The dynamics of retirement behavior in couples: Reduced-form evidence from England and the US*

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Abstract

This paper exploits the institutional variation across the US and the UK, and in particular the different ages of entitlement to a public pension in the two countries, to analyze husbands' responses to their wives' retirement incentives. Using working American couples as a control group for British ones, we show that British men are from 14 to 20 percentage points more likely to retire when their wife reaches state pension age at 60 than their American counterparts. We interpret our results as evidence of complementarity in leisure, whereby the husband enjoys retirement more when his wife is retired as well. Our findings imply that the wife's participation status enters the husband's utility function, and hence that spouses' participation choices are made simultaneously. Analyses of men's retirement outcomes that ignore the wife's retirement decision will yield biased policy predictions.

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1 Introduction

Labor market participation of older individuals is nowadays a major policy issue. In the current context of an ageing population, most countries in the developed world are introducing policy changes to encourage the delay of retirement, such as increasing retirement ages or restricting access to non-standard routes out of the labor force. The large literature analyzing the effects of Social Security and pensions on individual behavior is now more relevant than ever.

Many studies in this literature have looked at individual retirement incentives[1], but only recently has the focus began to switch towards retirement behavior of couples[2]. However, given that the typical worker approaching retirement age is married, it is crucial to be aware of potential interactions between spouses.

Evidence of joint retirement, defined as the coincidence in time of spouses' retirement dates, has been found in data from very different sources, including the New Beneficiary Survey (Hurd (1990a)), The National Longitudinal Survey of Mature Women (Gustman and Steinmeier (2000)), the Retirement History Study (Blau (1998)), and the Health and Retirement Study (Michaud (2003)). Different mechanisms may be at play in driving joint retirement outcomes in couples: financial incentives, willingness to spend time together after retirement, common shocks, caring needs of one spouse, children or grandchildren, etc. These can be broadly classified in four categories: sorting of spouses according to their tastes for leisure; correlation in observable variables such as assets, wages, pension incentives, health status, etc.; correlation in time-varying shocks; and interactions in leisure, so that spouses enjoy their own retirement more if their partner is retired as well.

Understanding the reasons underlying joint retirements is important for policy analysis. In particular, the presence of spillovers in spouses' decisions would imply that policies aimed at the individual level can potentially impact the behavior of both partners. In the UK, the state retirement age for women, which is currently 60 years of age, is set to increase by six months per year from 2010 until it reaches 65 in 2020. This is expected to affect women's retirement patterns. Given the incidence of joint retirement in the UK[3], which we document in the paper, the question is whether this type of policy will change men's retirement patterns as

[1] See Hurd(1990b), Stock and Wise (1990), Blau (1994), Diamond and Gruber (1999), Rust and Phelan (1997), French (2005).

[2] See Gustman and Steinmeier(2000), Blau and Gilleskie (2006), Coile (2004a, 2004b), Michaud (2003), Michaud and Vermeulen (2004).

[3] The institutional setting we describe in the paper is common to all the UK. For simplicity we will refer to the UK when talking about the data too, even though ELSA only surveys English households.

well.

In this paper we use the exogenous variation in institutional incentives to retirement between the US and the UK to analyze the effect on husbands' participation of their wife's retirement. Using working American couples as a control group for British ones, we are able to identify significant responses of British husbands to their wives' (exogenous) retirement incentives. Moreover, we show that the husband's retirement is directly linked to the actual realization of the wife's transition, using institutional incentives to instrument the latter.

Our results provide evidence of the existence of spillovers in spouses' retirement decisions. We attribute those to complementarities in leisure, whereby husbands value retirement more when their wife is retired as well. This raises the value of their leisure when their wife retires, creating a link between husbands' retirement transitions and wives' retirement incentives. We do not exclude the presence of further mechanisms leading to a correlation in spouses' outcomes, but none of those can explain our results in the absence of complementarities in leisure.

Our results imply have important implications for policy analysis. Since the wife's participation status enters the husband utility function, their participation decisions will be taken simultaneously. Analyses of men's retirement outcomes that ignore the wife's retirement decision will yield innacurate policy predictions.

The rest of the paper is structured as follows: Section 2 reviews the literature on joint retirement and discusses our identification strategy. Section 3 describes the institutional settings in the US and the UK. Section 4 describes the data and observed retirement patterns for individuals and couples in the two countries. Section 5 outlines the empirical strategy. The results are presented in section 6, and section 7 concludes.

2 Overview

There is a growing literature on couples' retirement choices that has analyzed the determinants of joint retirement. A strand of this literature has estimated the extent of leisure complementarities within structural models of family retirement (Maestas (2001), Gustman and Steinmeier (2004), Casanova (2010)). These papers find that leisure complementarities are a key source of spillovers in spouses' retirement decisions, although they differ in their conclusions regarding the relative magnitude of leisure interactions and financial incentives. Regarding the role of unobserved tastes for leisure, Gustman and Steinmeier (2004) find that they are an important determinant of *individual* retirement decisions, but not of joint retirements.

The advantages of estimating structural models are clear when the objective is to recover utility parameters. However, they also have drawbacks. Structural models require a full parameterizations of individual preferences and stochastic processes, including distributional assumptions about structural errors. Moreover, these models must be sufficiently rich to capture the different sources of incentives to retirement (from the institutional setting, private and public pensions, etc.). Failure to properly capture any of them may lead to over or underestimation of the role of leisure interactions -Casanova (2010) argues that simplifying assumptions regarding the financial and stochastic environment in which couples make decisions lead Maestas (2001) and Gustman and Steinmeier (2004) to overstate the role of leisure complementarities relative to the incentives for joint retirement provided by the Social Security system.

A complementary approach is the estimation of reduced-form models of the effect of one spouse's retirement incentives on their partner's participation. This approach does not require distributional assumptions, but relies on the exogeneity of the measure of retirement incentives. Early studies[4] in this literature regressed indicators of the wife's participation on the husband's retirement status. It is difficult to argue that this identifies a causal effect, as the husband's decision is unlikely to be exogenous -on the one hand, both spouses' participation decisions are linked through the shared budget constraint. Moreover, in the presence of leisure interactions, each spouses' utility depends on their partner's retirement status.

Coile (2004b) addresses these endogeneity concerns in her analysis of how husbands and wives respond to their partner's retirement incentives. She finds modest but significant responses of husbands to different measures of their wives' Social Security and private pension accrual. In particular, her results show that the stronger the financial incentive for a wife to delay retirement, the less likely her husband is to retire. She interprets this as evidence of complementarities in leisure: the value of leisure is diminished for a husband whose wife remains employed, which makes him more likely to remain employed himself.

The identifying assumption in Coile (2004b) is the exogeneity of pension accruals. In particular, these must be exogenous to individual tastes for retirement. Part of the heterogeneity in accruals is determined by Social Security parameters such as retirement ages, percentage benefit increases after early retirement age, the number of years of earnings used in the computation of benefits, etc. These are clearly exogenous from the individual's perspective. On the other hand, there is some scope for forward-looking individuals to time their accrual according to

[4] See Coile (2004a) for a review.

their taste for early retirement. A man who intends to retire early may choose an employer providing a defined-benefit pension which allows him to draw benefits at age 55. A woman who wants to accumulate 35 years of earnings[5] before, say, age 62, may go back to work sooner after taking time off to raise her kids than a woman who intends to work until age 65. To the extent that these mechanisms are important, and given the correlation in spouses' tastes for early retirement (Gustman and Steinmeier (2004)), they could explain part of husbands' responses to their wive's accruals.

2.1 Identification Strategy

In this paper we use an alternative measure of retirement incentives, namely the age of entitlement to a public pension, which we refer to as the retirement age. Since this is an institutional feature it is not correlated with couples' tastes for retirement. We first show that reaching retirement age is a strong predictor of wives' retirements. Then we exploit the different institutional environments in the UK and US, where women reach retirement age at 60 and 62, respectively, to test whether men respond to their wives' retirement incentives. We find that British men are significantly more likely to retire when their wife becomes 60 than their American counterparts.

We attribute the difference to complementarities in leisure: British wives are more likely to retire at age 60 than American wives. This raises the value of retirement for British husbands with respect to American husbands, and explains why the former are more likely to retire at this point. A threat to our identification strategy would be the presence of spurious incentives to retirement for British husbands that kick in when their wife becomes 60, even if she does not stop working. We explore this possibility by running IV regressions of husbands' transitions on those of their wives, using the retirement ages in each county as instruments, which confirm our previous results.

In order to illustrate how our identification strategy allows us to tease out the effect of complementarities, it is important to consider all potential sources of interactions in spouses retirement decisions, and how they affect couples' choices, not only upon reaching retirement age but during their whole working lives. This is key, since forward-looking individuals will be aware of the retirement age for public pensions from the start of their careers, and plan accordingly.

[5]Social Security pension accruals tend to flatten out after 35 years of work, because only the 35 highest years of earnings are used in the computation of benefits. Additional years of work after that only increase AIME (the earnings measure used to determine monthly benefits) if they replace a an earlier lower earnings year. See description of Social Security benefits below for further details.

The first channel that may lead to a link in spouses' retirement dates is a correlation in their tastes for leisure and, in particular, their willingness to retire early. Our measure of retirement incentives, however, is common to all workers, and thus exogenous to couples' tastes within each country. A concern would be that tastes for work are different in the UK and the US. We control for this in the empirical analysis of men's retirement transitions by interacting age dummies with a country indicator, allowing for different propensities to retire at every age in the two countries.

The second channel linking spouses' choices is the shared budget constraint. If institutional incentives lead British wives to retire earlier, they will have to finance retirement for a longer period. British couples may respond by accumulating more wealth during their working years -they may do so by reducing consumption or working longer hours. This type of anticipatory responses would allow them to smooth out consumption, and therefore rule out an income effect at the time of retirement. Our analysis does not exclude this type of responses, but focuses only on the employment response of the husband when his wife turns 60. Our maintained assumption is that, in the absence of leisure complementarities, the need to provide for a longer retirement for British wives would not make their husbands more likely to retire at the exact point when they reach retirement age.

It is also possible that some couples reach retirement age with insufficient savings to smooth out the drop in income brought about by the wife's retirement. This cannot, though, explain our results. A negative income effect would give husbands incentives to increase, rather than decrease, their labor supply upon their wife's retirement.

The final channel leading to correlations in spouses retirements is complementarity in leisure, whereby the husband enjoys retirement more when his wife is also retired.[6] Leisure complementarities increase the value of leisure for husbands upon their wife's retirement, and in turn make them more likely to retire themselves.

We have argued so far that in the absence of leisure complementarities British men should not have stronger incentives to retire when their wife reaches retirement age at 60 than American men, after controlling for their own age-specific retirement incentives. Hence we propose the comparison of retirement propensities in the two countries at the point when wives turn 60 as a test for the presence of leisure complementarities.

[6]Our analysis can only identify one-sided complementarities. Coile (2004b) and Gustman and Steinmeier (2004) find that the evidence that women's enjoyment of retirement increases when their husband is also retired is rather weak.

3 Financial Incentives for Retirement in the US and UK

In this section, we describe the main financial incentives for retirement facing individuals in the US and the UK. Since the focus of our empirical analysis are husbands' labor supply responses when their wife becomes entitled to a public pension for the first time, we focus on the rules governing Social Security pension entitlement in the two countries. In particular, we illustrate how these may give UK women incentives to retire at a different age from US women. Then, we consider other sources of financial incentives to retirement, and how they may influence our results.

3.1 Social Security Benefits in the US

Old-Age, Survivors Insurance

The Old-Age, Survivors Insurance (OASI) programme provides benefits for qualified retired workers (those who have worked for a minimum of 40 quarter in covered employment) and their dependants.

The level of individual benefits is determined from a worker's lifetime earnings in several steps. First, the average indexed monthly earnings (AIME) is computed as a weighted average of the worker's earnings in covered employment. The weights are obtained from a national wage index. Only the highest 35 years of earnings are used in this computation. On a second step, a three-piece linear formula is used to convert AIME into the primary insurance amount (PIA). The formula is weighed in favor of relatively low earners, so that the replacement rate falls with as the level of earnings rises. The final step is to adjust the PIA based on the age at which benefits are first claimed.

