Late-Career Job Loss and Retirement Behavior of Couples*

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Abstract

This paper argues that wealth uncertainty influences when couples choose to retire. Using data from the Health and Retirement Study, I show that wives delay retirement when their husbands retire following a job loss. This effect is stronger when husbands are the primary earners, and couples are relatively poorer. This provides evidence of intra-household insurance that mitigates the impact of an unexpected earnings shock. I find that wives tend to delay retirement only until they become eligible for Social Security. This suggests that Social Security benefits can relax households' budget constraints and allow wives to join their husbands in retirement.

Keywords: Social Security, retirement, job loss, older worker

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1 Introduction

Evidence from different sources shows that couples coordinate the timing of retirement (Hurd 1990a; Blau 1998; Gustman and Steinmeier 2000; Michaud 2003; Gustman and Steinmeier 2004). A number of studies examine the mechanisms underlying the phenomenon of "joint retirement," with a focus on understanding how individuals near retirement age would behave in response to changes in the social security system. Existing literature finds that complementarities in tastes for leisure between spouses are important in explaining joint retirement.[1] Leisure complementarities exist when spouses enjoy retirement more when their partners are retired as well. However, financial capability for supporting retirement is another crucial channel that affects the retirement behavior of couples by changing households' budget constraints. In addition, examining the role of financial considerations would also provide insight into identifying the group of individuals who rely heavily on the social security system.

While the literature on couples' retirement accounts for the impact of complex financial incentives that stem from the social security system and pensions, it does not specifically examine the impact of unexpected shocks to earnings of individuals. This paper bridges this gap in the literature by assessing the effect of displacement - job loss due to business closings or layoffs - on retirement behavior of both spouses. There are two possible responses of spouses if their partners' job loss increases the probability of their retirement. To restore lost income, the spouse of a displaced worker may stay in the labor force longer (i.e., delay retirement) compared to the spouse of a non-displaced worker. On the contrary, the spouse might leave the labor force and retire early for the sake of leisure complementarities. I test which of the two hypotheses dominates using the Health and Retirement Study (HRS). The retirement decision of the spouses of displaced workers can be different depending on the displaced workers' retirement status. For instance, the negative earnings shock to the household will be relatively modest if the displaced worker finds employment instead of choosing to retire. Therefore, I focus on how spouses respond only when their partners

[1] Given evidence of joint retirement, many studies have carefully modeled the environment in which couples jointly make employment decisions (Gustman and Steinmeier 2000; Gustman and Steinmeier 2004; Maestas 2001; Michaud 2003; Michaud and Vermeulen 2004; Blau and Gilleskie 2006; Van der Klaauw and Wolpin 2008; Casanova 2010). These studies focus on leisure complementarities between spouses as the key mechanism underlying joint retirement. Studies with reduced-form approaches also reach a similar conclusion showing that financial incentives alone cannot fully explain join retirement decisions (Coile 2004; Banks et al. 2010).

retire following job displacement.

This paper is related to the literature on the impact of job displacement. Displacement leads to long-term earnings losses, lower wealth holdings, lower employment rates, higher mortality, and decreased health insurance coverage (Ruhm 1991; Olson 1992; Jacobson et al. 1993; Chan and Stevens 1999; Chan and Stevens 2001; Munnell et al. 2006; Sullivan and Von Wachter 2009; Stevens and Moulton 2013). Moreover, Chan and Stevens [2004] find that job displacement increases the probability of retiring. Recent studies by Coile and Levine [2007, 2011] focus on the impact of recessions on older workers' retirement decisions and find that the probability of retirement increases in economic downturns. I extend this literature by considering the joint response of both spouses.

2 Research Design

2.1 Data

I use nine waves of the Health and Retirement Study (HRS) from 1994 to 2010. The HRS is a longitudinal panel data set that surveys a representative sample of individuals over the age of 50 and their spouses every two years. The HRS is ideal for studying retirement in a household context for at least three reasons. First, it surveys the relevant age group, 50 and older. Second, it tracks both spouses over time, a feature that is missing in most administrative data sets. Third, it contains detailed information such as employment, income and assets, Social Security and pension plans, and health status.

2.2 Sample Construction

I construct a sample that consists of full time workers who were between 50 and 70 years of age and were married when they first appeared in the survey. In total, there are 22,002 person-year observations. In terms of couples, there are 11,001 couple-year observations from 2,165 unique heterosexual couples, where both spouses meet the sample restriction. Using this sample of older working couples, I define the treatment (displaced) and the control (non-displaced) groups.

2.2.1 Definition of Job Loss

For the treatment group, I exploit extensive information on employment to identify individuals who have lost their jobs. Respondents are asked whether they are working at the same job as in the previous wave (i.e., two years ago). If they are no longer at the job, they are asked why they left the previous employer. I define displaced workers as those who stopped working because of business closings or layoffs. This is consistent with the definition commonly used in the literature on job loss (for example, see Chan and Stevens [1999, 2001]). These reasons are less likely to be correlated with worker characteristics that might affect retirement decisions.

