Women at the Helm? Earnings Power and Retirement Decisions in Married Couples

Siha Lee* Zhixiu Yu†‡

Preliminary Draft (March 2026).
Latest version: [LINK]

Abstract

We study how married couples coordinate retirement and Social Security claiming, and how those decisions vary with the relative earnings power of spouses. Using the Health and Retirement Study linked to Social Security administrative records, we find sizable gender asymmetries in the gap between observed claiming behavior and the joint claiming strategy that maximizes expected household Social Security wealth. In particular, while the observed Social Security wealth of primary earner husbands exceeds the optimum by 2.3%, primary earner wives experience losses of 7.3% despite being the higher-earning spouse. Primary earner wives are more likely to have husbands with health limitations and disability benefit receipt, suggesting that spousal health may exacerbate these asymmetries. We develop and estimate a dynamic life cycle model of couples that explicitly endogenizes both spouses' labor supply and claiming decisions and incorporates the full detailed structure of retirement, spousal, and survivor benefits. The estimates imply that impatience, coordinated non-employment, and weaker valuation of annuitized Social Security wealth relative to liquid assets help explain early claiming and retirement. Policy counterfactuals show that auxiliary benefits, especially survivor benefits, significantly affect wives' employment and claiming decisions, with much larger responses among male primary earner households. Our results suggest that Social Security still reflects the logic of a traditional one-earner marriage and generates uneven incentives within modern households.

JEL codes: J12, J16, J26

*Division of Economics, Hankuk University of Foreign Studies, Seoul, South Korea. Email: siha.lee.econ@hufs.ac.kr.

†Department of Economics, Louisiana State University, Baton Rouge, LA, USA. Email: zhixiuyu@lsu.edu.

‡We thank Olivia S. Mitchell for an excellent discussion and thoughtful feedback. We are grateful to Nicole Maestas, Svetlana Pashchenko, Jonathan Skinner, Angelino Viceisza, and participants at the 2026 NBER Economics of Aging Program Meeting for their helpful comments and suggestions. All errors are our own.

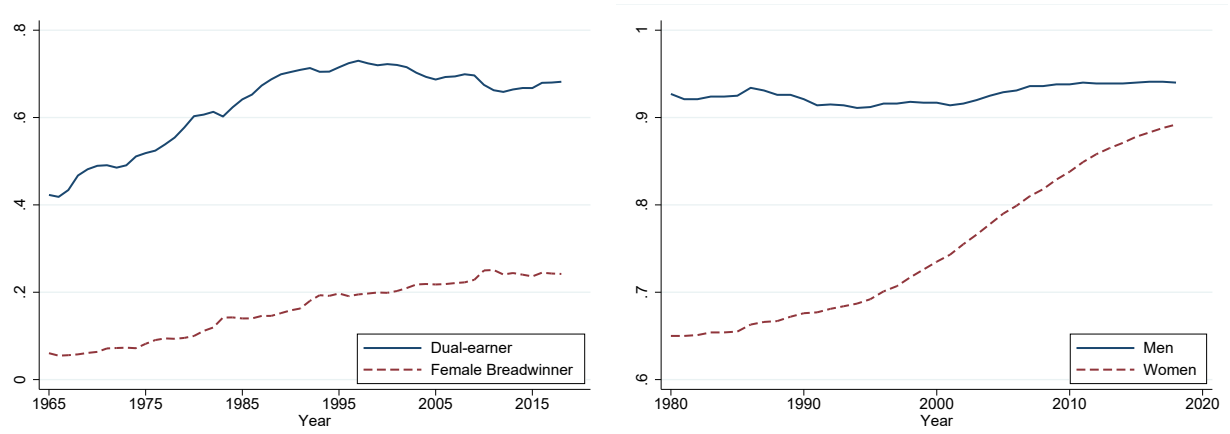
1 Introduction

Over the past several decades, rising female educational attainment, labor force participation, and earnings have significantly changed the economic position of women within households in the United States (Attanasio, Low, and Sánchez-Marcos 2008; Eckstein and Lifshitz 2011). A majority of married couples are now dual earners, and an increasing share of wives earn more than their husbands (Figure 1a). These shifts have greatly expanded the proportion of women eligible for Social Security benefits on the basis of their own work histories (Figure 1b), changing the way families interact with marriage-based Social Security provisions. The changing family earnings structure raises new questions about how married households coordinate work and retirement decisions, and whether a benefit system originally designed around a traditional one-earner family still fits the structure of modern marriages.

This paper studies how married couples coordinate retirement and Social Security claiming decisions, and how those decisions vary with which spouse is the primary earner. We focus on whether observed claiming behavior aligns with the joint claiming strategy that maximizes expected household Social Security wealth, and on whether the answer differs between male and female primary earner households. Understanding how couples make those choices in this new landscape is essential for evaluating both retirement behavior and the fairness of Social Security design.

For most Americans, Social Security benefits are the primary source of income in retirement. The timing of benefit claiming has permanent consequences: claiming early reduces benefits received after retirement, while delaying claiming raises them. Although the program was originally designed to be actuarially fair, shifts in longevity, interest rates, and policy parameters—such as the increase in delayed retirement credits—have altered those incentives. For married couples, Social Security benefits depend not only on each spouse's own earnings history, but also on spousal and survivor provisions that link one spouse's benefits to the other's claiming behavior, making coordination within households central to maximizing household Social Security wealth. Despite the importance of coordination, there remains little systematic evidence on how couples actually navigate these decisions.

Households where the wife is the primary earner may face different dynamics from those with a male household head. Prior research has shown that relative earnings often shape bargaining power within households (Bertocchi, Brunetti, and Torricelli 2014; Elder and Rudolph 2003; Friedberg and Webb 2006), and gender differences in preferences and caregiving responsibilities may further influence how households make important decisions depending



(a) Share of Dual-Earner and Female Primary Earner Couples

(b) Fully Insured for Social Security Retirement Benefits

Figure 1: Trends in Family Types and Social Security Coverage Among Women

Notes: Figure 1(a) is based on a sample of couples where both spouses were aged 25–61 in the March Current Population Survey (CPS) from 1965–2018. "Female breadwinners" indicate wives whose earnings are greater than their husbands. Figure 1(b) reports the share of men and women aged 62–66 who were entitled to Social Security retirement benefits based on their own earnings history (1980–2018) using data from Social Security Administration, Office of Research, Evaluation, and Statistics (2020).

on the gender of the primary earner.[1]

Using the Health and Retirement Study (HRS) linked to Social Security administrative records, we document several novel empirical findings. First, differences in realized household Social Security wealth relative to the wealth-maximizing benchmark are asymmetrically distributed between spouses. At the household level, realized Social Security wealth is 4–6% lower relative to that under the joint optimal claiming strategy, with these losses being larger in female primary earner households. At the individual level, wives consistently lose more Social Security wealth than husbands, even when they are the primary earners. In male primary earner households, husbands modestly exceed their optimal present value while wives forgo roughly 12 percent. In female primary earner households, wives' losses still exceed those of husbands, with shortfalls ranging from 5 to 7 percent. Wives retire earlier than optimal, undermining their own benefits and survivor benefits when their husbands become widowers. The asymmetry raises a puzzle: why do wives bear disproportionate losses, even when they are the primary earners? These patterns suggest a lack of household coordination to maximize joint wealth, with decisions apparently tilted toward husbands' incentives rather

1. Croson and Gneezy (2009) provides a comprehensive review of gender differences in risk, social, and competitive preferences.

than joint optimization.

Second, spousal health is correlated with primary earner status, as female primary earners are more likely to be healthy but also more likely to have husbands in poor health and on disability benefits. These findings point to a setting in which female earnings power does not necessarily translate into delayed retirement or greater protection of wives' own future benefits.

Motivated by these patterns, we develop and estimate a rich dynamic life cycle model of married couples with joint household consumption, savings, and each spouse's labor supply and Social Security claiming decisions. The model incorporates institutional detail, including retirement, spousal, and survivor benefits, as well as heterogeneity in earnings structure, health, wage risk, and education. The estimated model matches the main life cycle moments in the data well, including employment by health status and Social Security claiming distributions of each spouse, along with joint non-employment and household assets. The parameter estimates point to several mechanisms behind the observed departures from household wealth-maximizing claiming: impatience, positive utility from coordinated non-employment, and a much lower value on annuitized Social Security wealth than on liquid assets. A higher discount factor raises employment and assets and reduces joint non-employment, while valuing Social Security wealth like liquid assets substantially delays claiming. Additional evidence suggests that subjective mortality expectations are unlikely to be a central explanation for the observed patterns, while the relationship between earnings power and bargaining power appears imperfect and may differ systematically by gender.

We then use the estimated model to conduct policy counterfactuals. These exercises show that marriage-based benefits continue to shape household behavior in economically meaningful ways, but with important heterogeneity across households. In particular, survivor benefits matter much more than spousal benefits for wives' employment and claiming decisions, with the strongest responses concentrated in male primary earner couples. Removing auxiliary benefits produces much smaller effects on husbands, household consumption, and assets. These findings suggest that the current design of marital benefits still embeds incentives that are closely tied to the traditional male-breadwinner household. This makes the model a useful framework for evaluating reforms aimed at making Social Security more marriage-neutral, including changes to auxiliary benefits and earnings-sharing proposals.

Our paper speaks to four strands of literature. First, it relates to the large literature on retirement and Social Security claiming, especially structural studies of late-life behavior (Bairoliya and McKiernan 2023; French and Jones 2011; Gruber and Wise 1998; İmrohoroğlu

and Kitao 2012; Jones and Li 2023; Lalive, Magesan, and Staubli 2023; Liebman, Luttmer, and Seif 2009; Pashchenko and Porapakkarm 2024; Scholz, Seshadri, and Khitatrakun 2006; Yu 2024). This literature has shown that health and pension incentives are central to retirement and claiming behavior, but most of it focuses on male household heads or models the household in a way that abstracts from within-couple interactions.

Second, our paper contributes to the growing literature on married couples' labor supply (Attanasio et al. 2018; Bick and Fuchs-Schündeln 2018; Blau and Gilleskie 2006; Eckstein, Keane, and Lifshitz 2019; Golosov and Krasikov 2025; Guner, Kaygusuz, and Ventura 2012; Gustman and Steinmeier 2000, 2004; Klaauw and Wolpin 2008; Kleven, Kreiner, and Saez 2009; Lee 2024). These include studies that focus on understanding the drivers behind the empirical pattern that spouses often retire together, such as leisure complementarities (Casanova 2010), even when there is a large age gap between the two spouses (Maestas 2018). Related studies have explored the factors affecting female labor supply, such as family structure and caregiving responsibilities (Fahle and McGarry 2022; Gelber, Isen, and Song 2018; Goldin and Katz 2017; Lee and Yu 2025; Olivetti and Rotz 2016). We build on this work by bringing detailed Social Security claiming incentives to the center of the analysis and by allowing husbands and wives to make separate employment and claiming decisions.

Third, the paper contributes to research on marriage-based pension provisions, including spousal and survivor benefits, and their implications for labor supply, savings, and redistribution within marriage (Borella, De Nardi, and Yang 2023; Goda, Shoven, and Slavov 2007; Groneck and Wallenius 2021; Hong and Ríos-Rull 2012; Hubener, Maurer, and Mitchell 2016; Li 2018; Nishiyama 2019). This literature highlights that marriage-based benefits can create important distortions in spouses' decisions. Our results speak directly to this issue by showing how these incentives operate differently in male and female primary earner households.

Finally, our paper connects to research on efficiency in household decision-making (Andersen et al. 2020; Bergstresser and Poterba 2004; Choi, Laibson, and Madrian 2011; Choukhmane, Goodman, and O'Dea 2025; Gathergood et al. 2019; Lusardi and Mitchell 2023; Scholz, Seshadri, and Khitatrakun 2006) and women's power within the household (Bargain et al. 2022; Blundell et al. 2007; Friedberg and Webb 2006; Jayachandran and Voena 2025). We contribute to this literature by examining the efficiency of benefit claiming decisions and how relative earnings shape those decisions within couples.

Our paper extends the literature in several ways. First, we provide novel empirical evidence linking couples' Social Security claiming decisions and spouses' relative earnings power. Specifically, we document a striking gender asymmetry within households: wives

bear larger Social Security wealth losses than husbands, even when they are the primary earners. Second, we develop a rich structural model of couples that explicitly endogenizes both spouses' labor supply and claiming decisions, and also incorporates Social Security retirement, spousal, and survivor benefits. Unlike existing models that often treat one spouse as the sole decision-maker or impose joint claiming behavior, our framework allows for fully explicit intra-household decision-making. By incorporating heterogeneity in earnings structure, health, and education, together with leisure complementarities and distinct bequest motives for assets, the model can speak directly to mechanisms behind early claiming and can evaluate policy counterfactuals that are difficult to study in simpler frameworks. More broadly, the framework allows us to analyze intra-household decision-making and assess the welfare implications of novel Social Security reforms that, to the best of our knowledge, have not been examined in the literature.

The remainder of the paper is organized as follows. Section 2 provides descriptive data patterns by female primary earner status. Section 3 compares Social Security wealth-maximizing claiming ages versus actual observed claiming ages. Section 4 describes a fully specified dynamic life cycle model. Section 5 discusses the estimation method. Section 6 reports the estimation results and discusses mechanisms. Section 7 explores policy counterfactuals based on the estimated model. Section 8 concludes.

2 Data

We use the HRS, a rich panel study of Americans over the age of 50 and their spouses. Initiated in 1992 and conducted biennially, the HRS collects extensive information on a wide range of topics, including demographics, employment, wealth, income, health, and program participation. Our analysis includes data from 1992 to 2018. Importantly, we link the HRS to administrative Social Security data containing detailed information on Social Security claiming behavior as well as their annual Social Security earnings from 1951 to 2020.

We focus on a sample of women who 1) were married and aged 51–61 when they first entered the HRS, and 2) had a record of receiving Social Security benefits at any point in time. Additionally, we focus on women whose age differences with their husbands were ten years or fewer (i.e., the wife-husband age difference ranged from -10 to 10), as women with extremely large age gaps with their husbands may face considerably different incentives in coordinating retirement with their husbands. In total, our sample consists of 3,722 women.

Based on annual Social Security earnings data, we categorize a female respondent as a

primary earner if her average lifetime earnings as of age 62 were greater than those of her husband.[2] If this information is missing, we use prospective Social Security wealth measures available in the public HRS data and classify a female as a primary earner if her prospective Social Security wealth at age 62 exceeds that of her husband.

2.1 Sample Summary

Table 1 provides summary statistics. First, female secondary earners are on average 1.2 years younger than their husbands, whereas female primary earners are approximately the same age as their husbands. Second, female primary earners are not only more educated than their secondary earner counterparts but are also more likely to have higher educational attainment than their husbands (i.e., "married down"). This aligns with female primary earners having higher average lifetime earnings and lifetime labor supply as measured by the total Social Security quarters of coverage (QCs; quarters of employment credited towards being insured under Social Security). Third, female primary earners are less likely to be white. In particular, Black women comprise 12.4% of primary earners, which is more than double the 5.6% observed among secondary earners.

Next, Figure 2 presents the distribution of claiming ages and benefit types of the first Social Security benefit claimed. For Figure 2, we focus on a subsample in which the full retirement age is 66. There are four benefit types: retirement, disability, spousal, and survivor benefits. Retirement and disability benefits are primary benefits that are based the beneficiary's own earnings record, while spousal and survivor benefits are auxiliary benefits based on the beneficiary's (deceased) spouse's earnings record. For both men and women, age 62 is the most common claiming age, as this is the earliest age in which retirement benefits become available. While the share of men claiming at age 62 is similar between primary earners and secondary earners, male secondary earners are more likely to claim disability benefits and less likely to claim at age 66. Compared to husbands, wives are more likely to claim spousal or survivor benefits. Furthermore, female primary earners are less likely to claim at 62 and more likely to claim at 66.

2. We use age 62 as the cutoff for measuring average lifetime earnings, as it is the earliest age that individuals can claim Social Security retirement benefits.