Individuals receive their full PIA if they retire at full retirement age (FRA). The FRA for people born before January 1938 is 65. For people born between 1938 and 1943, the FRA increased at the rate of 2 months per year, and further increases are scheduled for people born after 1954. The earliest age at which a worker can claim Social Security benefits (early retirement age or ERA) has remained constant at 62 throughout. Workers who start receiving benefits between ERA and FRA have their benefits reduced in proportion to the number of months they retire early. For workers born after 1943, the rate of increase is equivalent to 6.7% per year between 63 and 65 and 5% per year from 62 to 63. On the other hand, workers who postpone their retirement beyond FRA obtain an increase in benefits for every month of nonpayment up to age 70. For workers born after 1943, the rate of increase is equivalent to 8% per year of delay.

While it is possible to claim social security benefits as early as age 62 independently of labor force status, beneficiaries below FRA are subject to the annual earnings test, whereby their benefits are withheld at a rate of $1 for every $2 of earnings above a threshold. Earnings lost through the earnings test translate into higher benefits in the future. For the workers born after 1943, the increase would be equivalent to 8% per year of benefits lost.

An important benefit provision affecting couples is the so-called dependent spouse benefit. Spouses of social security beneficiaries can receive benefits equal to up to half of their spouse's full retirement pension, provided that this is higher than their own entitlement. According to the Social Security Administration[7], the proportion of women aged 62 or older in 2004 who received benefits as dependants (that is, those who did not qualify for retirement benefits on their own record, and received benefits on the basis of their husband's earnings record only) was 32%. The proportion with dual entitlement (those who received benefits on the basis of both their own and their husbands' entitlement) was 28%. The remaining 40% was receiving benefits based on their own entitlement only.

Widows and widowers are entitled to survivors benefits, which are based on the deceased spouse's earnings record. They are eligible for full benefits at full retirement age, or reduced benefits from age 60.

Social security benefits are annually adjusted for increases in the consumer price index (CPI).

3.2 Public Pension Benefits in the UK

Basic State Pension

Unlike the US Social Security pension, the basic state pension (BSP) does not depend on a worker's past earnings, but only on the length of contribution to the system. In this sense, this portion of the UK public pension system should be viewed as a minimum pension, as the one provided in the US by the Supplemental Security Income (SSI) program. Unlike the SSI, however, the BSP is not means-tested, and is paid to all workers that fulfill the criteria described below.

In order to qualify for the full BSP, individuals need to have paid National Insurance contributions (NIC) for 90% of the period between age 16 and the year before pension age. Those with less years of contributions qualify for a proportion of the BSP, subject to this being higher than 25%. Individuals qualify to receive the BSP at the state pension age, which at present is 60 for women and 65 for

[7] *Fast Facts & Figures About Social Security, 2005.* Social Security Administration. SSA Publication No. 13-11785. September 2005.

men[8].

Until 2005, individuals could choose to defer receipt of the BSP for a maximum of five years. For each year of delay they received approximately 7.5% extra BSP. From 2005, individuals can defer their pension for as long as they like. If they put off claiming for at least one year, they can choose one of two options when they do finally claim: either to earn extra state pension at a rate equivalent to 10.5% per year of deferral; or to earn a one-off taxable lump-sum payment based on the amount of BSP they would have received during the deferral period, plus interest.

Recipients of BSP who are married to a partner over the state retirement age receive a dependant's addition to their BSP, unless their partner qualifies for a larger pension based on their own contribution record. Many married women do not qualify for a BSP on their own right, since those who were married before April 1977 could choose to opt out of the system and pay reduced-rate NICs in return for a BSP equal to 60% of their husband's entitlement.

Widows and widowers can inherit their deceased partner's pension entitlement in full if it is higher than their own.

The BSP is linked to inflation since 1981. In the year 2005, the value of the BSP was just under 15% of average earnings.

Earnings-Related State Pension

The second tier of the UK public pension system is an earnings-related pension. Even though the regimes legislating this tier of the system have changed over the years, the pension arrangement in place during most of the working lives of individuals in our sample was the State Earnings-Related Pension Scheme (SERPS). The SERPS was introduced to provide additional retirement income to around half of the workforce, whose employers did not provide an occupational pension scheme. In order to avoid crowding out of existing private pension schemes, from the time of its introduction individuals were allowed to opt out of SERPS into an employer-provided, defined benefit pension scheme. In return, both their and their employer's contributions were reduced. As from 1988, individuals could also opt out of SERPS into a defined contribution pension scheme, in return for which a proportion of their NICs were paid into the individual's pension fund.

Because of the opt-out provisions, the proportion of retirees covered by SERPS is much lower than that entitled to a Social Security pension in the US.

The benefit level under SERPS was based on a worker's NICs and level of earnings above a threshold. Workers qualified for SERPS at the same age age BSP. Once in payment, SERPS was indexed to inflation.

[8] The retirement age for women is set to increase by six months per year from 2010 until it reaches 65 in 2020.

Initially, surviving partners could inherit the full amount of their spouse's SERPS entitlement. Since 2002, however, changes are being phased in that will make the maximum inheritable amount equal to 50% in 2012.

Since 2002 SERPS has been replaced for new contributors by the State Second Pension (S2P). This is a reformed version of SERPS which provides more generous additional state pension for low and moderate earnings.

3.3 Other Financial Incentives for Retirement

Means-Tested Public Benefits

In the US, the Supplemental Security Income (SSI) programme provides income support to individuals aged 65 or older, as well as the blind or disabled.

The level of SSI entitlement is unrelated to previous work earnings, and it is based on the individual or couple's income. The federal benefit rate in 2005 was $579 per month for individuals and $869 per month for couples. These quantities are offset against income above a certain threshold. Furthermore, individuals are generally not eligible for SSI if they have net worth exceeding $2,000 (or $3,000 for couples).

In 2004, just over a million individuals qualified for age-related SSI payments.

In the UK, the Pension Credit (PC) was introduced in 2003 to provide income support to those at or approaching retirement age. The pension credit has two components, the guarantee credit and the savings credit.

The guarantee credit aims to bridge the gap between individuals or couples' income and a specified minimum level called the 'appropriate amount' (£167.05 per week for couples in 2005). A single person must be 60 or over to qualify for guarantee credit. Couples qualify when the oldest spouse reaches 60.

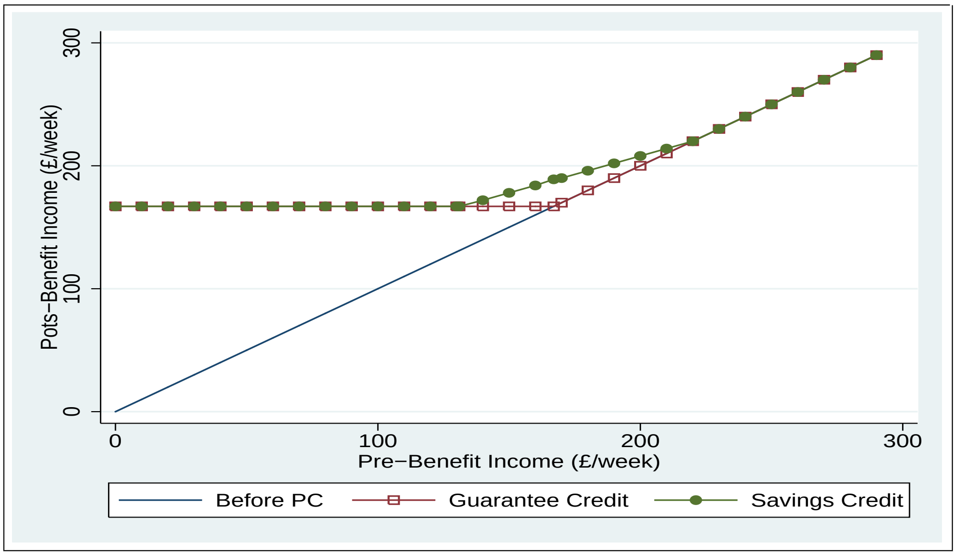
As can be seen in figure 1, individuals qualifying for the guarantee credit face a 100% marginal withdrawal rate whenever their total income is lower than the minimum level. The savings credit, which becomes available when a single individual or the oldest spouse in a couple turns 65, attempts to reduce this disincentive to save by cutting the marginal withdrawal rate. Guarantee credit beneficiaries with income between a minimum threshold (£131.20 per week for couples in 2005) and the appropriate amount receive a saving credit equal to 60% of their income above the threshold. The third series of figure 1 shows the effect of the savings credit.

Private Pensions

It is well known that private pensions play an important role in determining retirement decisions[9]. In particular, defined benefit (DB) schemes offer strong

[9] Gustman and Steinmeier (1989), Gustman and Mitchell (1992), Stock and Wise (1990),

Figure 1: Effect of PC when oldest spouse is aged 65 or over



incentives for retirement at certain ages through provisions such as the early and normal retirement ages.

On the surface, the expansions of private pensions in the US and the UK seem to follow some common trends. In particular, both countries have seen a switch from DB to defined contribution (DC) pensions in recent times. To our knowledge, however, there are no studies describing how private pension provisions -such as the distribution of normal retirement ages, relationship between early retirement ages and premium, etc.- may differ across the two countries. In the remaining of the paper we implicitly assume that incentives from private pensions have no significantly different age-effects on the two countries, and that this is particularly true at the ages in which we focus our analysis, namely 60 and 62.

Health Insurance

In the US, the health insurance programme Medicare covers most people who are either 65 or meet a series of special criteria, such as being disabled. The programme has four different parts, which cover different aspects of health care costs. Some of these are only available to individuals who pay a monthly fee.

Spouses of Medicare recipients who are not disabled do not become entitled to Medicare benefits until they reach 65.

Medicaid is another US state-run programme that provides hospital and medical coverage for people with low income and little or no resources. The rules for

French(2005)

Medicaid eligibility and coverage vary across states.

In the UK, health care is universal and free at all ages, and private provision is relatively rare. Therefore, there are no age-specific incentives to retire or stay in work related to health insurance.

Different studies have discussed how Medicare eligibility affects retirement decisions of individuals and their spouses in the US (Rust and Phelan (1997), Blau and Gilleskie (2006), French and Jones (2007)). Given that most health insurance before age 65 is provided by employers, these studies suggest that individuals whose employer-provided health insurance does not cover retirees may find strong incentives to remain in work until age 65. On the other hand, Lumsdaine, Stock, and Wise (1996) find that Medicare eligibility has little effect on retirement age. In the empirical analysis we do not specifically control for health insurance, but we think it is unlikely to have important effects in our results. Even in the presence of a health-insurance type of effect, the subsample of affected individuals would be relatively small. According to the HRS data, only around 9% of men and 8% of women from the initial cohort report having an insurance which they could not keep if they retired. It is conceivable that the fraction of these individuals in the sample of workers increases as they approach age 65, but our main interest is in retirement behavior at age 60, when the majority of both men and women are still in the labor force.

Disability Insurance

Disability benefits can provide important labor supply disincentives[10]. In particular, disability insurance is sometimes viewed as a path towards early retirement. Take-up of disability benefits has risen rapidly in recent years both in the US and the UK.

Given the difficulty in exactly quantifying the age structure of the disincentive to work these benefits provide, we opt once again for not including any specific controls in the empirical analysis.

3.4 Potential Interactions Among Incentives to Retirement

Table 1 summarizes the age-structure of incentives for retirement in the US and UK from public pensions, means-tested public benefits and state-provided health insurance. Private pensions and disability benefits are not included in table 1. For the latter, even though coverage increases with age -as does ill health-, we cannot identify jumps in entitlement at particular ages. The former do give strong incentives to retire at early retirement ages -particularly DB pensions-, but both

[10] See Bound and Burkhauser (1999), Benitez-Silva et al. (1999), Benitez-Silva, Buchinsky and Rust (2004).

these ages and the strength of the incentives vary wildly across plans in the two countries.

Table 1: Age structure of incentives to retirement. US and UK.

