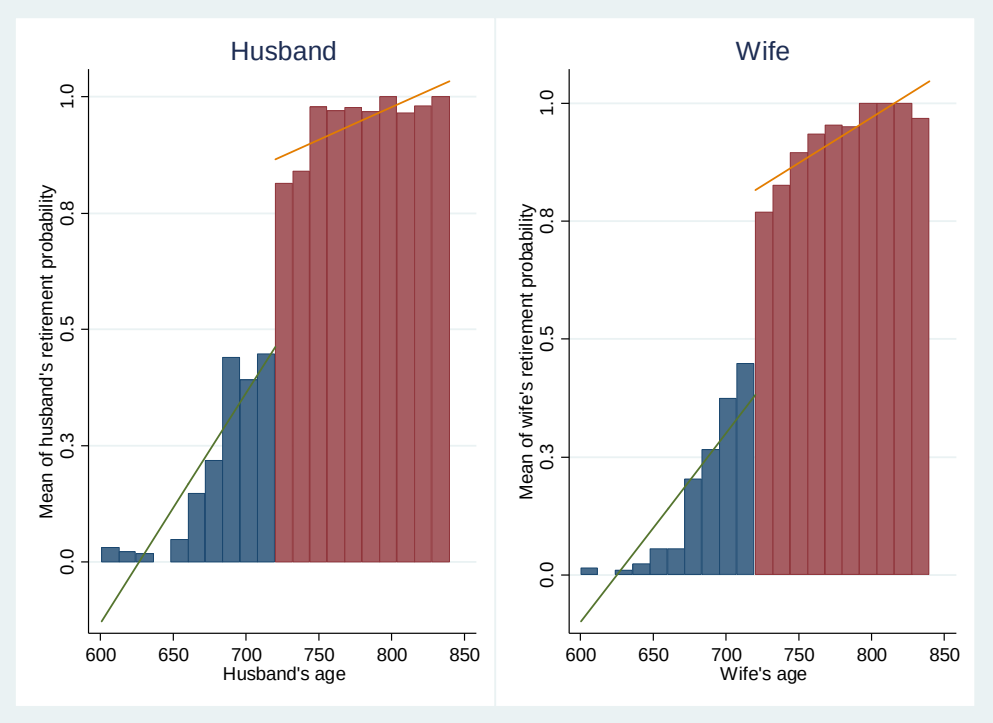

Figure 2: Mean of Retirement Probability by Age (Bins of Ten Months)

