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Divorcing Upon Retirement

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Abstract

Retirement represents a dramatic change in individual life that may also affect marriage stability, a fact which has been mostly ignored to date. Using observations on over 200 000 French men and over 166 000 French women aged 50 to 70, drawn from the French Labor Force Surveys over the last decade, and instrumenting retirement with legal retirement age in France, we find a significant and large increase in divorce rates upon retirement, which concerns especially individuals of either gender that grew up in a somewhat traditional type of household.

Keywords: Ageing, Retirement, Divorce

JEL classification: J12, J14, J22

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1. Introduction

Since the pioneering work of Gary Becker, the instability of marriage has been the subject of numerous studies by economists. However, to date the relation between retirement and marriage stability has been mostly ignored. Here we argue that retirement represents a dramatic change in individual life that may also affect marriage stability. Since the quality of marriage may in turn affect individual productivity, to disentangle the direction of causality we exploit legal retirement age in France to instrument the effect of retirement on the individual probability to divorce.

According to Gary Becker, Elisabeth Landes and Robert Michael (1977), marriage instability may result from a change in the expected returns from marriage or in their variance, the latter capturing the possible uncertainty surrounding the returns from marriage. In line with this prediction, for example, Bruce Meyer and Wallace Mock (2013) find some evidence of a negative effect of disability on marriage stability in the United States. Retirement being anticipated, one would not expect an effect of retirement on marriage break up rates. However, upon retirement individuals need to reallocate time from market work to other activities, and this may lead spouses to renegotiate the household allocation of time, which may possibly generate spousal conflicts.[1] Moreover, by the time individuals retire, children that often hold couples together (see, for example, Bellido et al. 2014) are likely to have left home and this may contribute to make marriages more vulnerable. Last but not least, traditional gender roles are likely to be challenged by retirement and this too may affect marriage stability.[2]

Increases in divorces and remarriages at older ages have been documented by, for example, Betsey Stevenson and Justin Wolfers (2007).[3] In line with this, Figure 1 (based on SIPP data) documents a striking increase in the proportion of divorcees among older Americans in the past decade while Figure 2 (based on administrative data on divorcees collected by the French Ministry of Justice) illustrates similar large increases in the proportion of French older

[1] Aguiar and Hurst, 2005 document a very sizeable increase in household work of older Americans. Stancanelli and Van Soest (2012) conclude that the husband's household work increases dramatically at retirement but it falls back when the wife also retires.

[2] See Akerlof and Krant (2000) on male gender identity.

[3] Gopi Shah Goda, John B. Shoven, Sita Nataraj Slavov, 2007, investigated the effect of social security on divorce in the USA to conclude that spousal pension benefits do not affect the individual decision to divorce. There are no spousal pension benefits in France. Child custody laws are also likely to be of little relevance to the older population under study in this paper since children are likely to be grown up by the time individuals retire.

divorcees.[4] French administrative data on marriage break up rates by the duration of the marriage show a steady and steep increase in the proportion of marriages that end up in divorce after having lasted for 30-34 years. By the end of the nineties, as many marriages broke up after 30-34 years of duration as after the first five years of marriage (see Figure 3). Because individuals marry on average in their late twenties/early thirties and retire in their sixties, this suggests that retirement years have become increasingly critical for marriage stability. Moen, Phillys, Jungmeen E. Kim, and Heather Hofmeister (2001) provide evidence of a negative association between retirement, gender roles and the quality of marriage, using a two years panel on American couples. Anecdotal evidence for Japan indicates that over 60 per cent of older women aged 60 and above are affected by a so-called 'retired husband syndrome", with soaring divorce rates of older couples in Japan (Kenyon Paul, 2006). Recent evidence for Italy, also points to soaring divorce rates of older individuals around retirement age (Corriere della Sera, 2011, La Repubblica, 2014). Interestingly, Italy and Japan stand out as the OECD countries in which married men contribute the least to housework (see OECD, 2001, and Burda, Hamermesh and Weil, 2013) and traditional gender roles prevail.

In particular, since individuals plan for their retirement well in advance, to comply with standard advance notice requirements to employers and social security offices, the prospects of retirement may upset marriage stability in anticipation of retirement. Retirement may be the last straw that breaks the (marriage) camel back. The costs of divorcing at older age are likely to be large not only for the individual[5] but also for the economy and society at large, as older people are less likely to remarry and may depend more heavily on the welfare state - while family providers of unpaid care will have to split their time between two divorced parents.[6] This is the first study that attempts to pin down the effect of retirement on marriage stability.

Marital instability may not be independent from the timing of retirement –as the quality of marriage may, for example, also affect productivity and employment. Therefore, to identify the effect of retirement on the individual divorce probability, we exploit legal retirement age in France and instrument the probability of individual retirement by applying a fuzzy regression discontinuity design. Using data drawn from the French Labor Force Surveys over

[4] There are notable spikes in divorce rates both after the introduction of consensual divorce (1975) and a recent reform (2004) that eased further divorce procedures in France. For each older age group, there are many more divorces for men than for women, which is explained by the fact that men marry (and divorce) on average younger women.
[5] See, for example, Paul Amato (2004) on the costs of divorce.
[6] See, for example, Paul Amato (2004) on the costs of divorce.

the last decade, on sample of over 200 000 men and over 166 000 women aged 50 to 70 years, we conclude that the probability to retire increases significantly when individuals turn 60 and the size of the increase is equal, respectively, to about 0.19-0.23 for men and 0.25-0.29 for women, which supports our identification strategy. The probability to divorce upon retirement increases significantly by 0.03 for men while retirement does not affect significantly female chances to divorce, on average. In particular, the negative effect of retirement on divorce is robust to several specification checks for individuals of either gender that grew up in a household in which the father was a farmer, which represent a large share of the population (Sumner, Daniel A. 2014) and are typically, traditional households (Jane Meiners and Geraldine Olson, 1987) with the husband contributing little to household work and both spouses working very long hours in the farm.

This paper is structured as follows. The empirical approach is described next. The data used for the analysis and the sample selection criteria are presented in Section 3. Descriptive analysis follows. The results of estimation are presented in Section 5. Conclusions are drawn in Section 6.

2. The empirical model

Because retirement is likely to be anticipated (see the pioneering work of Gary Becker, Elisabeth Landes and Robert Michael (1977), we would not expect a priori a significant effect of retirement on divorce. However, upon retirement a huge amount of time is freed from market work and this may induce spouses to renegotiate the household allocation of time, which may possibly lead to marital conflict. Retirement may challenge traditional gender roles and this may also upset marital stability. Moreover, by the time of retirement children that often hold couples together are likely to have left home. Here we argue that retirement may well cause divorce which is something that has not been considered before in the economic literature. Since individuals are going to plan their retirement well in advance –in France, for example, they have to notify social security officers at least four months earlier that they plan to retire at a certain date- the prospects of retirement may affect marriage stability well before actual retirement takes place. The actual retirement may just be the last straw that breaks the (marriage) camel's back. Therefore, we may find an immediate positive effect of retirement on individual divorce rates.

Because the individual decision to retire from work may not be independently determined from marriage (in)stability–for example, individuals in (un)stable marriages may be more

(less) productive at work and this may affect the timing of their retirement- we exploit the legislation in France that sets 60 as the legal retirement age for most workers,[7] to instrument the effect of retirement in our divorce model. The existence of a legal retirement age creates a discontinuity in the probability of retirement (as a function of age) that enables us to apply a regression discontinuity approach. Excellent literature reviews of regression discontinuity methods are provided, for example, by David Lee and Thomas Lemieux (2010). The main advantage of regression discontinuity over other competing approaches is that it is closer to a natural experimental design as individuals close to the discontinuity are likely to be very similar. Thus, we can neatly identify the effect of retirement (instrumented with the legal retirement age) on marriage outburst. Under this set up, the identification of the effect of retirement on the individual probability to divorce (the outcome variable) is achieved thanks to the sudden and large increase in retirement (the treatment) at the point of discontinuity (age 60) in the running variable (age). Individuals cannot manipulate their age –and this is one of the requirements for using a regression discontinuity approach (see, for example, Lee and Lemieux, 2010). In our data, year and month of birth were collected, and we also know the day, month and year of the survey interview. Therefore, we assume that age is measured continuously. There are no other policy measures that affect individuals reaching age 60 in France. Retirement is also measured at the time of the interview. However, we need to account for the fact that some people may retire earlier than sixty[8] –due to special early retirement schemes or specific employment sector rules - and others later, though in France, unemployment, maternity and sick leave periods are fully covered by pension rights, so that interrupted labour market experience will not translate into smaller pension benefits or into a longer working life.[9] We use a so-called Fuzzy Regression Discontinuity design - the jump in the probability of retirement at age 60 (or 720 months) is greater than zero but less than one.[10]

Let R_i be a dummy for retirement equal to one if individual *i* has retired from market work and zero otherwise. Let D_i be a dummy that takes value one when individuals have reached

[7] We us a fuzzy RD design to account for the fact that some individuals may retire earlier and others later.
[8] The pension benefits payable reach a maximum when individuals have cumulated a given contribution record (for example, 40 years of contributions in 1994 for people born in 1944 and working in the private sector). Once individuals have contributed enough to retire with maximum (full) pension benefits, their pension benefits will not increase if they retire later. Furthermore, periods of unemployment or sick leave, including maternity and parental leave, all lead to full (100 per cent coverage of) pension contribution records.
[9] See, for example, Blanchet and Pele (1997) for more details of the French pension system. In 2010, the legal early retirement age was set at 62 years, but this will become effective only in 2018.
[10] An application of regression discontinuity to the retirement decision is given in Stancanelli and van Soest (2012) who investigate the effect of partners' retirement on time allocation and notably, house work.

age 60 (720 months of age) and zero otherwise, and let S_i be the divorce outcome. The fuzzy regression discontinuity design can be estimated by specifying a two stages least square model of the effect of retirement -instrumented with a dummy for being aged at least 60 (720 months or more) and full interactions of this dummy with an individual age polynomial- on divorce (see Hahn, Jinyong; Petra Todd**;** Wilbert Van der Klaauw (2001).

1) $S_i = \alpha^c + R_i \beta^c + (Age_i - 720)\gamma^c + (Age_i - 720)^2 \gamma^{c2} + (Age_i - 720)^3 \gamma^{c3} + (Age_i - 720)^4 \gamma^{c4} +$
$+ D_i(Age_i - 720)\delta^c + D_i(Age_i - 720)^2 \delta^{c2} + D_i(Age_i - 720)^3 \delta^{c3} + D_i(Age_i - 720)^4 \delta^{c4} + Z_i\beta^c + \nu_i^c$
2) $R_i = \alpha^r + D_i\mu^r + D_i(Age_i - 720)\delta^r + D_i(Age_i - 720)^2 \delta^{r2} + D_i(Age_i - 720)^3 \delta^{r3} + D_i(Age_i - 720)^4 \delta^{r4} +$
$+ (Age_i - 720)\gamma^r + (Age_i - 720)^2 \gamma^{r2} + (Age_i - 720)^3 \gamma^{r3} + (Age_i - 720)^4 \gamma^{r4} + Z_i\beta^r + \nu_i^r$

Equation 1 is the outcome equation for divorcing (S) and equation 2 is the first stage equation for retirement in our Fuzzy Regression Discontinuity model. We specify a quartic flexible polynomial in age and test for the robustness of our estimates to using a different degree of the age polynomial. The threshold *720 months* corresponds to the legal retirement age for most workers in France. We assume that the covariates other than age (denoted by Z here) are not discontinuous at age 60 (and we also test for this).The vector Z includes individual education dummies, the number of children still living at home, year (we cover a thirteen years period) and district (95 departments) fixed effects, the level of the district unemployment rate a year before the survey, the individual "sex-ratio", which serves as a measure of tensions in the marriage market (see Section 3 for definitions). The errors ν is assumed to be normally distributed. The two equations are estimated by two stages least squares, including and excluding covariates. We adjust the standard errors of the model as recommended in the econometric literature The sensitivity of the results to narrowing the sample bounds on the two sides of legale retirement age is tested for. Finally, we also run similar models for the outcomes of widowhood (placebo), marriage, or singlehood.

3. The data

The data for the regression discontinuity analysis are drawn from the French Labour Force Surveys (LFS) 1990-2002. We use this sample cut for a number of reasons. First of all, these yearly surveys are highly comparable over time as they use the same questionnaire, the same data collection method (personal interviews at the respondent's home) and the same sample design approach. The LFS series was broken in 2003 to comply with Eurostat requirements. The recent LFS surveys (as from 2003) are carried out quarterly and most of the interviews are done by telephone; and the questionnaire and the sample design have changed

dramatically relative to the earlier 1990-2002 surveys. In addition, a reform of the length of the pension contribution period took place in 2003,[11] exactly at the time of the break in the LFS series, and divorce law was also reformed in 2004. Therefore, we select a sample of individuals from the 1990-2002 yearly LFS as follows:

1. Individuals reported as the main economic situation either employment or retirement at the interview date.
2. Individuals were aged between 50 (or 600 months) and 70 (or 840 months) at the interview date to set ten year bounds on the two sides of the discontinuity at age 60 (or 720 months), which is the legal retirement age for most workers in France.

This leads to selecting, respectively, a main sample of 202 606 men and 166 162 women, that were either retirees or employees, and aged 50 to 70 years at the time of the survey. The LFS collects month and year of birth together with records of the day, month and year of the interview. Therefore, we construct an approximately continuous measure of age in days, on the day of the interview, assuming that individuals were born on the 15th day of the month. We also checked the robustness of the results to measuring age in months and our conclusions were not affected.

The retirement status is subjectively assessed by the individual and measured on the interview date. In particular, the individual could choose among reporting that his/her main economic status was employment, or unemployment, in full-time education, a military, retirement or early retirement, being a housewife or other inactive. Marital status was also self-assessed and individuals were classified as married, cohabiting, single, divorced or widowed at the date of the interview. It follows that individuals that separated and were not (yet) formally divorced might classify themselves as any of these four possibilities, though it seems likely that they would report to be "divorced" rather than reporting to be still formally married or single and thus, we can think of our dependent (outcome) variable as encompassing either divorce or separation.