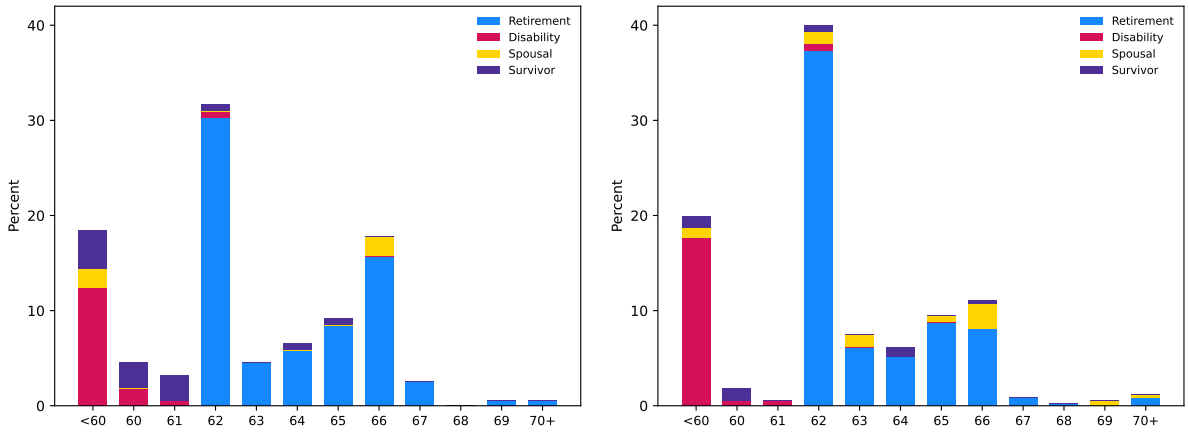
Table 1: Summary Statistics of Women by Their Primary Earner Status

	Primary Earner	Secondary Earner
Panel A: Own Summary Statistics		
Age at HRS entry	53.96	54.30
Wife-husband age difference	-0.13	-1.23
Education (%)		
Less than high school	7.65	15.20
High school graduates	32.59	40.56
Some college	28.02	24.00
College graduates	21.39	12.93
Post-college	10.35	7.32
Education relative to husband (%)		
Married down	35.48	23.98
Married same	40.82	43.34
Married up	23.70	32.68
Race (%)		
White	80.27	89.47
Black	12.38	5.57
Other	7.35	4.96
Average lifetime earnings (ages 19–62, in $)	33,415	14,339
Total Social Security quarters of coverage‡	133.7	87.3
Self-reported health at HRS entry*	3.54	3.51
Disabled at HRS entry (%)	15.0	21.4
Ever had emotional, nervous, or psychiatric problems (%)	7.61	11.4
Panel B: Husbands' Summary Statistics		
Average lifetime earnings (ages 19–62, in $)	20,699	45,671
Total Social Security quarters of coverage	98.42	146.5
Self-reported health at HRS entry	3.25	3.52
Disabled at HRS entry (%)	28.5	16.67
Ever had emotional, nervous, or psychiatric problems (%)	9.68	5.88
Person observations	715	3,007
(%)	(19.2%)	(80.8%)

Notes: All dollar values are in 2019 dollars.

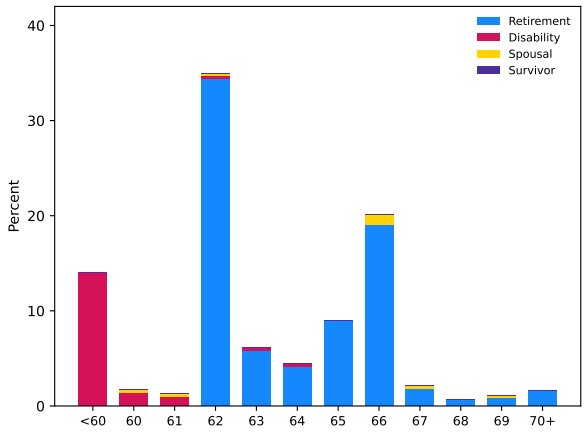
† A quarter of coverage (QC) refers to a quarter of Social Security-covered employment. Generally, 40 QCs are required to be insured for Social Security retirement benefits.

* Self-reported health is categorized as poor (1), fair (2), good (3), very good (4), and excellent (5).

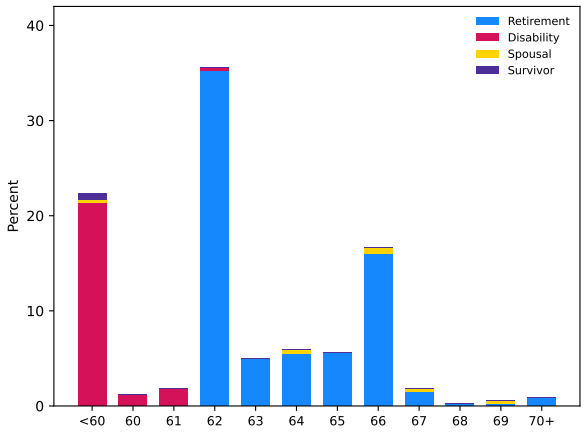


(a) Female Primary Earner

(b) Female Secondary Earner



(c) Male Primary Earner



(d) Male Secondary Earner

Figure 2: Distribution of Claiming Ages and the Type of Benefit Claimed

2.2 Spousal Health and Primary Earner Status

Table 1 also presents three different measures of health by primary earner status: self-reported health, disability status, and whether the respondent ever had emotional, nervous, or psychiatric problems. Self-reported health is based on the respondent's self-assessed general health, categorized as 'poor (1),' 'fair (2),' 'good (3),' 'very good (4),' and 'excellent (5).' Disability status is determined by the question, "Do you have any impairment or health problem that limits the kind or amount of paid work you can do?" Respondents answering "yes" were classified as disabled.

On average, female primary earners tend to be healthier than female secondary earners, but they are also more likely to be married to husbands with poorer health outcomes. To further investigate this sorting pattern, we perform a logit regression of the husband's health on the wife's health, the wife's primary earner status, and the interaction of the wife's health and primary earner status. The model controls for both spouses' age and age squared, educational attainment, and race. The results are reported in Table 2.

Table 2: Logit Estimates of Husbands' Health on
Wives' Health and Primary Earner Status (Marginal Effects)

	Health Measure		
	Disabled	"Bad" health†	Has nervous, emotional, or psychiatric problems
	(1)	(2)	(3)
Wife's health	0.090***	0.103***	0.090***
	(0.013)	(0.013)	(0.016)
Wife is primary earner	0.105***	0.092***	0.042**
	(0.021)	(0.018)	(0.021)
Wife's health × primary earner	0.019	-0.015	0.027
	(0.032)	(0.023)	(0.031)
Person-year observations	27,491	28,582	28,112

Notes: This table reports logit regression results using our sample from the HRS (1992-2018). The dependent variable is the husband's health for each of the three health measures. 'Wife's health' refers to the wife's health status for each column's corresponding health measure (i.e., 'wife is disabled' for column (1), 'wife has bad health' for column (2), and 'wife has nervous, emotional, or psychiatric problems' for column (3)). All specifications control for the age, age-squared, race dummies, and education dummies of both spouses. Standard errors are in parentheses, clustered at the household level. ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

† We define "bad" health as reporting either 'poor' or 'fair' self-reported health.

Table 2 indicates evidence of marital sorting on health, as 1) unhealthy wives are more likely to have unhealthy husbands, and 2) conditional on the wife's health, female primary earners are significantly more likely to have unhealthy husbands. In particular, columns (1) and (2) show that the likelihood of a female primary earner having an unhealthy husband is similar to that of an unhealthy wife having an unhealthy husband. Given that disability or bad health is related to earlier labor force exits and earlier Social Security claiming, the correlation between primary earner status and spousal health may be a mechanism behind differences in couples' Social Security claiming behavior by female primary earner status.

3 Wealth-Maximizing versus Actual Social Security Wealth

This section compares observed claiming behavior with the claiming age that maximizes household Social Security wealth. We restrict our analysis to the cohort with a Full Retirement Age (FRA) of 66 (born in 1943-1959) since earlier birth cohorts experienced changes in Social Security rules such as the retirement earnings test and delayed retirement credits.

We measure household Social Security wealth as the expected present value of retirement benefits that a couple can receive over their joint lifetimes. This calculation accounts for three types of benefit provisions in the Social Security system: retirement benefits based on one's own earnings, spousal benefits tied to the earnings of the spouse, and survivor benefits based on the deceased spouse's earnings. Tables C.1 and C.2 summarize the schedule of reductions and credits for each benefit provision.

Retirement Benefits Each spouse, $s \in \{m, f\}$, is entitled to a retirement benefit based on their own Primary Insured Amount (PIA), which is a monotonic function of a worker's lifetime earnings. Retirement benefits can be claimed as early as age 62 but claiming before the FRA results in an actuarial reduction, while delaying after the FRA yields an increase through delayed retirement credits. The retirement benefit at claiming age c_s is

$$B_s^{own}(c_s) = PIA_s \cdot \alpha(c_s), \tag{1}$$

where $\alpha(c_s) < 1$ for $c_s < FRA$, $\alpha(c_s) = 1$ for $c_s = FRA$, and $\alpha(c_s) > 1$ for $c_s > FRA$.

Spousal Benefits Upon filing, a spouse may alternatively claim a spousal benefit based on the other spouse's PIA. This spousal benefit is up to half of the other spouse's PIA if claimed at or after the FRA, but it is reduced if claimed earlier. Unlike retirement benefits, spousal benefits are not increased by delaying past the FRA. A spousal benefit is only payable if the other spouse is alive and has filed for their own retirement benefit. The spousal benefit at claiming age c_s can be expressed as

$$B_s^{spousal}(c_s) = PIA_{-s} \cdot \gamma(c_s), \tag{2}$$

where PIA_{-s} is the other spouse's PIA, $\gamma(c_s) < 1$ for $c_s < FRA$ and $\gamma(c_s) = 1$ for $c_s \geq FRA$.

If a spouse is entitled to both retirement benefits (based on their own PIA) and spousal benefits (based on their spouse's PIA), they can only receive the higher amount. Therefore, the retirement benefit that each spouse receives while both are alive is

$$B_s^{both}(c_m, c_f) = \max\{B_s^{own}(c_s), B_s^{spousal}(c_s)\}. \tag{3}$$

Survivor Benefits If one spouse dies, the surviving spouse may claim a survivor benefit. This benefit equals the deceased spouse's benefit including any delayed retirement credits, but with limits if the deceased had filed early. Survivor benefits themselves are reduced if the survivor claims before FRA. Upon widow/widowerhood, the survivor always receives whichever is larger: their own retirement benefit or the survivor benefit. For example, if the husband died at age d_m, the widow's survivor benefit is

$$B_f^{surv}(d_m, c_f) = \min\left\{\delta(c_f) \cdot \text{Base}(d_m, c_m),\ \text{Cap}(c_m)\right\}, \tag{4}$$

where $\delta(c_f)$ reflects the survivor's claiming age adjustment, $\text{Base}(d_m, c_m)$ is the deceased husband's benefit at death, and $\text{Cap}(c_m)$ enforces the widow(er) limit. The survivor ultimately chooses the larger of own and survivor benefits:

$$B_f^{widow}(d_m, c_f) = \max\{B_f^{own}(c_f), B_f^{surv}(d_m, c_f)\}. \tag{5}$$

The widower case is symmetric.

Household Maximization For each possible combination of claiming ages for the husband and wife $(c_m, c_f) \in \{62, ..., 70\}^2$, we trace out the flow of benefits that would be received in each state of the household: (i) both spouses alive, (ii) widowhood (wife survives husband),

and (iii) widowerhood (husband survives wife). These flows are then weighted by the probability that each state occurs. While both spouses are alive, benefits are weighted by the joint probability of survival. Widowhood and widowerhood probabilities are determined by the hazard that one spouse dies at a given age multiplied by the probability that the other survives.

To get the present discounted value, we discount the benefit flow to age 62 at a rate of $r = 0.03$:

$$PV^{both}(c_m, c_f) = \sum_{a=62}^{a_{\max}} \frac{\mathbb{E}[B_m^{both}(c_m, c_f) \cdot \mathbb{1}\{a \geq c_m\} + B_f^{both}(c_m, c_f) \cdot \mathbb{1}\{a \geq c_f\}]}{(1+r)^{a-62}} \tag{6}$$

$$PV^{widow}(c_m, c_f) = \sum_{a=62}^{a_{\max}} \frac{\mathbb{E}[B_f^{widow}(d_m, c_f) \cdot \mathbb{1}\{a \geq c_f\}]}{(1+r)^{a-62}} \tag{7}$$

$$PV^{widower}(c_m, c_f) = \sum_{a=62}^{a_{\max}} \frac{\mathbb{E}[B_m^{widower}(d_f, c_m) \cdot \mathbb{1}\{a \geq c_m\}]}{(1+r)^{a-62}} \tag{8}$$

We define the household's Social Security wealth as the sum of these state-contingent present values:

$$HH(c_m, c_f) = PV^{\text{both}}(c_m, c_f) \; + \; PV^{\text{widow}}(c_m, c_f) \; + \; PV^{\text{widower}}(c_m, c_f). \tag{9}$$

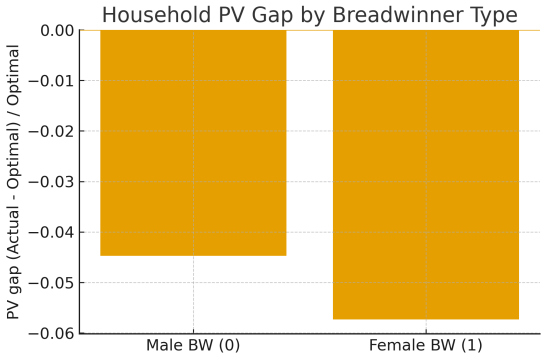
The optimal claiming strategy is defined as the pair of claiming ages that yields the highest expected present value of lifetime Social Security wealth, such that

$$(c_m^\star, c_f^\star) = \arg \max_{(c_m, c_f) \in \{62, \ldots, 70\}^2} HH(c_m, c_f). \tag{10}$$

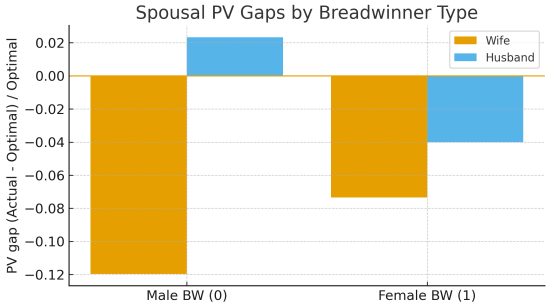
3.1 Spousal Asymmetries and The Gender Puzzle

We first compare actual and optimal Social Security wealth at the household level. Table 3 and Figure 3 (a) show that both male and female primary earner households fall short of their wealth-maximizing benchmarks by 4.5 and 5.7 percent, respectively. These gaps reflect systematic early claiming: the primary earner retires 4.5 years too early in male primary earner households and 3.3 years too early in female primary earner households.

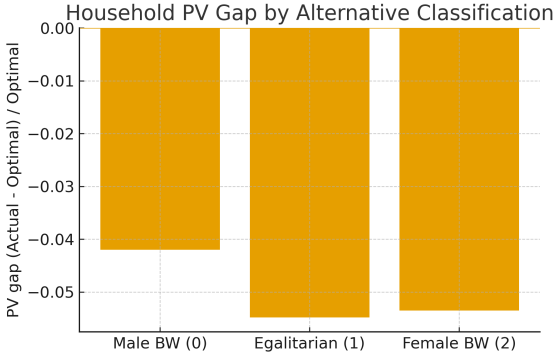
We also present results under an alternative definition of marital types, where we use the ratio of the wife's PIA to the sum of both spouses' PIAs. If this ratio is less than 0.4, between 0.4 and 0.6, or greater than 0.6, we refer to the household as a "male primary earner,"



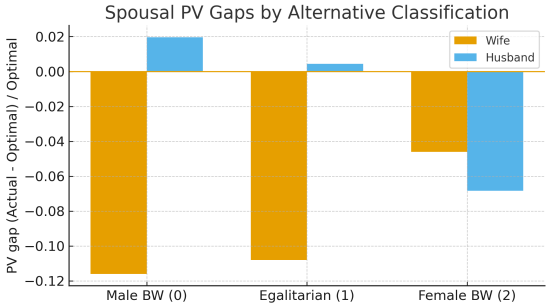
(a) Household Wealth



(b) Own Wealth



(c) Household Wealth
(Alternative Classification)



(d) Own Wealth
(Alternative Classification)

Figure 3: Gaps in Household and Own SS Wealth by Primary Earner Status

Notes: Households are categorized using the ratio of PIAs. Egalitarian households are those with ratios between 0.4 and 0.6. These figures plot the percentage shortfall or increase in household/spousal Social Security wealth (actual relative to optimal) for male and female primary earner households. Negative (positive) values indicate losses (gains) relative to the optimal strategy.