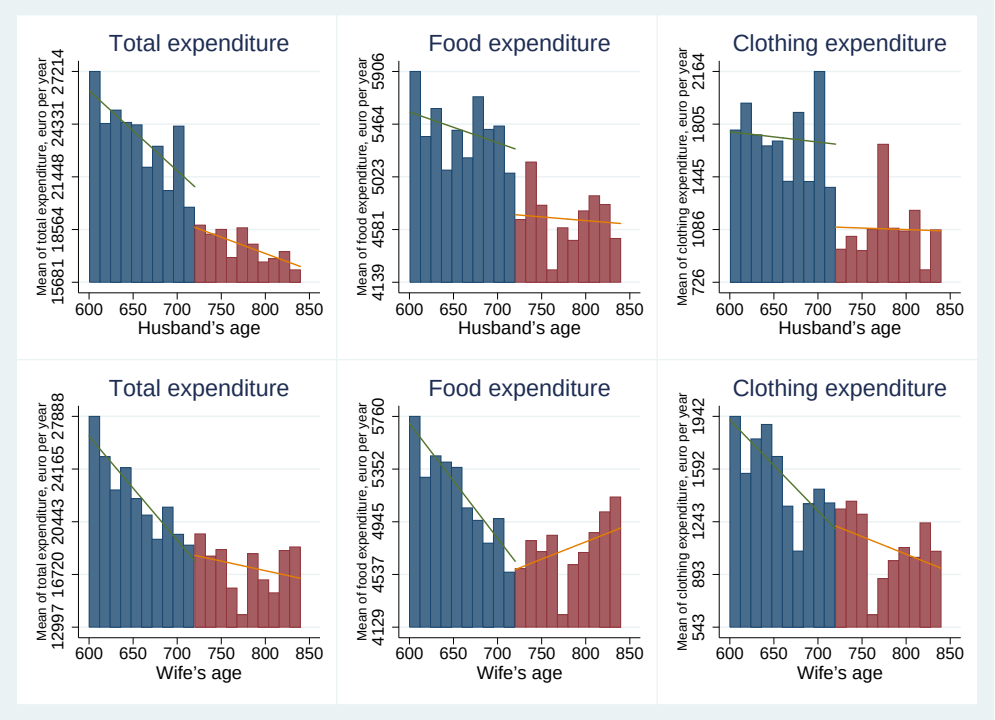

Figure 3: Mean of Household Expenditure by Age (Bins of Ten Months)

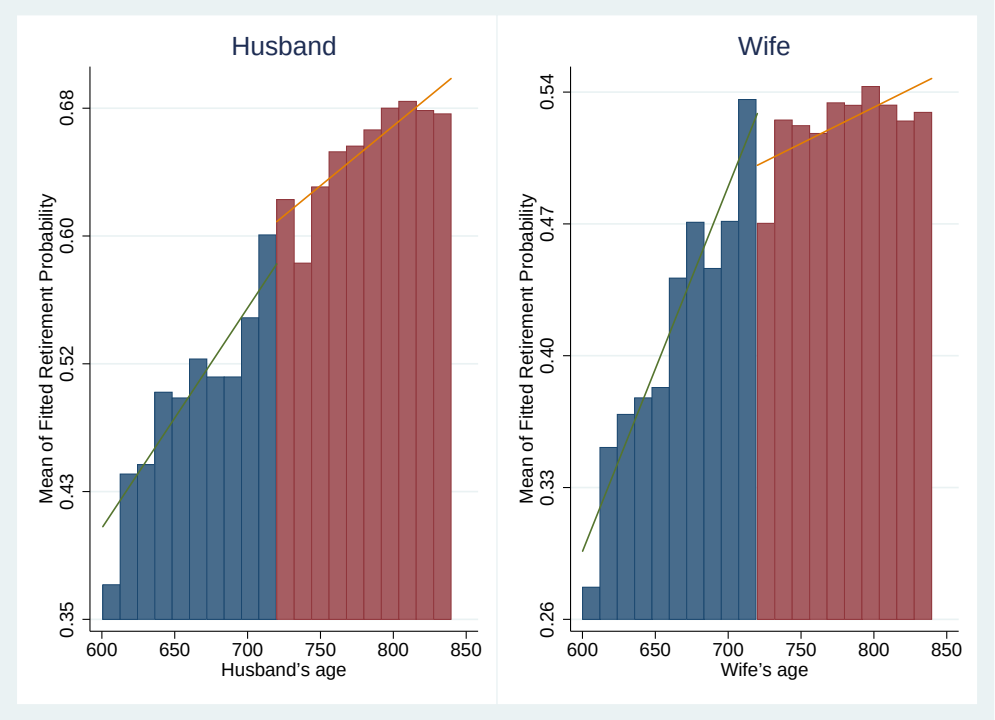

Figure 4: Predicted Retirement Probability as a Function of Covariates Other than Age

Figure 5: Discontinuity in Retirement Probabilities: Smoothed Polynomials in Age (Bins of Ten Months)

Figure 6: Discontinuity in Household Food and Total Expenditure: Smoothed Polynomials in Age (Bins of Ten Months)

Figure 7: Discontinuity in Household Clothing Expenditure:
Smoothed Polynomials in Age (Bins of Ten Months)