	US	UK
Husband's age		
60		Guarantee Credit (if husband is older)
62	**Early Retirement Social Security Benefit**	
65	**Normal Retirement Social Security Benefit*** Supplemental Security Income Medicare	**Basic and Earnings-Related State Pensions** Savings Credit (if husband is older)
Wife's age		
60		**Basic and Earnings-Related State Pensions** Guarantee Credit (if wife is older)
62	**Early Retirement Social Security Benefit***	
65	**Normal Retirement Social Security Benefit** Supplemental Security Income Medicare	Savings Credit (if wife is older)

* Normal retirement age will be higher than 65 years of age for individuals reaching age 62 later than the year 2000.

3.5 Sources of Elderly Couples' Income

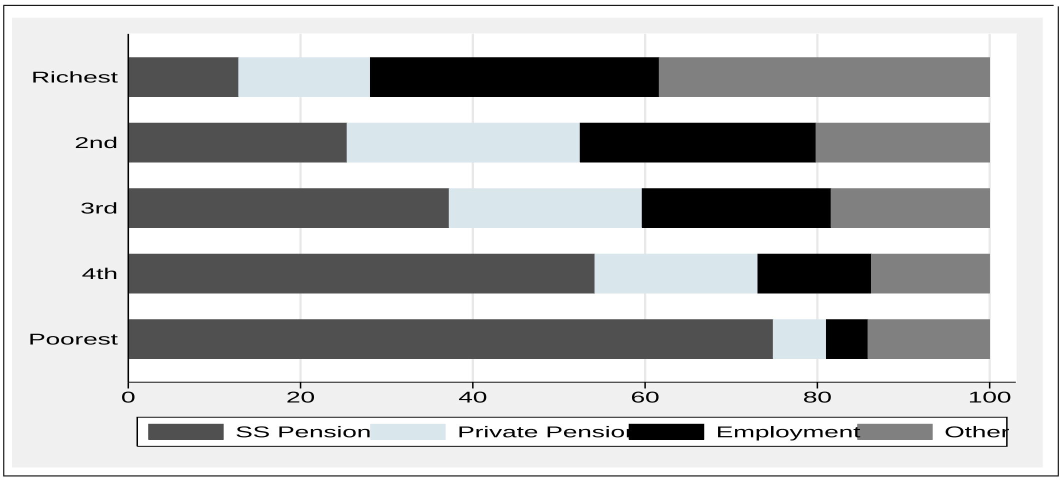
Our identification strategy will exploit the difference in retirement ages in the US and the UK. British women reach state pension age at 60, whereas American women cannot claim a Social Security pension before age 62. The power of our instrument will depend on how strongly women respond to the incentives provided by the system, and in particular whether they tend to retire upon reaching retirement age. Since this will be partly determined by the importance of Social

Security income as a proportion of household income in the two countries, we analyze these below.

Figures 2 and 3 show the relative importance of different sources of income for households in the US and the UK where the husband is past normal retirement age. Households are divided by country-specific income quintiles. The different sources of income considered are Social Security pensions, private pensions, income from work and income from all other sources, including disability pensions and health insurance payments.

The general trends are common for the two countries: The proportion of income from social security decreases as family income increases, whereas the proportion of income from private pensions, work and all other sources increases.

Figure 2: Sources of household income by income quintile. HRS. Year 2002.



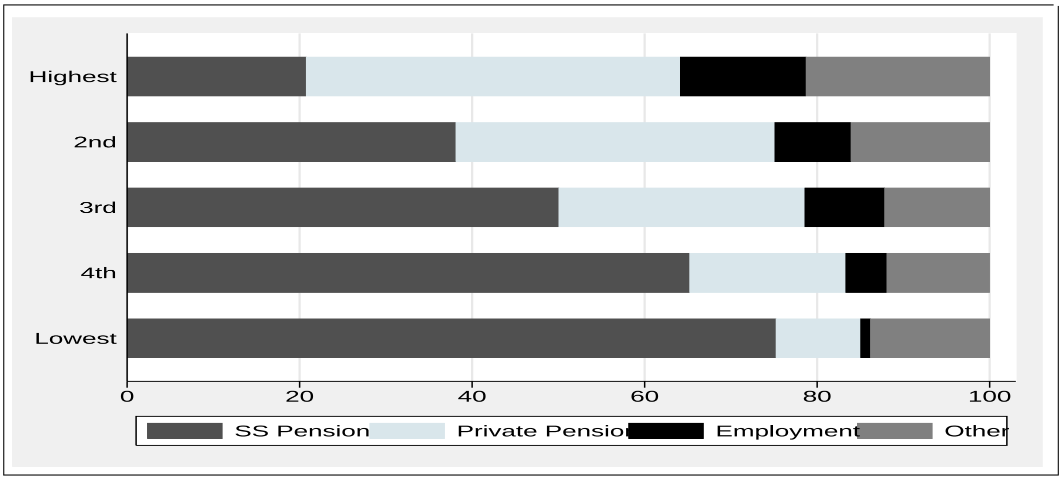
NOTE. - Source: Authors' calculations using the 2002 HRS wave. Sample includes couples where the husband is 66 to 70.

An important difference between the graphs is the proportion of income from employment, which is higher in the US for all income quintiles. The proportion of income from private pensions is generally higher in the UK. This is because 55% of workers in the UK[11] opt out of the earnings-related part of the public pension system, and instead contribute to their employer's occupational pension.

Regarding the relative weight of Social Security benefits in household income, we can see that this is higher in the UK for all income groups except the lowest one. This may seem puzzling, given that UK workers who opt out of the earnings-related public pension only get the basic pension from the public system, and this

[11]Data for years 2001/02. Source: Department of Work and Pensions. "Second Tier Pension Provision 1978/79 to 2003/04". UK.

Figure 3: Sources of household income by income quintile. ELSA. Year 2002.



NOTE. - Source: Authors' calculations using the 2002 ELSA wave. Sample includes couples where the husband is 66 to 70.

replaces a lower percentage of lifetime wages that the US Social Security pension for a majority of workers. However, other factors such as the larger proportion of workers delaying Social Security receipt beyond age 65 in the US, the larger proportion of US workers receiving income from employment after that age, and the higher replacement rates in the UK can explain the higher reliance on Social Security for British workers.

The higher share of public benefits in UK households' income should not affect the interpretation of our empirical results. The identifying power in our analysis comes only from the different age structure of public benefits in the US and UK, which gives rise to a discrete jump in benefit entitlement for women in the UK, but not in the US, at age 60.

4 Data Description

4.1 Data Sources

We use data from the Health and Retirement Study (HRS) for the US and from the English Longitudinal Study of Ageing (ELSA) for the UK[12].

The HRS is a longitudinal study of individuals over the age of 50 and their spouses. This US-representative survey is carried out every two years. Currently

[12] The institutional description in section 3 is relevant for the whole of the UK. For simplicity we refer to the UK too when describing the data, even though ELSA is only representative of the English population.

there are 7 waves available, the first of them corresponding to the year 1992, and the last one to 2004. The survey provides extensive information on individual sources of income, retirement plans, health and demographics. It also provides comprehensive measures of household wealth.

ELSA samples individuals aged 50 and over residing in the household sector in the UK at baseline, and their spouses. The study is conducted every two years. There are currently two waves available, corresponding to the years 2002 and 2004, plus baseline data from the Health Survey for England (HSE) from the years 1998 to 2001.

ELSA also provides comprehensive information on financial and health status of individuals, together with retirement expectations and demographics. ELSA has been developed in collaboration with the HRS, and the aim is for the income and wealth data and many of the health questions and experimental modules to be directly comparable across the two surveys.

The comparability of variables and their focus on individuals close to retirement age makes these two surveys optimal candidates to be used in our empirical study. We use data from the overlapping waves, corresponding to the years 2002 and 2004. Our core sample is made of working couples where the husband is aged between 55 and 66. After dropping those observations where any of the spouses is not present or did not respond to the survey in one of the two waves, we are left with 1338 such couples, 817 from HRS and 521 from ELSA.

We have tried to build a measure of participation that is as comparable as possible across surveys. We first compute the number of hours each individual works every week. For ELSA observations, these are obtained as the sum of the number of weekly hours worked in the main salary job or in self employment, plus the number of monthly hours worked in any other casual jobs divided by four. For HRS observations, weekly hours are the sum of hours worked per week in the main and secondary job, including self-employment.

Using this information, an individual is defined as active if they describe themselves as working for pay and work for more than 2 hours a week[13]. A person is defined as making a transition out of work between the two waves if they are active in the first wave and inactive in the second one.

Health is measured at baseline with three dummy variables constructed from the self-reported health question. The dummies indicate whether an individual is in very good, good or bad health (corresponding to excellent or very good; good; and fair or poor self-reported health, respectively). In all our regressions, the

[13]We have experimented with alternative definitions of participation, coding as participants those individuals working more than 8, 10 and 15 hours per week, and do not find any qualitative impact on the results.

omitted category is being in good health.

Education is also measured at baseline with three dummies. The dummy "graduate" is equal to 1 for individuals in both countries who have at least some college education. The dummy "high school" indicates whether US individuals are high school graduates or equivalent and whether British individuals have at least an O level or equivalent. The omitted category corresponds to individuals who are not high school graduates in the US or do not have any O level or equivalent in the UK.

Throughout our analysis we allow for differential effects of the health and education dummies in the two countries.

4.2 Labor Force Transitions of Older Couples

Figures 7 and 8 in the appendix show employment rates for ELSA and HRS men and women, respectively, after age 55. We use the two available observations per individual, corresponding to the 2002 and 2004 waves, to build 1-year cohorts by age at baseline, and follow these across the two waves. The figures show that the employment and transition patterns in both countries are relatively similar until age 60. At this point, the first retirement incentives take effect in the UK, and the series for the two countries start to diverge.

The post-age 60 divergence is more evident for women, for whom the state pension age is 60 in the UK. For men, a clear divergence takes place after 65, the state pension age in the UK and normal retirement age in the US. Participation rates past age 65 are much lower for men in the UK than in the US.

These two figures suggest that, until retirement incentives kick in, labor market outcomes are similar in the two countries. This provides preliminary evidence that the US is a proper control group for the UK.

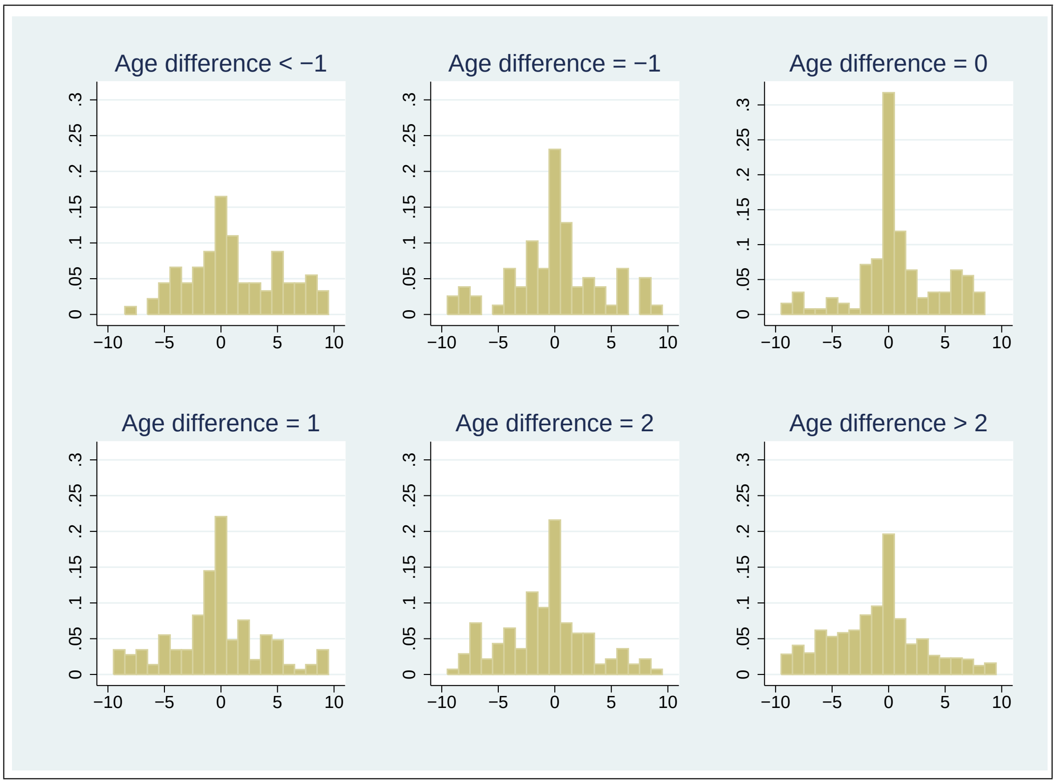
Figure 9 shows labor market exits for men and women in the US as a function of age. The series for men and women look relatively similar, which is consistent with retirement incentives in this country being the same for all individuals. The series for men shows the well-known spikes at 62 and 65, the early and normal retirement ages, respectively. The series for women also shows spikes at 62 and 65, even though they are less pronounced than for men.