Other reasons for job loss in the survey are poor health/disabled, family care, better job, quit, and retired. I exclude those who lost a job due to poor health/disabled as it is not the focus of the current study although it is an involuntary reason for job loss.[2] If an individual left employment voluntarily (i.e., due to family care, better job, or quit), I classify him as non-displaced. Hence, workers who stopped working for voluntary reasons form the control group in addition to employed workers.[3] Based on these rules, I construct a time-varying binary indicator for individuals who reported job loss because of business closings or layoffs since the last interview. In the sample, the incidence of job loss due to business closings or layoffs during the sample period is around 5% (1,143 out of 22,002).

Figure 1 presents the average displacement rates from 1994 to 2010. The solid line indicates my preferred measure of job loss that includes both business closings and layoffs. To address that job loss may be endogenous, I use job loss due to business closings only as another measure of displacement. The dashed line shows the trend in average displacement rates using this measure. Both schedules evolve in a similar pattern over time. Since I restrict my sample to those working full time in 1994, job loss rates are the lowest in 1994 relative to the years that follow. There are discernible increases in job loss in 2002 and 2010, consistent with the recessions in early 2000s and

[2]While retirement likely implies joint leisure for spouses whose partners retire after losing a job due to layoffs or plant closings, it might imply looking after the sick partners for spouses whose partners retire following a job loss due to poor health or disability. Thus, the spousal response can be different depending on the specific reason for job loss. That said, including job loss due to poor healthy/disabled as a source of job displacement in addition to layoffs and plant closings does not change the results.

[3]When I drop couples where either spouse stopped working due to voluntary reasons, I lose 2,739 couple-year observations. Excluding these couples does not affect the results; these results are available upon request. I am unable to conduct the analysis using those who lost a job due to voluntary reasons as the sole control group (i.e., excluding those who are employed), due to insufficient observations. Dropping couples where either spouse is working leaves 69 couples.

in 2008-2009.

2.2.2 Definition of Retirement

I define retirement using self-reported current employment status. A person is retired if he is not working, not looking for a job, not temporarily laid off, not disabled, and not a homemaker. I allow for temporary retirement (i.e., a person can retire in one period and be working next period) because retirement is frequently not a complete exit from the labor force for many individuals. I check whether the results are robust to another measure of retirement, which indicates whether the individual considers herself completely retired. This measure additionally captures individuals' intentions to rejoin the labor force even when they are currently retired. The results are not sensitive to this different measure of retirement.

2.2.3 Summary Statistics

One of the most important determinants of retirement is financial incentives. The HRS contains information on pension coverage, income, and assets. In addition, I use information on self-reported health, age, health insurance, and other time-varying factors in the main estimation with individual fixed effects. Table 1 shows means of selected variables in 1994 separately by whether an individual is ever displaced (columns (1) and (2)) as well as by whether the individual's spouse is ever displaced (columns (4) and (5)). For instance, the first row in panel A summarizes average age for husbands who have ever been displaced in column (1); average age for husbands who have never been displaced in column (2); the difference between these two groups in column (3); average age for husbands whose wives have ever been displaced in column (4); average age for husbands whose wives have never been displaced in column (5); and the difference between the last two groups in column (6). Panel B reports the same set of summary statistics for wives. Estimates are all weighted using survey weights to account for the oversampling of blacks, Hispanics, and Florida residents. All monetary measures are in 2006 real values adjusted by CPI-U.

Columns (1)-(3) show that husbands who have ever been displaced were slightly older, less likely to have health insurance, and less likely to participate in pension programs than never-displaced workers. The annual earnings gap between the two groups is sizable, approximately $14,600 in 2006 dollars. Moreover, never-displaced workers had more financial wealth and more money in their

Individual Retirement Account than ever-displaced workers. Ever-displaced wives display similar disadvantages compared to never-displaced wives. Columns (4)-(6) present a similar pattern in summary statistics by spousal displacement status.

2.3 Empirical Strategy

I first estimate the effect of job displacement on an individual's own retirement. Table 1 suggests that job displacement is not randomly assigned. To control for these differences in observable characteristics, I control for individual fixed effects (α_i) and time-varying characteristics (X_{it}) in the estimations described below.

$$R_{it} = \beta D_{it} + \delta' X_{it} + \alpha_i + \mu_t + e_{it} \tag{1}$$

R_{it} is an indicator for retirement status of person i in year t.[4] The impact of job loss on the individual's probability of retirement is captured by β, the coefficient on the indicator for job loss, D_{it}. D_{it} takes the value one if the individual i reports a job loss in year t. X_{it} includes time-varying covariates: age, age squared,[5] self-reported health, an indicator for having health insurance, lagged earnings, lagged financial and IRA wealth, and lagged indicators for defined benefit plan and defined contribution plan. I use lagged variables to take into account that these measures could have been affected by their current job status. For example, those who reported a job loss between the surveys might have depleted their wealth. The pension measures are also lagged because they tend to be tied to the individuals' current employment status. The results are not sensitive to excluding time-varying covariates. α_i is an individual fixed effect, which accounts for time-invariant characteristics of individuals. μ_t is a year effect that captures the general time pattern of retirement in the economy. I estimate the equation as a linear probability model separately for husbands and wives.[6] Standard errors in all specifications are clustered at the individual level to take into account serial correlation of retirement.