Table 3: Household Social Security Wealth by Primary Earner Type

	Male Primary Earner Couple	Female Primary Earner Couple
HH Present Value of Social Security Wealth (in $1,000)		
Optimal	495.540	485.640
Actual	473.320	457.030
Relative to Optimal	-4.5%	-5.7%
(Actual - Optimal) Claiming Age		
Wife	-0.275	-3.274
Husband	-4.461	-0.380

Table 4: Household Social Security Wealth by Alternative Primary Earner Classification

	Male Primary Earner Couple	Egalitarian Couple	Female Primary Earner Couple
HH Present Value of Social Security Wealth (in $1,000)			
Optimal	483.480	521.130	403.260
Actual	463.180	492.140	381.950
Relative to Optimal	-4.2%	-5.5%	-5.3%
(Actual - Optimal) Claiming Age			
Wife	-0.971	-0.491	-4.110
Husband	-4.225	-3.157	0.898

"egalitarian," and "female primary earner" household, respectively. Table 4 and Figure 3 (c) show that the pattern persists. Egalitarian households experience the largest losses (about 5.5 percent), followed closely by female primary earner households (5.3 percent).

Tables 5–6 and Figures 3 (b) and (d) highlight a systematic gender asymmetry. Wives consistently lose more than their husbands, regardless of household type. In male primary earner households, wives forgo 12 percent of potential wealth, while their husbands slightly exceed the optimum by 2.3 percent. In female primary earner households, wives lose 7 percent compared to 4 percent for husbands. These patterns are consistent under the alternative marital type classification, as wives' shortfalls range from 5 to 12 percent, while husbands' gaps fluctuate around zero. In particular, the loss of wives' Social Security wealth among egalitarian couples is similar to that among male primary earner couples.

Table 5: Spouse's Social Security Wealth by Primary Earner Type

	Male Primary Earner Couple		Female Primary Earner Couple	
	Husband's SS Wealth	Wife's SS Wealth	Husband's SS Wealth	Wife's SS Wealth
Total (in $1,000)				
Optimal	262.327	233.211	215.642	270.002
Actual	268.192	205.132	207.886	249.148
Relative to Optimal	2.3%	-12.0%	-4.0%	-7.3%
When Both Spouses are Alive (in $1,000)				
Optimal	207.911	116.808	166.661	156.923
Actual	226.670	112.076	170.510	164.047
Relative to Optimal	9.2%	-3.2%	1.5%	6.5%
When Widowed (in $1,000)				
Optimal	54.416	116.404	48.981	113.079
Actual	41.521	93.056	37.377	85.101
Relative to Optimal	-24.6%	-19.7%	-23.7%	-24.7%

Table 6: Spouse's SS Wealth by Alternative Classification

	Male Primary Earner Couple		Egalitarian Couple		Female Primary Earner Couple	
	Husband's SS Wealth	Wife's SS Wealth	Husband's SS Wealth	Wife's SS Wealth	Husband's SS Wealth	Wife's SS Wealth
Total (in $1,000)						
Optimal	265.706	217.772	246.193	274.941	151.506	251.750
Actual	270.919	192.266	247.260	244.877	141.149	240.802
Relative to Optimal	2.0%	-11.6%	0.4%	-10.8%	-6.8%	-4.6%
When Both Spouses are Alive (in $1,000)						
Optimal	211.574	101.926	193.033	157.772	107.647	148.202
Actual	229.024	98.763	207.888	155.388	105.478	160.065
Relative to Optimal	8.4%	-2.4%	7.4%	-0.4%	-1.7%	9.2%
When Widowed (in $1,000)						
Optimal	54.132	115.847	53.161	117.169	43.859	103.548
Actual	41.895	93.503	39.372	89.489	35.671	80.736
Relative to Optimal	-23.5%	-18.8%	-26.5%	-23.8%	-18.9%	-21.7%

The asymmetry raises a puzzle: why do wives bear disproportionate losses, even when they are the primary earners? In male primary earner households, husbands effectively "overclaim," capturing slightly more than the optimal PV at the cost of their wives' benefits. In female primary earner households, wives still retire earlier than wealth-maximizing ages, undermining their own benefits and survivor protection for their husbands. These patterns point to a lack of household coordination to maximize joint wealth, with decisions apparently tilted toward husbands' incentives rather than joint optimization.

3.2 Discussion

Taken together, Tables 3–6 and Figure 3 (a)-(d) establish two central facts. First, households leave substantial Social Security wealth unrealized by claiming too early. Second, and more puzzling, wives consistently lose more than husbands. In particular, the fact that female primary earners appear more likely to depart from the Social Security wealth-maximizing claiming benchmark points to deeper heterogeneity in preferences, constraints, and intra-household decision-making.

The gender asymmetry poses a challenge for standard models of household decision-making, where spouses coordinate claiming to maximize joint welfare, yet our evidence shows systematic deviations that disadvantage wives. Distinguishing between these mechanisms is critical for understanding whether the observed inefficiencies reflect preferences, power, or frictions, and for designing policies that better align individual incentives with household welfare.

3.3 Potential Mechanisms

The observed benefit claiming patterns suggest that the relationship between household earnings structure and retirement behavior is shaped by more than mechanical incentives embedded in Social Security rules. This section discusses several mechanisms that may help explain these patterns.

Value of annuity. One possibility is that households underappreciate the value of annuitized benefits, especially survivor protection. This may lead wives, who often benefit most from delayed claiming, to retire and claim too early.

Heterogeneity in patience. Less patient households place greater weight on current utility relative to future benefit flows, making earlier claiming more attractive even when

delaying raises expected lifetime Social Security benefits. In this case, observed departures from the wealth-maximizing claiming age may reflect variation in time preferences rather than misunderstanding of the rules.

Leisure complementarities. Primary earner status is defined relative to one's spouse and does not necessarily imply high earnings in an absolute sense. Female primary earners may still face limited resources and substantial non-market demands, such as caregiving responsibilities, which can raise the value of time out of the labor force and encourage earlier retirement despite the gains from delayed claiming.

Subjective mortality expectations. Individuals who expect shorter remaining lifespans have weaker incentives to delay claiming, since the gains from higher monthly benefits are realized over a shorter expected horizon. Differences in subjective survival beliefs may therefore generate substantial variation in claiming behavior even among households with similar observed earnings histories and institutional incentives, beyond what is captured by objective health measures.

Earnings power vs. bargaining power within the household. A further mechanism is that earnings power, based on relative earnings, need not map directly into decision-making authority within the household. This disconnect may be especially important when comparing households in which the primary earner is male versus female. Greater earnings power may translate more strongly into bargaining power for husbands than for wives. If so, similar earnings structures may nonetheless differ in whose preferences drive retirement and claiming choices, depending on the gender of the primary earner.

Taken together, these mechanisms suggest that earnings power may affect household behavior through several distinct channels. These channels are not mutually exclusive and may jointly explain the gender differences we observe in retirement and claiming behaviors.

4 Quantitative Model

To better understand couples' decision-making, we develop a dynamic life cycle model of labor supply, consumption, savings, and Social Security claiming decisions of couples, in which Social Security rules are modeled in great detail to match those of the current U.S.

system. A couple consists of a husband (spouse h) and a wife (spouse w), and the husband is assumed to be two years older than the wife. The life cycle from age $t = 50, ..., 90$ is modeled, where t denotes the wife's age. A period is a year.

Couples are heterogeneous with respect to permanent primary earner states (i.e., female primary earner and male primary earner couples) and education level of spouses.[3] The evolving states include household assets (a_t) and hourly wages (w_t^j), health status (h_t^j), average lifetime earnings ($\bar{y}_t^j$), and Social Security claiming status ($b_{t-1}^{ss,j}$) of both spouses $j \in \{h, w\}$. Given this vector of states, spouses optimally make household consumption, labor supply, and Social Security retirement claiming decisions to maximize the present discounted value of life-time utility. Couples can exogenously dissolve through death or divorce, and we assume no remarriage.

The life cycle of a married household is divided into three distinct phases. The first is the employment phase from ages 50 to 61, where the couple makes consumption, savings, and employment decisions.[4] The second is the retirement choice phase from ages 62 to 69, where spouses decide when to claim Social Security benefits. Finally, there is a retired phase from age 70, where both spouses do not work and only make consumption and savings decisions.

4.1 Sources of Uncertainty

At the beginning of each period t, the couple faces the following exogenous shocks:

1. Mortality shocks: The parameter s_t^j denotes the probability that spouse $j \in \{h, w\}$ is alive at age t conditional on being alive at age $t-1$. The survival probability depends on each spouse's age, previous health status, and education type as: $s_t^j = S(h_{t-1}^j, e^j, t)$. Because individuals live up to a maximum age T, $s_{T+1}^j = 0$ for any h_T^j.

2. Divorce shocks: Even if both spouses survive, the couple may dissolve through exogenous divorce. The divorce probability $\delta_d(h_{t-1}^h, h_{t-1}^w)$ depends on the health status of both spouses.[5]

Conditional on the household's survival, the following shocks are realized.

3. Health shocks: In each period, both husband and wife face uncertainty in health, $h_t^j \in \{0, 1\}$, where 0 indicates being in good health and 1 indicates being in bad health.

3. In the HRS, we use information on predicted Social Security wealth by age 62 to define primary earner status. We categorize a wife as "primary earner" if her average lifetime earnings exceed her husband's.

4. We do not allow individuals to claim disability benefits in the model for now.

5. Our HRS data confirms that divorce probability does not depend on education.

Household health $h_t = (h_t^h, h_t^w)$ evolves each period according to a Markov process. We allow for correlation between the two spouses' health status, as the transition probability jointly depends on the age, previous period's health status, and education of both spouses. A typical element of the health transition matrix at age t is given by

$$\pi_{l,k,t+1} = Pr(h_{t+1} = l | h_t = k, e^h, e^w, t), \quad k, l \in \{(0,0),(0,1),(1,0),(1,1)\}.$$

4. Wage shocks for each spouse: Each spouse's wage offer depends on their age, health status, and education type. In addition, both spouses receive idiosyncratic wage shocks each period.

4.2 Preferences

Each spouse $j \in \{h, w\}$ has preferences over consumption c_t^j and leisure l_t^j, and the within-period utility is specified as

$$u(c_t^j, l_t^j) = \frac{((c_t^j/\zeta)^\nu {l_t^j}^{1-\nu})^{1-\gamma}}{1-\gamma},$$

where γ is the coefficient of relative risk aversion, ν is the weight on consumption, and ζ is the equivalent scale in consumption.

The preferences for a couple are given as

$$U(c_t^h, c_t^w, l_t^h, l_t^w) = \theta u(c_t^h, l_t^h) + (1-\theta) u(c_t^w, l_t^w),$$

where θ captures the Pareto weight on the husband's utility. Currently, it is assumed that $\theta = 1/2$.

The total amount of leisure in period t for spouse j is given by

$$\begin{aligned} l_t^j = & \bar{L}^j - n_t^j - (\phi_{0,emp}^j \cdot t + \phi_{1,emp}^j \cdot \mathbb{I}\{h_t^j = 1\}) \cdot \mathbb{I}\{n_t > 0\} \\ & - \phi^j(h_t) + \phi_{joint}^j \cdot \mathbb{I}\{n_t^h = n_t^w = 0\}, \end{aligned} \tag{11}$$

where $\bar{L}^j$ is the total endowment of leisure each period and n_t^j is the annual hours corresponding to three discrete labor supply decisions, namely non-employment, part-time, and full-time employment. We allow the fixed cost of working to depend on age ($\phi_{0,emp}^j$) and health status ($\phi_{1,emp}^j$), while $\phi^j(h_t)$ is the time lost due to bad health. Following Casanova (2010), we model

leisure complementarity when both spouses are not working with the parameter ϕ^j_{joint}.

4.3 Wage Offers

Each household i receives wage offers and makes labor supply decisions once wages are revealed. The wage offer process evolves according to

$$\log w^h_{it} = \alpha^h_0 + \alpha^h_1 \cdot t + \alpha^h_2 \cdot t^2 + \alpha^h_3 \cdot e^h_i + \varphi^h \cdot \mathbf{1}(h^h_{it} = 1) + \zeta^h_{it} + \epsilon^h_{it} \tag{12}$$

$$\log w^w_{it} = \alpha^w_0 + \alpha^w_1 \cdot t + \alpha^w_2 \cdot t^2 + \alpha^w_3 \cdot e^w_i + \varphi^w \cdot \mathbf{1}(h^w_{it} = 1) + \zeta^w_{it} + \epsilon^w_{it} \tag{13}$$

$$\zeta^j_{it} = \zeta^j_{i,t-1} + \nu^j_{it}, \quad \begin{pmatrix} \nu^h_{it} \\ \nu^w_{it} \end{pmatrix} \overset{iid}{\sim} N\left[0, \begin{pmatrix} \sigma^2_{\nu,h} & \sigma_{\nu_{h,w}} \\ \sigma_{\nu_{h,w}} & \sigma^2_{\nu,w} \end{pmatrix}\right], \quad \zeta^j_{i,50} = \nu^j_{i,50}, \quad j \in \{h, w\} \tag{14}$$

$$\begin{pmatrix} \epsilon^h_{it} \\ \epsilon^w_{it} \end{pmatrix} \overset{iid}{\sim} N\left[0, \begin{pmatrix} \sigma^2_{\epsilon,h} & \sigma_{\epsilon_{h,w}} \\ \sigma_{\epsilon_{h,w}} & \sigma^2_{\epsilon,w} \end{pmatrix}\right], \tag{15}$$

where w^j_{it} denotes the hourly wage of spouse $j \in \{h, w\}$. For both spouses, log hourly wages depend on their own age, education type e^j_i, and health status h^j_{it}. Each spouse receives a permanent wage shock ν^j_{it} and a transitory shock ϵ^j_{it}, and these two shocks are assumed to be independent. Following previous studies, the permanent wage shock follows a random walk process. The permanent shock in the first period ($t = 50$) is initialized to $\zeta^j_{i,50} = \nu^j_{i,50}$. The permanent (transitory) wage shocks of the two spouses are assumed to be contemporaneously correlated with covariance $\sigma_{\nu_{h,w}}$ ($\sigma_{\epsilon_{h,w}}$).

4.4 Social Security Claiming

Each spouse j endogenously chooses when to claim Social Security retirement benefits. Retirement benefits are a monotonic function of Average Indexed Monthly Earnings (AIME), an average of a worker's highest earnings over the past 35 years. The AIME increases by working an additional year if earnings in that year are higher than the lowest earnings embedded in it, but they are also capped at a threshold, $\bar{y_{ss}}$.

Since tracking the 35 highest earnings years is computationally infeasible, we approximate the evolution of spouse j's average lifetime earnings $\bar{y}^j_t$ as

$$\bar{y}^j_{t+1} = \begin{cases} \bar{y}^j_t + \frac{y^j_t}{35} & \text{if } t < 60 \\ \bar{y}^j_t + \frac{\max\{0, y^j_t - \bar{y}^j_t\}}{35} & \text{if } t \geq 60, \end{cases} \tag{16}$$

where $y_t^j = \min\{w_t^j n_t^j, y_{ss}\}$. This implies that for individuals younger than 60, average lifetime earnings are always updated by additional years of earnings; after age 60, they are updated if current earnings are greater than the previous period's average lifetime earnings. We set $y_{ss} = \$132,900$ based on the Social Security maximum taxable earnings in 2019.

We then compute the annual Primary Insurance Amount (PIA) $pia(\bar{y}_t{}^j)$ using the following piece-wise linear function

$$pia(\bar{y}_t) = 0.90 \times \min\{\bar{y}_t, b_0\} + 0.32 \times \min\{\max\{\bar{y}_t - b_0, 0\}, b_1 - b_0\} + 0.15 \times \max\{\bar{y}_t - b_1, 0\}, \tag{17}$$

where the bend points $b_0 = 32,000$ and $b_1 = 44,000$ are based on 2019 values.[6]

4.4.1 Adjustments

Social Security benefits are further adjusted by a factor of Γ to account for early or delayed claiming such that the final benefit amount for an individual who claims at age t_b is $pia(\bar{y}_{t_b}) \cdot \Gamma_{t_b}$. Benefits claimed at the FRA are not subject to any penalty. While individuals can claim benefits from as early as age 62, every year of early claiming prior to the FRA permanently reduces Social Security benefits. Individuals can also delay their claiming age beyond the FRA, which permanently increases future benefits by the delayed retirement credit (DRC).