Figure 10 shows the age pattern of labor market exits for men and women in the UK. The two series look remarkably different. Both men and women tend to concentrate their exits around their respective state pension ages of 65 and 60.

Figures 9 and 10 indicate that both men and women follow their individual incentives in planning retirement exits. There is, however, a further dimension to retirement behavior, which is that of within-couple interactions. Individuals may take into account their spouse's incentives, on top of their own, when making retirement decisions. We analyze this possibility below.

The phenomenon of joint retirement refers to the coincidence in time of spouses' retirement, independently of the age difference between them. Several studies have studied the prevalence of this type of joint behavior in the US. Here, we compare the evidence for the US and the UK.

Figure 4: Distribution of differences in spouses' retirement dates, by age difference between spouses. HRS.



Our data for the baseline wave of 2002 confirm the importance of joint retirement in both countries. Figure 4 analyzes the correlation in retirement dates[14] for HRS couples where both members are retired in 2002. Each graph in figure 4 shows the distribution of differences in retirement dates for couples with different age differences across spouses[15]. The first graph shows the distribution of retirement date differences for couples where the husband is more than a year

[14] Retirement date difference is defined as the husband's retirement date minus the wife's retirement date. Hence positive values indicate that the husband retired at a later calendar date than the wife.

[15] Age difference is defined as age of the husband minus age of the wife.

younger than the wife; the second graph shows the distribution of retirement date differences for couples where the husband is exactly one year younger than the wife; and so on. In all of the 6 graphs, the highest frequency corresponds to a retirement date difference of zero, that is, to spouses retiring on the same calendar year.

Figure 5: Distribution of differences in spouses' retirement dates, by age difference between spouses. ELSA.

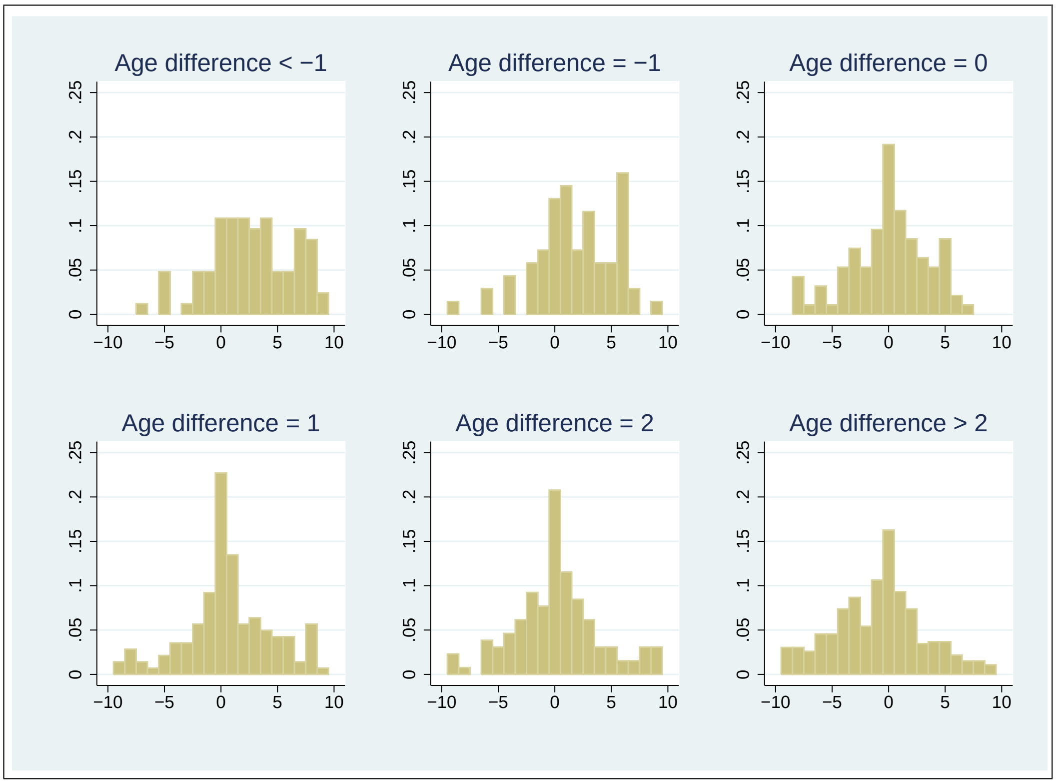
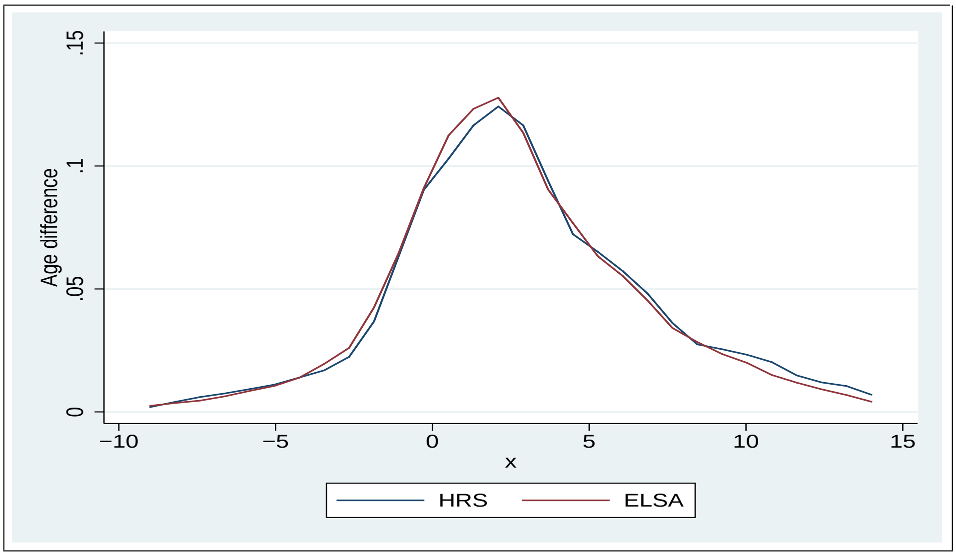


Figure 5 plots differences in retirement dates for ELSA couples. Once again, with the exception of the two first graphs -which correspond to couples where the husband is younger, and therefore a relatively small number of observations-, the highest frequency corresponds to spouses retiring the same year. Even in the first to graphs, the frequency of same-date exits is among the highest.

It is interesting to note that graphs 1 to 3 in figure 5 show a relatively large frequency of exits at the dates corresponding to both spouses retiring at state pension age (this would correspond to a difference in retirement dates greater than 7 years in graph 1, equal to 6 years in graph 2 , and 5 years in graph 3). For couples where the husband is older than the wife, which are one of the subsets that we analyze in the empirical part below, the only remarkable peaks corresponds to both spouses retiring at the same date, independently of their corresponding state pension ages.

These figures tell us that there is an important role to play for within-couple retirement incentives, beyond individual ones. In the empirical part of the analysis we study the effect of wives' incentives on men's retirement behavior, after controlling for men's individual incentives. We do this by using working US couples as a control for working British couples. When interpreting the results of the analysis we make the implicit assumption that any within-couple incentives coming from complementarities in leisure are similar across countries. This is a difficult hypothesis to test. In order to provide some support for it, we show in figure 6 that the distributions of age differences within spouses in the two countries are extremely close. This rules out differences in couples' preferences stemming from country-specific within-couple age patterns. We assume that any other country-specific differences in tastes for joint leisure can be accounted for through the individual age, health status and education controls that we include in the empirical analysis.

Figure 6: Within-couple age difference distribution. Husband aged 55 to 66.



5 Empirical strategy

The goal is to estimate the differential effect that having a wife who reaches age 60 has for British men with respect to American men. We estimate regression equations of the following form:

$$R_{ht} = \alpha + \beta_0 \Delta^a_{wt} + \beta_1 \Delta^a_{wt} \times ELSA + ELSA + X_{t-1}\theta'_0 + X_{t-1}\theta'_1 \times ELSA + \varepsilon_{ht}, \quad (5.1)$$

where h denotes the husband and w the wife; R_{ht} is a dummy variable indicating whether the husband makes a transition out of the labor force between periods $t-1$ and t; Δ^a_{wt} is a dummy variable indicating whether the wife reaches age a between $t-1$ and t; $ELSA$ is an indicator that observation comes from the ELSA sample; and X is a vector of observables which includes measures of the husband's age and education and both spouses' health status.

We also run IV regressions of the following form:

$$R_{ht} = \gamma + \delta R_{wt} + ELSA + X_{t-1}\phi'_0 + X_{t-1}\phi'_1 \times ELSA + u_{ht}, \quad (5.2)$$

where the wife's transition R_{wt} is instrumented with indicators of whether she has reached retirement age, i.e. Δ^a_{wt} and $\Delta^a_{wt} \times ELSA$ for different values of a.

All regressors in equations 5.1 and 5.2 are included both on their own and interacted with the ELSA dummy to allow for differential effects in the two countries. The regressions are estimated as probits.

The object of interest from our regressions is the interaction effect for the indicator that the wife crosses age 60 and the $ELSA$ dummy. As discusses in Ai and Norton (2003), this is not the same as the marginal effect of the interaction term. In particular, given a regression of the type:

$$E[R_{ht} \mid \Delta^{60}_{wt}, ELSA] = F(\alpha + \beta_0 \Delta^{60}_{wt} + \beta_1 \Delta^{60}_{wt} \times ELSA + \beta_2 ELSA), \quad (5.3)$$

the interaction effect is defined as the following discrete double difference:

$$\frac{\Delta^2 E[R_{ht} \mid \Delta^{60}_{wt}, ELSA]}{\Delta(\Delta^{60}_{wt})\Delta ELSA} = \quad (5.4)$$

$$\begin{aligned} &= E[R_{ht} \mid \Delta^{60}_{wt} = 1, ELSA = 1] - E[R_{ht} \mid \Delta^{60}_{wt} = 0, ELSA = 1] - \\ &- \big(E[R_{ht} \mid \Delta^{60}_{wt} = 1, ELSA = 0] - E[R_{ht} \mid \Delta^{60}_{wt} = 0, ELSA = 0\big) \end{aligned}$$

In nonlinear models, this is different from the marginal effect of the interaction, which would be defined as:

$$\frac{\Delta E[R_{ht} \mid \Delta_{wt}^{60}, ELSA]}{\Delta(\Delta_{wt}^{60} \times ELSA)} =$$

$$= E[R_{ht} \mid \Delta_{wt}^{60} = 1, ELSA = 1] - E[R_{ht} \mid \Delta_{wt}^{60} = 0, ELSA = 0]$$

Equation 5.4 shows that the interaction effect is the difference-in-differences estimator of the differential effect of the wife crossing 60 in the UK with respect to the US. This is the object of interest of this paper, and the effect we report in our results.

Given that the variables Δ_{wt}^{60} and $ELSA$ are dummies, 5.4 simplifies to:

$$\frac{\Delta^2 E[R_{ht} \mid \Delta_{wt}^{60}, ELSA]}{\Delta(\Delta_{wt}^{60})\Delta ELSA} =$$

$$= F(\alpha + \beta_0 + \beta_1 + \beta_2) - F(\alpha + \beta_2) - F(\alpha + \beta_0) + F(\alpha)$$

A further point of interest regarding marginal effects concerns the marginal effect of non-interacted variables. From equation 5.3, the marginal effect of the variable Δ_{wt}^{60} is defined as follows

$$\frac{\Delta E[R_{ht} \mid \Delta_{wt}^{60}, ELSA]}{\Delta(\Delta_{wt}^{60})} =$$

$$= E[R_{ht} \mid \Delta_{wt}^{60} = 1, ELSA] - E[R_{ht} \mid \Delta_{wt}^{60} = 0, ELSA] =$$

$$= F(\alpha + \beta_0 + \beta_1 ELSA + \beta_2 ELSA) - F(\alpha + \beta_2 ELSA)$$

.