[4] Year t indicates the year of the interview. Respondents are asked in year t whether they have lost a job or have retired since the last wave in year $t-2$. Thus, the retirement and job loss variables in year t include those that happened in the past two years.

[5] Using dummies for each age instead of a quadratic function of age does not change the results.

[6] Fixed effects estimators of nonlinear models (e.g., logit or probit) can be severely biased due to the incidental parameters problem. See, for example, Lancaster [2000].

Then, I estimate the following equation:

$$R_{it} = \beta_1 D_{it} + \beta_2 SR_{it} + \beta_3 SD_{it} + \beta_4 SR_{it} * SD_{it} + \delta' X_{it} + \alpha_i + \mu_t + e_{it} \quad (2)$$

SR_{it} is a binary indicator if the spouse is retired in year t, and SD_{it} is an indicator that takes one if the spouse is displaced in year t. Thus, $SR_{it} * SD_{it}$ would take one if the spouse was displaced and retired in year t. β_4 captures the impact on an individual's probability of retirement when his partner retires following a job displacement.

To identify the main coefficient of interest β_4 in equation (2), both individual displacement and spousal displacement should be exogenous to individual retirement decisions. However, job loss may be endogenous as some unobservable characteristics of displaced workers can be correlated with a tendency to retire. For example, those who value leisure highly might shirk at work and also prefer to retire early. It is impossible to test this assumption, but I tackle this issue in two ways. First, I repeat the estimation using business closings as the only measure of individual and spousal displacement, as this measure is plausibly more exogenous. Second, displacement due to economy-wide shocks (e.g., recessions) is likely to be exogenous to worker characteristics. I examine the subgroup of workers who reported job loss in the 2002 and 2010 surveys, which cover the periods that correspond to recessions in early 2000s and 2008-2009.

Another challenge in estimating equation (2) is that spousal retirement is endogenous to their partners' own retirement. For example, husbands who retire following a job loss might do so only because they know that their wives have substantial earnings ability and thus will naturally stay in the labor force longer. To deal with this issue, I exploit the earliest age at which a person can claim Social Security benefits, which is 62 in the US. Social Security benefits that are available at age 62 are reduced when claimed before the full retirement age, and are increased by delayed retirement credits when received after the full retirement age, up to age 70. Social security benefits are designed to replace part of the employment earnings; the replacement rate ranged from 26% to 56% in 2013 depending on the worker's prior earnings level. The literature documents that financial incentives from Social Security benefits play an important role in determining the timing of retirement (Hurd 1990b; Anderson et al. 1999).

Specifically, I use an indicator for spousal age 62 and older, $A_{it} = I(\text{spousal age} \geq 62)$, as an

instrument for spousal retirement, SR_{it}. Analogously, I use $A_{it} * SD_{it}$ as an instrument for the interaction term, $SR_{it} * SD_{it}$. This instrument is valid if the husband's incentive to retire at age 62 affects his wife's retirement decisions only because it increases the likelihood of his own retirement. Thus, the identification assumption is that the early entitlement age is an exogenous institutional feature that is not correlated with couples' characteristics. If a husband retires after reaching the age of 62 solely due to incentives created by the social security system, his retirement is exogenous to his wife's retirement decision. While it is not possible to test this exclusion restriction, I examine the distribution of age at retirement in my sample. Figure 2 shows disproportionately high number of people retiring at age 62 (the early entitlement age) and another modest spike at age 65 (the normal retirement age). This suggests that a substantial proportion of people are induced to time their retirement at the early entitlement age determined by the social security system. A number of papers use social security incentives as an instrument for retirement (Bound and Waidmann 2007; Banks et al. 2010; Rohwedder and Willis 2010; Mazzonna and Peracchi 2012).

3 Results

Based on the empirical strategy presented above, I estimate the effect of job displacement and retirement on couples both by OLS and 2SLS. Thereafter, I present the results of the event study approach and the heterogeneity analysis.

3.1 Main Results

Table 2 reports the results of OLS estimations separately for husbands (columns (1)-(4)) and wives (columns (5)-(8)). Columns (1) and (5) show the effect of individuals' job loss on their own retirement probability. Job loss significantly increases the probability of retirement for both husbands and wives.

Column (2) shows that wives' job displacement does not have a direct impact on their husbands' retirement. Column (6) shows that the effect of husbands' job displacement on wives' retirement is negative but not significant. The impact of spousal retirement is positive and significant, indicating a tendency of joint retirement as shown in columns (3) and (7). This suggests that couples value spending leisure together, and thus coordinate the timing of retirement. Moreover, notice that the

coefficient is larger in magnitude for husbands than for wives. This is consistent with the literature that finds that husbands are more responsive to wives' retirement incentives than wives are (see, for example, Coile [2004]).