Table I: Household Consumption Survey 2000-2001: Descriptive statistics

	Sample A		*Sample B*	
	Male	*Female*	*Male*	*Female*
Age (years)	60.40	58.31	60.31	58.73
	(5.56)	(5.41)	(5.71)	(5.70)
Age >= 60	0.53	0.38	0.52	0.42
	(0.50)	(0.49)	(0.50)	(0.49)
Retired	0.59	0.31	0.58	0.45
	(0.49)	(0.46)	(0.49)	(0.50)
French	0.93	0.94	0.94	0.95
	(0.25)	(0.24)	(0.23)	(0.20)
Professional training	0.26	0.17	0.26	0.17
	(0.44)	(0.37)	(0.44)	(0.37)
Lower secondary	0.09	0.13	0.09	0.13
	(0.28)	(0.34)	(0.29)	(0.33)
Technical upper secondary	0.05	0.03	0.05	0.03
	(0.21)	(0.17)	(0.22)	(0.16)
Upper secondary	0.06	0.08	0.06	0.10
	(0.24)	(0.27)	(0.24)	(0.29)
Higher education training	0.05	0.07	0.06	0.09
	(0.22)	(0.25)	(0.23)	(0.28)
University	0.12	0.07	0.12	0.08
	(0.32)	(0.25)	(0.32)	(0.27)
	Household characteristics		*Household characteristics*	
	Mean		*Mean*	
No. children at home	0.32		0.33	
	(0.65)		(0.64)	
No. children having left home	2.06		2.02	
	(1.40)		(1.43)	
Married	0.96		0.95	
	(0.20)		(0.21)	
Paris region	0.14		0.15	
	(0.35)		(0.36)	
Total consumption	19286.65		20413.84	
	(12089.01)		(12692.17)	
Food expenditure	4900.35		5022.27	
	(2275.99)		(2327.02)	
Clothing expenditure	1322.82		1385.93	
	(1798.70)		(1794.96)	
Number of obs.	*1567 couples*		*1067 couples*	

Table II: Estimation of the first-stage regressions for the two models

a) First-stage regressions (model including all covariates)

	(1) Husband's retirement	(2) Both partners' retirement	
		Husband	Wife
Husband aged 60=Dm	0.226***	0.168**	0.053
	(0.065)	(0.084)	(0.064)
Wife aged 60=Df		-0.003	0.230**
		(0.059)	(0.083)

b) First-stage regressions (model excluding covariates other than age)

	(1) Husband's retirement	(2) Both partners' retirement	
		Husband	Wife
Husband aged 60=Dm	0.237***	0.182**	0.044
	(.066)	(0.085)	(0.063)
Dm × (His age -60)	-0.088***	-0.075**	-0.0002
	(0.025)	(0.032)	(0.026)
Dm × (His age-60)^2	-0.012***	-0.013***	0.003
	(0.002)	(0.003)	(0.002)
Wife aged 60=Df		-0.014	0.226**
		(0.060)	(0.084)
Df × (Her age-60)		0.028	-0.074**
		(0.026)	(0.031)
Df × (Her age-60)^2		-0.0001	-0.012**
		(0.002)	(0.003)
Number of obs.	*1567*	*1067*	

Standard errors in parentheses are robust to heteroskedasticity of unknown form. *** p<0.01, ** p<0.05, * p<0.1. Only selected coefficients are shown.

Table III: First-stage regressions, restricting the sample boundaries

Restricting the sample boundaries on the two sides of the age cut-off.			
a) Sample of partners aged 52 to 68 years old, including covariates			
	Husband's retirement	Both partners' retirement	
		Husband	Wife
Husband aged 60=Dm	0.224***	0.192*	0.031
	(.078)	(0.101)	(0.078)
Wife aged 60=Df		-0.008	0.240**
		(0.075)	(0.101)
b) Sample of partners aged 52 to 68 years, excluding covariates other than age variables			
	Husband's retirement	Both partners' retirement	
		Husband	Wife
Husband aged 60=Dm	0.229***	0.187*	0.020
	(.079)	(0.101)	(0.076)
Wife aged 60=Df		-0.026	0.234**
		(0.076)	(0.103)
Number of obs.	*1153*	*763*	
Standard errors in parentheses are robust to heteroskedasticity of unknown form. *** p<0.01, ** p<0.05, * p<0.1. Only selected coefficients are shown.			