The adjustment factor is specified as

$$\Gamma_{t_b} = \begin{cases} 1 - \gamma_{pen}(t_b) \cdot (t_{FRA} - t_b) & \text{if } 62 \leq t_b < t_{FRA} \\ 1 & \text{if } t_b = t_{FRA} \\ 1 + \gamma_{drc} \cdot (\min\{t_b, 70\} - t_{FRA}) & \text{if } t_b > t_{FRA}. \end{cases} \tag{18}$$

Early claiming reduces benefits by $\gamma_{pen}(t_b)$, which is 6.67% annually for the first three years prior to FRA and 5% annually for every year beyond that. Each additional year of delayed claiming beyond the FRA increases benefits by $\gamma_{drc} = 0.08$.

6. In reality, indexed nominal earnings are used when computing Social Security benefits so that they reflect the general rise in the standard of living that occurred during the worker's working lifetime. Since all dollar values in the model are in 2019 dollars, the use of average lifetime earnings in equation (17) provides a reasonable approximation without the need to introduce a wage index for each calendar year.

4.4.2 Marriage-Related Benefits: Spousal and Survivor Benefits

Couples are also eligible for additional family benefits provided by the Social Security system, which are spousal and survivor benefits. Married individuals can receive up to 50% of their spouse's PIA as spousal benefits from age 62 as long as their spouse has also claimed their own Social Security benefits. If individuals are eligible for both spousal benefits and own benefits based on their own earnings record (i.e., primary benefits), they receive whichever is higher. Survivor benefits are available for widows and widowers, up to an amount of 100% of the deceased spouse's PIA. Similar to spousal benefits, if surviving spouses are entitled to both primary and survivor benefits, they receive the higher of the two.

Our model incorporates the full details of spousal and survivor benefits, following the rules described in Section 3, with benefit amounts determined by both spouses' PIAs and claiming ages.

4.5 Budget Constraint

In each period, the household faces the following budget constraint

$$A_{t+1} = (1+r)A_t + \sum_{j\in\{h,w\}} w_t^j n_t^j + ssb_t + I_t + T_t - c_t - \tau_t - m_t, \tag{19}$$

where the household receives asset income rA_t, labor income $w_t^h h_t^h + w_t^w h_t^w$, Social Security benefits ssb_t, all other sources of non-labor income I_t, and government transfers T_t. The household consumes c_t, incurs payroll and federal taxes τ_t, and pays out-of-pocket medical expenses m_t. Non-labor income I_t is a sum of both spouses' income from pensions, annuities, veteran benefits, and other lump sum income, and we assume it is an exogenous function of age, education type, and health status of both spouses. Taxes are computed according to Appendix A.1. The couple's out-of-pocket medical expenses $m_t = m(t, s_t^h, s_t^w, e^h, e^w)$ are assumed to be exogenous and depend on age, health status, and education type of both spouses.

4.5.1 Transfers

There is a standard consumption floor that guarantees a minimum level of consumption:

$$c_t \geq \bar{c}. \tag{20}$$

Government transfers, tr_t, bridge the gap between this minimum level of consumption and individuals' liquid resources such that

$$tr_t = \max\{0, \underline{c} - ((1+r)A_t + \sum_{j\in\{h,w\}} w_t^j n_t^j + ssb_t + I_t - \tau_t - m_t)\}. \tag{21}$$

This is a simple approximation to the federal safety net programs in the U.S. like Supplemental Nutritional Assistance Program (SNAP), Supplemental Security Income (SSI), Temporary Assistance for Needy Families (TANF), and other such programs.

4.6 Terminal Utility Upon Household Dissolution

Individual behavior after the dissolution of a married household (due to divorce or the death of one or both spouses) is not explicitly modeled. Instead, the surviving spouse j receives a terminal utility specified as

$$v^j(a_t^j, SSW_t) = \frac{\theta_{beq}^j}{1-\gamma}\Big(a_t^j + \kappa_{beq}^j\Big)^{\nu(1-\gamma)} + \frac{\theta_{ss}^j}{1-\gamma}\Big(SSW_t^j + \kappa_{ss}^j\Big)^{\nu(1-\gamma)},\ j \in \{h,w\}, \tag{22}$$

where a_t^j is the lump sum asset that spouse j receives upon household dissolution and SSW_t^j is the present discounted value of the stream of (future) retirement benefits. The value of a_t^j depends on whether spouse j is a surviving spouse or divorcee. Widow/ers are assumed to receive all of the household's assets ($a_t^j = A_t$) while divorcees split the household's assets equally ($a_t^h = a_t^w = \frac{1}{2}A_t$). SSW_t is computed based on both the surviving and deceased spouse's average lifetime earnings, as the surviving spouse may receive survivor benefits.

The terms $\kappa_{beq}^j, \kappa_{ss}^j \geq 0$ are shifters that affect the curvature of v^j and govern the degree to which households are risk-averse over consumption and wealth. This allows households to be less risk-averse over a_t^j or SSW_t^j than consumption. For instance, spouse j may receive additional government transfers on becoming single. Furthermore, there is a large previous literature documenting that people are reluctant to annuitize wealth, and we account for this by assuming that the warm-glow utility of lump sum assets (a_t^j) and Social Security wealth (SSW_t^j) are additively separable.

When both spouses die at period t, the remaining household wealth A_t generates a warm-glow bequest utility

$$v(A_t) = \frac{\theta_{beq}}{1-\gamma}\Big(A_t + \kappa_{beq}\Big)^{\nu(1-\gamma)}. \tag{23}$$

4.7 Recursive Formulation

Let $\boldsymbol{X}_t = \{A_t, h_t^h, h_t^w, \bar{y}_t^h, \bar{y}_t^w, b_{t-1}^{ss,h}, b_{t-1}^{ss,w}, e^h, e^w, \zeta_t^h, \zeta_t^w\}$ be the period t state vector. Then couples solve a finite-horizon Markovian decision problem where they choose a sequence of consumption $\{c_t^h, c_t^w\}_{t=1}^T$, hours $\{n_t^h, n_t^w\}_{t=1}^T$, and Social Security benefit application $\{b_t^{ss,h}, b_t^{ss,w}\}_{t=1}^T$ rules to maximize the expected discounted lifetime utility subject to a set of budget and time constraints, government transfer rule, and policies for taxes and Social Security:

$$
\begin{aligned}
V_t(\boldsymbol{X}_t) \;=\; & \max_{c_t,\, n_t^h,\, n_t^w,\, b_t^{ss,h},\, b_t^{ss,w}} U\big(c_t^h, c_t^w, l_t^h, l_t^w\big) \\
& + \beta_0 \Big\{ \big(1 - s_t^h\big)\big(1 - s_t^w\big)\big(1 - \delta_d(h_t^h, h_t^w)\big) E_t\big[V_{t+1}(\boldsymbol{X}_{t+1} \mid \boldsymbol{X}_t)\big] \Big\} \\
& + \Big\{ \big(1 - s_t^h\big)\big(1 - s_t^w\big)\, \delta_d(h_t^h, h_t^w) \big(\beta_h \cdot \theta\, v^h\big(a_{t+1}^h, SSW_{t+1}^h\big) + \beta_w \cdot (1-\theta)\, v^w\big(a_{t+1}^w, SSW_{t+1}^w\big)\big) \Big\} \\
& + \Big\{ \beta_h \cdot \big(1 - s_t^h\big) \cdot s_t^w \cdot \theta\, v^h\big(a_{t+1}^h, SSW_{t+1}^h\big) \Big\} \\
& + \Big\{ \beta_w \cdot s_t^h \cdot \big(1 - s_t^w\big) \cdot (1-\theta)\, v^w\big(a_{t+1}^w, SSW_{t+1}^w\big) \Big\} \\
& + \Big\{ \beta_0 \cdot s_t^h \cdot s_t^w \cdot v(A_{t+1}) \Big\}.
\end{aligned}
$$

5 Model Estimation

The model is estimated using a two-step Method of Simulated Moments (MSM) estimation strategy, as standard in the literature. In the first step, we estimate or calibrate the parameters that can be cleanly identified without explicitly using the model. These parameters are derived directly from data, based on existing literature evidence, or calculated from program rules. Table 7 summarizes our first stage parameters.

In the second step, taking the first stage parameters as given, we use Generalized Method of Moments (GMM) techniques to estimate the remaining model parameters. The objective is to find a vector of parameters Θ that generates simulated decision profiles that best match (by a GMM criterion function) the corresponding profiles from the data.

The estimator $\hat{\Theta}$ is given by the minimized GMM criterion function

$$
\hat{\boldsymbol{\theta}}_{\boldsymbol{s}} = \arg\min_{\boldsymbol{\theta}_{\boldsymbol{s}}} \big(\boldsymbol{m_d} - \boldsymbol{m_s}(\hat{\boldsymbol{\theta}}_{\boldsymbol{f}}, \boldsymbol{\theta}_{\boldsymbol{s}})\big)' \, \hat{W} \, \big(\boldsymbol{m_d} - \boldsymbol{m_s}(\hat{\boldsymbol{\theta}}_{\boldsymbol{f}}, \boldsymbol{\theta}_{\boldsymbol{s}})\big), \tag{24}
$$

where $\boldsymbol{m_d}$ is the vector of data moments, $\boldsymbol{m_s}(\hat{\boldsymbol{\theta}}_{\boldsymbol{f}}, \boldsymbol{\theta}_{\boldsymbol{s}})$ is the vector of simulated moments, and matrix $\hat{W}$ denotes the weight. We use a diagonal weighting matrix $\hat{W}$, which is the

inverse of the variance-covariance matrix of the data along the diagonal and zero elsewhere.

The moments that our model is estimated to match are:

1. Employment by health status (healthy and unhealthy) and age (50-69) of each spouse
2. Household median assets by age (50-69)
3. Joint retirement by age (50-69)
4. Claiming ages (62-69) of each spouse
5. Wage moments for each spouse

6 Results

The estimated structural parameters are presented in Table 8. Figure 4 displays the life cycle profiles of decision variables from the HRS alongside profiles generated from the model estimation. Additional model fit of targeted moments is reported in Table C.3.

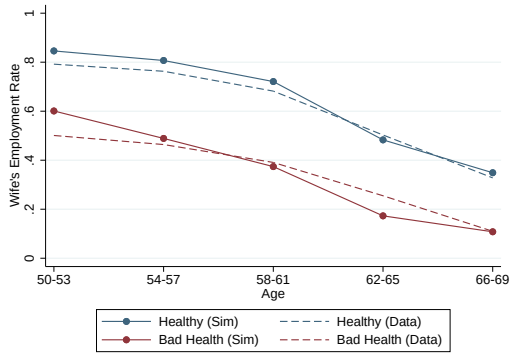
As is evident, the model fits the targeted data profiles well. It reproduces the observed life cycle patterns of labor force participation by health status for both spouses, joint non-employment within couples, and median household assets over the life cycle. More importantly, it closely matches wives' Social Security claiming behavior, capturing both the concentration of claims at the early retirement age of 62 and the fact that most wives claim before the full retirement age. For husbands, the model overpredicts the share claiming at

Table 7: First Stage Parameters

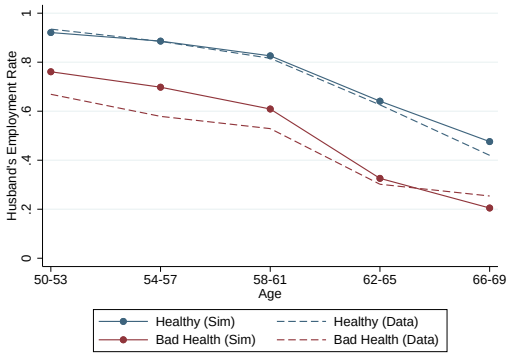
Parameter	Value	Source
Husband's time endowment, $\bar{L}$	5,840 (=16 hours $\times$ 365 days)	
Real interest rate, r	0.028	SSA Trustees Reports
Minimum consumption level, $\bar{c}$	25,365	150% of Federal Poverty Line (2019)
Divorce rates, δ_d	Table B.1	HRS
Mortality rates, s_t^j	Figure B.1	HRS
Health transition probabilities	Figure B.2	HRS
Household medical expenses, m_t	Figure B.3	HRS
Household non-labor income, I_t	Table B.2	HRS

Table 8: Estimation Results: Parameters

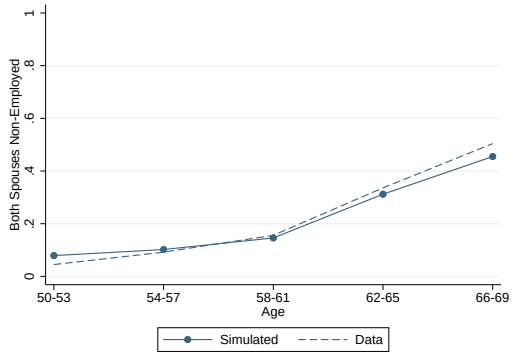
Parameter (Household/Wife w)	Description	Value	Parameter (Husband h)	Value
	Preferences			
ν	Consumption weight	0.465		
γ	CRRA coefficient	2.966		
β_0	Discount factor	0.800		
β_w	Discount factor (when spouse died)	0.855	β_h	0.851
	Time Constraint			
$\bar{L}^w$	Wife's time endowment	4470		
$\phi^w_{0,emp}$	Fixed cost of employment (age slope)	12.95	$\phi^h_{0,emp}$	27.94
$\phi^w_{1,emp}$	Fixed cost of employment (bad health)	228.10	$\phi^h_{1,emp}$	624.69
$\phi^w(h_t)$	Unhealthy leisure penalty	667.67	$\phi^h(h_t)$	1214.25
ϕ^w_{joint}	Joint non-work utility bonus	201.47	ϕ^h_{joint}	195.24
	Bequest Motives			
θ_{beq}	Asset bequest motive weight	0.265		
κ_{beq}	Asset bequest motive curvature	278,367		
θ^w_{beq}	Asset bequest motive weight	0.381	θ^h_{beq}	0.332
κ^w_{beq}	Asset bequest motive curvature	194,118	κ^h_{beq}	228,389
$\theta^w_{beq,SS}$	SS bequest motive weight	0.001	$\theta^h_{beq,SS}$	0.009
$\kappa^w_{beq,SS}$	SS bequest motive curvature	3305	$\kappa^h_{beq,SS}$	20,668
	Wage Process			
α^w_1	Wage: age	0.206	α^h_1	0.063
α^w_2	Wage: age square	-0.206	α^h_2	-0.091
α^w_3	Wage: college	0.556	α^h_3	0.517
φ^w	Wage: bad health	-0.281	φ^h	-0.294
$\sigma_{\nu,w}$	Std. dev. of permanent shock	0.094	$\sigma_{\nu,h}$	0.180
$\sigma_{\epsilon,w}$	Std dev of transitory shock	0.177	$\sigma_{\epsilon,h}$	0.148
$\sigma_{\nu_{h,w}}$	Covariance of permanent shocks	-0.001		
$\sigma_{\epsilon_{h,w}}$	Covariance of transitory shocks	0.010		



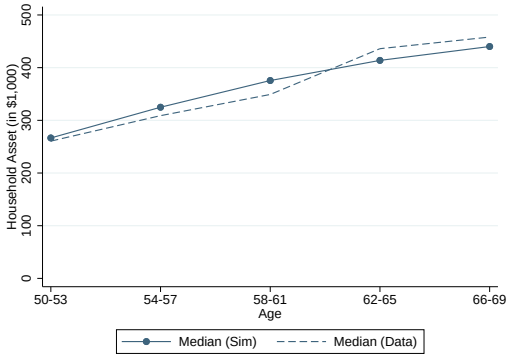
(a) Wife's Employment Rate by Health



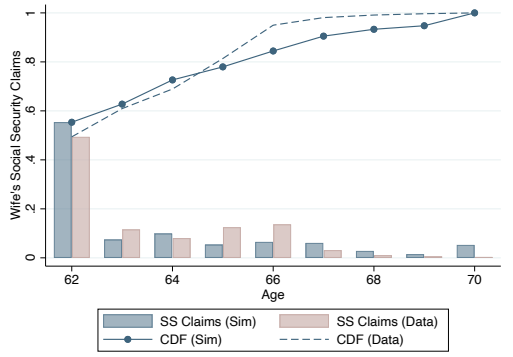
(b) Husband's Employment Rate by Health



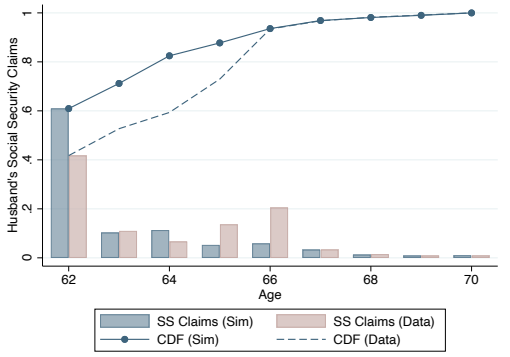
(c) Both Spouses Non-employed



(d) Household Assets



(e) Wife's Social Security Claims

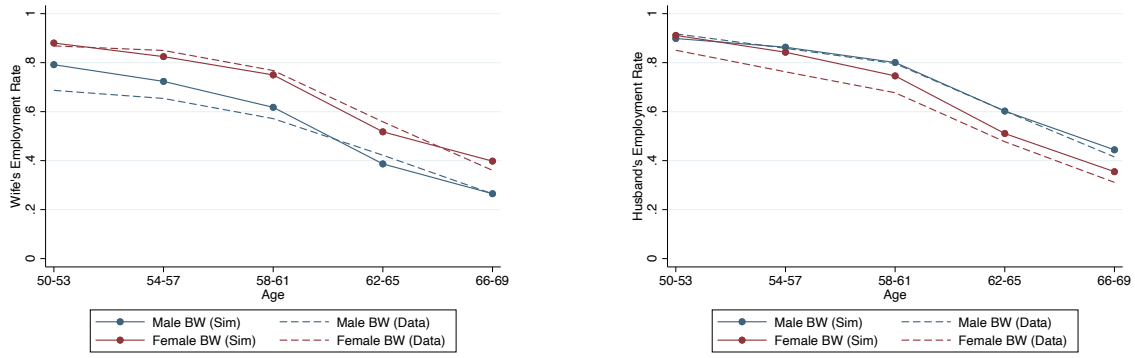


(f) Husband's Social Security Claims

Figure 4: Estimation Results: Data vs. Estimated Profiles

the early retirement age, but it closely matches the cumulative claiming share at the full retirement age and thereafter.