Columns (4) and (8) show how individuals' retirement decisions are affected by spousal job displacement and retirement status. The coefficient on the interaction term, spouse displaced and retired, is negative but insignificant for husbands. However, it is negative and significant for wives. That is, wives are 12 percentage points less likely to retire when their husbands retire following a job loss, and the magnitude is large enough to offset the increased probability of retirement due to their own job loss. This effect is more than half the mean (20.7%) and statistically significant at the 0.01 level. This is evidence that wives delay retirement when their husbands retire after losing a job. I interpret this as indicating that an unexpected job loss inducing displaced workers to leave the labor force involuntarily, and their spouses delaying retirement for financial support in response to that.

I repeat the estimation of equation (2) using instrumental variables to address the endogeneity of spousal retirement. Table 3 summarizes the first-stage regressions. Since there are two endogenous variables (SR_{it} and $SR_{it} * SD_{it}$), there are two first-stage regressions:

$$SR_{it} = \beta_1 D_{it} + \beta_2 A_{it} + \beta_3 SD_{it} + \beta_4 A_{it} * SD_{it} + \delta' X_{it} + \alpha_i + \mu_t + e_{it} \quad (3)$$

$$SR_{it} * SD_{it} = \beta_1 D_{it} + \beta_2 A_{it} + \beta_3 SD_{it} + \beta_4 A_{it} * SD_{it} + \delta' X_{it} + \alpha_i + \mu_t + e_{it} \quad (4)$$

Columns (1) and (2) show the regression results of equations (3) and (4) for husbands. Similarly, column (3) and (4) show the estimates of equations (3) and (4) for wives. First-stage F-statistics reported in the last row confirm that age 62 is a strong predictor of retirement.

Table 4 shows the results of the 2SLS regressions. The coefficients on the instrumented spousal retirement are positive and significant for both husbands and wives. Moreover, wives are less likely to retire in response to their displaced husbands' retirement, and the magnitude is larger than that from the OLS regression in column (8) of Table 2. The difference may reflect different populations captured by 2SLS and OLS. For instance, those who retire in accordance with Social Security (i.e., compliers) may be more credit-constrained, which can explain the larger 2SLS estimates. These results suggest that wives' retirement delay is not driven by their husbands' endogenous retirement.

In additional analyses, I use a more exogenous measure of displacement, which considers business closings as the only valid reason for job displacement (i.e., excluding layoffs). Wives tend to delay retirement in response to their husbands' job loss and retirement (OLS coefficient: -0.064 (0.061); 2SLS coefficient: -0.183 (0.120)). Although the estimates are not as precise due to low incidence of business closings (1.6%), this suggests that the results are not solely driven by those who were laid off. I also repeat the main estimations for the subgroup of workers who experienced a job loss during recessions in 2000-2001 or in 2008-2009, since displacement due to economy-wide shocks is likely to be exogenous to worker characteristics. Wives are 29 percentage points less likely to retire (OLS coefficient: -0.289 (0.371)), which is comparable to the 2SLS estimate from my preferred specification (from column (2) of Table 4: -0.271 (0.089)).

Moreover, I examine another measure of retirement, which indicates whether individuals consider themselves completely retired. OLS regressions suggest that both husbands and wives tend to delay retirement (husbands: -0.129 (0.058); wives: -0.142 (0.039)). 2SLS regressions indicate that the estimate for husbands is of the same magnitude but insignificant (-0.164 (0.123)) while the magnitude of the estimate for wives is larger and significant (-0.333 (0.113)).

3.2 Event Study Approach

To investigate how persistent the impacts of individuals' job loss and retirement are on their spouses' retirement, I employ an event study approach. An event study also serves as a way to test causal interpretations of the main results. For example, showing that a pre-trend in the retirement probability is not correlated with a future job displacement, while the likelihood of retirement changes sharply at the time of displacement, would support the notion that job displacement triggered the response in retirement decisions. This is a common approach taken in the literature in the analysis of job displacement [Jacobson et al., 1993]. Specifically, I estimate the following equation:

$$R_{it} = \beta_1 D_{it} + \beta_2 A_{it} + \beta_3 SD_{it} + \sum_{-10}^{10} \beta_{4k} (SRSD)_{it}^{k} + \delta\ X_{it} + \alpha_i + \mu_t + e_{it} \tag{5}$$

The dummy variables, $(SRSD)_{it}^{k}$ (k=-10, -8, ..., 0, ..., 8, 10) indicate k years before and after spousal retirement following job displacement (hereafter, the event). Since I observe up to 16 years before and after the event, $(SRSD)_{it}^{-10}$ takes one for 10 to 16 years before the event and zero

otherwise. $(SRSD)_{it}^{10}$ is analogously defined for 10 to 16 years after the event. The omitted time period is 2 years before the event. Hence, the coefficients β_{4k} measure the change in the probability of retirement not only at the time of the event but also k years before and after, relative to the time period just before the event. I estimate this both by OLS and by 2SLS, instrumenting the spousal retirement variables with an indicator for spousal age greater than or equal to 62.