Table IV: Effect of retirement on total household consumption: IV models

	1) Husband's retirement	2) Both partners' retirement
Mean household consumption for ages 55-59	*20 828*	*22020*
Husband retires	-2266.97	-2 218
	(2311.88)	(3026)
Wife retires		-353.3
		(2749)
No. of children still at home	4716.05***	5774***
	(498.36)	(643.8)
No. of children having left home	-607.63***	-293.9
	(169.04)	(208.9)
Husband: Professional training	2023.29***	431.8
	(540.75)	(692.1)
Husband: Lower secondary	5687.99***	3075***
	(897.47)	(993.6)
Husband: Technical upper secondary	4796.30***	2698**
	(946.32)	(1081)
Husband: Upper secondary	7845.37***	3605***
	(1136.96)	(1309)
Husband: Higher education training	9404.09***	4727***
	(1234.69)	(1457)
Husband: University	13992.01***	7469***
	(1233.15)	(1888)
Wife: Professional training		2442***
		(747.9)
Wife: Lower secondary		4471***
		(949.8)
Wife: Technical upper secondary		5012**
		(2397)
Wife: Upper secondary		5598***
		(1159)
Wife: Higher education training		7272***
		(1278)
Wife: University		9959***
		(2096)
Husband: French	3579.73***	3371**
	(1034.55)	(1516)
Wife: French		-307.0
		(1904)
Married	-2795.84*	-2703
	(1538.44)	(1883)
City of Paris	3602.71***	4056***
	(393.43)	(987.4)

Paris Region	688.70	1632**
	(644.53)	(777.4)
Number of obs.	*1567*	*1067*
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.		

Table V: Effect of retirement on household food expenditure: IV models

	Husband's retirement	Both partners' retirement
Mean food expenditure for ages 55-59	*5275*	*5441*
Husband retires	-992.78**	-992.4
	(485.12)	(643.4)
Wife retires		-283.4
		(573.3)
No. of children still at home	735.56***	972.8***
	(108.65)	(132.5)
No. of children having left home	-70.00*	-48.03
	(40.73)	(47.63)
Husband: Professional training	251.11*	69.17
	(130.84)	(160.6)
Husband: Lower secondary	506.28**	-11.30
	(219.29)	(272.0)
Husband: Technical upper secondary	500.46**	146.4
	(224.91)	(266.3)
Husband: Upper secondary	1050.98***	541.6*
	(264.16)	(322.5)
Husband: Higher education training	802.16***	177.5
	(272.26)	(324.4)
Husband: University	1283.16***	387.2
	(226.51)	(373.9)
Wife: Professional training		394.5**
		(176.7)
Wife: Lower secondary		736.8***
		(220.8)
Wife: Technical upper secondary		785.9**
		(396.2)
Wife: Upper secondary		575.0**
		(278.9)
Wife: Higher education training		1361***
		(320.2)
Wife: University		1110***
		(399.2)
Husband: French	564.25**	423.1
	(231.41)	(360.9)
Wife: French		307.9
		(367.1)
Married	199.38	152.8
	(302.28)	(362.0)
City of Paris	368.03*	492.9**
	(192.46)	(228.6)

Paris Region	29.59	161.5
	(138.75)	(165.2)
Number of obs.	*1567*	*1067*
Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.		

Table VI: Effect of retirement on household clothing expenditure: IV models

	Husband's retirement	Both partners' retirement
Mean clothing expenditure for ages 55-59	*1532*	*1603*
Husband retires	-830.99**	-967.6**
	(328.26)	(470.4)
Wife retires		-112.2
		(381.9)
No. of children still at home	224.60***	305.6***
	(78.67)	(86.20)
No. of children having left home	-58.69**	-44.64
	(26.09)	(31.95)
Husband: Professional training	252.28***	127.3
	(72.79)	(90.18)
Husband: Lower secondary	722.95***	528.0***
	(142.00)	(158.7)
Husband: Technical upper secondary	724.91***	548.1***
	(180.47)	(208.2)
Husband: Upper secondary	838.83***	278.0
	(210.79)	(228.2)
Husband: Higher education training	806.98***	483.6**
	(202.48)	(226.1)
Husband: University	1338.43***	736.9**
	(232.89)	(314.4)
Wife: Professional training		317.3***
		(113.2)
Wife: Lower secondary		444.5***
		(157.5)
Wife: Technical upper secondary		439.2
		(268.8)
Wife: Upper secondary		545.8***
		(181.8)
Wife: Higher education training		432.5**
		(213.0)
Wife: University		956.2**
		(385.2)
Husband: French	335.01**	374.2*
	(141.56)	(219.6)
Wife: French		12.10
		(259.4)
Married	-160.39	-153.0
	(185.29)	(185.0)
City of Paris	356.06***	372.7**
	(141.56)	(146.7)