As far as the other variables go, we construct categorical dummies for the occupation of the father of the respondent (see Appendix for details of the various occupations coded), which we expect to capture the effect of the individual socio-economic background and in particular, the type of household individual grew up in. We do not control for own occupation for a

[11] Also a substantial reform of survivor pensions took time in 2003, which is when the LFS surveys were also broken up.

number of reasons. First of all, occupation may be endogenous as individual choose their occupation. Next, current occupation is obviously only recorded for individuals still at work while occupation in the last job is available for retirees but the code is slightly different than that for current occupation and moreover, individuals may have changed occupation over the life-cycle.

The explanatory variables of the model include controls for completed education dummies - the excluded group being individuals with college education. The level of the unemployment rate may affect the individual retirement probability as, for example, employers may encourage older workers to retire in recessionary times. Therefore, we construct a measure of the local unemployment rate, using the level of the district unemployment rate in the year before each survey was carried out. The most disaggregated area of residence or say district, available in the survey is the "department". France is divided into 22 regions that are further subdivided into 95 districts ('departments') - without considering the overseas territories (French Guyana, Guadeloupe, Martinique, Mayotte, Ile de la Reunion) that were not covered by these surveys. We also include district ("department") fixed effects and year dummies. The latter are meant to capture macroeconomic changes such as the secular increase in female labour supply. Finally, we constructed a measure of tensions in the marriage market, the "sex-ratio", defined as the ratio of the number of men born in the same year as the individual under consideration to the number of women born two years later, since the average age difference between older spouses in France at the time covered by this study was two years (see also Hans Bloemen and Elena Stancanelli, 2014). We test for the robustness of the estimates to including birth cohort dummies, defining 5 years birth intervals, and to dropping some of the survey years.

To provide more insights on the issue at stake, we also draw data on couples from the Labor Force Surveys of 1990 to 2002 ; the French Time use Survey of 1998-99; the French Consumption Survey 2001 and the recent French Financial Wealth survey of 2010 (see Table D in the Appendix).

4. Descriptive analysis

Sample descriptive statistics are shown in Table 1. About 5.5% of the men in the sample were divorced against almost 9 % of the women, on average. Marriage is much more common among older men (remember our sample includes individuals aged 50 to 70 years) than among older women: 85 per cent of the men were married against 68% of the women. In

contrast, widowhood concerned more often women than men: 16.5% of the women in the sample against only 3% of the men. This is due to longer life expectancy for women and also possibly to the fact that older (widowhood) men are perhaps more likely to remarry than older (widowhood) women. The proportion of singles was only slightly larger in the older women's sample (almost 6%) than in the older men's sample (almost 5%). The average sex ratio for the individuals in the sample was almost 0.47, indicating that there were 0.47 men on average for each two-years-younger woman. The local unemployment rate at the time was high, equal on average to 9%. As far as retirement goes, 55% of the men and almost 57% of the women in the sample were retirees.

Looking at marriage break up patterns by respondent's father socio-economic category (see Table A in the Appendix), reveals that older men whose father was a farmer are the least represented among divorcees (less than 2 per cent of them were divorced in 1990) while older men whose father was a Secondary School or University teacher are the most likely to divorce (9.3% of them were divorced in 1990). Divorce rates are very large also for older men whose father was a teacher, almost 14% of whom were divorced by 2002 against 5.6% of older men whose father was a farmer. Divorces increase generally with the individual education level: almost 7% of male college graduates were divorced against 4.5% of individuals with less than middle school (see Table B, Appendix).

Remarkably, the correlation between the own and the father's socio-economic category falls over time, averaging about 27 per cent for men and 31 per cent for women (Table C in the Appendix). To gain more insights into the implications of stratifying the sample by father's socio-economic category, we gather some descriptive information on marriage-match characteristics, consumption and time allocation of married individuals classified according to the father's socio-economic category (see Table D in the Appendix). In particular, couples in which the father of the husband was a farmer appear to be slightly more fertile than others and the age difference between the husband and the wife is slightly larger than for other socio-economic backgrounds. The proportion of housewives in these couples is slightly lower than for other socio-economic background. In line with this, we also find that in current farmer couples, partners tend to enjoy fewer "pure" leisure hours than others -defining "pure" leisure as performing sports, socializing, reading, or watching television- and the husband contributes considerably less than the average to unpaid domestic work. This evidence tends to confirm that men in farmer households perform little domestic work and both spouses work harder on average than the average. Although, we only have a limited number of observations in each

cell, which makes generalizations difficult to carry out, we compare total household consumption and wealth returns before and after retirement age for couples of farmers and couples in other employment types, to conclude that the drop in the returns from wealth upon retirement is not especially large for farmer households while the drop in consumption is smaller for farmer than for individuals in top occupations. This is in line with Nicolas Moreau and Elena Stancanelli (2014) who find no significant changes in total consumption upon spouses' retirement in France.

Next, to check that we can apply a regression discontinuity approach to our sample of older individuals, we performed a Mc Crary test (see Justin McCrary, 2008) of the continuity of the running variable (age) on the two sides of the age cut-off at 720 months of age (age 60). Plots of the Mc Crary DC density function revealed no discontinuity in age (see Figures A for the sample, and B for the subsample of individuals whose father was a farmer). We also investigated whether the "Z" covariates other than age were smooth on the two sides of the age cut-off (60 years or 720 months). We found that individuals with college education were somewhat less likely to retire at age 60 than individuals with lesser education -since the more educated are likely to have entered the labor market later and thus, have cumulated fewer pension contribution than the lesser educated (see Tables E and F in the Appendix). We inspected graphically whether the covariates were smooth at age 60 by plotting predicted divorce rates by gender (predicted as a function of the Zs) against age (see Figure C).

Then, as customary when applying a Regression Discontinuity approach, we ran some exploratory graphical analysis of the retirement probability and the outcome variables as a function of the running variable (age). We used bins of ten months of age (see Figures 4, 5 and 6 respectively) and repeated the analysis also for the subsample of individuals whose father was a farmer (see Figures 7, 8, and 9). Large jumps in the retirement probability upon reaching age 60 (720 months) are evident for both men and women in the main sample (Figure 4) and in the subsample of individuals whose father was a farmer (Figures 7). Figure 8 indicates an increase in divorce rates upon turning 60 (720 months here) for men and women whose father was a farmer while the evidence for the full sample of men and women is much less clear-cut (Figure 5). We find no detectable increase in the chances of widowhood (placebo check) upon turning 60 (see Figures 6 and 7, respectively) while the patterns are more complex for marriage (see Figures D and E in the Appendix), that show a turning point downward slightly before age 60 for men and a steady decline for older women.

5. Results of estimation

We expect that retirement may have a negative effect on marriage stability (see Introduction). We have estimated two-stages-least-squares models of the effect of individual retirement (instrumented with a dummy for reaching legal retirement age, 720 months of age, and full interactions of this dummy with a quartic age polynomial) on the individual chances to divorce. These models were estimated separately for men and women and for subsamples of individuals by own education level and by father's socio-economic background. We do not control for own occupation for a number of reasons. First of all, occupation may be endogenous as individual choose their occupation. Next, current occupation is obviously only recorded for individuals still at work.[12] We have tested for the robustness of the estimates to using different degrees of the age polynomials as well as including and excluding covariates and narrowing the sample age boundaries on the two sides of the age cutoff. Finally, we also estimated similar models for different outcomes such as marriage, singlehood and widowhood (placebo).

First of all, we find that the retirement probability increases sharply and strongly (significant at the 1% level) upon reaching age 60 (720 months) for both men and women (see Tables 2 and 3, respectively). The estimates of the increase in retirement upon reaching legal retirement age are robust to all specification checks and, equal to 0.19-0.23 for men and 0.22-0.29 for women. The effect of turning 60 years on the retirement probability remains strongly significant (at the one per cent statistical significance level) and is only slightly smaller in size when narrowing the sample bounds on the two sides of the age cut-off, restricting the sample to individuals aged, respectively, 52 to 68 years or 54 to 66 years (see bottom part of Tables 2 and 3, Specifications 9 to 12). Thus, we are comforted that our identification strategy is valid.

Next, we find a significant change in the probability to divorce for men, when using a quadratic age polynomial, and this effect is robust to including or excluding other covariates (see Table 2, Specification 5, without covariates, and 6, including covariates). Under this specification, the chances to divorce increase significantly by 0.03 upon male retirement, which represents a large increase in divorce rates –the share of divorces in the sample is equal

[12] In the survey occupation in the last job was available for retirees but the survey code was different than that for the current occupation of respondents employed. Moreover, individuals may change occupation over the life-cycle.

to 0.05 for men aged 59 to less than 60 years (the group close to the legal retirement age discontinuity). We find no effect of retirement on female divorce rates (see Table 3).

However, when restricting attention to individuals whose father was a farmer, retirement is found to increase significantly divorce rates upon both male and female retirement (see Tables 4 and 5, respectively). In particular, the probability to break up increases by 0.045 to 0.11 upon male retirement and by 0.06 to 0.08 upon female retirement, for individuals whose father was a farmer. These findings are robust to numerous specification checks such as using a different degree of the age polynomial or narrowing the sample bounds on the two sides of the age discontinuity or dropping individuals that are aged exactly 60 from the sample (see the bottom blocks of results in Tables 4 and 5, respectively). They are also robust to including birth cohort dummies or to dropping observations drawn from the early nineties Labor Force Surveys or from the 2000s LFS Surveys (see Table 6).

In contrast, retirement does not affect significantly the divorce rates of individuals with other social-economic backgrounds (see Table 7), except for women whose father was a blue collar and for whom divorce rates drop significantly at retirement. Splitting the sample by education level, we do not find any significant effect of male retirement on divorce rates (see Table 8), but female retirement reduces significantly the chances to divorce for women that have completed at most middle education. It is difficult to think of any explanation for these findings which are not robust to specification checks anyhow.

Finally, we find no significant effect of retirement on either marriage or widowhood (placebo) or singlehood (see Table 9). Tables 10 and 11 present, respectively, the full-sets of results for the full sample, and for the subsample of individuals whose father was a farmer. Interestingly, the presence of children reduces significantly the chances of marriage break up for all sample cuts, in line with earlier literature in this area.

Discussion

Fernandez, Fogli and Olivetti (2004), analyzing the determinants of the secular rise of female labor force in the USA conclude that women married to a man whose mother worked for pay are themselves more likely to participate in the labor force. Here we find that both men and women who grew up in a farmer household are more likely to experience marriage instability at retirement and this finding is robust to various sensitivity checks.

Although farms have been steadily disappearing over time, individuals that grew up in a father-farmer household still represent a large share of the French population varying from 6% up to over 40% of the population across French districts (see Table G in the Appendix). France still counted 515 000 farms in 2010 (with an average surface of over 100 hectares per farm), which represent 4.3% of the 12 million European Union farms (INSEE, 2014) while in the USA there were over 2 million farms at about the same time and it is documented that this is a growing sector (Sumner, Daniel A. 2014; Adamopolous Tasso and Diego Restuccia. 2014). Data on time allocation in France indicate that male farmers spent on average, three hours a week on housework at the end of the nineties, against an average of eleven hours for the average married man, and both spouses in a farmer household enjoyed only twelve hours of pure leisure per week at most, against more than eighteen hours for the average French married spouses (see Table D in the Appendix). This suggests that in farmer households a more traditional division of household work and longer market hours prevail, on average (see also Jane Meiners and Geraldine Olson (1987) for an account of time allocation of USA female farmers and Annie Rieu (2004) on the situation of female farmers in France). Moreover, on average, individuals whose father was a farmer have slightly more children than others, and their marriage is characterized by larger age and education differences between spouses (see Table D in the Appendix), which may also characterize more traditional marriages (Bloemen and Stancanelli, 2014). Larger age and education or earnings differences between spouses may signal marriage mismatch[13] and may be associated with higher divorce rates in general. Individuals that grew up in a household in which the father was a farmer may have been exposed during youth to stronger gender roles and gender specialization in household tasks than the average person in the population. Both spouses are often involved with farm work in farmer hosueholds and work long hours in the farm, and thus, individuals that grew up in these households are more also likely to work longer hours in the labor market, which may contribute to make it more difficult for them to adjust to retirement.

Conclusions

This paper studies the effect of retirement on divorce, an issue which has received scarce attention in the literature. We argue that retirement may upset marital stability for a number of

[13] According to Chiappori, Pierre-André, Oreffice, Sonia and Climent Quintana-Domeque (2012), the less attractive partner may compensate the other financially.

reasons. Upon retirement a huge amount of time is freed from paid work and thus, spouses may want to renegotiate the household division of paid and unpaid work which may lead to spousal conflict. Retirement may undermine gender identity and traditional gender roles in the household and this may negatively affect marriage stability. By the time of retirement, children that often hold the couple together are likely to have left home. Since individuals start planning their retirement well in advance -also to comply with advance notice requirements to employers and social security offices- the actual time of retirement may be the last straw that breaks the (marriage) camel back.

Because the individual decision to retire from work may not be independently determined from marriage (in)stability –for example, individuals that expect to divorce may retire earlier or later than others- we exploit legal retirement age in France to identify the effect of male and female retirement on the probability to divorce. Using data drawn from the French Labor Force Surveys over the last decade on sample of over 200 000 men and over 166 000 women aged 50 to 70 years, we conclude that the probability to retire increases significantly when individuals turn into legal retirement age, which support our identification approach. We find that the probability to divorce upon retirement increases significantly for men while the effect is on average not statistically significant for women. In particular, we find that the negative effect of retirement on marriage stability is robust to many specification checks for individuals of either gender that grew up in a father-farmer household. We conclude that the probability of marriage break-up increases upon retirement by 0.03 (or 3 percentage points) for men, on average; and by 0.045 to 0.11 for men whose father was a farmer and 0.06 to 0.08 for women whose father was a farmer. These estimates represent a large increase in the probability to divorce, given that the average divorce rate is equal, respectively to 0.05 (or 5%) for older men and to about 0.025 (2.5%) for older men whose father was a farmer and to 0.039 (3.9%) for older women whose father was a farmer.