Figure 3 shows the dynamics of individuals' retirement probability after their spouses retire following a job loss. Panels (a) and (b) show the results of OLS regressions for husbands and wives, respectively. For panels (c) and (d), I use an indicator for spousal displacement after reaching 62 as an instrument for spousal retirement following displacement. Consistent with Tables 2 and 3, husbands do not immediately respond to their wives' retirement following a job loss, whereas wives do. Interestingly, husbands do seem to delay retirement four years later, which suggests that the earnings shock following their displaced wives' retirement might not take effect until a few years later.

Panel (d) is particularly informative - it presents a sharp drop in wives' probability of retirement when their husbands report a job loss and retire, and this increases steadily over time. The decline in the probability of retirement does not persist and is not statistically different from zero four years after spousal retirement following a job loss. This provides additional evidence that wives may be staying in the labor force to compensate for their husbands' involuntary retirement induced by job displacement.

An unexpected shock to one individual's wage income can have a significant impact on the retirement behavior of both spouses. Interestingly, however, only wives delay retirement in response to their husbands' job loss and retirement. This poses multiple hypotheses about the possible underlying mechanisms. Is a husband's job loss more critical to household finance than a wife's job loss, as husbands are more likely to be the primary earners? Do wives have a better chance of staying in the labor force, as they are generally younger? Or do wives who are younger than husbands need to spend a few more years working before being able to claim Social Security benefits? I investigate these hypotheses in the following section.

3.3 Heterogeneity Analysis

I examine heterogeneous effects by subgroups to disentangle potential mechanisms of the main effects. I repeat the main 2SLS estimations for different subgroups; Table 5 reports the coefficients on the interaction between spousal displacement and spousal retirement.

I consider individual age below or above 62 to test whether the effects vary depending on whether the spouse of the displaced worker is eligible for Social Security benefits. As shown in columns (2) and (3) of panel B, the delay of retirement is mostly driven by wives younger than 62 and thus not yet eligible for Social Security benefits. This is consistent with the hypothesis that a financial mechanism is at play. I also examine the effects by the level of total financial and IRA wealth to test the hypothesis that people who have secure retirement wealth would not necessarily respond to their partners' job loss and retirement. In columns (4)-(6) I divide the sample into three groups based on the sum of total financial and IRA wealth.[7] I find that the wives' response is the largest when couples were in the lowest quartile of the wealth distribution. This suggests that wives in the relatively poor household are most likely to delay retirement in response to their husbands' retirement following a job loss.

Finally, I examine whether the effects are heterogeneous depending on who assumes the role of the primary earner in the household. I define the primary earner as the spouse who contributes more than half of the total household earnings in the period preceding the job loss. Column (7) shows a significant drop in wives' probability of retiring when their husbands are the primary earners. If husbands who were primary earners lost a job and subsequently retired, it could cause a substantial loss in household income. This could have led their wives (i.e., the secondary earners) to delay retirement to compensate for their husbands' job loss. This might explain why I do not find any effect on the husbands' retirement decision when their wives lose a job and retire. As wives are likely to earn less than husbands in general (64% of the case in my sample), losing wives' income might not be as substantial a loss to the household.

[7]Financial wealth is calculated as the sum of dollar values of stock, bonds, and savings. The HRS also asks whether the couple has any money or assets held in an Individual Retirement Account (i.e., in an IRA or KEOGH account), and how much is in their accounts. The 25th percentile wealth was $10,000 and the 75th percentile wealth was $175,000 in 2006 dollars. The mean wealth was $184,700 in 2006 dollars.

4 Discussion and Conclusion

While the existing literature focuses on complementarities in tastes for leisure between spouses in examining retirement behavior couples, I examine the role of an unexpected earnings shock: a late-career job loss. I find that wives delay retirement when their husbands retire following a job loss, instead of seeking other employment. The decline in wives' probability of retiring persists for at least a couple of years following their husbands' job loss. Wives' job loss, however, does not have a statistically significant impact on their husbands' retirement decision, though the point estimates are negative.

This evidence suggests that uncertainty in household income has a significant impact on how couples time their retirement. In addition, it shows how married men are privately insured by their wives, mitigating the impact of an unexpected earnings shock. However, selection into retirement is not random, which makes it difficult to interpret the effect of husbands' retirement on that of wives as causal. To address this issue, I use the early entitlement age for Social Security benefits, which is 62 in the US, as an instrument for retirement. I find that two stage least squares (2SLS) regressions yield the same conclusions.

Heterogeneity analysis reveals that the results appear stronger for subgroups that are relatively more credit-constrained. The drop in the probability of retirement is pronounced when couples are in the lowest quartile of the wealth distribution. In addition, I find that wives tend to delay retirement more when their husbands were the primary earners in the household. This is consistent with a story where the secondary earner tends to delay retirement to compensate for the primary earner's job loss. Moreover, I find that wives younger than 62 are much more likely to delay retirement in response to their partners' retirement following a job loss relative to wives older than 62, implying that Social Security benefits can help relax the household budget constraint and allows wives to join their husbands in retirement.