Paris Region	-13.96	58.35
	(119.06)	(134.5)
Number of obs.	*1567*	*1067*

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table VII: Effect of retirement on consumption: Excluding all covariates other than age variables

	Husband's retirement	Both partners' retirement
Effects on total consumption		
Husband retires	-4454.57*	-3187
	(2676.17)	(3669)
Wife retires		809.7
		(3383)
Effects on food consumption		
Husband retires	-1221.83**	-1021
	(513.67)	(698.9)
Wife retires		-123.2
		(620.9)
Effects on clothing consumption		
Husband retires	-999.65***	-1263***
	(346.59)	(478.9)
Wife retires		34.76
		(417.2)
Number of obs.	*1567*	*1067*

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Table VIII: Robustness Checks

Restricting the sample boundaries on the two sides of the age cut-off		
a) Sample of partners aged 52 to 68 years, including covariates		
	Husband's retirement	Both partners' retirement
Total household consumption		
Husband retires	-3247.18	-1261
	(3244.21)	(4,231)
Wife retires		-2,548
		(3744)
Food consumption		
Husband retires	-1111.25	-1519
	(718.88)	(1041)
Wife retires		216.6
		(849.3)
Clothing consumption		
Husband retires	-1474.84***	-1673**
	(501.51)	(745.8)
Wife retires		144.0
		(556.7)
b) Sample of partners aged 52 to 68 years, excluding all covariates other than age variables		
	Husband's retirement	Both partners' retirement
Total household consumption		
Husband retires	-6623.13*	-4430
	(3731.054)	(4842)
Wife retires		1522
		(4514)
Food consumption		
Husband retires	-1290.72*	-1389
	(716.87)	(985.4)
Wife retires		599.8
		(878.2)
Clothing consumption		
Husband retires	-1743.882***	-1838***
	(520.7754)	(695.0)
Wife retires		407.8
		(613.6)
Number of obs.	*1153*	*763*

Standard errors in parentheses are robust to heteroskedasticity of unknown form. *** p<0.01, ** p<0.05, * p<0.1. Only selected coefficients are shown.

8 Appendix

Appendix, Table I: Effect of retirement on total household consumption: Results for Sample B (couples in which each partner is employed or retired)

	(1)	(2)	(3)
Mean household consumption for ages 55-59	22020	22020	22020
Husband retires	-3,127		-2,218
	(2,988)		(3,026)
Wife retires		-936.6	-353.3
		(2,937)	(2,749)
No. of children still at home	5,903***	5,827***	5,774***
	(663.1)	(672.2)	(643.8)
No. of children having left home	-488.4**	-243.9	-293.9
	(204.6)	(233.4)	(208.9)
Husband: Professional training	1,571**		431.8
	(687.2)		(692.1)
Husband: Lower secondary	5,411***		3,075***
	(1,031)		(993.6)
Husband: Technical upper secondary	4,042***		2,698**
	(1,178)		(1,081)
Husband: Upper secondary	7,739***		3,605***
	(1,336)		(1,309)
Husband: Higher education training	8,654***		4,727***
	(1,392)		(1,457)
Husband: University	13,977***		7,469***
	(1,542)		(1,888)
Wife: Professional training		3,000***	2,442***
		(743.4)	(747.9)
Wife: Lower secondary		5,913***	4,471***
		(1,040)	(949.8)
Wife: Technical upper secondary		6,981***	5,012**
		(2,680)	(2,397)
Wife: Upper secondary		8,077***	5,598***
		(1,073)	(1,159)
Wife: Higher education training		10,980***	7,272***
		(1,294)	(1,278)
Wife: University		15,944***	9,959***
		(1,685)	(2,096)
Husband: French	3,103***		3,371**
	(1,188)		(1,516)
Wife: French		2,273	-307.0
		(1,589)	(1,904)

Married	-3,692*	-2,191	-2,703
	(1,935)	(1,957)	(1,883)
City of Paris	4,282***	4,438***	4,056***
	(1,046)	(1,057)	(987.4)
Paris Region	1,391*	1,459	1,632**
	(780.9)	(939.5)	(777.4)
Number of obs.	1067	1067	1067

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Age polynomials not shown.