Notice that this marginal effect cannot be interpreted as the effect on American husbands of their wife reaching age 60. This is because the effect of a change in the variable Δ_{wt}^{60} operates through the coefficient β_0 and, for observations from the ELSA sample, also through the coefficient β_1.

In some cases we will want to comment on the effect on American husbands of their wives reaching a particular age. In those cases, we compute this effect separately according to the following formula:

$$\frac{\Delta E[R_{ht} \mid \Delta_{wt}^{62}, ELSA = 0]}{\Delta(\Delta_{wt}^{62})} = \tag{5.5}$$

$$= E[R_{ht} \mid \Delta_{wt}^{62} = 1, ELSA = 0] - E[R_{ht} \mid \Delta_{wt}^{62} = 0, ELSA = 0] =$$

$$= F(\alpha + \beta_0) - F(\alpha)$$

6 Estimation Results

We start by estimating equation 5.1 using the sample of couples where both spouses work at baseline and the wife is younger than 60 at baseline. We exclude older wives because in the UK most of them will have retired at age 60, and therefore the group of working women aged 61 and older will likely oversample those with a strong taste for work. Results for the variables of interest are presented in table 2 below.

Table 2: Effect on husbands' transitions of wife reaching age 60.

Dependent Variable: R_{ht}				
	Full sample	Agediff >0	Agediff >1	Agediff >2
Δ_{wt}^{60}	-0.01928 (0.464)	0.01995 (0.606)	0.01699 (0.693)	-0.00360 (0.918)
$\Delta_{wt}^{60}\times$ELSA	0.03255 (0.566)	0.15438 (0.041)	0.13991 (0.102)	0.19918 (0.038)
N	1,027	899	782	671

NOTE.- Average individual marginal effects from probit regressions reported. Empirical p-values (in parentheses) obtained from 2,500 parametric bootstrap replications. Sample includes couples where both spouses are working and wife is younger than 60 at baseline. Full set of controls includes both spouses' health status and husband's age and education at baseline. See table 6 in appendix 1.B for full estimation results.

As can be seen from the second column of table 2, the marginal effect of having a wife who reaches age 60 is small and not significant. More importantly, the interaction effect for the indicator that the wife crosses age 60 and the $ELSA$ dummy is positive but small and not significantly different from zero. As pointed out in section 5, the interaction effect is the difference-in-differences estimator of the effect of having a wife reaching age 60 for a British husband, with respect to an American one. Hence British husbands do not appear more likely to retire when their wives reach retirement age than their American counterparts.

We hypothesize that the lack of a differential effect is driven by the behavior of very young husbands, who are many years away from becoming entitled to their own public pension -state pension age is 65 for British men. In the absence of a private pension with an early retirement clause, these husbands will have strong financial incentives to continue working. In order to check this hypothesis, we run the same regression restricting the sample to those couples where the husband is older than the wife (that is, where the variable "Agediff", which is equal to husband's age minus wife's age, is greater than zero). In this restricted sample, all husbands of women reaching age 60 between waves will have reached age 60 themselves. Results are shown on the third column of table 2.

We can see that for the restricted sample the baseline effect of having a wife crossing age 60 is not significant, but the differential effect for British men is positive and significant. In particular, the retirement propensity for British husbands whose wife reaches age 60 is 15 percentage points higher than for their American counterparts. Further restricting the sample to couples where the husband is more than a year older than the wife (column 4) yields a coefficient of similar magnitude, while in the sample of couples where the husband is more than two years older than the wife (column 5), British husbands are 19 percentage points more likely to retire when the wife becomes 60 than American husbands.

As argued in section 2, the increase in husbands' retirement propensity when their wife reaches retirement age cannot be explained by a correlation in tastes for retirement or income effects, so our results are suggestive of complementarities of leisure. There is a concern, though, that British men may have incentives to retire when their wife reaches age 60 that are independent of whether she retires or not. To confirm that we are not capturing a spurious effect, and British husbands are indeed responding to their wives' retirement, we next run IV regressions of the husband's retirement transition indicator on that of his wife. We instrument the wife's transition with indicators that she has reached age 60 or age 62, the retirement ages in the UK and the US, respectively. In order to sample women reaching retirement age in the two countries, we use observations for all working couples where the wife is younger than 62 at baseline. Results for the second stage are reported in table 3 below.

Table 3: Effect of wife's transition on husband's transition.

Dependent Variable: R_{ht}				
	Full sample	Agediff >0	Agediff >1	Agediff >2
R_{st}	0.11795 (0.565)	0.46392 (0.019)	0.54210 (0.008)	0.63521 (0.035)

NOTE.- Average individual marginal effects from probit regressions reported. Empirical p-values (in parentheses) obtained from 2,500 parametric bootstrap replications. Sample includes couples where both spouses are working and wife is younger than 62 at baseline. Full set of controls includes both spouses' health status and husband's age and education at baseline. See table 7 in appendix 1.B for full estimation results.

The effect of the wife's transition on that of her husband is positive but not significant for the full sample, as seen in column 2. As before, we next restrict the sample by dropping those couples where the husband is furthest from his own retirement age. Column 3 shows results for the sample of couples where the husband is older than the wife. The results indicate that a husband whose wife retires is 46% more likely to retire himself than one whose wife continues working. The coefficient is significant with a p-value of 0.02. For the samples of couples where the husband is more than a year and more than two years older than their wife, we find that the wife's transition increases the husband's retirement propensity by 54 and 63%, respectively.

These results confirm that the increases in British husbands' retirement propensities we found in table 2 were triggered by their wives' high retirement propensity upon reaching age 60. The retirement age for women in exogenous to husbands' taste for retirement. Most household should be prepared to smooth out the drop in income at the time of the wife's retirement. For household without savings, the negative income effect would give husbands incentives to decrease, rather than decrease their labor supply. On the other hand, if the husband values retirement more when this is shared with his wife, upon his wife's retirement the value of leisure increases for him, which would in turn increase his retirement propensity. Thus we interpret the positive differential responses of British husbands to their wives reaching retirement age as evidence of leisure complementarities.

6.1 Retirement transitions of American men

By the time women reach age 60 either in the US or the UK, most of those who were working in their 50's remain in the labor force. Most of their husbands are working, too. However, by the time they reach age 62 the majority of British women will have retired. For this reason, those British couples where both spouses are working by the time the wife becomes 62 are likely to have a strong taste for work. Hence they may not be as good a control group for their American counterparts at this age as American couples where for British couples at the time when wives become 60. Keeping this caveat in mind, we turn now to the analysis of American men's retirement transitions when their wives reach early retirement age at 62.

We estimate equation 5.1 using the sample of working couples where women are up to 61 years at baseline, and adding as a regressor an indicator for whether the wife reaches age 62 between waves. Results are reported in table 4.

As before, we find that the differential effect of having a wife who reaches age 60 for British with respect to American husbands is small and not significant for the whole sample, but is positive for the subsamples of couples where the husbands are at least one, two, or three years older than their wives. The magnitude of the effects is similar to those reported in table 2, and they are significant at 5 percent for the third and fifth columns and at 10 percent for the fourth one.

We turn now to the effect of having a wife who reaches age 62. The differential

Table 4: Effect on husbands' transitions of wife reaching age 60 or age 62.

Dependent Variable: R_{ht}				
	Full sample	Agediff >0	Agediff >1	Agediff >2
Δ_{wt}^{60}	-0.01424	0.03032	0.02972	0.00435
	(0.616)	(0.452)	(0.528)	(0.944)
Δ_{wt}^{60}×ELSA	0.04994	0.17656	0.15564	0.21871
	(0.392)	(0.024)	(0.088)	(0.040)
Δ_{wt}^{62}	0.06408	0.06957	0.06816	0.09415
	(0.056)	(0.092)	(0.124)	(0.116)
Δ_{wt}^{62}×ELSA	-0.08776	-0.13591	-0.13296	-0.11330
	(0.296)	(0.188)	(0.236)	(0.444)
N	1169	996	861	717

NOTE.- Average individual marginal effects from probit regressions reported. Empirical p-values (in parentheses) obtained from 2,500 parametric bootstrap replications. Sample includes couples where both spouses are working and wife is younger than 62 at baseline. Full set of controls includes both spouses' health status and husband's age education at baseline. See table 8 in appendix 1.B for full estimation results.

effect for British husbands is negative for all samples, indicating that they are less likely to retire when their wife becomes 62 than their American counterparts. This is what we would have expected in the presence of leisure complementarities, since American women reach retirement age at 62, while British women do not have specific incentives coming from the public pension system to retire at that age. The coefficients, however, are not statistically significant for any of the samples. This is likely due to the small number of observations: since the majority of British women retire at 60, we end up with few working British couples where the wife crosses age 62 between waves.

Beyond the interaction effect, we are also interested in the marginal effect of having a wife crossing age 62 for American men, which we would expect to be negative if American men are responsive to their wives' retirement incentives. As explained in section 5, the marginal effect for the indicator that the wife crosses 62, reported in table 4 above, compounds the responses of American and British husbands. The marginal effect of having a wife who reaches age 62 for American husbands, computed according to the formula described in 5.5, is reported in table 5 for the different samples. It is always significant, and it increases from 10 to 13 percent as we restrict the sample to exclude young husbands who are further from their own retirement age.

Table 5: Marginal effect on American husbands' transitions of wife reaching age 62.

Dependent Variable: R_{ht}				
	Full sample	Agediff >0	Agediff >1	Agediff >2
$\Delta^{62}_{wt}\mid_{ELSA=0}$	0.10129 (0.028)	0.12370 (0.028)	0.11867 (0.076)	0.13731 (0.112)
N	1169	996	861	717

NOTE.- Average individual marginal effects from probit regressions reported. Empirical p-values (in parentheses) obtained from 2,500 parametric bootstrap replications.

7 Conclusion

In this paper we use the institutional variation across the US and the UK, and in particular the different ages of entitlement to a public pension in the two countries (60 in the UK, 62 in the US), to analyze husbands' responses to their wives' retirement incentives.

We show in section 4 that labor market outcomes in the two countries are comparable until the first retirement incentives for women kick in in the UK. Based on this, we use working American couples as a control group for British ones at the point when British women reach retirement age.

We find that, in the sample of couples where the husband is older than the wife, British men are from 14 to 20 percentage points more likely to retire when their wife reaches state pension age at 60 than their American counterparts.

We then use the exogenous institutional retirement ages to instrument women's transitions in a regression of husbands' transitions onto those of their wives. For the sample of couples where the husband is older than the wife, we find a strong effect of the wife's retirement onto that of the husband.

We interpret our results as evidence of complementarity in leisure, whereby the husband enjoys retirement more when his wife is retired as well. Alternative explanations for the correlation in spouses' retirement outcomes are not consistent with our results.

Our findings have important implications for policy analysis. They imply that the wife's participation status enters the husband's utility function, and hence that the spouses' participation choices are made simultaneously. Analyses of men's retirement outcomes that ignore the wife's retirement decision will yield biased policy predictions.

8 Appendix 1.A. Figures

Figure 7: Percentage employed by age cohort, men.