Although behavior by primary earner status is not explicitly targeted in the current estimation, Figure 5 shows that the model also performs well along this untargeted dimension. In particular, it replicates the employment patterns of wives and husbands by primary earner status in the data.



(a) Wife's Employment Rate

(b) Husband's Employment Rate

Figure 5: Untargeted Moments by Primary Earner Status

6.1 Estimated Parameters and Mechanism

The estimated parameters in Table 8 shed light on the mechanisms explaining the gap between household Social Security wealth-maximizing claiming age and observed claiming behavior.

First, the estimated discount factors imply substantial impatience, which helps rationalize why some households claim earlier than the wealth-maximizing benchmark: although delaying claiming raises future monthly benefits, those gains are discounted. Our low estimate of the discount factor is similar to that in Lockwood (2018), which offers a detailed discussion of patience and the bequest motive. Our estimates also distinguish between the states in which both spouses are alive/dead and those in which only one spouse survives. The discount factor is higher in widow/widowerhood than for couples, suggesting that single individuals are more patient. Since the values are very similar across surviving wives and husbands, the parameter estimates point mainly to impatience, rather than differential patience across surviving spouses.

Second, the time constraint parameters point to an important role for health-related work costs and coordinated retirement. The fixed cost of employment rises with age and

increases sharply for both spouses when in bad health, with larger values for husbands than for wives. In addition, the positive joint non-work utility bonus indicates that couples value coordinated non-employment, consistent with leisure complementarities and joint retirement incentives (Casanova 2010). At the same time, the estimated joint leisure terms are similar across spouses, suggesting little gender difference along this margin.[7]

Third, the bequest parameters provide useful evidence on the valuation of annuitized survivor wealth relative to assets. Annuity valuation has been discussed by Brown and Poterba (2000) and Brown et al. (2021), with low annuity demand discussed by Pashchenko and Porapakkarm (2024). Our estimated bequest motive is much stronger for assets than for Social Security wealth: the weights on asset bequests are substantial for both spouses, whereas the corresponding Social Security bequest weights are close to zero. This pattern suggests that households have relatively weak incentives to delay claiming solely to raise future annuity or survivor flows. In addition, there is heterogeneity by gender: the wife's asset-bequest weight is slightly larger than the husband's, while the husband places somewhat greater weight on Social Security bequests.

Finally, the wage process parameters highlight the importance of human capital and health. College is associated with substantially higher wages for both spouses, with a slightly larger premium for wives, while poor health lowers wages for both. These estimates are consistent with female primary earner households in this cohort being positively selected on education and earnings capacity.

At the same time, the current model does not include an explicit bargaining-power parameter, so the estimates speak most directly to patience, health-related work costs, joint leisure, bequest motives, and wage heterogeneity as the mechanisms behind the observed retirement and claiming patterns.

6.2 Counterfactual Analysis of Key Parameters

To better understand the mechanisms behind couples' retirement and claiming behavior, we conduct a set of parameter counterfactuals that vary three forces highlighted by the estimated model: patience, the valuation of Social Security wealth, and the utility gain from coordinated non-employment. Specifically, we consider a 10 percentage point (pp) increase in discount factors, a counterfactual in which the bequest weight on Social Security wealth is set equal

7. We also consider the possibility that caregiving responsibilities shape joint non-work utility. Table C.4 reports the share of spousal caregiving and caregiving hours by spousal health status from the data. Given the small share of respondents who provide care to a spouse, it is difficult to identify statistically differences in caregiving responsibilities by gender and by primary earner status.

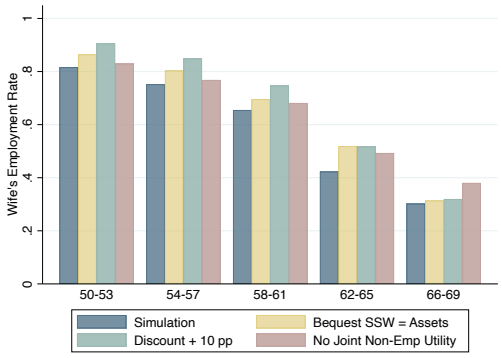
to that on liquid assets, and a removal of the joint non-employment utility term for both spouses. Figure 6 reports the resulting changes in employment, household outcomes, and claiming behavior. Figure C.1 presents the effects by primary earner status, and Figure C.2 displays the employment effects by health for both spouses. These exercises are not intended as realistic policy reforms; rather, they are comparative statics that help quantify which mechanisms are most important for household labor supply, saving, and claiming decisions.

Increasing patience generates the largest behavioral response. When households place greater weight on future utility, wives and husbands both work more over the life cycle, joint non-employment declines, household consumption falls modestly, and asset accumulation rises substantially. The employment response is visible across health types, and it is especially pronounced among those in poor health. Higher patience also shifts wives' claiming away from the early eligibility age, while the effect on husbands' claiming is more limited. This experiment shows that impatience is an important force behind early labor force exit and low asset accumulation, and it contributes to early claiming primarily through the wife's decision.

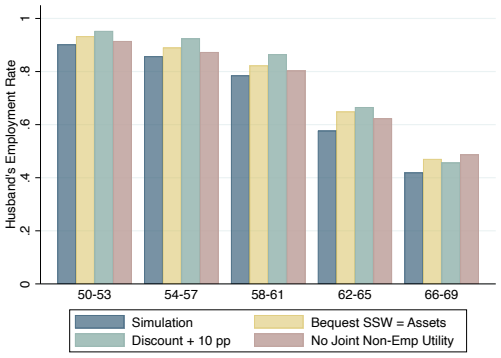
The second counterfactual strengthens households' valuation of annuitized Social Security wealth by setting the bequest weight on Social Security wealth equal to that on liquid assets. This experiment has a more targeted effect on claiming behavior. Relative to the baseline, it sharply reduces claiming at age 62 for both wives and husbands, and it shifts claims to later ages. Employment also rises, but less than in the higher-patience counterfactual, and the effects on consumption and assets are relatively modest. This pattern suggests that one reason households claim too early in the baseline is that they place too little value on Social Security wealth relative to bequests. Once annuitized wealth is valued more like wealth, the incentive to delay claiming becomes much stronger.

The third counterfactual removes the utility gain from joint non-employment. This change also raises employment for both spouses and reduces the share of couples in which both spouses are out of the labor force. Its effects on claiming are much smaller than those produced by the bequest experiment, and its effects on assets are also smaller relative to those from greater patience. This indicates that the joint-retirement motive helps explain why couples leave the labor force together, but it plays a smaller role in accounting for very early claiming than either impatience or weak valuation of annuitized Social Security wealth.

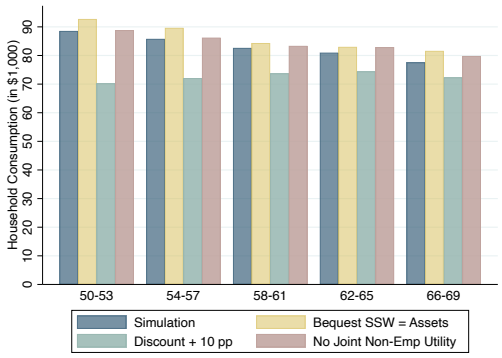
The heterogeneity patterns in Figures C.1 and C.2 further clarify these mechanisms. The employment effects of all three changes are generally larger among individuals in poor health, suggesting that health-related work costs amplify the impact. Across primary earner types, the qualitative responses are similar in male- and female primary earner households.



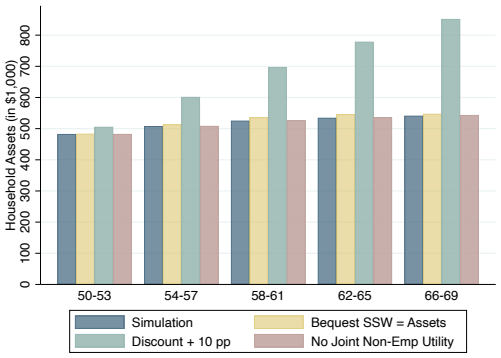
(a) Wife's Employment Rate



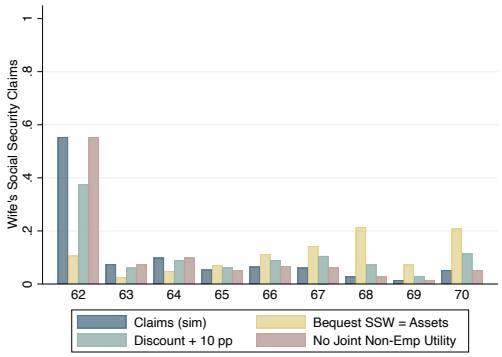
(b) Husband's Employment Rate



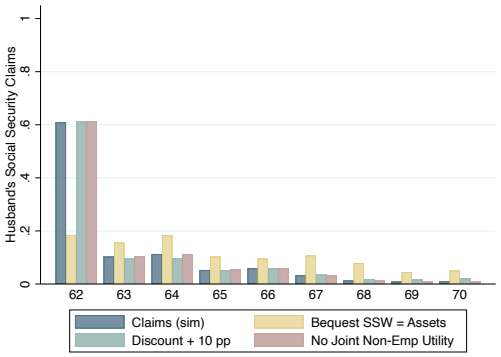
(c) Household Consumption



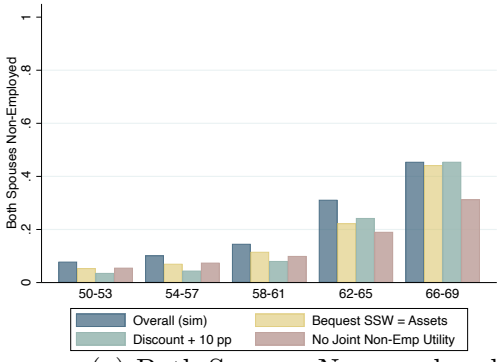
(d) Household Assets



(e) Wife's Social Security Claims



(f) Husband's Social Security Claims



(g) Both Spouses Non-employed

Figure 6: Effects of Changing Parameters

In sum, these experiments imply that the model's main mechanisms operate through distinct margins: patience primarily affects labor supply, saving, and delayed retirement; stronger valuation of Social Security wealth primarily affects claiming; and the joint non-employment term mainly governs coordinated retirement within the household.

6.3 Discussion

Two additional mechanisms may help explain the patterns in the data, although they are not directly captured by the structural parameter estimates.

6.3.1 Subjective mortality expectation

One is heterogeneity in subjective mortality expectations. Individuals who expect shorter remaining lifespans have weaker incentives to delay claiming, since the returns to higher monthly benefits are realized over a shorter expected horizon. We assess this channel using the HRS measures of subjective survival expectations, but we do not find significant differences across household types or by gender (see Table 9). This suggests that subjective mortality is unlikely to be a central explanation for the differences we document.

Table 9: Subjective Survival Probability to Age 75 (in %)

	Secondary Earner	Primary Earner
Male		
Perceived probability[†]	64.20	61.98
Life table probability[‡]	71.27	71.14
Ratio of perceived to life table	0.903	0.872
Female		
Perceived probability	67.13	69.31
Life table probability	79.86	80.12
Ratio of perceived to life table	0.842	0.866

[†] The respondent's subjective likelihood of living to age 75.
[‡] The respondent's likelihood of living to age 75 based on Vital Statistics life tables.

6.3.2 Household Welfare Weights

A second mechanism is the distinction between earnings power and bargaining power within the household. Because primary earner status is defined by relative earnings, it need not

correspond directly to decision-making authority. This disconnect may be particularly important when comparing male and female primary earner households: a higher earnings share may translate into greater bargaining power more strongly for husbands than for wives. We investigate this possibility using HRS measures of who has the final say in important household decisions. Specifically, we compare households with similar earnings splits across primary earner gender and examine whether the primary earner is equally likely to report having final decision-making. As shown in Table 10, the evidence suggests that earnings power does not map one-for-one into bargaining power. Half of households report equal decision-making regardless of primary earner status, and male primary earners are more likely than female primary earners to report sole decision-making authority, indicating that gender may shape how earnings power is translated into household decision-making.

Table 10: Who has final say when making major family decisions (in %)

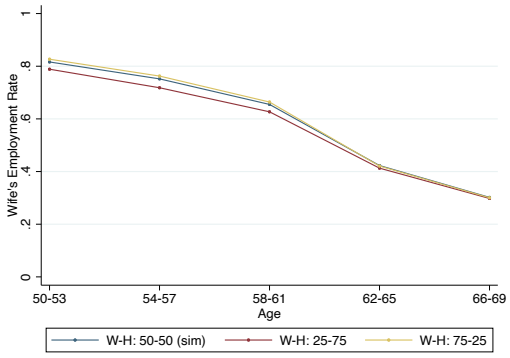
	Male Primary Earner	Female Primary Earner
Female	14.17	25.0
Male	34.03	23.80
Equal	51.80	51.20

6.3.3 Sensitivity to Household Welfare Weights

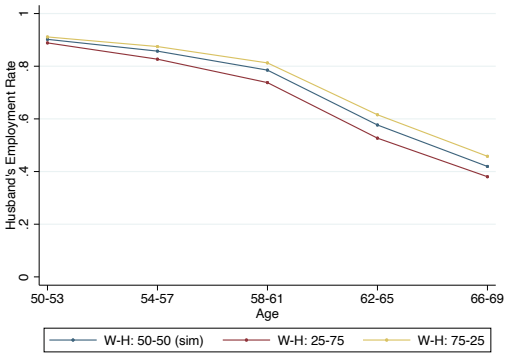
Finally, we examine how household behavior changes when intra-household welfare weights are varied. Starting from the benchmark case in which the wife and husband receive equal weight in the household objective, we consider alternative weights of 25:75 and 75:25.

As shown in Figure 7, placing greater weight on the wife's utility increases employment for both spouses over most of the life cycle, lowers the share of couples in joint non-employment, and raises household asset accumulation, while consumption falls modestly. Shifting weight toward the husband has the opposite effect: both spouses work somewhat less, joint non-employment rises, and assets are lower. The labor responses are stronger when health is poor and are broadly similar across household primary earner types (Figure C.3).

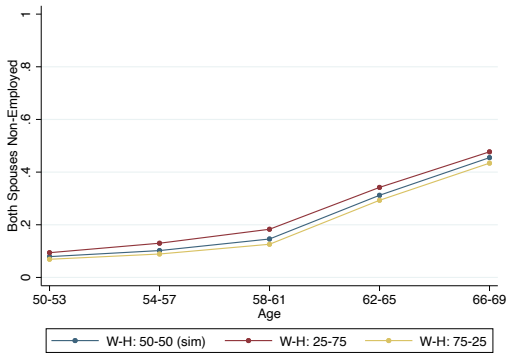
The effects on claiming are more limited for wives. For husbands, increasing the wife's weight raises claiming at age 62 and reduces later claiming, while increasing the husband's weight delays husbands' claiming somewhat.