For future research, it would be useful to investigate how ever-married or single individuals cope with an unexpected job loss. For instance, single individuals might need to seek a different source of insurance following an unexpected earnings shock, due to a lack of within-household insurance. In addition, exploring policy tools that can help correct this potential discrepancy stemming from different family structures or marital status would be an important agenda for future research. For

example, tagging current marital status besides just age when designing the social security system would be worth considering.

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5 Figures

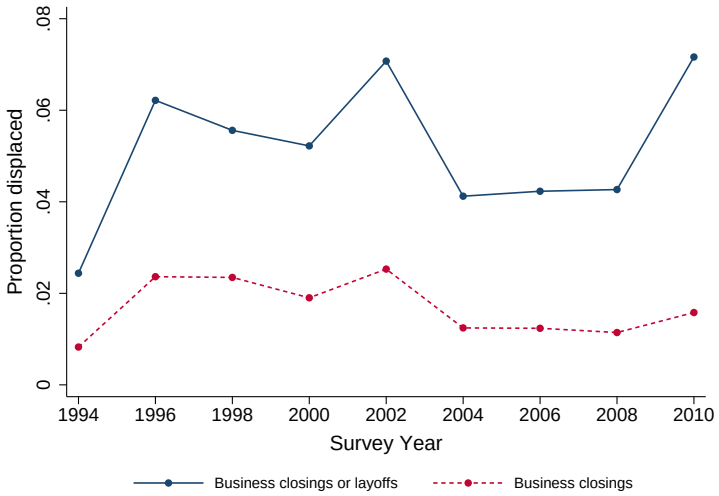

Figure 1: Incidence of Displacement over the Sample Period

Source: Author's tabulations from the 1994-2010 Health and Retirement Study.

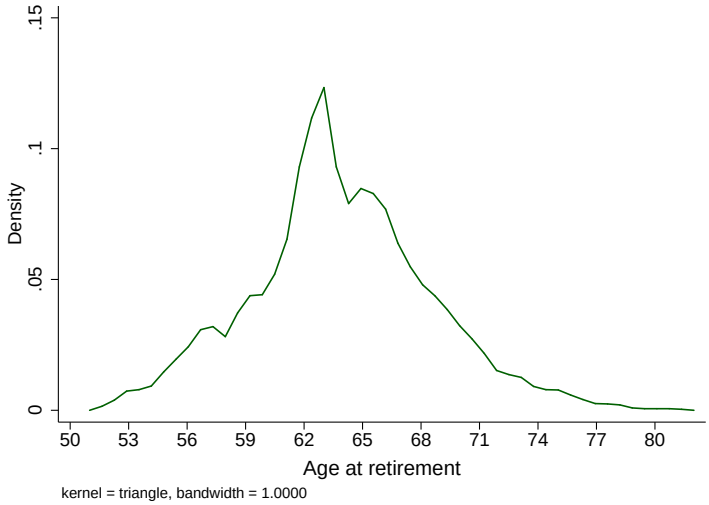

Figure 2: Retirement Hazard Rate

Source: Author's tabulations from the 1994-2010 Health and Retirement Study.

Notes: The figure reports the density of age at retirement in the sample. I define retirement using self-reported current employment status. Specifically, a person is retired if he is not working, not looking for a job, not temporarily laid off, not disabled, and not a homemaker. I use the triangular kernel and a bandwidth of 1.

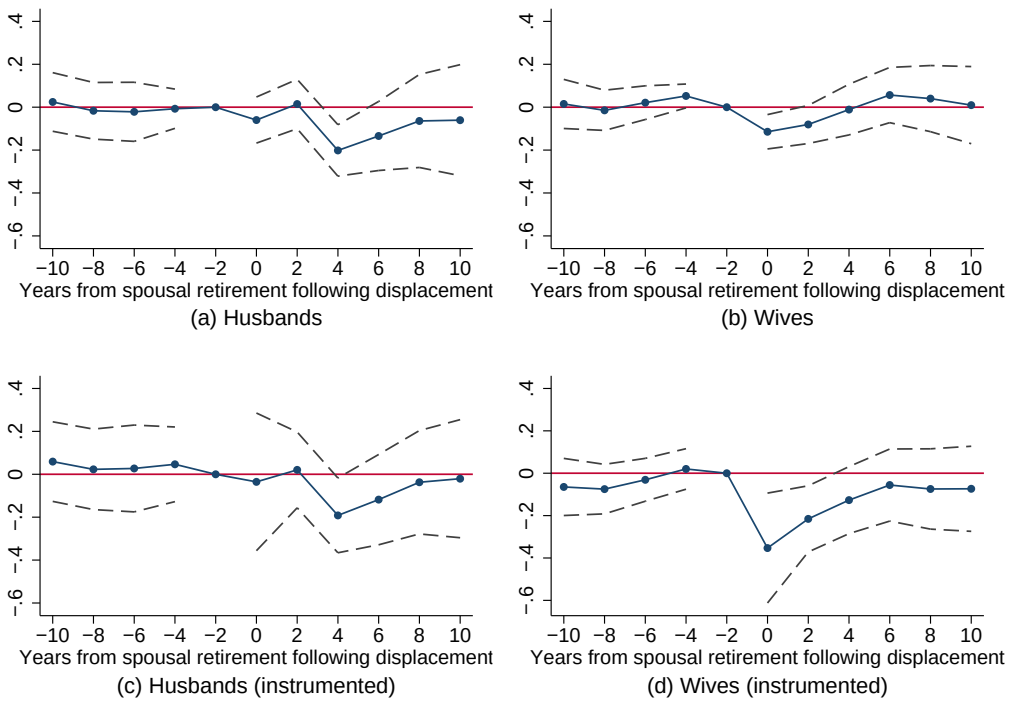

Figure 3: Probability of Retirement by Years from the Displaced Spousal Retirement