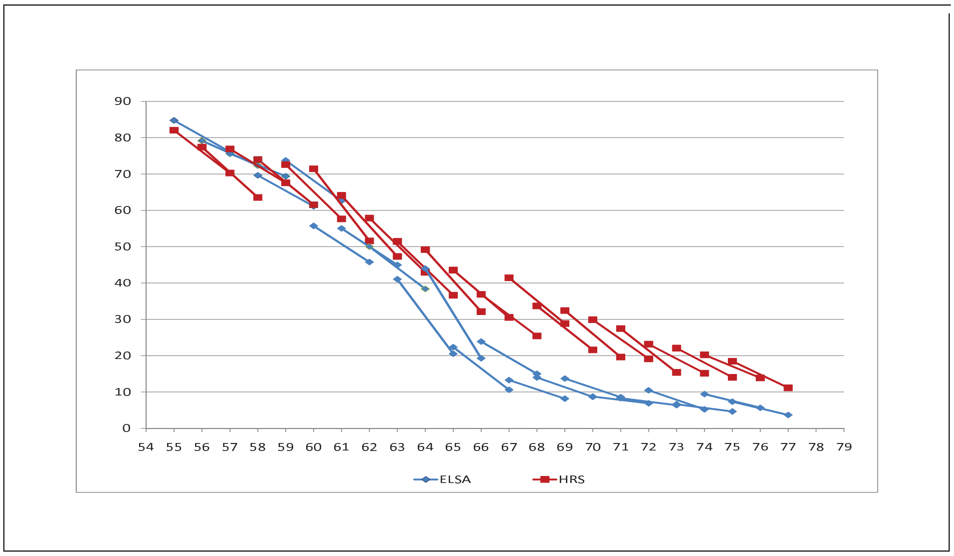


Figure 8: Percentage employed by age cohort, women.

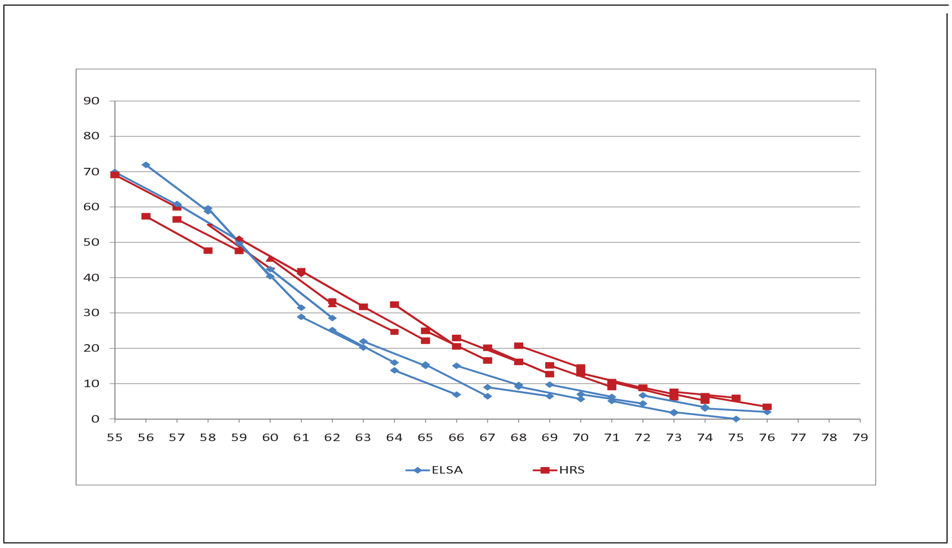


Figure 9: Change in proportion working by age crossed between waves, men and women, US.

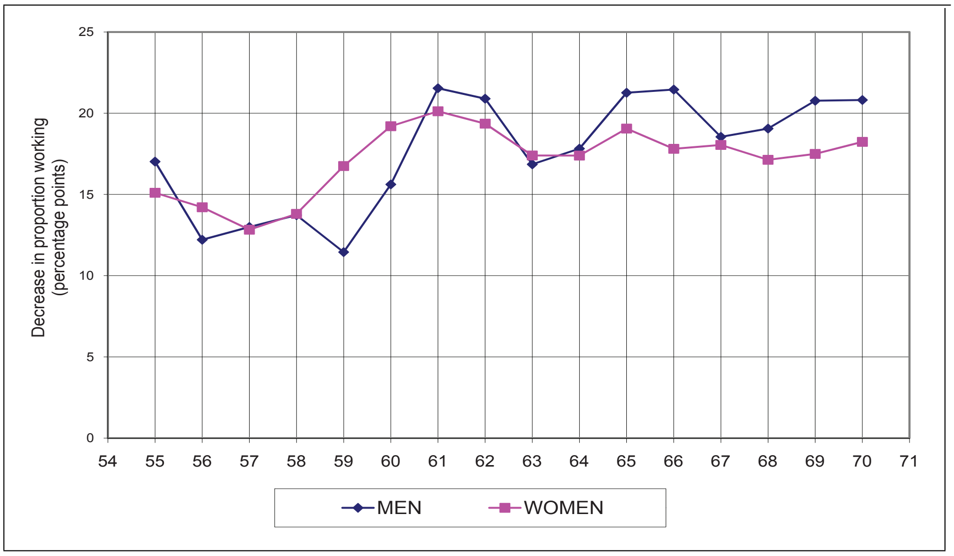
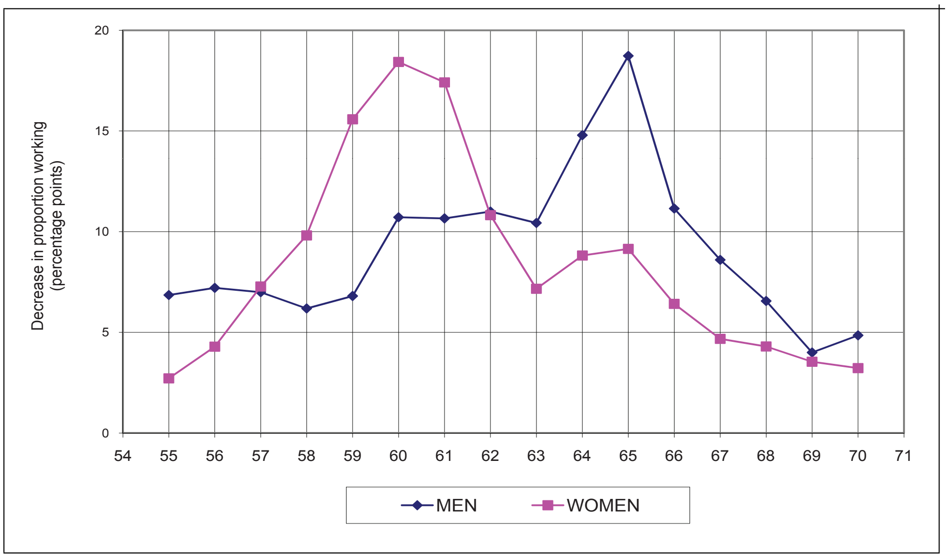


Figure 10: Change in proportion working by age crossed between waves, men and women, UK.



9 Appendix 1.B. Tables

Table 6: Probit regression of husbands' transitions on dummies indicating whether their wives reach age 60. Marginal effects reported. (Continued in next page).

	Full sample	Agediff >0	Agediff >1	Agediff >2
Δ_{st}^{60}	-0.01928	0.01995	0.01699	-0.00360
	(-0.068, 0.035)	(-0.044, 0.092)	(-0.052, 0.095)	(-0.080, 0.086)
Δ_{st}^{60}×ELSA	0.03255	0.15438*	0.13991	0.19918*
	(-0.071, 0.138)	(0.013, 0.305)	(-0.011, 0.299)	(0.024, 0.387)
ELSA	0.07375*	0.08555**	0.08369**	0.10003**
	(0.025, 0.122)	(0.032, 0.139)	(0.025, 0.141)	(0.038, 0.160)
Graduate	0.01335	0.01552	0.00290	-0.00832
	(-0.047, 0.073)	(-0.049, 0.080)	(-0.066, 0.071)	(-0.082, 0.063)
High School	-0.00853	-0.00746	-0.03143	-0.03454
	(-0.071, 0.059)	(-0.074, 0.065)	(-0.103, 0.047)	(-0.109, 0.049)
Graduate × ELSA	0.03958	0.06598	0.04914	0.06059
	(-0.076, 0.167)	(-0.060, 0.205)	(-0.085, 0.199)	(-0.083, 0.217)
High School × ELSA	0.00052	0.01383	-0.04662	-0.07765
	(-0.120, 0.132)	(-0.115, 0.156)	(-0.180, 0.101)	(-0.218, 0.080)
Health = v good	-0.07539**	-0.09979**	-0.09615**	-0.09099*
	(-0.128, -0.026)	(-0.156, -0.047)	(-0.156, -0.040)	(-0.155, -0.031)
Health = v good × ELSA	0.03839	0.02047	0.01713	0.00928
	(-0.029, 0.116)	(-0.049, 0.098)	(-0.057, 0.101)	(-0.069, 0.100)
Health = bad	-0.02686	-0.03381	-0.09008	-0.13716*
	(-0.130, 0.080)	(-0.145, 0.082)	(-0.209, 0.035)	(-0.265, -0.004)
Health = bad × ELSA	0.07464	0.08811	0.05184	-0.01507
	(-0.076, 0.235)	(-0.065, 0.255)	(-0.108, 0.230)	(-0.185, 0.179)
Sp heal = v good	0.00969	0.02083	0.01119	0.01327
	(-0.039, 0.059)	(-0.031, 0.073)	(-0.045, 0.066)	(-0.047, 0.072)
Sp heal = v good × ELSA	0.02885	0.04833	0.04277	0.02639
	(-0.044, 0.113)	(-0.035, 0.143)	(-0.047, 0.148)	(-0.068, 0.139)
Sp heal = bad	0.07198	0.11287	0.12144	0.09407
	(-0.035, 0.176)	(-0.003, 0.224)	(-0.002, 0.242)	(-0.038, 0.221)
Sp heal = bad × ELSA	-0.01966	0.00510	-0.07950	-0.08815
	(-0.178, 0.140)	(-0.175, 0.188)	(-0.275, 0.117)	(-0.293, 0.114)
Age = 56	0.03350	0.03496	0.08870	0.12656
	(-0.049, 0.125)	(-0.062, 0.145)	(-0.038, 0.235)	(-0.035, 0.302)
Age = 57	-0.02025	-0.00323	0.04496	0.07091
	(-0.100, 0.081)	(-0.096, 0.113)	(-0.074, 0.195)	(-0.074, 0.254)
Age = 58	0.04001	0.04255	0.06684	0.10690
	(-0.046, 0.143)	(-0.053, 0.159)	(-0.059, 0.213)	(-0.048, 0.285)
Age = 59	0.05764	0.04683	0.10727	0.16462*
	(-0.036, 0.164)	(-0.052, 0.162)	(-0.018, 0.248)	(0.008, 0.336)
Age = 60	0.08098	0.06535	0.09392	0.12468
	(-0.017, 0.188)	(-0.041, 0.185)	(-0.037, 0.233)	(-0.027, 0.288)

NOTE.- Average individual marginal effects reported. Empirical confidence intervals (in parentheses) obtained from 2,500 parametric bootstrap replications. * indicates significance at 5%. ** indicates significance at 1%. Agediff is age difference between spouses, defined as age of the husband minus age of the wife. Sample: couples where both spouses work at baseline, husband's age is between 55 and 66 at baseline, and wife's age is less than 60 at baseline.

Table 6: Continued from previous page.