Although farms have been steadily disappearing over time, France still counted 515 000 farms in 2010, which represent 4.3% of the 12 million European Union farms while in the USA there were over 2 million farms at about the same time. It follows that the implications of our analysis may concern a non-negligeable fraction of households. Traditional gender roles are not the resort of men only but they can also be internalized by women and more generally, by both spouses. Earlier literature, analyzing the determinants of the secular right of female labor force in the USA, find that women married to a man whose mother worked are more likely to participate in the labor force. Here, we find that both men and women who grew up in a

father-farmer household, often a traditional household, are more likely to experience marriage instability just after retirement and this finding is robust to various sensitivity checks. If individuals in unstable relations timed their divorce at retirement for various convenience reasons, we would not expect to find a significant effect of retirement on divorce rates especially for individuals that grew up in a traditional household.

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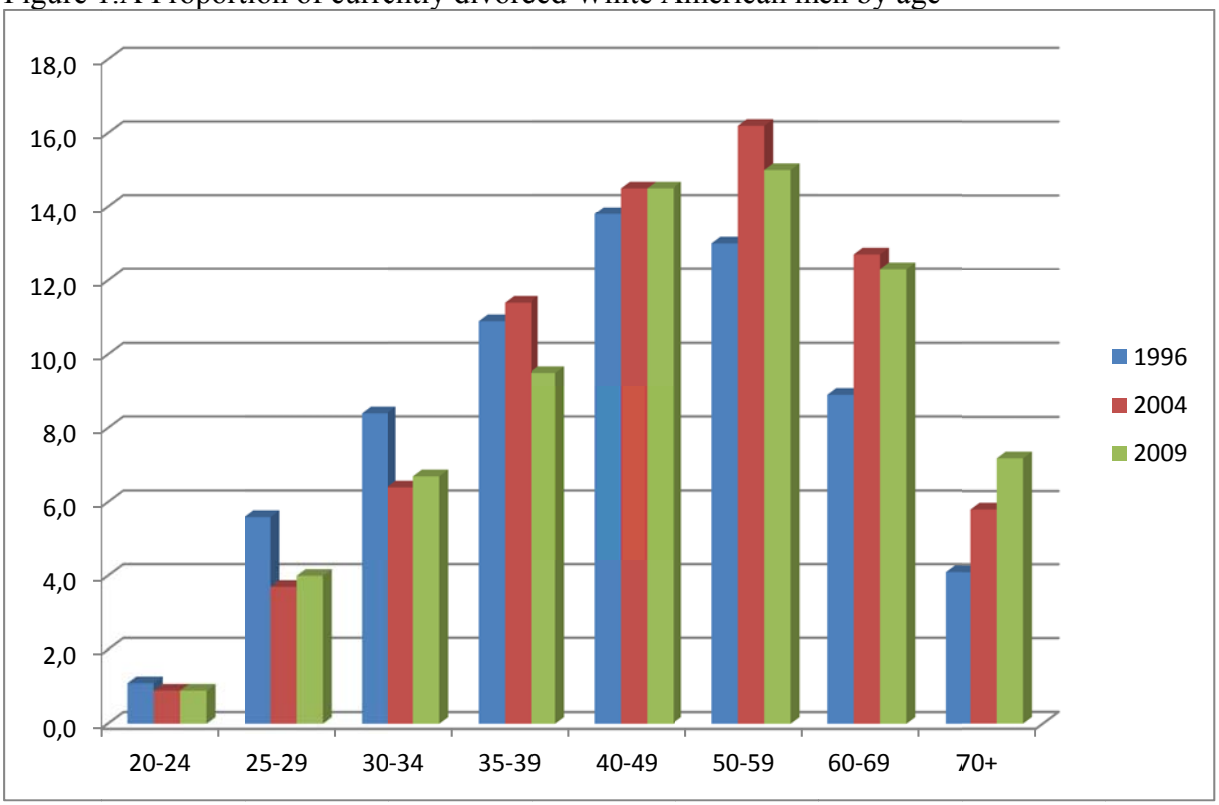
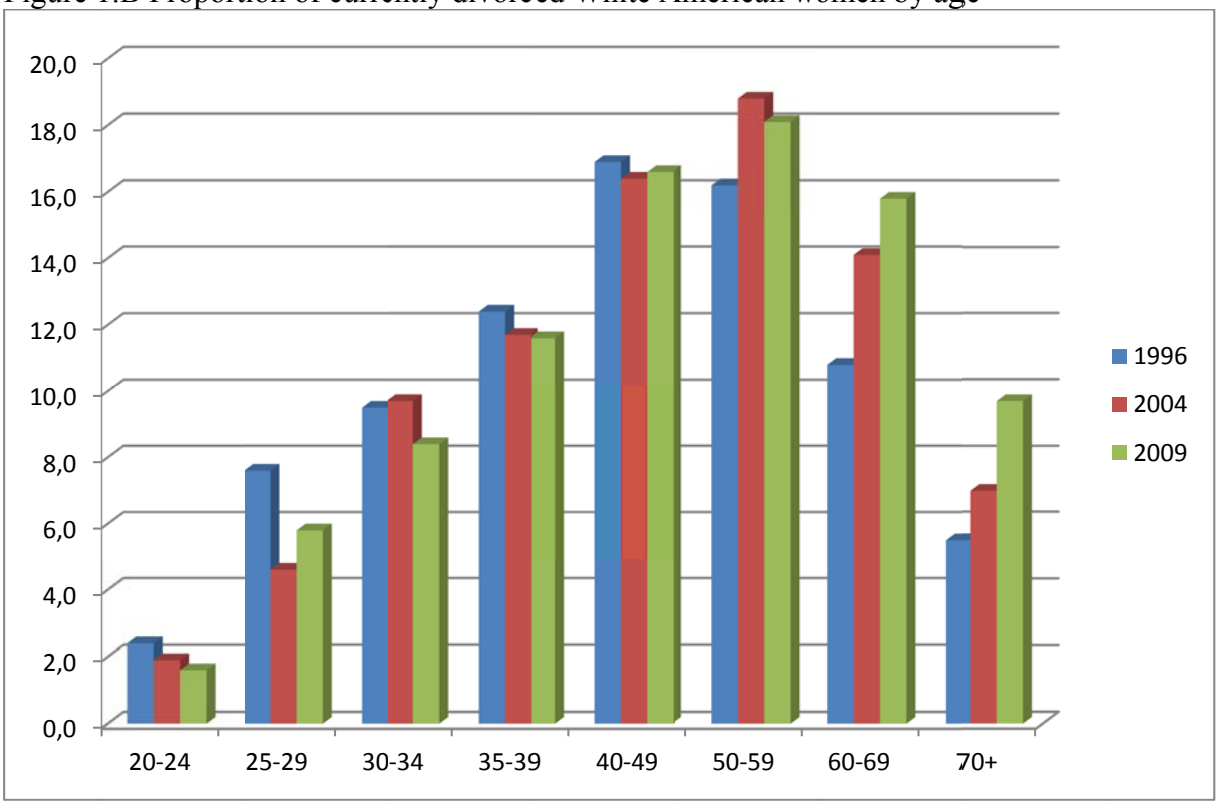
Figure 1.A Proportion of currently divorced White American men by age



Source: The Survey of Income and Program Participation (SIPP), United States Census Bureau.

Figure 1.B Proportion of currently divorced White American women by age



Source: The Survey of Income and Program Participation (SIPP), United States Census Bureau.

Figure 2. Divorced French persons by year of the divorce and age of the divorcee.
(As a proportion of the married population by gender in the same year).
Source. French Ministry of Justice.

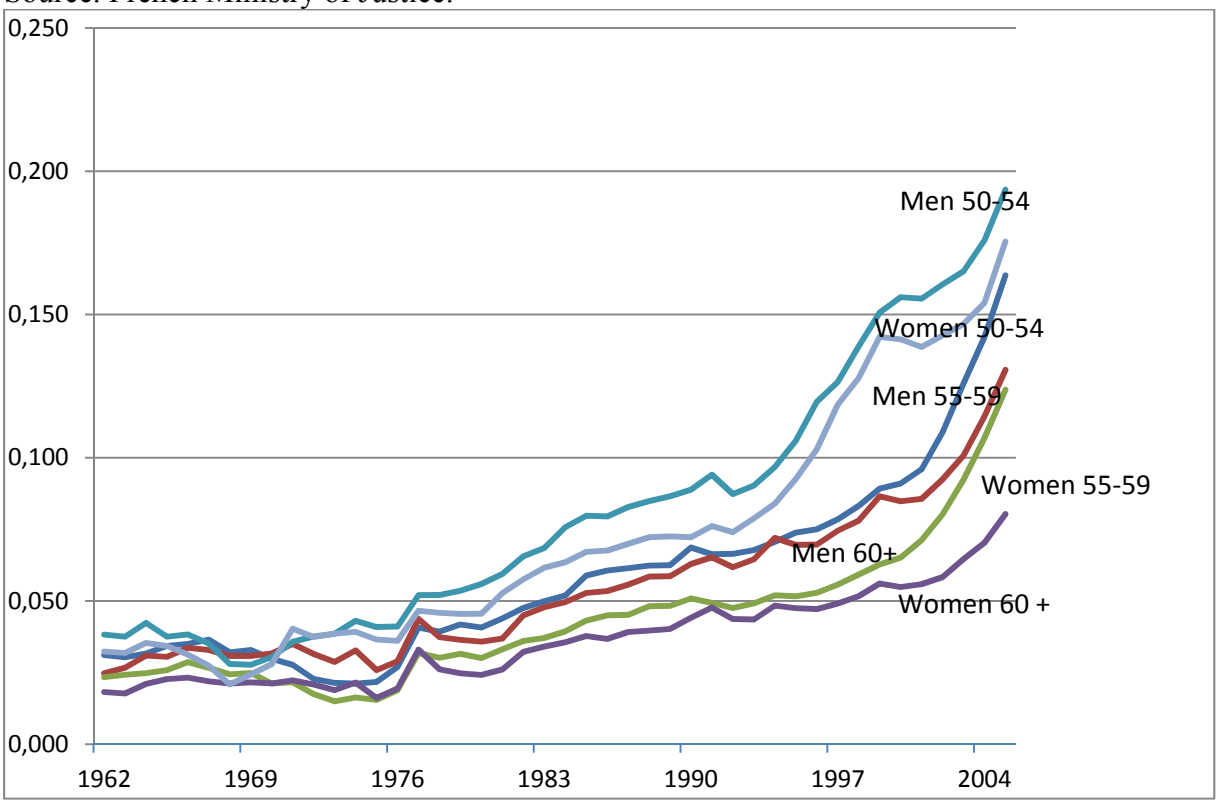


Figure 3. Divorced French persons by year of the divorce and duration of the marriage
(as a percentage of the married population in the same year)
Source. French Ministry of Justice.

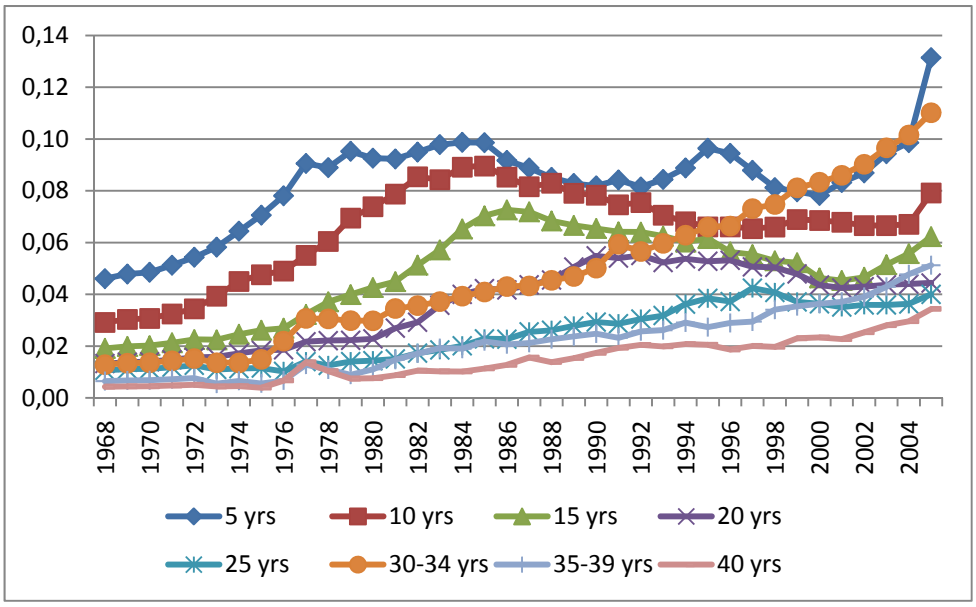


Table 1. Sample descriptives.

	Sample of Men		*Sample of Women*	
	Mean	Std. Dev.	Mean	Std. Dev.
Divorced	0.055	0.227	0.089	0.284
Married	0.852	0.354	0.681	0.466
Cohabitant	0.034	0.182	0.031	0.173
Single	0.047	0.213	0.057	0.232
Widow	0.034	0.181	0.165	0.371
Retired	0.552	0.497	0.568	0.495
aged >=720 months	0.505	0.497	0.553	0.497
junior college	0.037	0.19	0.061	0.239
high school	0.078	0.269	0.073	0.260
middle school technical	0.225	0.418	0.155	0.362
middle school	0.051	0.221	0.083	0.276
less than middle school	0.520	0.499	0.582	0.493
local U rate	9.361	2.429	9.307	2.381
sex-ratio in birth year	0.469	0.016	0.469	0.017
Observations	*202 606*		*166 162*	

Note: The reference category for the completed education dummies is having a college degree. The sex ratio is the proportion of men born in the individual year of birth over the proportion of women born two years later (as the average age difference between partners is two years in France at the time covered by the survey).