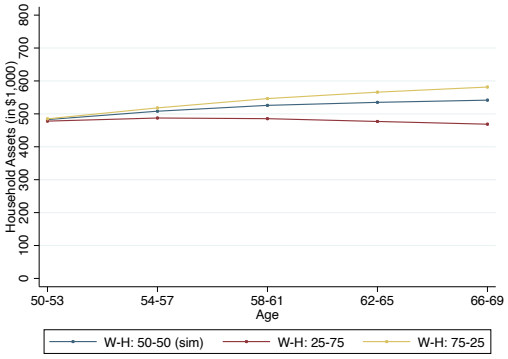
(a) Wife's Employment Rate



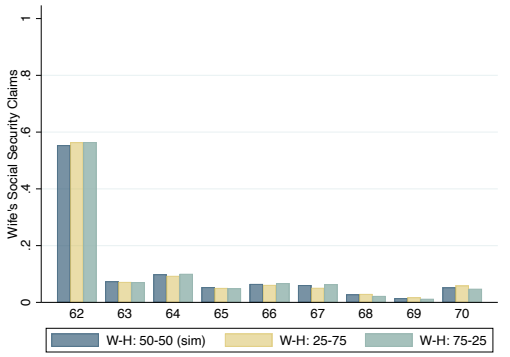
(b) Husband's Employment Rate



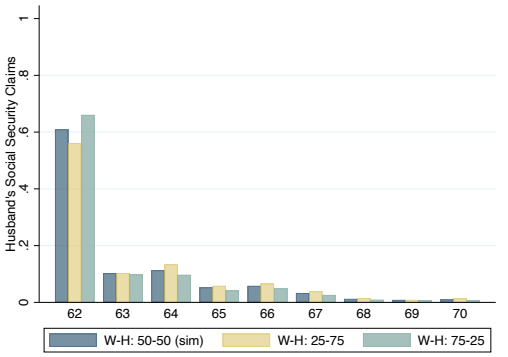
(c) Both Spouses Non-employed



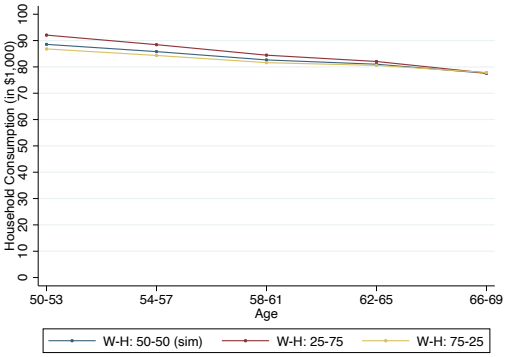
(d) Household Assets



(e) Wife's Social Security Claims



(f) Husband's Social Security Claims



(g) Household Consumption

Figure 7: Effects of Changing Household Weights

7 Policy Counterfactuals

Because the estimated model matches the key life cycle moments in the data closely, we use it to conduct a set of policy counterfactuals that isolate the role of auxiliary benefits in household decision-making. Specifically, we remove spousal benefits, survivor benefits, and both programs jointly, and then examine the implied changes in labor supply, claiming behavior, consumption, and assets. Table 11 reports the average effects by age group and primary earner status, while Figure 8 shows the associated life cycle profiles and claiming distributions.

The counterfactuals show that auxiliary benefits primarily affect wives' behavior, with much larger responses in male primary earner households than in female primary earner households. Eliminating spousal benefits alone has only modest effects on employment, raising wives' employment by 0.18–0.41 pp. In contrast, removing survivor benefits generates much larger responses, increasing wives' employment by 2.66 pp at ages 50–61, 3.18 pp at ages 62–65, and 1.32 pp after reaching the full retirement age. When both programs are removed, the effects on employment are even stronger prior to age 66. These changes are driven almost entirely by male primary earner households: for example, at ages 62–65, wives' employment rises by 0.57 pp under no spousal benefits, 4.29 pp under no survivor benefits, and 7.37 pp when both are removed. In female primary earner households, the corresponding responses are close to zero. This pattern is consistent with the fact that auxiliary benefits matter most when the wife's retirement income depends importantly on her husband's earnings record.

Figure 8 (panel e) shows that wives' claiming behavior also responds strongly to these policy changes. Removing spousal benefits shifts claiming toward the early eligibility age, increasing the share of wives who claim at age 62. In contrast, removing survivor benefits reduces claiming at age 62 and shifts some claims toward later ages, particularly around the FRA. When both spousal and survivor benefits are eliminated, the survivor-benefit channel dominates: age-62 claiming falls relative to the baseline, while claiming at later ages rises, especially at the FRA. These patterns indicate that spousal and survivor benefits affect wives' claiming through different margins. The presence of spousal benefits in the baseline slightly discourages very early claiming, whereas survivor benefits reduce labor-force attachment and encourage earlier claiming.

The effects on husbands are much smaller throughout. Across all policy experiments, changes in husbands' employment are generally below 1 pp, and there are only minimal adjustments in the claiming distribution.[8] This asymmetry reflects the structure of auxiliary

8. Figure C.4 and Figure C.5 display the life cycle profiles and claiming distributions by primary earner

benefits in the model: these provisions alter the value of wives' claiming and labor supply decisions far more than for husbands.

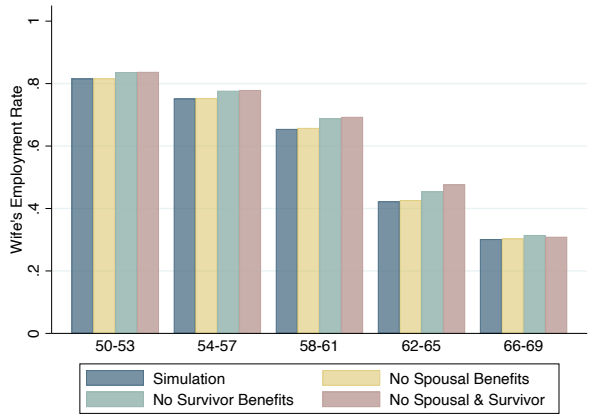
The effects on household-level consumption and assets are also modest. Consumption changes are small and slightly negative at most older ages, while assets rise modestly, especially later in life and particularly in male primary earner households. Thus, households respond to the removal of auxiliary benefits mainly through wives' labor supply and claiming behavior, while smoothing the effects on household consumption.

Taken together, these counterfactuals show that auxiliary benefits, and especially survivor benefits, play an important role in shaping household retirement behavior. Their effects are highly heterogeneous across households, with the strongest responses concentrated among male primary earner couples. This finding helps explain why primary earner status is important for understanding the interaction between Social Security rules and household retirement decisions.

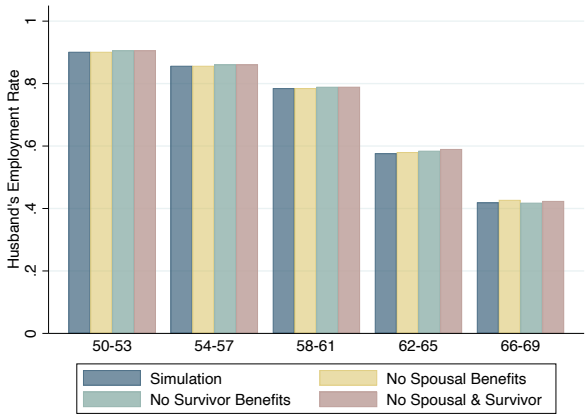
status and health. The effects of auxiliary benefits on husbands' employment are slightly larger in households in which the wife is the primary earner and among husbands in poor health.

Table 11: Effects of Policy Experiments

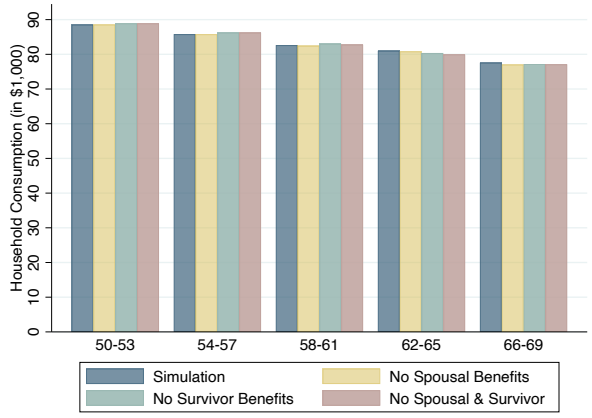
	No Spousal Benefits			No Survivor Benefits			No Spousal & Survivor		
	50-61	62-65	66-69	50-61	62-65	66-69	50-61	62-65	66-69
Wife's Employment Rate (p.p.)									
Average	0.18	0.41	0.20	2.66	3.18	1.32	2.92	5.37	0.77
Male Primary Earner	0.25	0.57	0.08	3.49	4.29	1.82	3.85	7.37	0.90
Female Primary Earner	-0.01	-0.03	0.50	0.53	0.29	0.02	0.52	0.14	0.43
Husband's Employment Rate (p.p.)									
Average	0.01	0.37	0.84	0.43	0.84	-0.06	0.43	1.37	0.48
Male Primary Earner	0.00	0.40	1.15	0.39	0.93	-0.07	0.37	1.54	0.72
Female Primary Earner	0.03	0.29	0.03	0.52	0.59	-0.04	0.56	0.93	-0.13
Household Consumption (%)									
Average	-0.09	-0.22	-0.71	0.44	-0.78	-0.49	0.34	-1.32	-0.61
Male Primary Earner	-0.07	-0.37	-0.99	0.57	-0.94	-0.60	0.48	-1.78	-0.96
Female Primary Earner	-0.15	0.15	-0.01	0.14	-0.37	-0.21	0.00	-0.16	0.28
Household Assets (%)									
Average	0.04	0.22	0.48	0.11	0.35	0.54	0.15	0.56	0.98
Male Primary Earner	0.05	0.29	0.62	0.14	0.46	0.72	0.18	0.73	1.32
Female Primary Earner	0.02	0.06	0.12	0.06	0.09	0.12	0.07	0.14	0.16



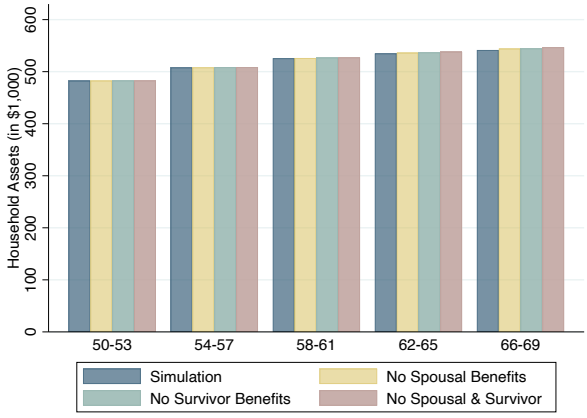
(a) Wife's Employment Rate



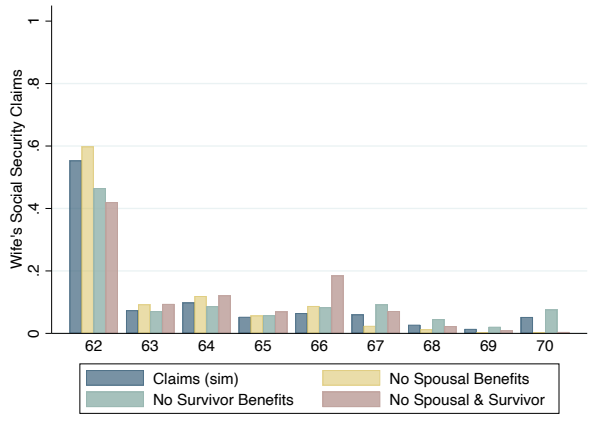
(b) Husband's Employment Rate



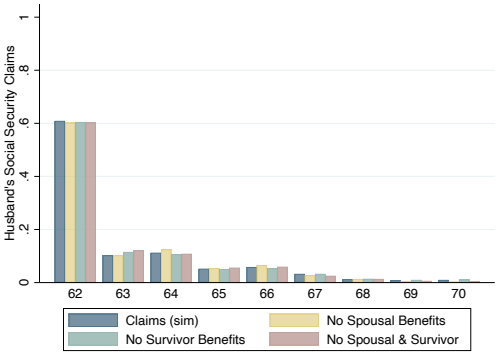
(c) Household Consumption



(d) Household Assets



(e) Wife's Social Security Claims



(f) Husband's Social Security Claims

Figure 8: Policy Counterfactuals

7.1 Discussion

Because our model incorporates the key institutional details of Social Security and the joint decision-making structure of married households, it provides a useful framework for policy counterfactuals left unexamined in previous studies that abstracted from within-household interactions and the full set of marriage-based benefit rules. A natural next step would be to use the model to evaluate the distributional and welfare consequences of alternative Social Security policy reforms. This is especially relevant because, although dual-earner and female primary earner households have become increasingly common, the current benefit formula still reflects the logic of a traditional one-earner marriage. Under existing rules, conditional on the same total household earnings, one-earner couples can receive higher Social Security benefits than dual-earner couples because of the design of spousal benefits. Our model is therefore well suited to studying proposed reforms, such as earnings sharing and alternative adjustments to spousal and survivor benefits, aimed at making the system more marriage neutral while preserving financial sustainability.

8 Conclusion

This paper has explored how married couples coordinate retirement and Social Security claiming decisions, and how those choices vary with household earnings. Using linked HRS-SSA data, we document substantial gaps between observed claiming behavior and the joint claiming strategy that maximizes household Social Security wealth, with losses that are especially pronounced for female primary earner couples. A central finding is a persistent gender asymmetry: wives bear larger Social Security wealth losses than husbands do, even in households where they are the primary earners. The observed behavior is tilted toward husbands' incentives rather than household-level wealth maximization, generating gendered inefficiencies even in dual-earner and female primary earner families. Furthermore, the empirical evidence shows that female primary earner households are positively selected on wives' education and earnings, yet they are also more likely to have husbands in worse health and on disability benefits, pointing to an important role for spousal health and household specialization in shaping retirement behavior.

We develop and estimate a rich dynamic life cycle model of married couples that incorporates the full structure of retirement, spousal, and survivor benefits. Our estimated model fits the main life cycle moments in the data well, including employment profiles, joint non-employment, household assets, and Social Security claiming behavior. The parameter

estimates point to several mechanisms behind early claiming: impatience, positive utility from coordinated non-employment, and a much stronger bequest motive for liquid assets than for annuitized Social Security wealth. Among them, increasing the bequest weight on Social Security wealth substantially delays claiming. Additional evidence suggests that subjective mortality expectations are unlikely to be a central explanation for the observed patterns, while the relationship between earnings power and bargaining power appears imperfect and may differ systematically by gender.

The policy counterfactuals confirm that marriage-based Social Security provisions materially shape household behavior, especially through survivor benefits. Removing auxiliary benefits primarily affects wives' employment and claiming decisions, with much larger responses for male primary earner households than for female primary earner households, while the effects on husbands, consumption, and assets are comparatively modest. More broadly, our findings suggest that Social Security rules still reflect the logic of a traditional one-earner couple and may generate uneven incentives within modern households. Understanding these within-household distortions is essential for evaluating the distributional and welfare consequences of reforms aimed at making the system more marriage neutral.

References

Andersen, Steffen, John Y. Campbell, Kasper Meisner Nielsen, and Tarun Ramadorai. 2020. "Sources of Inaction in Household Finance: Evidence from the Danish Mortgage Market." *American Economic Review* 110 (10): 3184–3230.

Attanasio, Orazio, Peter Levell, Hamish Low, and Virginia Sánchez-Marcos. 2018. "Aggregating Elasticities: Intensive and Extensive Margins of Women's Labor Supply." *Econometrica* 86 (6): 2049–2082.

Attanasio, Orazio, Hamish Low, and Virginia Sánchez-Marcos. 2008. "Explaining Changes in Female Labor Supply in a Life-Cycle Model." *American Economic Review* 98 (4): 1517–1552.

Bairoliya, Neha, and Kathleen McKiernan. 2023. "Revisiting Retirement and Social Security Claiming Decisions." Unpublished.

Bargain, Olivier, Damien Echevin, Audrey Etienne, Nicolas Moreau, and Adrien Pacifico. 2022. "Tax Minimization by French Cohabiting Couples." *National Tax Journal* 75 (2): 265–296.

Bergstresser, Daniel, and James Poterba. 2004. "Asset Allocation and Asset Location: Household Evidence from the Survey of Consumer Finances." *Journal of Public Economics* 88 (9–10): 1893–1915.

Bertocchi, Graziella, Marianna Brunetti, and Costanza Torricelli. 2014. "Who Holds the Purse Strings Within the Household? the Determinants of Intra-family Decision Making." *Journal of Economic Behavior & Organization* 101:65–86.