Source: Author's tabulations from the 1994-2010 Health and Retirement Study.

Notes: Each figure plots point estimates from a regression of retirement status on a set of dummies that indicate years from spousal retirement after displacement. Individual fixed effects, year effects, and time-varying controls (age, age squared, self-reported health, an indicator for having health insurance, lagged earnings, lagged financial and IRA wealth, lagged indicators for defined benefit plan, and defined contribution plan) are also included in the regressions. The dashed lines plot 95-percent confidence intervals computed based on standard errors clustered at the individual level. The omitted time period is 2 years before the spousal post-displacement retirement. Panels (a) and (b) show results from OLS regressions. Panels (c) and (d) present 2SLS regressions using an indicator for spousal age greater than or equal to 62 to instrument for spousal retirement variables.

6 Tables

Table 1: Summary statistics

	(1) Ever displaced	(2) Never displaced	(3) Difference (1)-(2)	(4) Spouse ever displaced	(5) Spouse never displaced	(6) Difference (4)-(5)
Panel A. Husbands						
Age	61.79	61.43	0.36**	61.84	61.43	0.41***
			(0.15)			(0.16)
Education	13.45	13.39	0.06	13.31	13.43	-0.12**
			(0.04)			(0.05)
White	0.92	0.91	0.01**	0.92	0.91	0.01*
			(0.00)			(0.00)
Have health insurance	0.80	0.82	-0.02**	0.78	0.83	-0.04***
			(0.01)			(0.01)
Have pension	0.30	0.39	-0.09***	0.35	0.37	-0.02
			(0.01)			(0.01)
Earnings	$35,200	$49,800	-$14,600***	$42,400	$47,200	-$4,800*
			(1,500)			(2,500)
Financial wealth	$82,600	$108,700	-$26,100***	$78,600	$108,500	-$29,900***
			(7,400)			(7,300)
IRA wealth	$75,600	$98,500	-$22,900***	$71,800	$98,500	-$26,700***
			(7,900)			(7,800)
Observations	2742	8259	11001	2446	8555	11001
Panel B. Wives						
Age	59.49	58.96	0.53***	59.53	58.92	0.61***
			(0.15)			(0.14)
Education	13.23	13.43	-0.20***	13.38	13.39	-0.01
			(0.04)			(0.04)
White	0.93	0.91	0.01***	0.92	0.91	0.00
			(0.00)			(0.00)
Have health insurance	0.83	0.87	-0.04***	0.86	0.86	-0.00
			(0.01)			(0.01)
Have pension	0.31	0.44	-0.13***	0.42	0.41	0.01
			(0.01)			(0.01)
Earnings	$23,800	$31,800	-$8,000***	$27,300	$31,100	-$3,800***
			(1,100)			(1,000)
Financial wealth	$78,600	$108,500	-$29,900***	$82,600	$108,700	-$26,100***
			(7,300)			(7,400)
IRA wealth	$71,800	$98,500	-$26,700***	$75,600	$98,500	-$22,900***
			(7,800)			(7,900)
Observations	2446	8555	11001	2742	8259	11001

Source: Author's calculations from the 1994-2010 Health and Retirement Study.

Notes: All estimates are weighted with survey weights. All monetary variables are inflation-adjusted using 2006 CPI-U. Financial wealth is defined as the sum of dollar values of stock, bonds, and savings. Note that financial wealth and IRA wealth are measured at the household level. Standard errors are in parentheses.

* Significant at 10%, ** significant at 5%, *** significant at 1%.

Table 2: Effects of job loss on each spouse's retirement decision: OLS estimates

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Husbands				Wives			
Displaced	0.143***	0.142***	0.148***	0.148***	0.069***	0.069***	0.068***	0.071***
	(0.022)	(0.022)	(0.022)	(0.022)	(0.021)	(0.021)	(0.021)	(0.020)
Spouse displaced		0.006		-0.002		-0.021		-0.006
		(0.019)		(0.021)		(0.016)		(0.017)
Spouse retired			0.203***	0.206***			0.175***	0.191***
			(0.019)	(0.020)			(0.018)	(0.018)
Spouse displaced and retired				-0.029				-0.122***
				(0.047)				(0.038)
Observations	11001	11001	11001	11001	11001	11001	11001	11001
Mean retirement rate	0.265	0.265	0.265	0.265	0.207	0.207	0.207	0.207

Source: Author's estimations from the 1994-2010 Health and Retirement Study.
Notes: Standard errors in parentheses are clustered at the individual level. * Significant at 10%, ** significant at 5%, *** significant at 1%. All estimates are weighted with survey weights. Each regression contains individual fixed effects, year effects, and time-varying covariates (age, age squared, self-reported health, an indicator for having health insurance, lagged earnings, lagged financial and IRA wealth, lagged indicators for defined benefit plan, and defined contribution plan).