Figure 4. Individual retirement probability: means by bins of ten months of age.

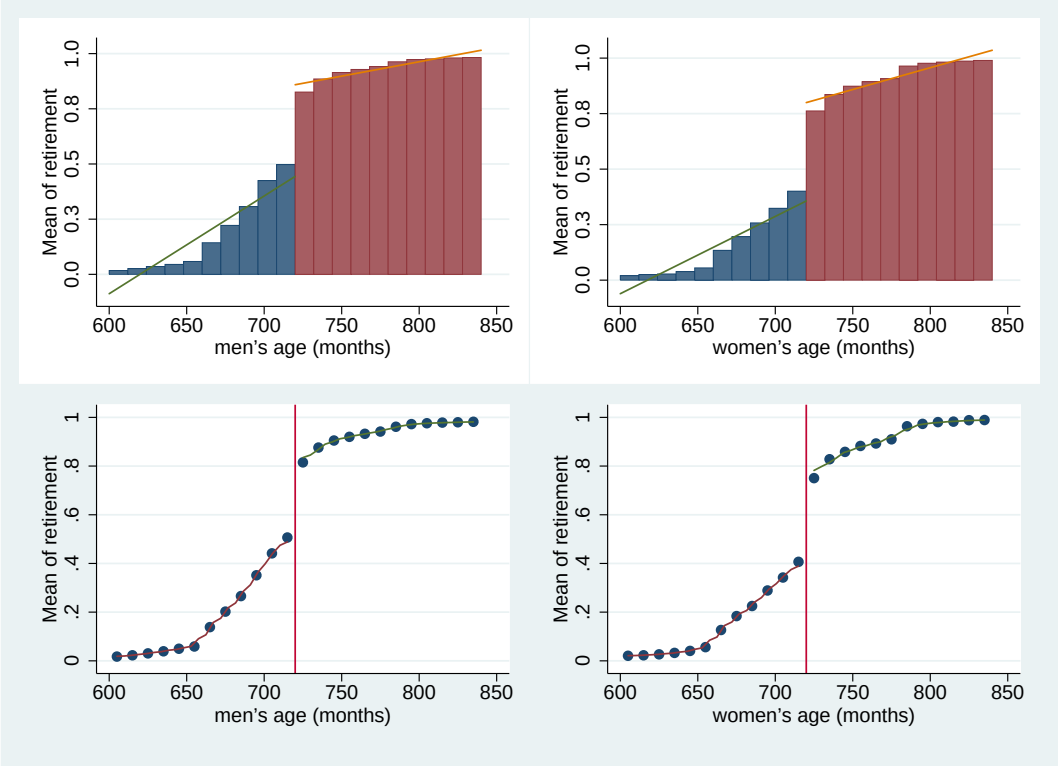


Figure 5. Divorce rates (outcome variable): means by bins of ten months of age.

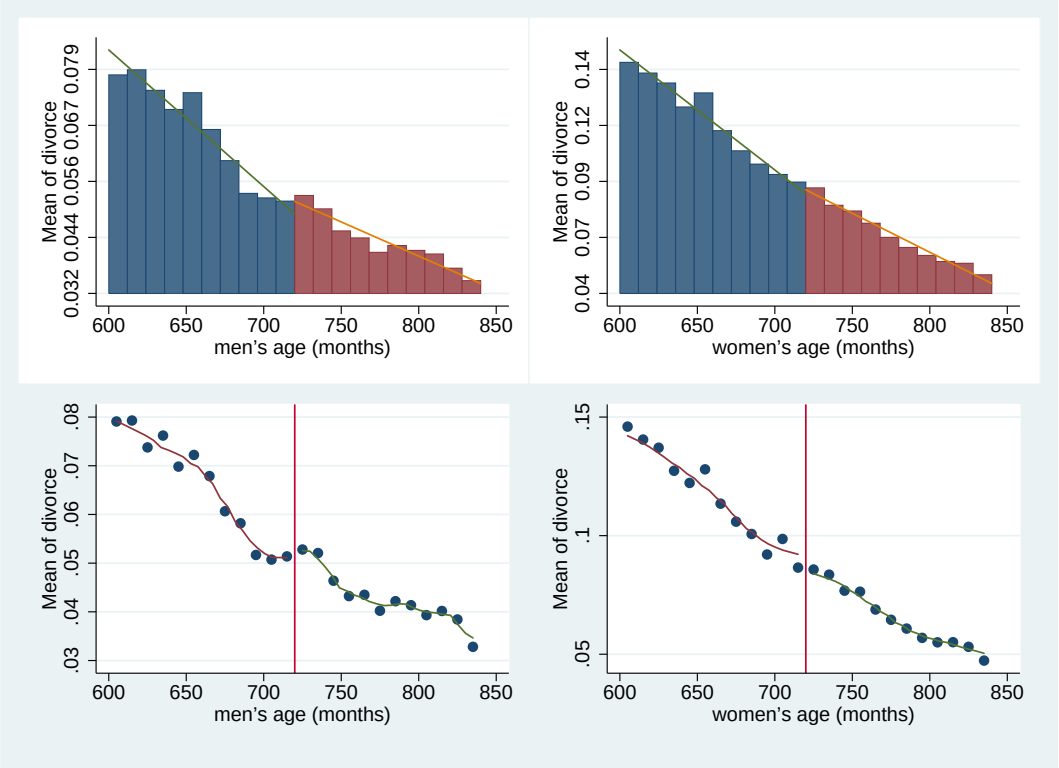


Figure 6. Widowhood rates: means by bins of ten months of age.

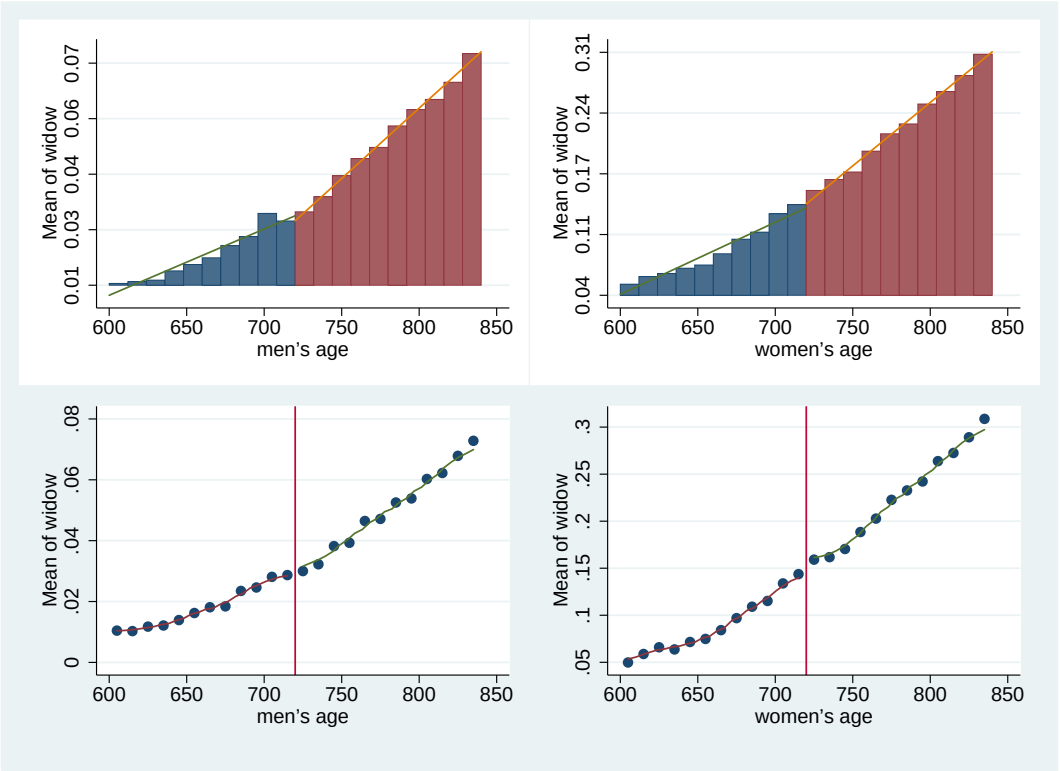


Figure 7. Means of retirement by age (bins of ten months).
Subsamples of men and women whose father was a farmer.

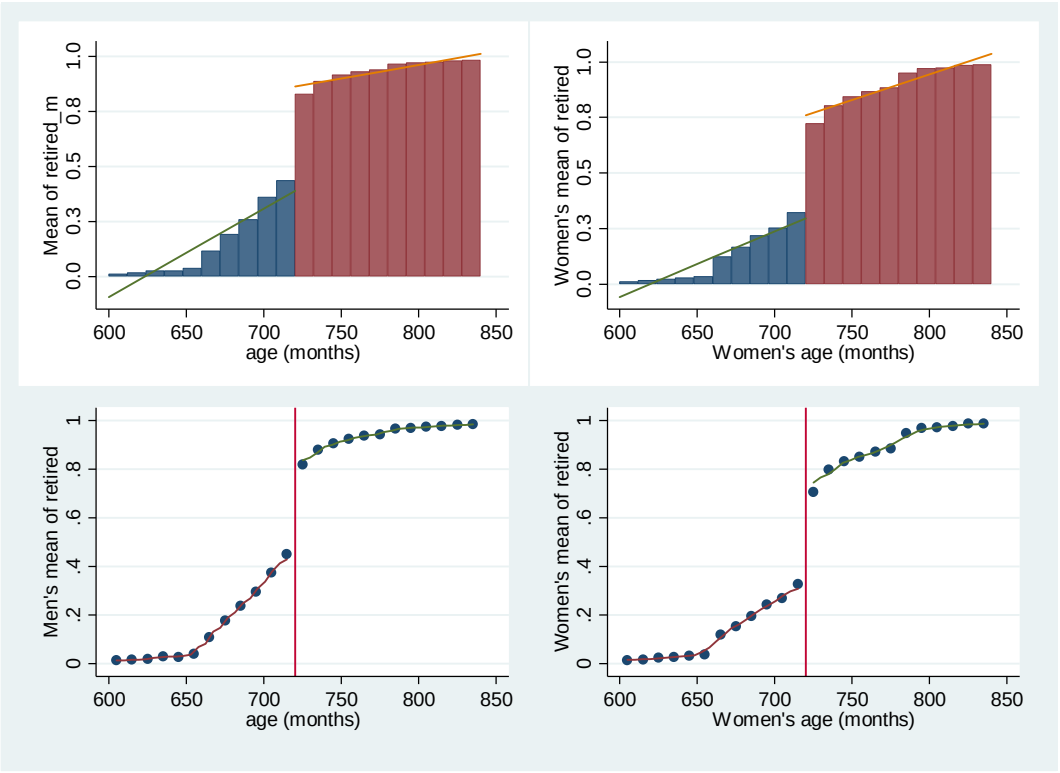


Figure 8. Means of divorce by age (bins of ten months).
Subsamples of men and women whose father was a farmer.

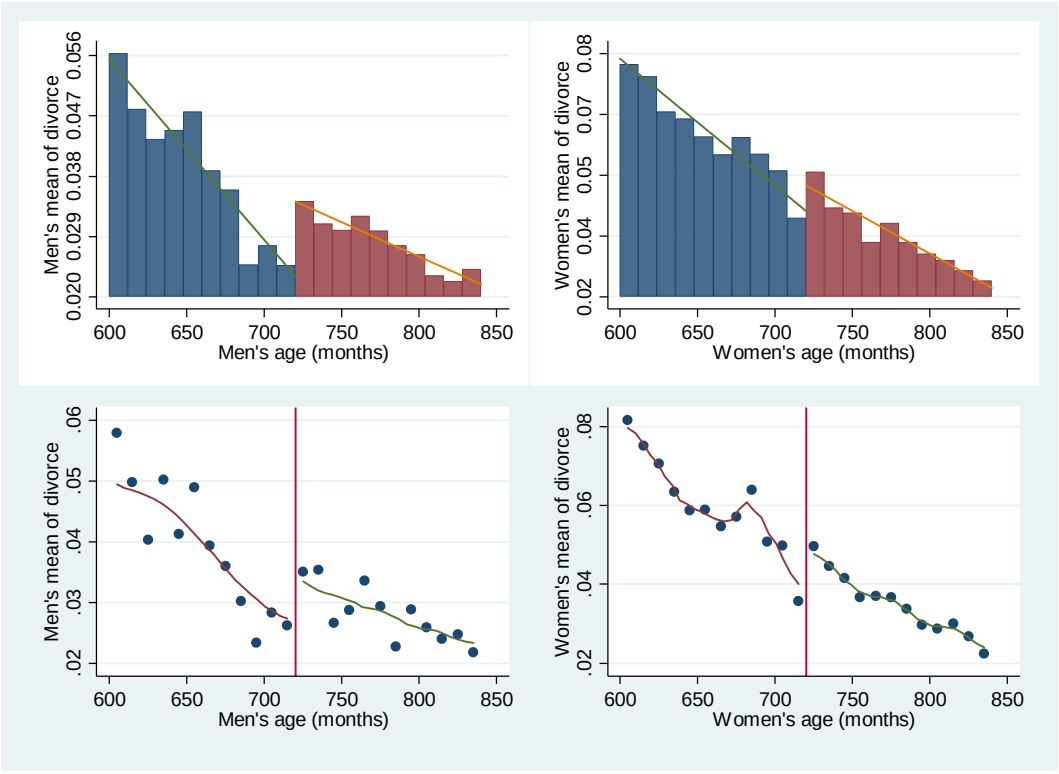


Figure 9. Means of widowhood by age (bins of ten months).
Subsamples of men and women whose father was a farmer.