Bick, Alexander, and Nicola Fuchs-Schündeln. 2018. "Taxation and Labour Supply of Married Couples across Countries: A Macroeconomic Analysis." *The Review of Economic Studies* 85 (3): 1543–1576.

Blau, David M., and Donna B. Gilleskie. 2006. "Health Insurance and Retirement of Married Couples." *Journal of Applied Econometrics* 21 (7): 935–953.

Blundell, Richard, Pierre-André Chiappori, Thierry Magnac, and Costas Meghir. 2007. "Collective Labour Supply: Heterogeneity and Non-Participation." *The Review of Economic Studies* 74 (2): 417–445.

Borella, Margherita, Mariacristina De Nardi, and Fang Yang. 2023. "Are Marriage-Related Taxes and Social Security Benefits Holding Back Female Labour Supply?" *The Review of Economic Studies* 90 (1): 102–131.

Brown, Jeffrey R., Arie Kapteyn, Erzo F. P. Luttmer, Olivia S. Mitchell, and Anya Samek. 2021. "Behavioral Impediments to Valuing Annuities: Complexity and Choice Bracketing." *Review of Economics and Statistics* 103 (3): 533–546.

Brown, Jeffrey R., and James M. Poterba. 2000. "Joint Life Annuities and Annuity Demand by Married Couples." *Journal of Risk and Insurance* 67 (4): 527–553.

Casanova, Maria. 2010. "Happy Together: A Structural Model of Couples' Joint Retirement Choices." Unpublished.

Choi, James J., David Laibson, and Brigitte C. Madrian. 2011. "$100 Bills on the Sidewalk: Suboptimal Investment in 401(k) Plans." *The Review of Economics and Statistics* 93 (3): 748–763.

Choukhmane, Taha, Lucas Goodman, and Cormac O'Dea. 2025. "Efficiency in Household Decision-Making: Evidence from the Retirement Savings of US Couples." *American Economic Review* 115 (5): 1485–1519.

Croson, Rachel, and Uri Gneezy. 2009. "Gender Differences in Preferences." *Journal of Economic Literature* 47 (2): 448–474.

Eckstein, Zvi, Michael Keane, and Osnat Lifshitz. 2019. "Career and Family Decisions: Cohorts Born 1935–1975." *Econometrica* 87 (1): 217–253.

Eckstein, Zvi, and Osnat Lifshitz. 2011. "Dynamic Female Labor Supply." *Econometrica* 79 (6): 1675–1726.

Elder, Harold W., and Patricia M. Rudolph. 2003. "Who Makes the Financial Decisions in the Households of Older Americans?" *Financial Services Review* 12 (4): 293–308.

Fahle, Sean, and Kathleen McGarry. 2022. "How Caregiving for Parents Reduces Women's Employment: Patterns across Sociodemographic Groups." In *Overtime: America's Aging Workforce and the Future of Working Longer,* edited by Lisa F. Berkman and Beth C. Truesdale. New York: Oxford University Press.

French, Eric, and John Jones. 2011. "The Effects of Health Insurance and Self-Insurance on Retirement Behavior." *Econometrica* 79 (3): 693–732.

Friedberg, Leora, and Anthony Webb. 2006. "Determinants and Consequences of Bargaining Power in Households." NBER Working Paper 12367.

Gathergood, John, Neale Mahoney, Neil Stewart, and Jörg Weber. 2019. "How Do Individuals Repay Their Debt? The Balance-Matching Heuristic." *American Economic Review* 109 (3): 844–875.

Gelber, Alexander, Adam Isen, and Jae Song. 2018. "The Role of Social Security Benefits in the Initial Increase of Older Women's Employment: Evidence from the Social Security Notch." In *Women Working Longer: Increased Employment at Older Ages,* edited by Claudia Goldin and Lawrence F. Katz, 239–268. University of Chicago Press.

Goda, Gopi Shah, John B Shoven, and Sita Nataraj Slavov. 2007. "Social Security and the Timing of Divorce." NBER Working Paper 13382.

Goldin, Claudia, and Lawrence F. Katz. 2017. "Women Working Longer: Facts and Some Explanations." In *Women Working Longer: Increased Employment at Older Ages,* 11–53. University of Chicago Press.

Golosov, Mikhail, and Ilia Krasikov. 2025. "The Optimal Taxation of Couples." *The Quarterly Journal of Economics* 140 (3): 2163–2211.

Groneck, Max, and Johanna Wallenius. 2021. "It Sucks to Be Single! Marital Status and Redistribution of Social Security." *The Economic Journal* 131 (633): 327–371.

Gruber, Jonathan, and David A. Wise. 1998. "Social Security and Retirement: An International Comparison." *American Economic Review* 88 (2): 158–163.

Guner, Nezih, Remzi Kaygusuz, and Gustavo Ventura. 2012. "Taxation and Household Labour Supply." *The Review of Economic Studies* 79 (3): 1113–1149.

Gustman, Alan L., and Thomas L. Steinmeier. 2000. "Retirement in Dual-Career Families: A Structural Model." *Journal of Labor Economics* 18 (3): 503–545.

———. 2004. "Social Security, Pensions and Retirement Behaviour Within the Family." *Journal of Applied Econometrics* 19 (6): 723–737.

Hong, Jay H., and José-Víctor Ríos-Rull. 2012. "Life Insurance and Household Consumption." *American Economic Review* 102 (7): 3701–3730.

Hubener, Andreas, Raimond Maurer, and Olivia S. Mitchell. 2016. "How Family Status and Social Security Claiming Options Shape Optimal Life Cycle Portfolios." *The Review of Financial Studies* 29 (4): 937–978.

İmrohoroğlu, Selahattin, and Sagiri Kitao. 2012. "Social Security Reforms: Benefit Claiming, Labor Force Participation, and Long-run Sustainability." *American Economic Journal: Macroeconomics* 4 (3): 96–127.

Jayachandran, Seema, and Alessandra Voena. 2025. "Women's Power in the Household." NBER Working Paper 34605.

Jones, John Bailey, and Yue Li. 2023. "Social Security Reform with Heterogeneous Mortality." *Review of Economic Dynamics* 48:320–344.

Klaauw, Wilbert van der, and Kenneth I. Wolpin. 2008. "Social Security and the Retirement and Savings Behavior of Low-income Households." *Journal of Econometrics* 145 (1-2): 21–42.

Kleven, Henrik Jacobsen, Claus Thustrup Kreiner, and Emmanuel Saez. 2009. "The Optimal Income Taxation of Couples." *Econometrica* 77 (2): 537–560.

Lalive, Rafael, Arvind Magesan, and Stefan Staubli. 2023. "How Social Security Reform Affects Retirement and Pension Claiming." *American Economic Journal: Economic Policy* 15 (3): 115–50.

Lee, Siha. 2024. "Spousal Labor Supply, Caregiving, and the Value of Disability Insurance." *International Economic Review* 65 (4): 1681–1716.

Lee, Siha, and Zhixiu Yu. 2025. "Breadwinning, Social Security, and Retirement Patterns among Couples." *AEA Papers and Proceedings* 115:695–699.

Li, Yue. 2018. "Economic Analysis of Social Security Survivors Insurance." *International Economic Review* 59 (4): 2043–2073.

Liebman, Jeffrey B., Erzo F. P. Luttmer, and David G. Seif. 2009. "Labor Supply Responses to Marginal Social Security Benefits: Evidence from Discontinuities." *Journal of Public Economics* 93 (11–12): 1208–1223.

Lockwood, Lee M. 2018. "Incidental Bequests and the Choice to Self-Insure Late-Life Risks." *American Economic Review* 108 (9): 2513–2550.

Lusardi, Annamaria, and Olivia S. Mitchell. 2023. "The Importance of Financial Literacy: Opening a New Field." *Journal of Economic Perspectives* 37 (4): 137–154.

Maestas, Nicole. 2018. "The Return to Work and Women's Employment Decisions." In *Women Working Longer: Increased Employment at Older Ages,* edited by Claudia Goldin and Lawrence F. Katz. University of Chicago Press.

Nishiyama, Shinichi. 2019. "The Joint Labor Supply Decision of Married Couples and the U.S. Social Security Pension System." *Review of Economic Dynamics* 31:277–304.

Olivetti, Claudia, and Dana E. Rotz. 2016. "Changes in Marriage and Divorce as Drivers of Employment and Retirement of Older Women." NBER Working Paper 22738.

Pashchenko, Svetlana, and Ponpoje Porapakkarm. 2024. "Accounting for Social Security Claiming Behavior." *International Economic Review* 65 (1): 505–545.

Scholz, John Karl, Ananth Seshadri, and Surachai Khitatrakun. 2006. "Are Americans Saving "Optimally" for Retirement?" *Journal of Political Economy* 114 (4): 607–643.

Social Security Administration, Office of Research, Evaluation, and Statistics. 2020. *Population Profile: Fully Insured Workers.* Technical report. Social Security Administration.

Yu, Zhixiu. 2024. "Why are Older Men Working More? The Role of Social Security." *Journal of Public Economics* 231.

Appendix

A Model Details

A.1 Taxes

Household taxes $\tau_t = \tau(A_t, w_t^h n_t^h, w_t^w n_t^w, ssb_t, I_t)$ are computed as the sum of payroll taxes of both spouses and federal income tax ($\tau_t = \tau_{P,t}^h + \tau_{P,t}^w + \tau_{F,t}$). State income taxes are not modeled due to the wide variation in state tax codes.

Payroll tax – Payroll tax consists of Social Security and Medicare tax. Social Security tax is 6.2% of earnings capped at the maximum taxable earnings while the Medicare tax rate is 1.45% and earnings are uncapped. Therefore, each spouse's payroll tax $\tau_{P,t}^j$ is specified as

$$\tau_{P,t}^j = 0.062 \times \min\{w_t^j n_t^j, y_{ss}\} + 0.0145 \times w_t^j n_t^j, \quad j \in \{h, w\}. \tag{25}$$

Federal income tax – Federal income tax is a progressive tax on labor and non-labor income. First, define taxable household income (TI_t) as the sum of asset income, earnings, unemployment benefits, taxable Social Security benefits (tb_t), and all other non-labor income, subtracted by the standard household deduction (d).

$$TI_t = \max\{rA_t + w_t^h n_t^h + w_t^w n_t^w + tb_t + I_t - d, 0\}. \tag{26}$$

We set d as $d =$ \$24,400 based on the standard deduction for married households filing jointly in 2019. Taxable Social Security benefits are computed according to Table A.1.

Similar to the PIA computation formula, the federal income tax has seven progressive tax rates that are applied to seven taxable income brackets. Table A.2 reports the amount of federal income tax $\tau_{F,t}$ that the household pays based on taxable household income TI_t. We use the 2019 income tax brackets for married households filing jointly.

Table A.1: Taxable Social Security Benefits for Married Taxpayers (in $)

Provisional Income[†]	Taxable Social Security Benefits
(A) Less than $32,000	None
(B) $32,000 to $44,000	Lesser of 50% of benefits or 50% of provisional income above $32,000 (max $6,000)
(C) Greater than $44,000	Lesser of 85% of benefits or 85% of provisional income above $44,000 plus the amount from line (B)

Source: Table 1 from Congressional Research Service, *Social Security: Taxation of Benefits* (CRS Report RL32552), June 12, 2020.
[†] Provisional income is defined as the sum of asset income, earnings, all other sources of non-labor income excluding Social Security benefits, and 50% of Social Security benefits.

Table A.2: Federal Income Tax by Taxable Household Income Brackets (in $)

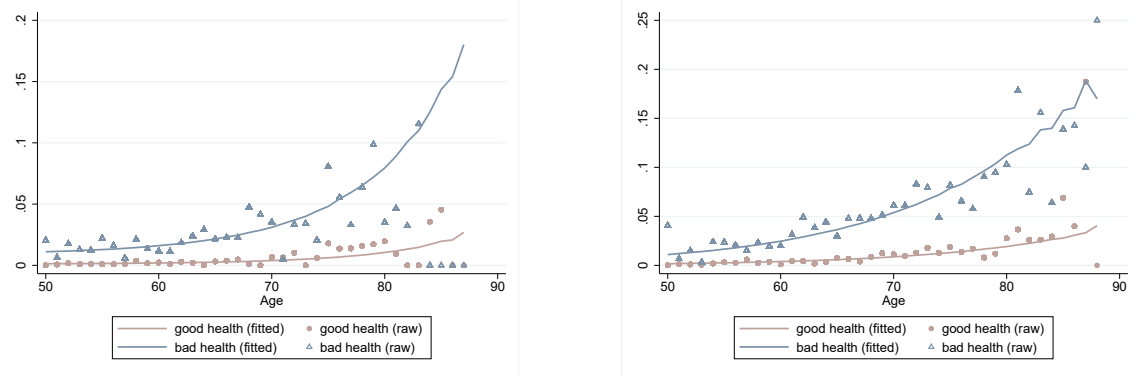
Taxable Household Income (TI_t)	Federal Income Tax ($\tau_{F,t}$)
0 - 19,400	$0.10 \times TI_t$
19,401 - 78,950	$1,940 + 0.12 \times (TI_t - 19,400)$
78,951 - 168,400	$9,086 + 0.22 \times (TI_t - 78,950)$
168,401 - 321,450	$28,765 + 0.24 \times (TI_t - 168,400)$
321,451 - 408,200	$65,497 + 0.32 \times (TI_t - 321,450)$
408,201 - 612,350	$93,257 + 0.35 \times (TI_t - 408,200)$
612,351+	$164,709.50 + 0.37 \times (TI_t - 612,350)$

Note: All values are in 2019 dollars.

B First Stage Estimation

This section provides further details on the first stage parameters used in the dynamic programming model.

Mortality rates – Annual mortality rates are estimated from a logit regression model using reported death dates in the HRS data. We estimate logit regressions for men and women separately with covariates including a quadratic in age, a dummy for bad health, and a dummy for education type. Figure B.1 documents the fitted mortality rates by gender, age, and health status.



(a) Women (b) Men

Figure B.1: Mortality Rates

Divorce rates – Biennial divorce rates $\tilde{\delta}_d(h_t^h, h_t^w)$ are computed as the fraction of married couples in the HRS that divorced in the next survey wave, conditional on both spouses' health status. To approximate annual divorce rates $\delta_d(h_t^h, h_t^w)$ from the biennial rates $\tilde{\delta}_d(h_t^h, h_t^w)$, we assume that annual divorce rates between the survey waves are equal and use the relationship $1 - \tilde{\delta}_d(h_t^h, h_t^w) = \big(1 - \delta_d(h_t^h, h_t^w)\big)^2$. The resulting parameter values are reported in Table B.1.

Health transition probabilities – Instead of estimating the health transition probabilities of each spouse separately, we define the household health status as $h_t = (h_t^h, h_t^w)$ (taking on four values, (0,0), (0,1), (1,0), and (1,1)) and estimate the biennial transition probabilities of h_t from the HRS data using a multinomial logit regression model. This allows the possibility of one spouse's current health status to be correlated with the other spouse's health status

Table B.1: Divorce Rates by Household Health and Primary Earner Status

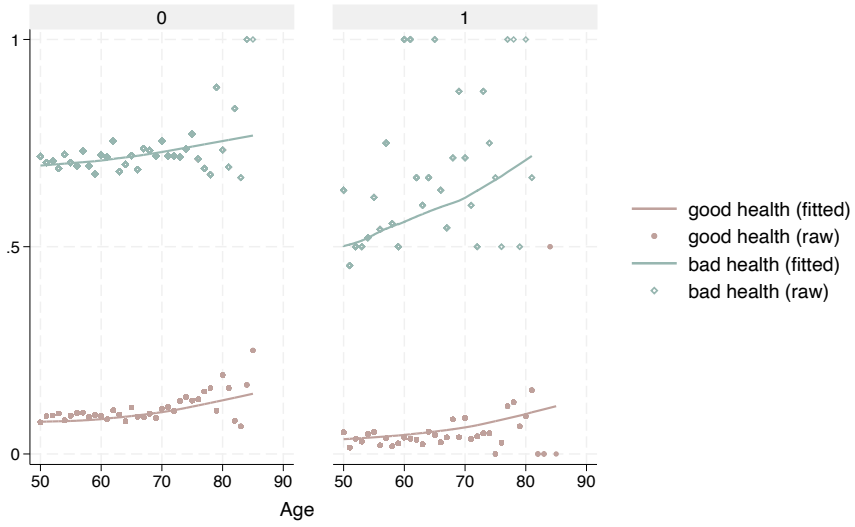
Household Health (Husband, Wife)	Primary Earner Status	
	Male Primary Earner	Female Primary Earner
(Healthy, Healthy)	.0041	.0064
(Healthy, Unhealthy)	.0070	.0099
(Unhealthy, Healthy)	.0053	.0065
(Unhealthy, Unhealthy)	.0121	.0103

in the following period. Covariates include current household health status, quadratic in age and education type for each spouse, interactions of age and age squared with household health status, and interactions of age and age squared with dummies for the education type for each spouse. Conditional on age and education type of both spouses, we obtain a four-by-four matrix of annual transition probabilities Π_a from the matrix of biennial transition probabilities Π_b using the relationship $\Pi_a^2 = \Pi_b$. Figure B.2 reports the fitted biennial health transition probabilities.