Appendix, Table II: Effect of retirement on household food consumption: Results for Sample B (couples in which each partner is employed or retired)

	(1)	(2)	(3)
Mean food consumption for ages 55-59	5441	5441	5441
Husband retires	-1,063*		-992.4
	(639.4)		(643.4)
Wife retires		-644.1	-283.4
		(590.2)	(573.3)
No. of children still at home	925.8***	969.3***	972.8***
	(132.6)	(136.0)	(132.5)
No. of children having left home	-80.44*	-54.34	-48.03
	(48.36)	(47.16)	(47.63)
Husband: Professional training	242.4		69.17
	(159.7)		(160.6)
Husband: Lower secondary	339.7		-11.30
	(265.9)		(272.0)
Husband: Technical upper secondary	364.5		146.4
	(270.2)		(266.3)
Husband: Upper secondary	1,104***		541.6*
	(310.1)		(322.5)
Husband: Higher education training	755.0**		177.5
	(309.3)		(324.4)
Husband: University	1,164***		387.2
	(289.2)		(373.9)
Wife: Professional training		449.4**	394.5**
		(174.7)	(176.7)
Wife: Lower secondary		796.6***	736.8***
		(216.2)	(220.8)
Wife: Technical upper secondary		931.2**	785.9**
		(401.1)	(396.2)
Wife: Upper secondary		865.3***	575.0**
		(242.6)	(278.9)
Wife: Higher education training		1,691***	1,361***
		(284.8)	(320.2)
Wife: University		1,523***	1,110***
		(314.9)	(399.2)
Husband: French	563.8*		423.1
	(309.5)		(360.9)
Wife: French		531.3*	307.9
		(315.1)	(367.1)
Married	20.01	108.5	152.8
	(382.3)	(357.5)	(362.0)
City of Paris	478.5**	524.6**	492.9**
	(230.7)	(229.3)	(228.6)

Paris Region	76.09	155.7	161.5
	(165.8)	(165.7)	(165.2)
Number of obs.	1067	1067	1067

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimates of age polynomials not shown.

Appendix, Table III: Effect of retirement on household clothing consumption: Results for Sample B (couples in which each partner is employed or retired)

	(1)	**(2)**	**(3)**
Mean clothing consumption for ages 55-59	1603	1603	1603
Husband retires	-1,004**		-967.6**
	(435.4)		(470.4)
Wife retires		-85.46	-112.2
		(385.9)	(381.9)
No. of children still at home	290.2***	360.1***	305.6***
	(97.65)	(88.99)	(86.20)
No. of children having left home	-60.78*	-24.34	-44.64
	(31.01)	(36.30)	(31.95)
Husband: Professional training	234.9***		127.3
	(88.98)		(90.18)
Husband: Lower secondary	682.8***		528.0***
	(156.5)		(158.7)
Husband: Technical upper secondary	656.4***		548.1***
	(206.7)		(208.2)
Husband: Upper secondary	612.5***		278.0
	(214.9)		(228.2)
Husband: Higher education training	740.3***		483.6**
	(225.2)		(226.1)
Husband: University	1,224***		736.9**
	(292.2)		(314.4)
Wife: Professional training		413.9***	317.3***
		(110.7)	(113.2)
Wife: Lower secondary		722.0***	444.5***
		(168.6)	(157.5)
Wife: Technical upper secondary		622.7**	439.2
		(284.4)	(268.8)
Wife: Upper secondary		847.3***	545.8***
		(166.8)	(181.8)
Wife: Higher education training		895.4***	432.5**
		(202.7)	(213.0)
Wife: University		1,925***	956.2**
		(370.2)	(385.2)
Husband: French	368.4**		374.2*
	(162.1)		(219.6)
Wife: French		330.5*	12.10
		(180.3)	(259.4)
Married	-201.3	-11.37	-153.0
	(188.3)	(177.5)	(185.0)
City of Paris	403.6***	362.0**	372.7**
	(152.9)	(154.9)	(146.7)

Paris Region	17.70	159.9	58.35
	(142.0)	(157.8)	(134.5)
Observations	1067	1067	1067

Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1. Estimates of age polynomials are not shown.

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