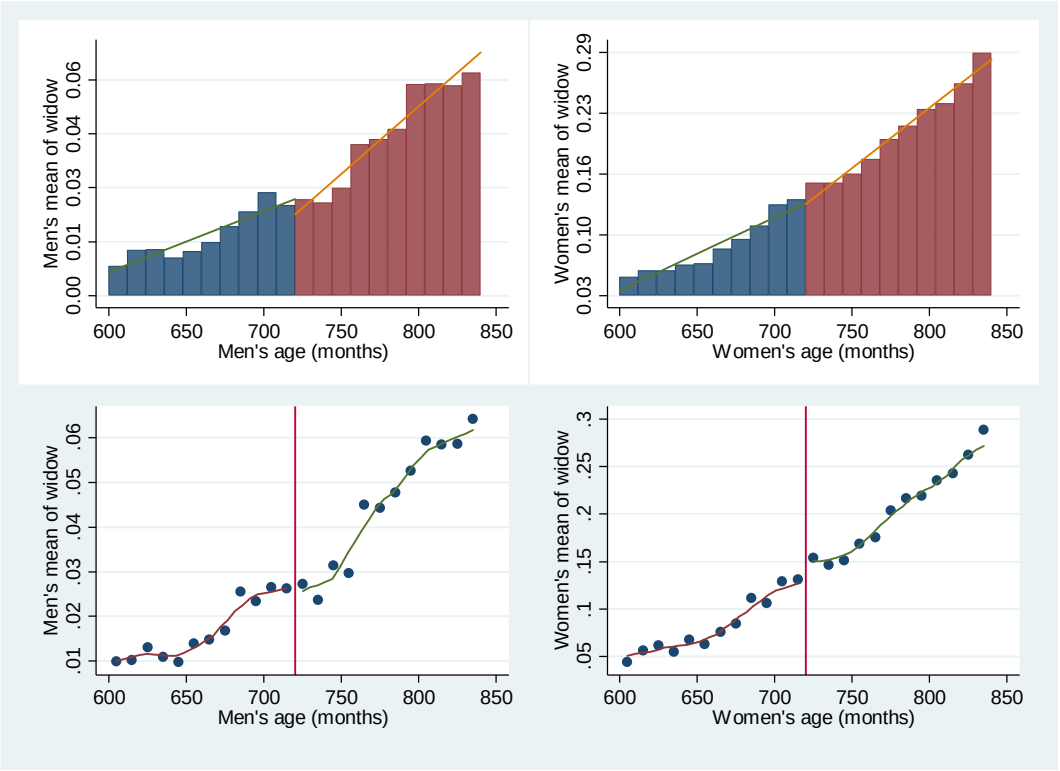


Table 2. Results of estimation for men.
(Selected coefficient estimates, standard errors in brackets).

Men	(1)	(2)	(3)	(4)	(5)	(6)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	*0.496*	*0.496*	*0.496*	*0.496*	*0.496*	*0.496*
Age 60 and above coefficient	0.236***	0.234***	0.223***	0.221***	0.236***	0.234***
	(0.010)	(0.010)	(0.008)	(0.008)	(0.006)	(0.005)
	IV, Outcome variable: divorce rate					
Mean divorce, age 59 to < 60	*0.051*	*0.051*	*0.051*	*0.051*	*0.051*	*0.051*
Retirement coefficient	0.008	0.014	0.028	0.034*	0.033**	0.035**
	(0.021)	(0.021)	(0.018)	(0.018)	(0.013)	(0.013)
Including Zs	NO	YES	NO	YES	NO	YES
Quartic Age polynomial	YES	YES	NO	NO	NO	NO
Cubic age polynomial	NO	NO	YES	YES	NO	NO
Quadratic Age polynomial	NO	NO	NO	NO	YES	YES
Observations number	*202931*	*202606*	*202931*	*202606*	*202931*	*202606*
Men	(7)	(8)	(9)	(10)	(11)	(12)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	*0.496*	*0.496*	*0.496*	*0.496*	*0.496*	*0.496*
Age 60 and above coefficient	0.215***	0.214***	0.193***	0.193***	0.238***	0.236***
	(0.011)	(0.011)	(0.013)	(0.013)	(0.010)	(0.010)
	IV, Outcome variable: divorce rate					
Mean divorce, age 59 to < 60	*0.051*	*0.051*	*0.051*	*0.051*	*0.051*	*0.051*
Retirement coefficient	-0.0010	0.006	-0.002	0.005	0.010	0.015
	(0.026)	(0.026)	(0.033)	(0.033)	(0.021)	(0.021)
Including Zs	NO	YES	NO	YES	NO	YES
Dropping those aged 720 months	NO	NO	NO	NO	YES	YES
Sample age 52 to 68 years	YES	YES	NO	NO	NO	NO
Sample age 54 to 66 years	NO	NO	YES	YES	NO	NO
Observations number	*159676*	*159411*	*117776*	*117566*	*202886*	*202561*

The IV model is estimated by two stages least squares with robust standard errors. The first stage regressors include a dummy for being aged 720 months and above, a polynomial in age, and full interactions of the two. The outcome equation includes a polynomial in age, and full interactions with the dummy for being aged 720 months and above. The Z variables include year and district (department) fixed effects, the individual sex ratio, the local unemployment rate a year before the survey, education dummies, and number of children still living at home.
Note: *** denotes statistical significance at the 1% level; ** at the 5 % level and * at the 10 % level.

Table 3. Results of estimation for women.
(Selected coefficient estimates, standard errors in brackets).

Women.	(1)	(2)	(3)	(4)	(5)	(6)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	*0.401*	*0.401*	*0.401*	*0.401*	*0.401*	*0.401*
Age 60 and above coefficient	0.293***	0.293***	0.294***	0.294***	0.284***	0.284***
	(0.012)	(0.012)	(0.009)	(0.009)	(0.007)	(0.007)
	IV, Outcome variable: divorce rate					
Mean divorce, age 59 to < 60	*0.090*	*0.090*	*0.090*	*0.090*	*0.090*	*0.090*
Retirement coefficient	-0.020	-0.018	0.003	0.009	0.018	0.023
	(0.026)	(0.025)	(0.020)	(0.020)	(0.016)	(0.016)
Including Zs	NO	YES	NO	YES	NO	YES
Quartic Age polynomial	YES	YES	NO	NO	NO	NO
Cubic age polynomial	NO	NO	YES	YES	NO	NO
Quadratic Age polynomial	NO	NO	NO	NO	YES	YES
Observations number	*166162*	*165907*	*166162*	*165907*	*166162*	*165907*
Women	(7)	(8)	(9)	(10)	(11)	(12)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	*0.401*	*0.401*	*0.401*	*0.401*	*0.401*	*0.401*
Age 60 and above coefficient	0.254***	0.255***	0.229***	0.231***	0.298***	0.298***
	(0.014)	(0.013)	(0.016)	(0.016)	(0.012)	(0.012)
	IV, Outcome variable: divorce rate					
Mean divorce, age 59 to < 60	*0.090*	*0.090*	*0.090*	*0.090*	*0.090*	*0.090*
Retirement coefficient	-0.030	-0.031	-0.012	-0.019	-0.018	-0.016
	(0.033)	(0.033)	(0.043)	(0.042)	(0.026)	(0.025)
Including Zs	NO	YES	NO	YES	NO	YES
Dropping those aged 720 months	NO	NO	NO	NO	YES	YES
Sample age 52 to 68 years	YES	YES	NO	NO	NO	NO
Sample age 54 to 66 years	NO	NO	YES	YES	NO	NO
Observations	*128174*	*127976*	*91828*	*91690*	*166129*	*165874*

The IV model is estimated by two stages least squares with robust standard errors. The first stage regressors include a dummy for being aged 720 months and above, a polynomial in age, and full interactions of the two. The outcome equation includes a polynomial in age, and full interactions with the dummy for being aged 720 months and above. The Z variables include year and local area fixed effects, the individual sex ratio, the local unemployment rate a year before the survey, education dummies, and number of children still living at home.
Note: *** denotes statistical significance at the 1% level; ** at the 5 % level and * at the 10 % level.

Table 4. Results of estimation for the subsample of men whose father was a farmer.

	(1)	(2)	(3)	(4)	(5)	(6)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	0.437	0.437	0.437	0.437	0.437	0.437
Age 60 and above coefficient	0.30***	0.297***	0.296***	0.295***	0.310***	0.310***
	(0.021)	(0.021)	(0.016)	(0.016)	(0.011)	(0.012)
	IV, Outcome variable: Divorce rate					
Mean divorce, age 59 to < 60	0.025	0.025	0.025	0.025	0.025	0.025
Retirement coefficient	0.045*	0.049*	0.042**	0.047**	0.043**	0.042**
	(0.027)	(0.027)	(0.022)	(0.022)	(0.016)	(0.016)
Including Zs	NO	YES	NO	YES	NO	YES
Quartic Age polynomial	YES	YES	NO	NO	NO	NO
Cubic age polynomial	NO	NO	YES	YES	NO	NO
Quadratic Age polynomial	NO	NO	NO	NO	YES	YES
Observations	*46213*	*46121*	*46213*	*46121*	*46213*	*46121*
Men's main sample	(7)	(8)	(9)	(10)	(11)	(12)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	0.437	0.437	0.437	0.437	0.437	0.437
Age 60 and above coefficient	0.273***	0.270***	0.247***	0.246***	0.305***	0.300***
	(0.024)	(0.023)	(0.028)	(0.027)	(0.021)	(0.021)
	IV, Outcome variable: Divorce rate					
Mean divorce, age 59 to < 60	0.025	0.025	0.025	0.025	0.025	0.025
Retirement coefficient	0.063**	0.069**	0.105**	0.111***	0.045*	0.050*
	(0.032)	(0.033)	(0.042)	(0.042)	(0.026)	(0.027)
Including Zs	NO	YES	NO	YES	NO	YES
Quartic Age polynomial	YES	YES	YES	YES	YES	YES
Dropping those aged 720 months	NO	NO	NO	NO	YES	YES
Sample age 52 to 68 years	YES	YES	NO	NO	NO	NO
Sample age 54 to 66 years	NO	NO	YES	YES	NO	NO
Observations	*36847*	*36763*	*27425*	*27356*	*46203*	*46111*

The IV model is estimated by two stages least squares with robust standard errors. The first stage regressors include a dummy for being aged 720 months and above, a polynomial in age, and full interactions of the two. The outcome equation includes a polynomial in age, and full interactions with the dummy for being aged 720 months and above. The Z variables include year and local area fixed effects, the individual sex ratio, the local unemployment rate a year before the survey, education dummies, and number of children still living at home.
Note: *** denotes statistical significance at the 1% level; ** at the 5 % level and * at the 10 % level.

Table 5. Results of estimation for women whose father was a farmer.

	(1)	(2)	(3)	(4)	(5)	(6)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	*0.324*	*0.324*	*0.324*	*0.324*	*0.324*	*0.324*
Age 60 and above	0.329***	0.323***	0.340***	0.340***	0.329***	0.328***
	(0.025)	(0.024)	(0.019)	(0.019)	(0.014)	(0.014)
	IV, Outcome variable: divorce rate					
Mean divorce, age 59 to < 60	*0.039*	*0.039*	*0.039*	*0.039*	*0.039*	*0.039*
Retirement	0.068*	0.068*	0.057**	0.058**	0.014	0.017
	(0.036)	(0.036)	(0.027)	(0.027)	(0.020)	(0.020)
Including Zs	NO	YES	NO	YES	NO	YES
Quartic Age polynomial	YES	YES	NO	NO	NO	NO
Cubic age polynomial	NO	NO	YES	YES	NO	NO
Quadratic Age polynomial	NO	NO	NO	NO	YES	YES
Observations	*38477*	*38385*	*38477*	*38385*	*38477*	*38385*

	(7)	(8)	(9)	(10)	(11)	(12)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	*0.324*	*0.324*	*0.324*	*0.324*	*0.324*	*0.324*
Age 60 and above	0.268***	0.269***	0.230***	0.232***	0.0329***	0.328***
	(0.028)	(0.028)	(0.033)	(0.032)	(0.025)	(0.024)
	IV, Outcome variable: divorce rate					
Mean divorce, age 59 to < 60	*0.039*	*0.039*	*0.039*	*0.039*	*0.039*	*0.039*
Retirement	0.082*	0.082*	0.098	0.102	0.068*	0.068*
	(0.049)	(0.048)	(0.066)	(0.066)	(0.035)	(0.035)
Including Zs	NO	YES	NO	YES	NO	YES
Dropping those aged 720 months	NO	NO	NO	NO	YES	YES
Sample age 52 to 68 years	YES	YES	NO	NO	NO	NO
Sample age 54 to 66 years	NO	NO	YES	YES	NO	NO
Observations	*29987*	*29920*	*21716*	*21667*	*38468*	*38376*

The IV model is estimated by two stages least squares with robust standard errors. The first stage regressors include a dummy for being aged 720 months and above, a polynomial in age, and full interactions of the two. The outcome equation includes a polynomial in age, and full interactions with the dummy for being aged 720 months and above. The Z variables include year and local area fixed effects, the individual sex ratio, the local unemployment rate a year before the survey, education dummies, and number of children still living at home.
Note: *** denotes statistical significance at the 1% level; ** at the 5 % level and * at the 10 % level.