Table 3: Effects of job loss on each spouse's retirement decision: First-stage estimates

	(1)	(2)	(3)	(4)
	Husbands		Wives	
Dependent variable:	Spouse retired	Spouse displaced & retired	Spouse retired	Spouse displaced & retired
Displaced	-0.026	-0.004	-0.002	0.010
	(0.016)	(0.005)	(0.020)	(0.010)
Spouse displaced	0.039*	0.118***	0.080***	0.166***
	(0.020)	(0.024)	(0.025)	(0.031)
Spousal age≥62	0.110***	-0.009***	0.093***	-0.011***
	(0.018)	(0.003)	(0.017)	(0.004)
Spouse displaced and spousal age≥62	0.127**	0.388***	0.136***	0.382***
	(0.051)	(0.054)	(0.041)	(0.047)
Observations	11001	11001	11001	11001
Mean of dependent variable	0.207	0.011	0.265	0.019
F-statistic on the excluded instruments	30.8	41.4	28.3	55.6

Source: Author's estimations from the 1994-2010 Health and Retirement Study.
Notes: Standard errors in parentheses are clustered at the individual level. * Significant at 10%, ** significant at 5%, *** significant at 1%. All estimates are weighted with survey weights. Each regression includes individual fixed effects, year effects, and time-varying covariates (age, age squared, self-reported health, an indicator for having health insurance, lagged earnings, lagged financial and IRA wealth, lagged indicators for defined benefit plan, and defined contribution plan).

Table 4: Effects of job loss on each spouse's retirement decision: 2SLS estimates

	(1) Husbands	(2) Wives
2SLS using spousal age		
Displaced	0.151***	0.074***
	(0.020)	(0.018)
Spouse displaced	-0.005	0.016
	(0.028)	(0.027)
Spouse retired	0.312**	0.394***
	(0.134)	(0.126)
Spouse displaced and retired	-0.050	-0.271***
	(0.108)	(0.089)
Observations	11001	11001
Mean retirement rate	0.265	0.207

Source: Author's estimations from the 1994-2010 Health and Retirement Study.

Notes: Standard errors in parentheses are clustered at the individual level. * Significant at 10%, ** significant at 5%, *** significant at 1%. All estimates are weighted with survey weights. Each regression includes individual fixed effects, year effects, and time-varying covariates (age, age squared, self-reported health, an indicator for having health insurance, lagged earnings, lagged financial and IRA wealth, lagged indicators for defined benefit plan, and defined contribution plan). I use an indicator for spousal age greater than or equal to 62 as an instrument for spousal retirement and the interaction between the indicator and spousal displacement as an instrument for spousal retirement interacted with spousal displacement.

Table 5: Heterogeneous effects on retirement

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Full sample	Age		Wealth (percentile)			Primary earner	
		<62	≥62	<25th	25-75th	≥75th	Husband	Wife
Panel A. Husbands								
Spouse displaced and retired	-0.050	-0.259	0.036	0.045	-0.174	0.080	-0.159	0.078
	(0.108)	(0.400)	(0.233)	(0.229)	(0.147)	(0.308)	(0.173)	(0.380)
Observations	11001	4682	5794	2355	5335	2601	4045	2075
Mean retirement rate	0.265	0.066	0.428	0.232	0.246	0.333	0.173	0.385
Panel B. Wives								
Spouse displaced and retired	-0.271***	-0.266**	0.583	-0.408***	-0.141	-0.365	-0.377**	-0.093
	(0.089)	(0.106)	(1.259)	(0.148)	(0.133)	(0.257)	(0.190)	(0.210)
Observations	11001	6657	3868	2355	5335	2601	4045	2075
Mean retirement rate	0.207	0.064	0.441	0.153	0.194	0.284	0.206	0.163

Source: Author's estimations from the 1994-2010 Health and Retirement Study.

Notes: Standard errors in parentheses are clustered at the individual level. * Significant at 10%, ** significant at 5%, *** significant at 1%. All estimates are weighted with survey weights. Each regression contains individual fixed effects, year effects, and time-varying covariates (age, age squared, self-reported health, an indicator for having health insurance, lagged earnings, lagged financial and IRA wealth, lagged indicators for defined benefit plan, and defined contribution plan). Spousal retirement variables are instrumented with spousal age greater than or equal to 62. Wealth is defined as the sum of total financial and IRA wealth. The 25th percentile wealth was $10,000 and the 75th percentile wealth was $175,000 in 2006 dollars. The primary earner of the household indicates the spouse who contributes more than half of the total household earnings in the period preceding the job loss.