	Full sample	Agediff >0	Agediff >1	Agediff >2
Age = 61	0.07443	0.05104	0.08944	0.08395
	(-0.026, 0.193)	(-0.055, 0.176)	(-0.035, 0.233)	(-0.058, 0.252)
Age = 62	0.15326*	0.12719	0.17160*	0.21428*
	(0.023, 0.298)	(-0.008, 0.279)	(0.015, 0.340)	(0.036, 0.398)
Age = 63	0.27529**	0.24343**	0.28872**	0.33057**
	(0.134, 0.421)	(0.095, 0.400)	(0.124, 0.458)	(0.138, 0.517)
Age = 64	0.22358**	0.19892**	0.23937**	0.27227**
	(0.083, 0.366)	(0.052, 0.352)	(0.079, 0.407)	(0.088, 0.464)
Age = 65	0.34829**	0.31016*	0.34615**	0.40626*
	(0.132, 0.532)	(0.096, 0.505)	(0.141, 0.539)	(0.179, 0.613)
Age = 66	0.19855*	0.13796	0.17930*	0.19946
	(0.010, 0.421)	(-0.047, 0.379)	(-0.021, 0.430)	(-0.026, 0.467)
Age = 56 × ELSA	-0.00953	-0.07042	-0.01961	-0.16035
	(-0.188, 0.161)	(-0.285, 0.129)	(-0.299, 0.235)	(-0.486, 0.143)
Age = 57 × ELSA	-0.00089	0.00314	0.03811	-0.00841
	(-0.180, 0.186)	(-0.212, 0.217)	(-0.237, 0.319)	(-0.344, 0.307)
Age = 58 × ELSA	0.14590	0.18135	0.12182	0.00701
	(-0.047, 0.341)	(-0.042, 0.400)	(-0.161, 0.399)	(-0.324, 0.328)
Age = 59 × ELSA	0.06885	0.08605	0.11608	-0.01867
	(-0.144, 0.274)	(-0.150, 0.308)	(-0.169, 0.385)	(-0.352, 0.298)
Age = 60 × ELSA	0.03276	-0.01451	0.01032	-0.02594
	(-0.179, 0.252)	(-0.237, 0.220)	(-0.261, 0.282)	(-0.340, 0.278)
Age = 61 × ELSA	0.13604	0.08074	0.11707	-0.03075
	(-0.078, 0.373)	(-0.142, 0.330)	(-0.150, 0.401)	(-0.332, 0.296)
Age = 62 × ELSA	0.18359	0.12815	0.16345	0.00252
	(-0.111, 0.476)	(-0.179, 0.431)	(-0.178, 0.485)	(-0.358, 0.353)
Age = 63 × ELSA	0.34634*	0.27769	0.30185	0.14440
	(0.026, 0.615)	(-0.065, 0.566)	(-0.070, 0.611)	(-0.257, 0.493)
Age = 64 × ELSA	0.41565*	0.37602*	0.41384*	0.27913
	(0.106, 0.693)	(0.057, 0.673)	(0.067, 0.710)	(-0.096, 0.619)
Age = 65 × ELSA	0.50674*	0.42994	0.46272*	0.30557
	(0.057, 0.821)	(-0.026, 0.778)	(0.020, 0.801)	(-0.165, 0.700)
Age = 66 × ELSA	0.43941	0.30455	0.34520	0.20747
	(-0.022, 0.798)	(-0.160, 0.698)	(-0.134, 0.746)	(-0.300, 0.660)
obs	1027	899	782	671

NOTE.- Average individual marginal effects reported. Empirical confidence intervals (in parentheses) obtained from 2,500 parametric bootstrap replications. * indicates significance at 5%. ** indicates significance at 1%. Agediff is age difference between spouses, defined as age of the husband minus age of the wife. Sample: couples where both spouses work at baseline, husband's age is between 55 and 66 at baseline, and wife's age is less than 60 at baseline.

Table 7: IV regression of husbands' transitions on wives' transitions. Marginal effects reported. (Continued in next page).

	Full sample	Agediff >0	Agediff >1	Agediff >2
R_{st}	0.11795	0.46392*	0.54210**	0.63521*
	(-0.302,0.527)	(0.073,0.959)	(0.119,1.077)	(0.044,1.440)
ELSA	0.02576	0.00440	-0.02715	-0.00734
	(-0.059,0.122)	(-0.095,0.107)	(-0.138,0.088)	(-0.141,0.125)
Graduate	-0.02602	-0.02578	-0.06677	-0.07441
	(-0.141,0.082)	(-0.151,0.095)	(-0.197,0.063)	(-0.214,0.072)
Graduate × ELSA	0.05814	0.06557	0.11868	0.12703
	(-0.094,0.246)	(-0.101,0.261)	(-0.074,0.333)	(-0.080,0.358)
High School	-0.04447	-0.04469	-0.05122	-0.03975
	(-0.114,0.047)	(-0.118,0.053)	(-0.116,0.034)	(-0.114,0.058)
High School × ELSA	0.02924	0.02990	-0.00330	-0.02113
	(-0.090,0.151)	(-0.096,0.165)	(-0.127,0.147)	(-0.162,0.162)
Health=v good	-0.07574**	-0.10820**	-0.09470**	-0.07893*
	(-0.124,-0.026)	(-0.161,-0.053)	(-0.155,-0.034)	(-0.145,-0.012)
Health=bad	0.02929	0.01256	0.02130	0.03067
	(-0.040,0.107)	(-0.063,0.096)	(-0.063,0.114)	(-0.065,0.132)
Health=v good × ELSA	0.00105	0.01852	-0.03448	-0.12350
	(-0.100,0.105)	(-0.095,0.142)	(-0.159,0.109)	(-0.256,0.039)
Health=bad × ELSA	0.06527	0.07733	0.07106	0.02032
	(-0.085,0.224)	(-0.082,0.244)	(-0.106,0.271)	(-0.175,0.260)
Sp heal=v good	0.02022	0.02004	0.01424	0.03441
	(-0.029,0.068)	(-0.036,0.074)	(-0.047,0.074)	(-0.032,0.102)
Sp heal=bad	0.02221	0.03491	0.05156	0.13253*
	(-0.054,0.114)	(-0.054,0.131)	(-0.045,0.157)	(0.016,0.261)
Sp heal=v good ×ELSA	0.07495	0.09122	0.10413	0.06165
	(-0.025,0.175)	(-0.034,0.203)	(-0.033,0.227)	(-0.096,0.192)
Sp heal=bad × ELSA	-0.02385	-0.01446	-0.08351	-0.22231
	(-0.200,0.152)	(-0.205,0.170)	(-0.289,0.115)	(-0.467,0.011)
Age = 56	0.02521	0.03943	0.09875	0.17091*
	(-0.063,0.134)	(-0.069,0.168)	(-0.039,0.251)	(0.007,0.336)
Age = 57	-0.02884	-0.00099	0.04453	0.08161
	(-0.119,0.081)	(-0.108,0.131)	(-0.092,0.198)	(-0.088,0.267)
Age = 58	0.01525	0.00750	0.04218	0.10378
	(-0.074,0.131)	(-0.100,0.135)	(-0.091,0.191)	(-0.062,0.277)
Age = 59	0.02228	-0.00014	0.05101	0.09840
	(-0.067,0.134)	(-0.113,0.119)	(-0.100,0.203)	(-0.108,0.288)
Age = 60	0.08858	0.02948	0.05721	0.09336
	(-0.019,0.209)	(-0.090,0.154)	(-0.084,0.202)	(-0.083,0.263)
Age = 61	0.05600	-0.03565	-0.00736	-0.01567
	(-0.064,0.195)	(-0.167,0.092)	(-0.162,0.141)	(-0.206,0.155)

NOTE.- Average individual marginal effects reported. Empirical confidence intervals (in parentheses) obtained from 2,500 parametric bootstrap replications. * indicates significance at 5%. ** indicates significance at 1%. Agediff is age difference between spouses, defined as age of the husband minus age of the wife. Sample: couples where both spouses work at baseline, husband's age is between 55 and 66 at baseline, and wife's age is less than 62 at baseline.

Table 7: Continued from previous page.

	Full sample	Agediff >0	Agediff >1	Agediff >2
Age = 62	0.10979	0.05533	0.08922	0.18903
	(-0.006,0.244)	(-0.078,0.194)	(-0.075,0.251)	(-0.004,0.371)
Age = 63	0.24726**	0.15796	0.17988	0.22275
	(0.103,0.406)	(-0.025,0.340)	(-0.033,0.381)	(-0.088,0.493)
Age = 64	0.29799**	0.23252*	0.25065*	0.27772*
	(0.145,0.450)	(0.058,0.415)	(0.050,0.452)	(0.003,0.532)
Age = 65	0.25316**	0.17427	0.20111	0.21006
	(0.065,0.431)	(-0.026,0.377)	(-0.021,0.411)	(-0.060,0.460)
Age = 66	0.14411	0.09289	0.12970	0.15991
	(-0.022,0.344)	(-0.085,0.295)	(-0.073,0.344)	(-0.080,0.398)
Age = 56 × ELSA	-0.03562	-0.11113	-0.08580	-0.23924
	(-0.220,0.140)	(-0.330,0.099)	(-0.351,0.175)	(-0.528,0.062)
Age = 57 × ELSA	-0.01516	0.01183	-0.00432	-0.04823
	(-0.214,0.174)	(-0.225,0.245)	(-0.291,0.274)	(-0.373,0.269)
Age = 58 × ELSA	0.11204	0.13479	0.09012	0.00606
	(-0.090,0.302)	(-0.102,0.347)	(-0.181,0.348)	(-0.298,0.300)
Age = 59 × ELSA	0.06610	0.11668	0.09951	-0.02341
	(-0.139,0.261)	(-0.106,0.324)	(-0.178,0.353)	(-0.328,0.264)
Age = 60 × ELSA	0.02178	0.00143	-0.01860	-0.09685
	(-0.186,0.242)	(-0.218,0.229)	(-0.276,0.249)	(-0.388,0.196)
Age = 61 × ELSA	0.05907	0.05545	0.12151	0.06196
	(-0.143,0.276)	(-0.143,0.261)	(-0.120,0.367)	(-0.209,0.333)
Age = 62 × ELSA	0.10503	0.06017	0.12393	0.11250
	(-0.142,0.357)	(-0.195,0.306)	(-0.162,0.402)	(-0.218,0.436)
Age = 63 × ELSA	0.20703	0.17050	0.17789	0.12562
	(-0.071,0.490)	(-0.106,0.465)	(-0.124,0.496)	(-0.203,0.479)
Age = 64 × ELSA	0.29151	0.29073	0.29183	0.18592
	(-0.046,0.596)	(-0.054,0.602)	(-0.064,0.622)	(-0.177,0.528)
Age = 65 × ELSA	0.35704	0.18871	0.19290	0.05583
	(-0.093,0.742)	(-0.269,0.623)	(-0.291,0.632)	(-0.430,0.533)
Age = 66 × ELSA	0.12821	0.00675	0.00667	-0.14465
	(-0.245,0.508)	(-0.357,0.379)	(-0.370,0.391)	(-0.533,0.259)
obs	1169	996	861	717

NOTE.- Average individual marginal effects reported. Empirical confidence intervals (in parentheses) obtained from 2,500 parametric bootstrap replications. * indicates significance at 5%. ** indicates significance at 1%. Agediff is age difference between spouses, defined as age of the husband minus age of the wife. Sample: couples where both spouses work at baseline, husband's age is between 55 and 66 at baseline, and wife's age is less than 62 at baseline.

Table 8: Probit regression of husbands' transitions on dummies indicating whether their wives reach ages 60 and 62. Marginal effects reported. (Continued in next page).

	Full sample	Agediff >0	Agediff >1	Agediff >2
Δ_{st}^{60}	-0.01424	0.03032	0.02972	0.00435
	(-0.066,0.045)	(-0.036,0.105)	(-0.044,0.115)	(-0.077,0.099)
$\Delta_{st}^{60}\times$ELSA	0.04994	0.17656*	0.15564	0.21871*
	(-0.069,0.175)	(0.025,0.339)	(-0.015,0.336)	(0.022,0.426)
Δ_{st}^{62}	0.06408	0.06957	0.06816	0.09415
	(-0.006,0.143)	(-0.016,0.168)	(-0.027,0.178)	(-0.034,0.245)
$\Delta_{st}^{62}\times$ELSA	-0.08776	-0.13591	-0.13296	-0.11330
	(-0.240,0.058)	(-0.321,0.044)	(-0.337,0.064)	(-0.391,0.171)
ELSA	0.06297**	0.06354*	0.07309*	0.11534**
	(0.013,0.116)	(0.010,0.120)	(0.013,0.138)	(0.040,0.193)
Graduate	0.00969	0.00777	-0.01235	-0.01512
	(-0.051,0.069)	(-0.057,0.071)	(-0.084,0.057)	(-0.095,0.062)
High School	-0.02525	-0.02854	-0.05586	-0.05198
	(-0.081,0.036)	(-0.089,0.037)	(-0.121,0.014)	(-0.125,0.028)
Graduate × ELSA	0.04591	0.05633	0.05791	0.06878
	(-0.069,0.166)	(-0.066,0.186)	(-0.076,0.200)	(-0.079,0.228)
High School × ELSA	0.01299	0.00046	-0.05212	-0.08837
	(-0.105,0.135)	(-0.126,0.130)	(-0.187,0.086)	(-0.239,0.072)
Health = v good	-0.06797**	-0.09529**	-0.08440**	-0.07846*
	(-0.116,-0.020)	(-0.147,-0.044)	(-0.142,-0.028)	(-0.142,-0.016)
Health = v good × ELSA	0.02660	0.01290	0.01134	0.01999
	(-0.038,0.100)	(-0.054,0.089)	(-0.063,0.097)	(-0.065,0.118)
Health = bad	-0.01566	-0.03057	-0.10513	-0.16170*
	(-0.113,0.084)	(-0.136,0.080)	(-0.221,0.018)	(-0.291,-0.025)
Health = bad × ELSA	0.06707	0.07408	0.01422	-0.03158
	(-0.084,0.221)	(-0.082,0.234)	(-0.154,0.188)	(-0.222,0.166)
Sp heal = v good	0.02228	0.02415	0.01951	0.02307
	(-0.025,0.068)	(-0.027,0.073)	(-0.036,0.073)	(-0.038,0.082)
Sp heal = v good × ELSA	0.02549	0.04405	0.04112	0.04984
	(-0.048,0.115)	(-0.038,0.143)	(-0.050,0.153)	(-0.058,0.183)
Sp heal = bad	0.07849	0.11728*	0.13349*	0.10112
	(-0.014,0.174)	(0.015,0.221)	(0.022,0.249)	(-0.022,0.230)
Sp heal = bad × ELSA	-0.00129	0.01736	-0.05780	-0.11268
	(-0.159,0.164)	(-0.161,0.205)	(-0.259,0.152)	(-0.351,0.125)
Age = 56	0.02565	0.03628	0.08887	0.12820
	(-0.058,0.130)	(-0.064,0.164)	(-0.041,0.247)	(-0.035,0.318)
Age = 57	-0.02761	-0.00123	0.04933	0.07783
	(-0.105,0.071)	(-0.095,0.117)	(-0.074,0.201)	(-0.078,0.266)
Age = 58	-0.01339	-0.02636	0.04787	0.19048
	(-0.141,0.182)	(-0.159,0.187)	(-0.141,0.315)	(-0.089,0.494)