Table 6 Results of estimation. More robustness checks.
Including birth cohort dummies/ dropping observations from 2000s or early 1990 waves

Father Farmer sample	Men	Women	Men	Women	Men	Women
	(1)	(2)	(3)	(4)	(5)	(6)
	IV, First stage equation for retirement					
Mean retirement, age 59 to < 60	*0.437*	*0.324*	*0.437*	*0.321*	*0.461*	*0.351*
Age 60 and above	0.299***	0.324***	0.306***	0.333***	0.303***	0.329
	(0.021)	(0.024)	(0.023)	(0.027)	(0.023)	(0.028)
	IV, Outcome variable: divorce rate					
Mean divorce, age 59 to < 60	*0.025*	*0.039*	*0.023*	*0.038*	*0.028*	*0.046*
Retirement	0.049*	0.067*	0.046*	0.049	0.064*	0.068
	(0.027)	(0.035)	(0.027)	(0.035)	(0.033)	(0.042)
Including Zs	YES	YES	YES	YES	YES	YES
Quartic Age polynomial	YES	YES	YES	YES	YES	YES
Including Birth Cohort Dummies	YES	YES	NO	NO	NO	NO
Dropping years 2000, 2001, 2002	NO	NO	YES	YES	NO	NO
Dropping years 1990, 1991, 1992	NO	NO	NO	NO	*YES*	*YES*
Observations	*46121*	*38385*	*35930*	*29815*	*35357*	*29561*

The model is estimated by two stages least squares. The first stage regressors include a dummy for being aged 720 months and above, a quadratic polynomial in age, and full interactions of the two. The outcome equation includes a quadratic polynomial in age, and full interactions with the dummy for being aged 720 months and above. The Z variables include yar and local area fixed effects, the individual sex ratio, the local unemployment rate a year before, education dummies, number of children still living at home.
Note: *** denotes statistical significance at the 1% level; ** at the 5 % level and * at the 10 % level.

Table 7. Results of estimation by respondent's father occupation. (Selected coefficient estimates. Standard errors in brackets).

Men	(1)	(2)	(3)	(4)
	Fathers' farmer	**Fathers' top occupations**	**Father's White collar**	**Father's Blue collar**
	IV	**First stage equation for retirement**		
Mean retirement, age 59 to < 60	*0.437*	*0.353*	*0.527*	*0.596*
Age 60 and above coefficient	0.297***	0.215***	0.213***	0.228***
	(0.021)	(0.024)	(0.022)	(0.015)
	IV	**Outcome variable: divorce rate**		
[2]Mean divorce, age 59 to < 60	*0.025*	*0.069*	*0.065*	*0.051*
Retirement coefficient	0.049*	-0.018	-0.037	0.034
	(0.027)	(0.06)	(0.060)	(0.037)
Including Zs	YES	YES	YES	YES
Observations	*46121*	*38820*	*38190*	*71555*
Women	(5)	(6)	(7)	(8)
	Fathers' farmer	**Fathers' top occupations**	**Father's White collar**	**Father's Blue collar**
	IV	**First stage equation for retirement**		
Mean retirement, age 59 to < 60	0.324	*0.394*	*0.494*	*0.438*
Age 60 and above coefficient	0.323***	0.210***	0.304***	0.305***
	(0.024)	(0.028)	(0.026)	(0.020)
	IV	**Outcome variable: divorce rate**		
Mean divorce, age 59 to < 60	*0.039*	*0.117*	*0.114*	*0.095*
Retirement coefficient	0.068*	-0.080	-0.020	-0.086**
	(0.036)	(0.091)	(0.063)	(0.042)
Including Zs	YES	YES	YES	YES
Observations	*38385*	*30736*	*32988*	*58384*

The model is estimated by two stages least squares. The first stage regressors include a dummy for being aged 720 months and above, a quartic polynomial in age, and full interactions of the two. The outcome equation includes a quartic polynomial in age, and full interactions with the dummy for being aged 720 months and above. The Z variables include year and district fixed effects, the individual sex ratio, the local unemployment rate a year before, education dummies, number of children still living at home.
Note: *** denotes statistical significance at the 1% level; ** at the 5 % level and * at the 10 % level.

Table 8. Results of estimation by respondent's education level.

Men	(1)	(2)	(3)
	College	**High School**	**Less than high school**
Mean retirement, age 59 to < 60	*0.310*	*0.516*	*0.525*
Age 60 and above coefficient	0.088**	0.248***	0.255***
	(0.030)	(0.017)	(0.013)
	IV	**Outcome variable: divorce rate**	
Mean divorce, age 59 to < 60	*0.070*	*0.051*	*0.048*
Retirement coefficient	-0.114	0.039	0.012
	(0.196)	(0.037)	(0.025)
Including Zs	YES	YES	YES
Observations	25200	*61563*	*115843*
Women	(4)	(5)	(6)
	College	**High School**	**Less than high school**
	IV	**First stage equation for retirement**	
Mean retirement, age 59 to < 60	0.421	*0.468*	*0.372*
Age 60 and above coefficient	0.130***	0.268***	0.329***
	(0.037)	(0.024)	(0.015)
	IV	**Outcome variable: divorce rate**	
Mean divorce, age 59 to < 60	*0.107*	*0.105*	*0.080*
Retirement coefficient	0.200	-0.136**	-0.001
	(0.212)	(0.061)	(0.027)
Including Zs	YES	YES	YES
Observations	*17830*	*37816*	*110261*

The model is estimated by two stages least squares. The first stage regressors include a dummy for being aged 720 months and above, a quadratic polynomial in age, and full interactions of the two. The outcome equation includes a quadratic polynomial in age, and full interactions with the dummy for being aged 720 months and above. The Z variables include yar and local area fixed effects, the individual sex ratio, the local unemployment rate a year before, education dummies, number of children still living at home.
Note: *** denotes statistical significance at the 1% level; ** at the 5 % level and * at the 10 % level.

Table 9. Results of estimation: other marital-status outcomes by father's occupation.

	Fathers' farmer	**Fathers' top occupations**	**Father's White collar**	**Father's Blue collar**	**Sample**
MEN	**IV**	**Outcome variable: Marriage rate**			
Retirement	-0.066	0.011	-0.004	-0.021	-0.025
	(0.054)	(0.086)	(0.085)	(0.057)	(0.033)
Observations	*46121*	*38820*	*38190*	*71555*	202606
MEN	**IV**	**Outcome variable: widow rate**			
Retirement	0.030	-0.020	0.011	-0.038	-0.003
	(0.025)	(0.041)	(0.040)	(0.031)	(0.011)
Observations	*46121*	*38820*	*38190*	*71555*	202606
MEN	**IV**	**Outcome variable: single rate**			
Retirement	-0.023	0.004	0.070	0.026	0.018
	(0.040)	(0.047)	0.050)	(0.032)	(0.020)
Observations	*46121*	*38820*	*38190*	*71555*	202606
WOMEN	**IV**	**Outcome variable: Marriage rate**			
Retirement	-0.109	0.085	-0.015	0.070	-0.011
	(0.071)	(0.134)	(0.091)	(0.069)	(0.041)
Observations	*38385*	*30736*	*32988*	*58384*	*165907*
WOMEN	**IV**	**Outcome variable: widow rate**			
Retirement	0.067	-0.078	0.054	0.028	0.032
	(0.058)	(0.092)	(0.066)	(0.057)	(0.032)
Observations	*38385*	*30736*	*32988*	*58384*	*165907*
WOMEN	**IV**	**Outcome variable: single rate**			
Retirement	-0.018	0.080	-0.008	-0.0008	0.007
	(0.034)	(0.085)	(0.048)	(0.030)	(0.021)
Observations	*38385*	*30736*	*32988*	*58384*	*165907*

The first stage regressions for the male and female sample are provided in Table 7.

Table 10. Full Results of Estimation (See Tables 10 and 11, Specification 2).

	Men, Father Farmer			Women, Father Farmer		
	IV first stage	IV outcome	**OLS**	IV First Stage	IV Outcome	**OLS**
	Retirement	Divorce	Divorce	Retirement	Divorce	Divorce
D Age>= 60	**0.297*** **			**0.323*** **		
	(0.0206)			**(0.0245)**		
Retired		**0.0494***	**0.00645****		**0.0676***	**-0.00218**
		(0.0270)	**(0.00299)**		**(0.0356)**	**(0.00365)**
local U Rate	-0.00522**	0.00557***	0.00534***	0.00220	0.00213	0.00228
	(0.00237)	(0.00146)	(0.00146)	(0.00273)	(0.00208)	(0.00207)
sex-ratio	-0.0651	-0.0485	-0.0470	0.0515	-0.0332	-0.0320
	(0.190)	(0.121)	(0.120)	(0.216)	(0.156)	(0.155)
children at home	-0.0129***	-0.0145***	-0.0151***	-0.0216***	-0.00690***	-0.00842***
	(0.00147)	(0.000770)	(0.000687)	(0.00226)	(0.00194)	(0.00180)
junior college	0.101***	-0.0136	-0.00940	0.124***	0.00340	0.0119
	(0.0144)	(0.0109)	(0.0106)	(0.0154)	(0.0151)	(0.0144)
high school	0.0898***	-0.00708	-0.00339	0.0879***	0.00768	0.0136
	(0.0115)	(0.00912)	(0.00877)	(0.0145)	(0.0145)	(0.0142)
middle tech	0.0911***	-0.0172**	-0.0134*	0.0153	-0.00723	-0.00642
	(0.00958)	(0.00764)	(0.00723)	(0.0123)	(0.0128)	(0.0128)
middle school	0.111***	-0.0205**	-0.0159*	0.0476***	0.00832	0.0115
	(0.0123)	(0.00932)	(0.00880)	(0.0132)	(0.0135)	(0.0135)
< middle school	0.114***	-0.0257***	-0.0209***	0.0209*	-0.0118	-0.0106
	(0.00933)	(0.00754)	(0.00688)	(0.0117)	(0.0123)	(0.0123)
(1-D)*Age	0.0583***	-0.00235		0.0269	-0.0169	
	(0.0205)	(0.00872)		(0.0228)	(0.0131)	
(1-D)*Age2	-0.0172**	0.00293		-0.0141*	-0.00278	
	(0.00751)	(0.00314)		(0.00834)	(0.00498)	
(1-D)*Age3	-0.00355***	0.000499		-0.00232**	-0.000213	
	(0.00104)	(0.000486)		(0.00115)	(0.000768)	
(1-D)*Age4	-0.000169***	2.44e-05		-9.55e-05*	-2.93e-06	
	(4.79e-05)	(2.49e-05)		(5.30e-05)	(3.92e-05)	
D*Age	0.112***	-0.0159		0.130***	-0.0194	
	(0.0149)	(0.0100)		(0.0188)	(0.0132)	
D*Age2	-0.0293***	0.00462		-0.0315***	0.00412	
	(0.00541)	(0.00356)		(0.00678)	(0.00448)	
D*Age3	0.00353***	-0.000622		0.00411***	-0.000445	
	(0.000748)	(0.000503)		(0.000927)	(0.000627)	
D*Age4	-0.000153***	2.89e-05		-0.000196***	1.72e-05	
	(3.47e-05)	(2.41e-05)		(4.26e-05)	(2.98e-05)	
Age			-0.00225***			-0.00164**
			(0.000577)			(0.000713)
Age2			0.000165*			-8.32e-05
			(9.84e-05)			(0.000127)
Age3			-4.44e-06			-1.26e-05
			(6.07e-06)			(7.93e-06)
Age4			-6.42e-07			1.62e-06
			(1.11e-06)			(1.43e-06)
Observations	46,121	46,121	46,121	38,385	38,385	38,385
Rsquared	0.696	0.019	0.023	0.667	0.016	0.025

Table 11. Full Results of Estimation (See Tables 8 and 9, Specification 2).

	Men Sample			Women Sample		
	IV first stage Retirement	IV Outcome Divorce	**OLS** Divorce	IV First Stage Retirement	IV Outcome Divorce	**OLS** Divorce
D Age>= 60	0.235***			0.293***		
	(0.00981)			(0.0119)		
Retired		0.0140	0.00267		-0.0178	-0.0297***
		(0.0215)	(0.00181)		(0.0257)	(0.00247)
local U Rate	-0.00301***	0.00249***	0.00246***	0.000760	0.00469***	0.00468***
	(0.00114)	(0.000877)	(0.000875)	(0.00125)	(0.00126)	(0.00126)
sex-ratio	0.0708	-0.219***	-0.216***	-0.0175	0.0208	0.0286
	(0.0953)	(0.0742)	(0.0740)	(0.105)	(0.102)	(0.101)
children at home	-0.0167***	-0.0228***	-0.0229***	-0.0154***	-0.0113***	-0.0115***
	(0.000753)	(0.000596)	(0.000480)	(0.00118)	(0.00132)	(0.00126)
junior college	0.0943***	0.00723*	0.00832**	0.0983***	0.00267	0.00383
	(0.00420)	(0.00412)	(0.00361)	(0.00474)	(0.00582)	(0.00525)
high school	0.103***	0.00725**	0.00841***	0.0705***	-0.00290	-0.00192
	(0.00340)	(0.00355)	(0.00282)	(0.00447)	(0.00535)	(0.00502)
middle tech	0.125***	-0.00958***	-0.00814***	0.0569***	-0.0225***	-0.0216***
	(0.00279)	(0.00346)	(0.00223)	(0.00390)	(0.00471)	(0.00446)
middle school	0.134***	-0.00279	-0.00124	0.0585***	-0.0135***	-0.0126***
	(0.00379)	(0.00420)	(0.00309)	(0.00432)	(0.00506)	(0.00482)
< middle school	0.131***	-0.0106***	-0.00913***	0.0419***	-0.0317***	-0.0309***
	(0.00268)	(0.00346)	(0.00206)	(0.00370)	(0.00435)	(0.00420)
(1-D)*Age	0.0513***	0.00167		0.0354***	0.00924	
	(0.00973)	(0.00595)		(0.0113)	(0.00869)	
(1-D)*Age2	-0.0253***	0.00337*		-0.0186***	0.00499	
	(0.00357)	(0.00189)		(0.00411)	(0.00304)	
(1-D)*Age3	-0.00488***	0.000461		-0.00327***	0.000651	
	(0.000492)	(0.000287)		(0.000563)	(0.000458)	
(1-D)*Age4	-0.00023***	1.92e-05		-0.000145***	2.92e-05	
	(2.27e-05)	(1.45e-05)		(2.58e-05)	(2.30e-05)	
D*Age	0.108***	-0.00568		0.109***	0.00193	
	(0.00712)	(0.00622)		(0.00879)	(0.00822)	
D*Age2	-0.0280***	-0.000271		-0.0250***	-0.00281	
	(0.00261)	(0.00219)		(0.00316)	(0.00281)	
D*Age3	0.00344***	0.000158		0.00315***	0.000438	
	(0.000363)	(0.000310)		(0.000433)	(0.000397)	
D*Age4	-0.00015***	-1.13e-05		-0.000148***	-2.11e-05	
	(1.69e-05)	(1.49e-05)		(1.99e-05)	(1.90e-05)	
Age			-0.00418***			-0.0015***
			(0.000326)			(0.000455)
Age2			0.000264***			-1.30e-05
			(5.96e-05)			(8.26e-05)
Age3			2.99e-06			-2.07e-05***
			(3.45e-06)			(4.86e-06)
Age4			-1.83e-06***			1.07e-06
			(6.55e-07)			(9.06e-07)
Observations	202,606	202,606	202,606	165,907	165,907	165,907
Rsquared	0.680	0.020	0.020	0.679	0.030	0.030

Appendix

Table A . Divorcees by respondent 's father occupation

	1990				2002			
	Mean	St. Dev.	Obs.	Percentage	Mean	St. Dev.	Obs.	Percentage
Farmers	***0.018***	0.134	3642	24.63	***0.056***	0.229	3369	20.84
Craftmen	**0.034**	0.180	1246	8.43	***0.060***	0.238	1141	7.06
shop keepers	***0.043***	0.204	778	5.26	***0.090***	0.287	708	4.38
Business owners of >=10 persons	**0.104**	0.307	134	0.90	***0.088***	0.284	171	1.06
Lawyers, consultants	***0.034***	0.182	118	0.80	***0.074***	0.263	175	1.08
Public sector managers	***0.050***	0.219	219	1.48	***0.083***	0.276	277	1.71
Teachers above primary school	***0.093***	0.294	43	0.29	***0.138***	0.348	58	0.36
IT, Web, artists	***0.067***	0.254	30	0.20	***0.086***	0.284	35	0.22
firm managers	***0.041***	0.199	170	1.15	***0.096***	0.296	228	1.41
firm ingeneers and tech	***0.065***	0.248	138	0.93	***0.067***	0.250	195	1.21
primary school teachers	***0.023***	0.152	86	0.58	***0.077***	0.267	208	1.29
health and welfare workers	***0.049***	0.218	41	0.28	***0.088***	0.285	57	0.35
Public sector supervisors	**0.030**	0.173	131	0.88	***0.086***	0.281	163	1.01
private sector supervisors	***0.047***	0.211	257	1.74	***0.091***	0.287	298	1.84
technical workers	***0.038***	0.194	52	0.35	***0.095***	0.295	105	0.65
supervisors manufacture	***0.046***	0.211	304	2.05	***0.063***	0.244	347	2.15
public sector workers	***0.032***	0.175	411	2.78	***0.076***	0.266	509	3.15
military forces	***0.024***	0.153	335	2.26	***0.097***	0.296	576	3.56
firm administrative workers	***0.039***	0.193	618	4.18	***0.080***	0.272	833	5.15
sale assistants	***0.026***	0.161	76	0.51	***0.059***	0.238	84	0.52
help sector workers	***0.053***	0.224	171	1.15	***0.081***	0.273	173	1.07
skilled workers manufacture	***0.029***	0.167	1075	7.27	***0.082***	0.275	1177	7.28
skilled workers craftmen	***0.034***	0.182	991	6.70	***0.078***	0.269	1200	7.42
drivers	***0.050***	0.220	237	1.60	***0.087***	0.282	357	2.21
transport and storage workers	***0.030***	0.172	264	1.78	***0.084***	0.277	251	1.55
unskilled firm workers	***0.031***	0.174	1415	9.57	***0.076***	0.265	2006	12.41
unskilled craf worker	***0.20***	0.140	202	1.36	***0.143***	0.352	84	0.52
rural workers	***0.026***	0.161	942	6.37	***0.059***	0.236	925	5.72
Missing	***0.032***	0.175	662	4.48	***0.096***	0.294	459	2.84
			14788	100			16169	100

Table B. Divorcees by education level and gender.

	Men			**Women**		
	Mean	St. Deviation	Obs. no.	Mean	St. Deviation	Obs. no.
College (University)	*0.068*	0.252	17520	*0.145*	0.352	7686
junior college	*0.080*	0.271	7680	*0.134*	0.341	10144
high school	*0.074*	0.262	15884	*0.125*	0.331	12134
middle school technical	*0.059*	0.236	45679	*0.101*	0.302	25682
middle school	*0.065*	0.247	10464	*0.105*	0.307	13763
less than middle school	*0.045*	0.207	105379	*0.070*	0.254	96498

Table C . Raw correlation between individual occupation and their father's occupation.

	Men's main sample			Women's main sample		
	Father's job					
	1990	1996	2002	1990	1996	2002
Last job occupied	0.3685	0.3321	0.2678	0.3948	0.3765	0.3193

Table D. Descriptive information on spouses, consumption and time allocation from other data sources.

Labor force surveys 1990-2002: sample of married couples in which the husband was aged 45 to 55 years.

	Father farmer	Father top occupation	Father white collar	Father blue collar	Sample
Wife is a housewife	0.238	0.255	0.22	0.258	0.245
	(0.426)	(0.436)	(0.41)	(0.437)	(0.432)
Children at home number	1.57	1.44	1.30	1.35	1.41
	(1.41)	(1.22)	(1.12)	(1.22)	(1.26)
Contractual hours husband	44.12	44.91	41.22	40.35	41.93
	(12.02)	(11.68)	(9.65)	(8.09)	(10.09)
Contractual hours wife	34.67	34.46	34.60	33.84	34.30
	(13.38)	(12.14)	(10.90)	(11.45)	(11.86)
Husband' age minus wife's	3.12	2.65	2.51	2.60	2.71
	(4.12)	(4.37)	(4.25)	(4.23)	(4.28)
He less educated than she	0.13	0.11	0.12	0.125	0.120
	(0.34)	(0.31)	(0.33)	(0.330)	(0.325)
She less educated than him	0.21	0.18	0.22	0.24	0.219
	(0.41)	(0.39)	(0.41)	(0.43)	(0.414)
Wife same father's background	8.66%	1.98%	0.45%	1.26	12.35%
Observations	20077	21020	23054	41542	110096
%	18.25%	19.09%	20.94%	37.73%	100

French consumption survey 2000-2001 : sample of married couples in which the husband was aged 45 to 55 years.

	Husband farmer	Husband top occupations	Husband White collar	Husband blue collar	Sample
Expenditure, Euro year	3220	4812	3909	2869	1516
Wealth revenue, Euro year	3824	2304	1442	518	3807
Observations	61	420	467	456	1418
%	4 .3%	29.7%	32.9%	32.2%	100%

French consumption survey 2000-2001 : sample of married couples in which the husband was aged 60 to 70 years

	Husband farmer	Husband top occupations	Husband White collar	Husband blue collar	Sample
Expenditure, Euro year	2177	2989	-	2709	2541
Wealth revenue, Euro year	3122	6862	-	670	2634
Observations	79	118	6	361	882
%	8.9%	13.38%	-	40.93%	100%

French Time Use Survey 1998-99: sample of working age couples with both partners aged between 20 and 59 years.

	Husband farmer	Husband top occupations	Husband White collar	Husband blue collar	Sample	Wife Farmer
His house work hours	3.52	9.06	12.07	12.16	10.99	6.45
	(5.89)	(11.28)	(12.30)	(12.23)	(12.00)	(11.60)
Her house work hours	26.32	13.63	23.96	26.57	24.88	28.48
	(12.94)	(14.85)	(14.57)	(13.93)	(14.42)	(12.16)
His Leisure hours	12.24	15.32	19.02	19.67	18.00	10.18
	(12.64)	(11.94)	(13.06)	(13.39)	(13.02)	(11.67)
Her leisure hours	11.65	14.67	15.97	16.44	15.64	8.74
	(9.77)	(10.17)	(10.60)	(10.87)	(10.60	(8.62)
Observations	98	812	955	1052	2919	51
%	3.36%	27.82%	32.72%	36.04%	100%	1.75%

Source : author's calculations from the raw survey data as specified above. Unweighted statistics.

Table E	**Sample descriptives by retirement status on the two sides of the age discontinuity. Men.**							
	Not Retired & Aged<60		**Not Retired & Aged>=60**		**Retired & Aged<60**		**Retired & Aged>=60**	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Divorce	0.068	0.252	0.052	0.223	0.061	0.239	0.042	0.200
married	0.857	0.350	0.814	0.389	0.860	0.347	0.850	0.357
Single	0.044	0.205	0.093	0.290	0.047	0.213	0.048	0.215
Widow	0.015	0.123	0.029	0.169	0.040	0.197	0.051	0.221
junior college	0.052	0.223	0.048	0.213	0.041	0.199	0.023	0.152
high school	0.091	0.287	0.095	0.294	0.084	0.277	0.065	0.247
middle tech	0.282	0.450	0.119	0.324	0.274	0.446	0.175	0.379
middle school	0.054	0.227	0.043	0.203	0.063	0.243	0.047	0.213
< middle school	0.399	0.489	0.432	0.495	0.503	0.500	0.635	0.481
Children home	0.851	1.121	0.462	0.907	0.469	0.932	0.221	0.625
local U Rate	9.240	2.427	9.239	2.369	9.519	2.429	9.445	2.429
sex-ratio	0.482	0.011	0.462	0.013	0.475	0.011	0.458	0.013
Obs.	*84 351*		*6520*		*16140*		*95 920*	

Note: The reference category for the completed education dummies is a college degree. The sex ratio is the proportion of men in the year of birth over the proportion of women born two years later (as the average age difference between partners is two years in in France).

Table F. **Sample descriptives by retirement status on the two sides of the age discontinuity. Male sample.Men whose father was a farmer.**

	Not Retired & Aged<60		Not Retired & Aged>=60		Retired & Aged<60		Retired & Aged>=60	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
divorce	0.040	0.196	0.029	0.168	0.035	0.185	0.028	0.165
married	0.867	0.339	0.758	0.428	0.868	0.338	0.843	0.364
single	0.065	0.246	0.168	0.374	0.059	0.236	0.076	0.266
widow	0.015	0.122	0.033	0.179	0.025	0.157	0.046	0.210
children at home	0.960	1.253	0.559	1.038	0.580	1.164	0.269	0.702
junior college	0.024	0.155	0.018	0.133	0.024	0.154	0.009	0.096
high school	0.052	0.221	0.040	0.196	0.042	0.201	0.024	0.152
middle tech	0.261	0.439	0.092	0.289	0.176	0.381	0.095	0.294
middle school	0.036	0.186	0.030	0.170	0.042	0.200	0.022	0.147
< middle school	0.588	0.492	0.741	0.438	0.704	0.456	0.834	0.372
local U Rate	8.951	2.195	9.034	2.248	9.068	2.082	9.055	2.132
sex-ratio	0.481	0.011	0.461	0.012	0.474	0.011	0.458	0.013
Obs.	*17 958*		*1547*		*3019*		*23 689*	

Note: The reference category for the completed education dummies is a college degree. The sex ratio is the proportion of men in the year of birth over the proportion of women born two years later (as the average age difference between partners is two years in in France).

Table G. Respondent's Father Job by District: year average over the years 1990-2002. All Ages Sample.

	Father Farmer %	Father Unskilled worker %	Father Rural worker %	Observations per district
Ain	23.18	1.56	12.35	10414
Aisne	12.76	16.0	11.46	14409
Allier	25.70	13.47	6.70	14563
Alpes-de-Haute-Provence	21.30	**8.37**	3.86	2976
Hautes-Alpes	24.06	8.48	1.99	2664
Alpes-Maritimes	8.35	7.05	3.44	23028
Ardèche	29.14	10.29	2.09	5463
Ardennes	13.52	20.62	4.12	10284
Ariège	26.87	15.45	5.50	3398
Aube	17.58	15.51	5.60	10731
Aude	16.62	8.62	18.64	7346
Aveyron	41.79	10.59	2.58	6363
Bouches-du-Rhône	7.39	9.88	3.82	40183
Calvados	15.58	14.23	7.81	20918
Cantal	35.99	10.70	9.10	6933
Charente	26.33	12.40	11.37	11609
Charente-Maritime	25.90	8.71	6.38	16603
Cher	16.33	18.59	6.59	9135
Corrèze	30.56	10.49	3.37	15138
Corse	25.29	5.46	6.76	1639
Côte-d'Or	15.98	11.83	4.95	14458
Côtes-d'Armor	37.44	7.71	4.21	13715
Creuse	40.33	6.54	5.84	8147
Dordogne	35.43	10.09	8.03	8807
Doubs	19.43	16.19	1.77	20808
Drôme	26.96	11.25	3.51	9299
Eure	13.89	15.29	8.68	16533
Eure-et-Loir	19.89	14.84	8.36	7857
Finistère	28.46	6.81	6.78	25967
Gard	13.99	12.67	8.90	13848
Haute-Garonne	15.80	8.55	3.88	22842
Gers	37.72	6.76	11.25	4409
Gironde	11.41	9.58	8.77	30758
Hérault	12.83	7.69	10.48	24697
Ille-et-Vilaine	30.34	8.29	3.90	21035
Indre	24.53	12.12	9.54	6813
Indre-et-Loire	20.16	11.89	6.26	14595
Isère	14.64	15.93	2.16	22513
Jura	26.41	13.40	1.99	13094
Landes	27.16	10.00	4.91	6803
Loir-et-Cher	28.43	13.15	8.96	5903
Loire	20.09	18.13	1.70	18209
Haute-Loire	39.66	10.51	0.85	5661
Loire-Atlantique	21.10	9.00	2.83	25588
Loiret	18.72	11.39	5.54	13986
Lot	42.30	9.07	3.90	2922
Lot-et-Garonne	37.00	9.15	7.16	6351
Lozère	37.01	7.26	2.24	2988
Maine-et-Loire	27.98	11.56	6.58	17253
Manche	34.96	8.24	6.47	18181
Marne	14.15	11.25	7.41	17345
Haute-Marne	22.34	15.45	4.29	7484
Mayenne	37.54	11.41	6.35	6742
Meurthe-et-Moselle	8.89	18.42	2.08	16697
Meuse	22.44	16.55	3.54	5705
Morbihan	34.22	7.71	4.57	15239

Table E. Continued.Respondent's Father Job by District: year average over the years 1990-2002. All Ages Sample.