NOTE.- Average individual marginal effects reported. Empirical confidence intervals (in parentheses) obtained from 2,500 parametric bootstrap replications. * indicates significance at 5%. ** indicates significance at 1%. Agediff is age difference between spouses, defined as age of the husband minus age of the wife. Sample: couples where both spouses work at baseline, husband's age is between 55 and 66 at baseline, and wife's age is less than 62 at baseline.

Table 8: Continued from previous page.

	Full sample	Agediff >0	Agediff >1	Agediff >2
Age = 59	0.03288	0.04378	0.11006	0.17188*
	(-0.054,0.145)	(-0.056,0.175)	(-0.018,0.267)	(0.008,0.356)
Age = 60	0.09342	0.06073	0.09273	0.12710
	(-0.006,0.210)	(-0.048,0.190)	(-0.039,0.244)	(-0.033,0.304)
Age = 61	0.07088	0.03471	0.07830	0.08071
	(-0.034,0.182)	(-0.073,0.153)	(-0.051,0.221)	(-0.069,0.251)
Age = 62	0.10929	0.09592	0.14622*	0.21118*
	(-0.005,0.238)	(-0.024,0.234)	(0.002,0.301)	(0.031,0.394)
Age = 63	0.23254**	0.20966**	0.25701**	0.33015**
	(0.100,0.376)	(0.070,0.364)	(0.104,0.421)	(0.147,0.514)
Age = 64	0.27949**	0.25849**	0.30321**	0.33860**
	(0.121,0.438)	(0.098,0.427)	(0.133,0.477)	(0.149,0.531)
Age = 65	0.23852*	0.20385*	0.24720*	0.27515*
	(0.047,0.412)	(0.011,0.383)	(0.055,0.432)	(0.066,0.481)
Age = 66	0.11640	0.07871	0.12745	0.14637
	(-0.045,0.310)	(-0.078,0.278)	(-0.051,0.348)	(-0.055,0.391)
Age = 56 × ELSA	-0.02094	-0.06748	-0.01304	-0.15152
	(-0.217,0.151)	(-0.305,0.137)	(-0.309,0.242)	(-0.498,0.163)
Age = 57 × ELSA	-0.02017	0.01396	0.05442	0.00381
	(-0.214,0.166)	(-0.214,0.231)	(-0.237,0.327)	(-0.346,0.318)
Age = 58 × ELSA	0.00792	0.01073	0.07327	0.20972
	(-0.101,0.187)	(-0.106,0.209)	(-0.082,0.295)	(-0.017,0.418)
Age = 59 × ELSA	0.06179	0.07993	0.11591	-0.01353
	(-0.140,0.250)	(-0.152,0.291)	(-0.164,0.366)	(-0.344,0.286)
Age = 60 × ELSA	0.04153	-0.02341	0.01512	-0.01885
	(-0.172,0.249)	(-0.254,0.202)	(-0.262,0.281)	(-0.338,0.287)
Age = 61 × ELSA	0.09203	0.03675	0.11347	-0.02762
	(-0.127,0.325)	(-0.199,0.289)	(-0.174,0.401)	(-0.358,0.302)
Age = 62 × ELSA	0.14888	0.15432	0.18798	0.00199
	(-0.106,0.392)	(-0.111,0.414)	(-0.129,0.480)	(-0.370,0.355)
Age = 63 × ELSA	0.27645*	0.26023	0.29872	0.19217
	(0.001,0.516)	(-0.039,0.522)	(-0.025,0.573)	(-0.175,0.517)
Age = 64 × ELSA	0.33246*	0.31773	0.35361	0.21854
	(0.012,0.605)	(-0.020,0.603)	(-0.004,0.639)	(-0.176,0.555)
Age = 65 × ELSA	0.44452*	0.40715	0.46705*	0.34042
	(0.044,0.776)	(-0.005,0.765)	(0.048,0.801)	(-0.116,0.727)
Age = 66 × ELSA	0.22300	0.15986	0.21232	0.08008
	(-0.147,0.568)	(-0.214,0.525)	(-0.209,0.589)	(-0.375,0.507)
obs	1169	996	861	717

NOTE.- Average individual marginal effects reported. Empirical confidence intervals (in parentheses) obtained from 2,500 parametric bootstrap replications. * indicates significance at 5%. ** indicates significance at 1%. Agediff is age difference between spouses, defined as age of the husband minus age of the wife. Sample: couples where both spouses work at baseline, husband's age is between 55 and 66 at baseline, and wife's age is less than 62 at baseline.

References

[1] Ai, Ch. and E. Norton. 2003. “Interaction terms in logit and probit models”. *Economic Letters*. Vol 80, pp. 123-129.

[2] Benitez-Silva, H., M. Buchinsky, H.-M. Chan, J. Rust and S. Sheivasser. 1999. “An Empirical Analysis of the Social Security Disability Application, Appeal, and Award Process”. *Labour Economics*. Vol. 6, pp. 147-178.

[3] Benitez-Silva, H., M. Buchinsky and J. Rust. 2004. “How Large are the Classification Errors in the Social Security Disability Award Process?”. NBER Working Paper No. 10219.

[4] Blau, D. 1994. “Labor Force Dynamics of Older Men”. *Econometrica*. Vol 62, no. 1, pp. 117-156.

[5] Blau, D. 1998. “Labor Force Dynamics of Older Married Couples”. *Labor Economics*. Vol 16, no. 3, pp. 595-629.

[6] Blau, D. and D. Gilleskie. 2006. “Health Insurance and Retirement of Married Couples”. *Journal of Applied Economietrics*. Vol. 21, no. 7, pp. 935-953.

[7] Bound, J. and R. V. Burkhauser. 1999. “Economic Analysis of Transfer Programs Targeted on People with Disabilities”, in *Handbook of Labor Economics*, eds. O. Ashenfelter and D. Card, Elsevier North Holland.

[8] Casanova, M. 2010. “Happy Together: A Structural Model of Couples’ Retirement Chocies”. Working Paper.

[9] Coile, C. 2004a. “Retirement Incentives and Couples’ Retirement Decisions”. *Topics in Economic Analysis & Policy*. Vol. 4, no. 1, Article 17.

[10] Coile, C. 2004b. “Health Shocks and Couples’ Labor Supply Decisions”. NBER Working Paper 10810.

[11] Coile, C. and J. Gruber. 2001. “Social Security Incentives for Retirement”, in *Themes in the Economics of Aging*, ed. David A. Wise, Chicago: University of Chicago Press.

[12] Coile, C. and J. Gruber. 2007. “Future Social Security Entitlements and the Retirement Decison”. *The Review of Economics and Statistics*. Vol. 89, no. 2, pp. 234-246

[13] Diamond, P. and J. Gruber. 1999. "Social Security and Retirement in the United States". In *Social Security and Retirement Around the World,* eds. Jonathan Gruber and David A. Wise, Chicago: University of Chicago Press.

[14] French, E. 2005. "The Effects of Health, Wealth, and Wages on Labour Supply and Retirement Behaviour". Review of Economic Studies. Vol. 72, no. 2, pp. 395-427.

[15] French, E. and J. B. Jones. 2007. "The effects of Health Insurance and Self-Insurance on Retirement Behavior". FRB Chicago Working Paper No. 2001-19.

[16] Gruber, J. and D. Wise (eds.). 1999. "Social Security and Retirement Around the World". Chicago: University of Chicago Press.

[17] Gruber, J. and D. Wise (eds.). 2004. "Social Security Programs and Retirement Around the World. Micro-Estimation". Chicago: University of Chicago Press.

[18] Gustman, A. and O. Mitchell. 1992. "Pensions and labor Market Activity: Behavior and Data Requirements", in *Pensions and the U.S. Economy: The Need for Good Data.*, ed. Zvi Bodie and Alicia Munnell, Philadelphia: Pension Research Council.

[19] Gustman, A. and T. Steinmeier. 1989. "An Analysis of Pension Benefit Formulas, Pension Wealth and Incentives from Pensions". *Research In Labor Economics*, Vol. 10, pp. 53-106

[20] Gustman, A. and T. Steinmeier. 2000. "Retirement in Dual-Career Families: A Structural Model". *Journal of Labor Economics.* Vol. 18, no. 3, pp. 503-545.

[21] Gustman, A. and T. Steinmeier. 2004. "Social Security, Pensions And Retirement Behavior Within The Family". *Journal of Applied Econometrics.* Vol. 19, no. 6, pp. 723-737.

[22] Hurd, M. 1990a. "Research on the Elderly: Economic Status, Retirement, and Consumption and Saving". *Journal of Economic Literature.* Vol 28, no. 2 pp. 565-637.

[23] Hurd, M. 1990b. "The Joint Retirement Decisions of Husbands and Wives". In *Issues in the Economics of Aging"*, ed. David A. Wise, Chicago: University of Chicago Press.

[24] Lumsdaine, R., J. Stock, and D. Wise. 1996. "Retirement Incentives: The Interaction Between Employer-Provided Pensions, Social Security, and Retiree

Health Benefits", in *The Economic Effects of Aging in the United States and Japan*, ed. Michel Hurd and Naohiro Yahiro, National Bureau of Economic Research, Inc.

[25] Maestas, N. 2001. "Labor, Love, & Leisure: Complementarity and the Tieming of Retirement by Working Couples", mimeo, University of California at Berkeley.

[26] Michaud, P. 2003. "Joint Labor Supply Dynamics of Older Couples". IZA Discussion Paper 832.

[27] Michaud, P. and F. Vermeulen. 2004. "A Collective Retirement Model: Identification and Estimation in the Presence of Externalities". IZA Discussion Paper 1294.

[28] Rust, J. and C. Phelan. 1997. "How Social Security and Medicare Affect Retirement Behavior in a World of Incomplete Markets". *Econometrica*. Vol. 65, no. 4, pp. 781-831.

[29] Shaw, J. and L. Sibieta. 2005. "A Survey of the UK Benefit System". *IFS Briefing Note No 13*. London: IFS. http://www.ifs.org.uk/bns/bn13.pdf

[30] Stock, J. and D. Wise. 1990. "Pensions, the Option Value of Work and Retirement". *Econometrica*. Vol. 58, no. 5, pp. 1151-1180.

[31] U.S. Social Security Administration. 2005. "Annual Statistical Supplement to the Social Security Bulletin".
http://www.ssa.gov/policy/docs/statcomps/supplement/2005/supplement05.pdf