	Father Farmer %	Father Unskilled worker %	Father Rural worker %	Observations per district
Moselle	9.08	19.44	1.93	22850
Nièvre	16.00	16.85	8.42	8496
Nord	6.67	19.26	2.78	56698
Oise	9.72	16.84	6.87	18468
Orne	32.06	11.80	6.03	8023
Pas-de-Calais	9.52	20.93	4.92	31938
Puy-de-Dôme	21.91	16.32	2.33	20704
Pyrénées-Atlantiques	21.93	10.34	4.78	14011
Hautes-Pyrénées	21.67	11.72	3.49	4121
Pyrénées-Orientales	18.51	7.01	12.36	9231
Bas-Rhin	14.04	13.05	1.98	28544
Haut-Rhin	11.27	15.68	2.64	20550
Rhône	12.23	12.75	2.29	33214
Haute-Saône	23.54	19.21	2.07	9738
Saône-et-Loire	23.91	16.99	3.42	19339
Sarthe	27.20	14.89	5.11	12689
Savoie	20.26	17.08	1.80	7908
Haute-Savoie	20.54	13.10	2.63	14735
Paris	7.56	5.48	1.85	50278
Seine-Maritime	10.46	14.55	5.86	36314
Seine-et-Marne	7.75	11.22	5.73	24367
Yvelines	8.27	8.25	2.76	24934
Deux-Sèvres	37.45	11.32	5.25	11915
Somme	16.18	16.35	8.50	16060
Tarn	23.88	17.63	5.24	9949
Tarn-et-Garonne	28.54	10.17	10.56	3647
Var	9.68	7.94	5.66	18860
Vaucluse	15.96	11.38	8.18	9518
Vendée	37.53	8.09	5.98	11664
Vienne	23.91	10.20	8.10	12869
Haute-Vienne	24.96	10.71	7.69	20491
Vosges	17.79	20.02	2.62	9382
Yonne	19.01	12.58	5.33	10.147
Territoire de Belfort	12.04	20.87	1.28	8117
Essonne	8.08	8.55	4.10	23227
Hauts-de-Seine	8.04	8.05	2.26	30822
Seine-Saint-Denis	11.53	11.25	3.90	28194
Val-de-Marne	7.86	8.96	3.23	25402
Val-d'Oise	7.66	11.13	3.49	23147

Source : Author's calculations from raw data.Unweighted statistics. French Labour Force Surveys 1990-2002.

Figure A. McCrary density distribution of the running variable (age)

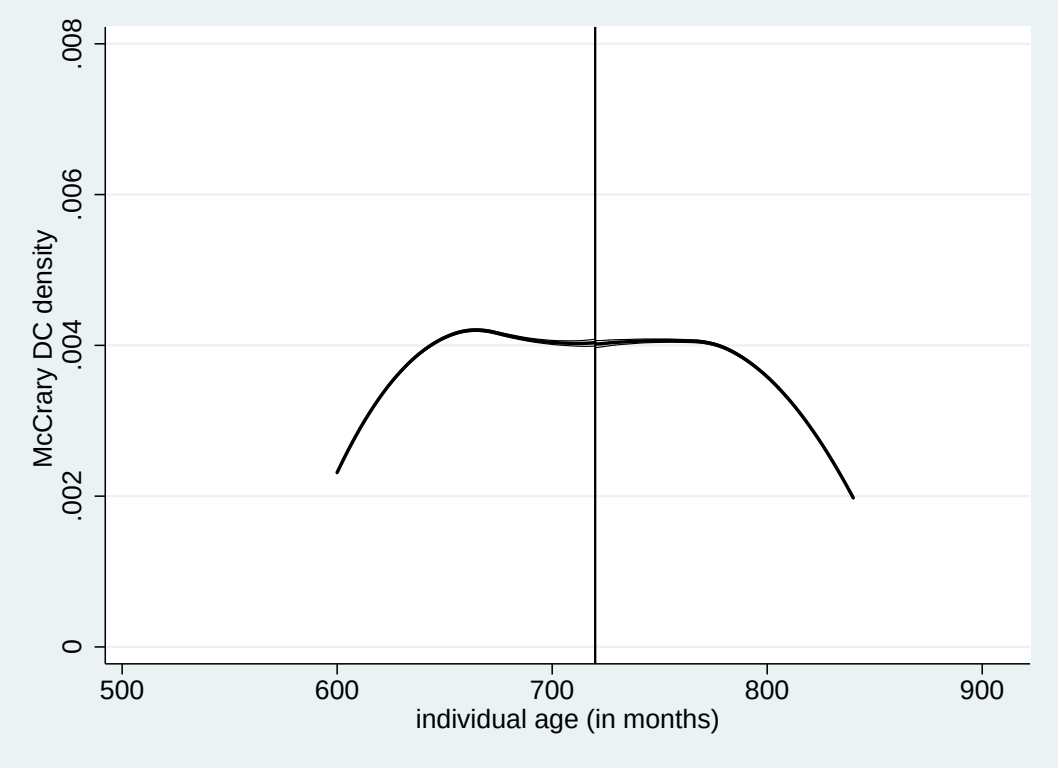


Figure B. McCrary density distribution of the running variable (age).
Subsample of individuals whose father was a farmer.

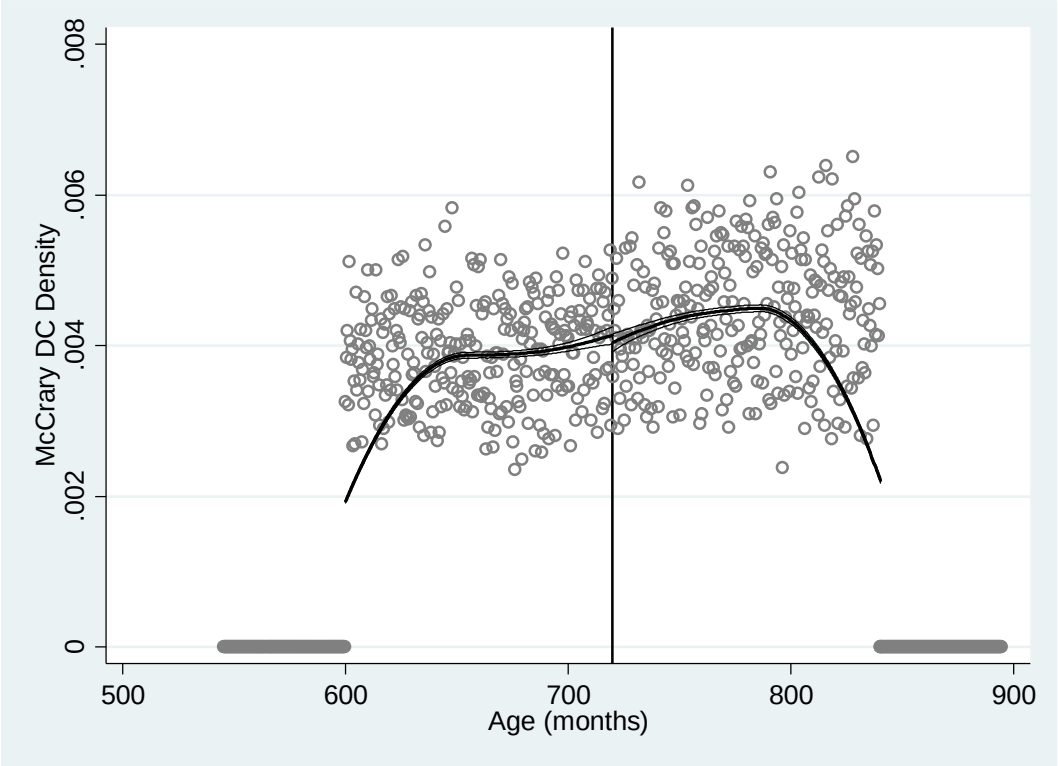
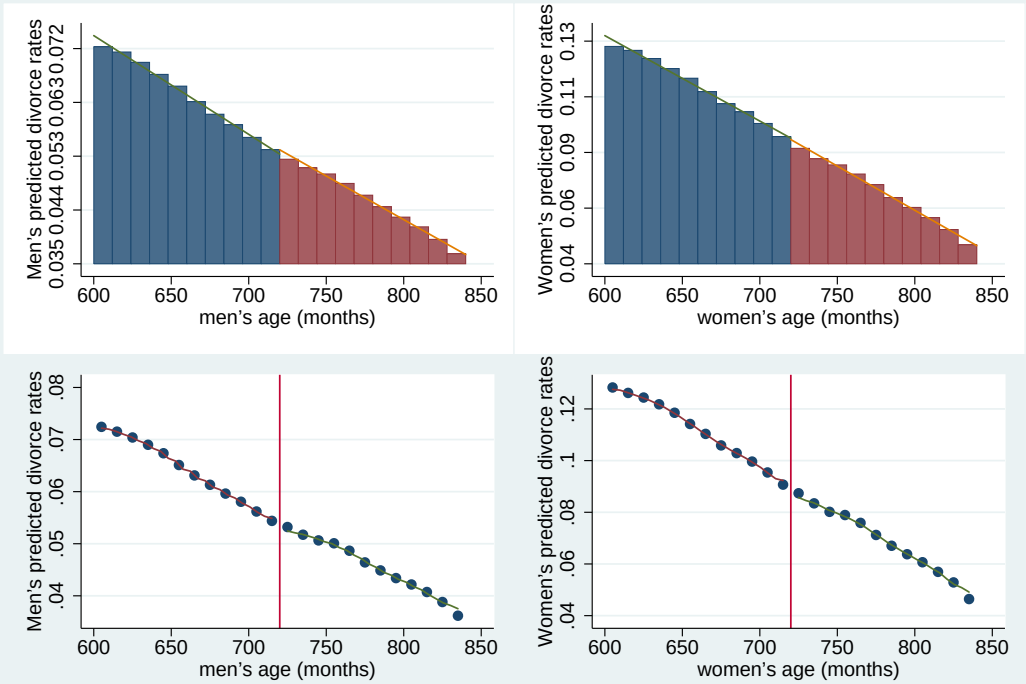


Figure C. Predicted divorce rates as a function of the Z's: means by bins of ten months of age.



Predicted divorce rates as a function of the Z covariates (see Section 2).

Figure D. Marriage rates (outcome variable): means by bins of ten months of age.

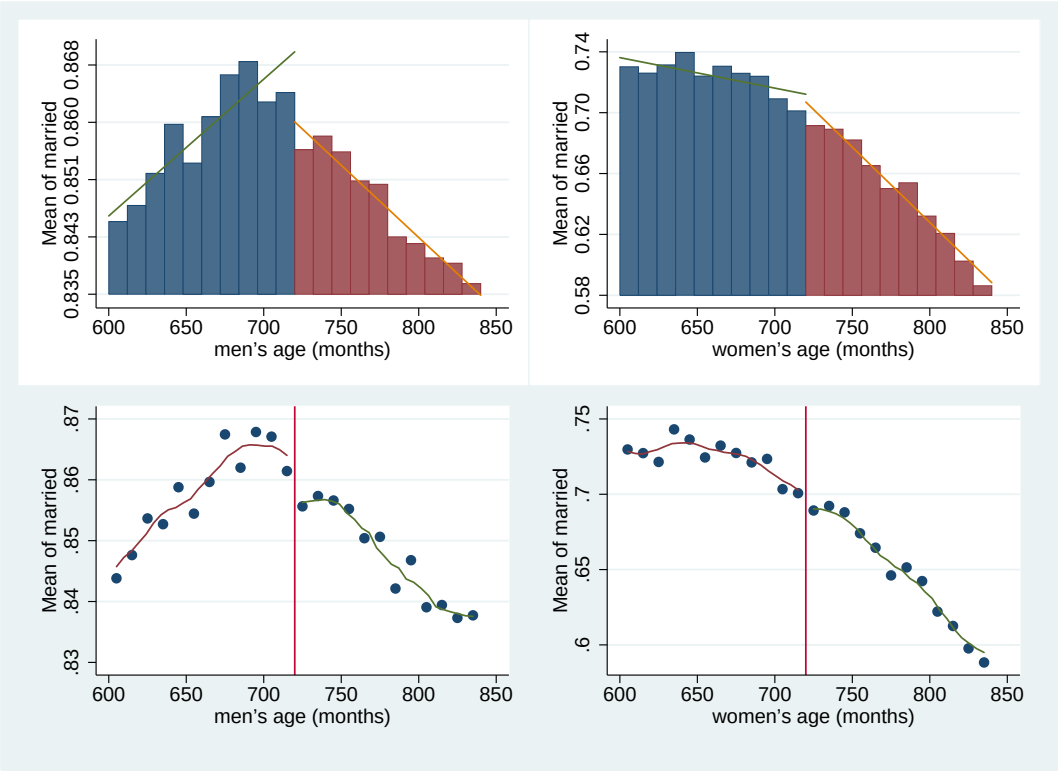


Figure E. Means of marriage by age (bins of ten months).
Subsamples of men and women whose father was a farmer.