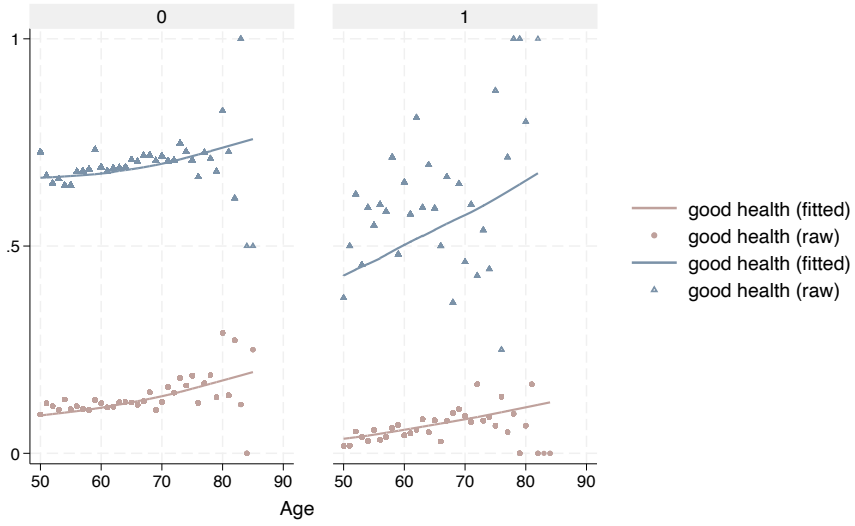
Annual household non-labor income – We estimate non-labor income I_t by running a linear regression of log non-labor income on the following controls for both spouses: a quadratic in age, education type, health status, interactions of age and education type, indicators for being above age 55, 62, and full retirement age (FRA),[9] interactions of being above 55 with age, and interactions of being above age 62/FRA and health status. We use the sum of household pension income, household annuity income, household veteran benefits, and other household income such as lump sum income as our measure of household non-labor income. Table B.2 reports the estimated coefficients.

Annual household medical expenses – Household medical expenses are defined as the sum of out-of-pocket medical expenses of the husband and the wife. While earlier waves of the HRS collected information on medical expenses in the past 12 months, the reference period for later waves is the past 2 years. Therefore, medical expenses are annualized by dividing them by the appropriate reference period. Figure B.3 reports fitted profiles of out-of-pocket medical expenses by age, education type, and health status of both spouses.

9. We use these age milestones since depending on the pension plan, individuals can liquidate pension wealth as early as age 55 and age 62 is the earliest age for early Social Security retirement benefits. Full retirement age ranges from 65 to 67, depending on birth year.



(a) Women



(b) Men

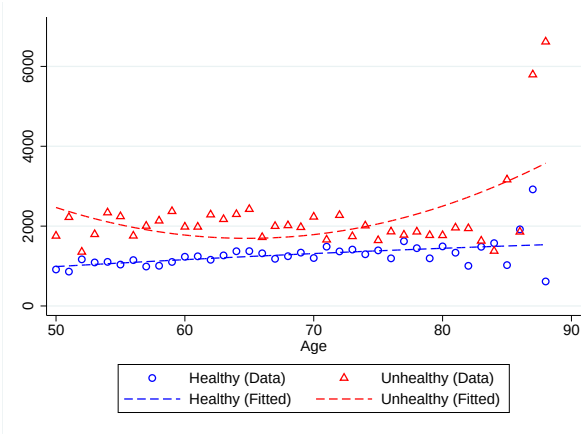
Figure B.2: Health Transition Rates

Table B.2: Annual Household Non-labor Income (OLS Estimates)

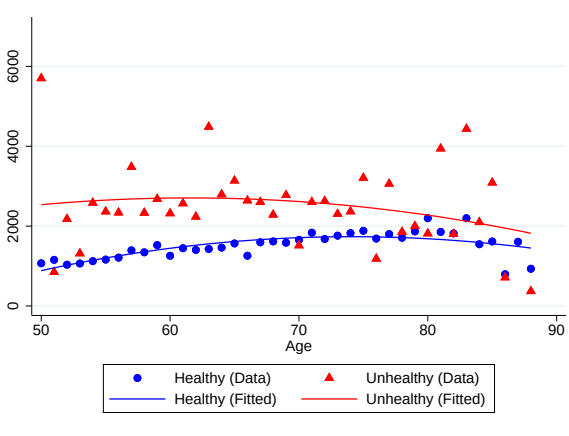
Dependent variable: log(household non-labor income)†		
Controls	Coefficients	Std. Err.
Husbands' characteristics		
Age	0.375***	0.053
$(\text{Age}/10)^2$	-0.325***	0.049
Bad health	0.485***	0.054
Bachelor's degree or higher	-0.718**	0.315
Age × Bachelor's degree or higher	0.014***	0.005
Age 55+	-4.925***	1.138
(Age 55+) × Age	0.092***	0.021
Age 62+	0.145***	0.054
(Age 62+) × Bad health	-0.190**	0.086
FRA+	0.162*	0.084
(FRA+) × Bad health	-0.650***	0.080
Wives' characteristics		
Age	0.089	0.061
$(\text{Age}/10)^2$	-0.111**	0.055
Bad health	-0.089*	0.048
Bachelor's degree or higher	-1.337***	0.362
Age × Bachelor's degree or higher	0.024***	0.006
Age 55+	-2.584**	1.095
(Age 55+) × Age	0.048**	0.020
Age 62+	0.082	0.058
(Age 62+) × Bad health	-0.167*	0.089
FRA+	0.081	0.085
(FRA+) × Bad health	-0.250***	0.082
Observations	42,222	

Notes: Results are based on a sample of married couples in the HRS (1992-2018). ***, **, * indicate statistical significance at the 1, 5, and 10 percent levels, respectively.

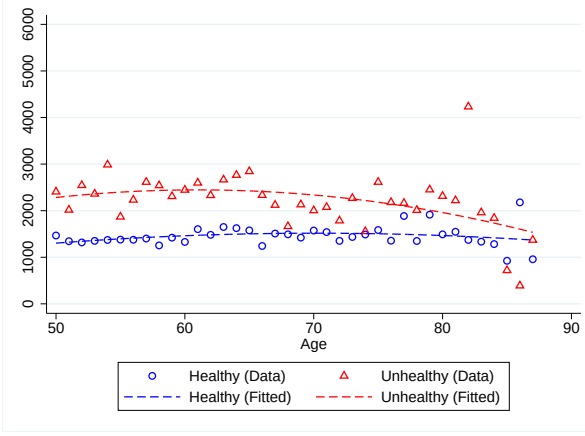
† Household non-labor income is defined as the sum of household pension income, household annuity income, household veteran benefits, and other household income such as lump sum income.



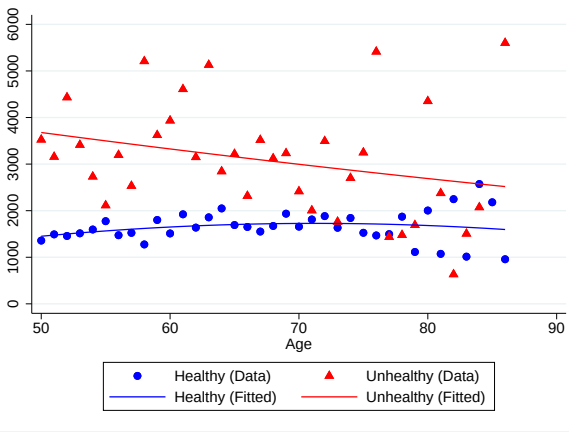
(a) Male: Non-College



(b) Male: College



(c) Female: Non-College



(d) Female: College

Figure B.3: Fitted Annual Out-of-Pocket Medical Expenses

C Additional Tables and Figures

Table C.1: Adjustments to Retirement and Spousal Benefits by Claiming Age

Claiming Age	Retirement Benefit (% of own PIA)	Spousal Benefit (% of spouse's PIA)
62	75	35
63	80	37.5
64	86.7	41.7
65	93.3	45.8
66	100	50
67	108	50
68	116	50
69	124	50
70	132	50

Table C.2: Survivor Benefits as a Percentage of the Deceased Spouse's PIA

	Deceased Spouse's Claiming Age								
	62	63	64	65	66	67	68	69	70
Widow(er)'s Claiming Age									
60	71.50	71.50	71.50	71.50	71.50	77.22	82.94	88.66	94.38
61	76.25	76.25	76.25	76.25	76.25	82.35	88.45	94.55	100.65
62	81.00	81.00	81.00	81.00	81.00	87.48	93.96	100.44	106.92
63	82.50	82.50	85.75	85.75	85.75	92.61	99.47	106.33	113.19
64	82.50	82.50	86.67	90.50	90.50	97.74	104.98	112.22	119.46
65	82.50	82.50	86.67	93.33	95.25	102.87	110.49	118.11	125.73
66 or later	82.50	82.50	86.67	93.33	100.00	108.00	116.00	124.00	132.00

Notes: Both the deceased worker and the widow(er) are assumed to have a FRA of 66.

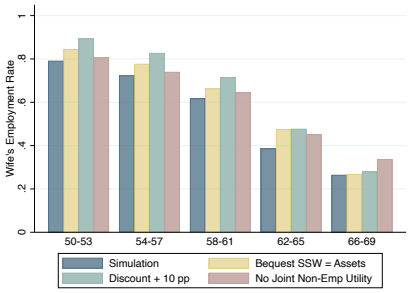
Table C.3: Model Fit of Targeted Moments – Wage

	Model	Data	Model	Data
Panel A: OLS Regressions of Log Hourly Wages				
	Wives		Husbands	
Age	0.150	0.112	0.173	0.086
$(\text{Age}/10)^2$	-0.138	-0.099	-0.138	-0.082
Bad Health	-0.175	-0.195	-0.190	-0.229
College	0.551	0.533	0.510	0.541
Panel B: Other Wage Moments				
	Wives ($j = w$)		Husbands ($j = h$)	
$E(\Delta\omega^j_{i,t} \cdot \Delta\omega^j_{i,t+2})$	-0.029	-0.040	-0.022	-0.053
$E\big(\Delta\omega^j_{i,t} \cdot (\Delta\omega^j_{i,t-2} + \Delta\omega^j_{i,t} + \Delta\omega^j_{i,t+2})\big)$	0.009	0.015	0.030	0.035
	Couples			
$E(\Delta\omega^h_{i,t} \cdot \Delta\omega^w_{i,t+2})$	-0.008	-0.00005		
$E\big(\Delta\omega^h_{i,t} \cdot (\Delta\omega^w_{i,t-2} + \Delta\omega^w_{i,t} + \Delta\omega^w_{i,t+2})\big)$	0.0002	0.003		

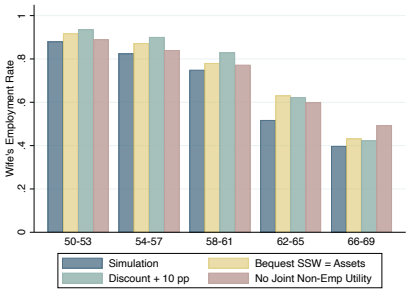
Table C.4: Spousal Caregiving by Gender, Breadwinner Status, and Spouse Health

Gender	Breadwinner	Spouse Health	Share	Hrs (Uncond.)	Hrs (Cond.)	N
Husband	Not Breadwinner	Healthy	0.009	0.062	7.012	2248
		Unhealthy	0.135	1.781	13.179	370
	Breadwinner	Healthy	0.020	0.291	14.516	4939
		Unhealthy	0.228	5.155	22.561	1405
Wife	Not Breadwinner	Healthy	0.016	0.319	19.821	4656
		Unhealthy	0.168	3.635	21.695	1128
	Breadwinner	Healthy	0.029	0.793	27.780	1857
		Unhealthy	0.198	6.654	33.524	529

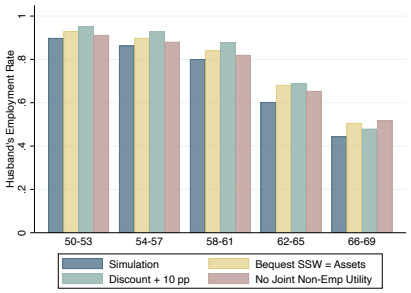
Notes: Sample from HRS, aged 55-65. Share is fraction with positive caregiving hours. Hrs (Uncond.) includes zeros. Hrs (Cond.) is among caregivers only.



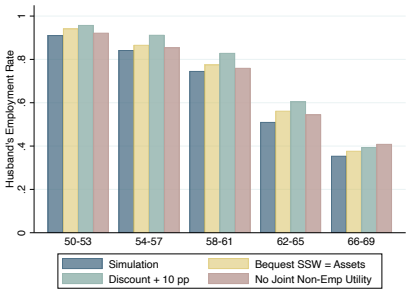
(a) Wife's Employment Rate (Male Primary Earner)



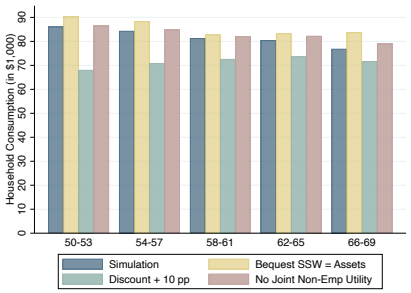
(b) Wife's Employment Rate (Female Primary Earner)



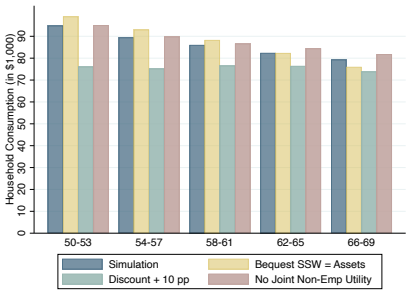
(c) Husband's Employment Rate (Male Primary Earner)



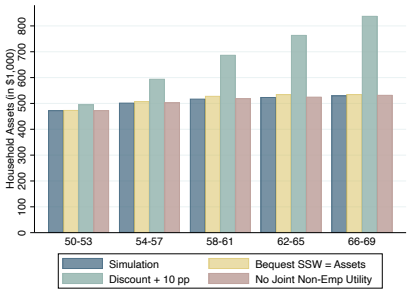
(d) Husband's Employment Rate (Female Primary Earner)



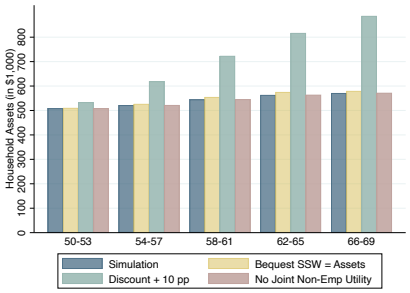
(e) Household Consumption (Male Primary Earner)



(f) Household Consumption (Female Primary Earner)

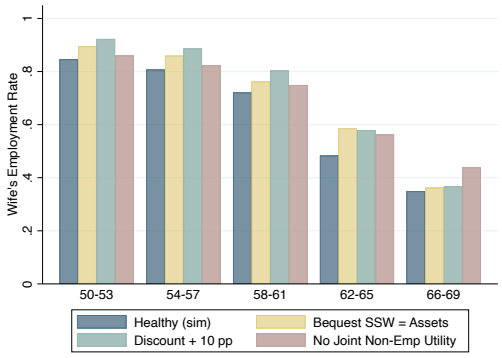


(g) Household Assets (Male Primary Earner)

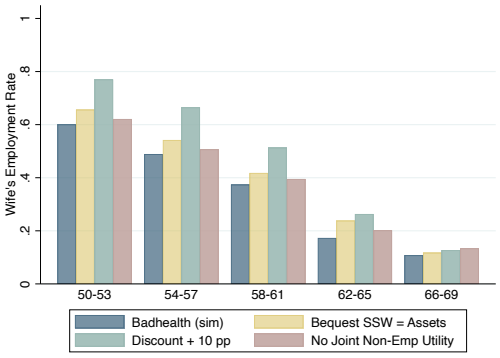


(h) Household Assets (Female Primary Earner)

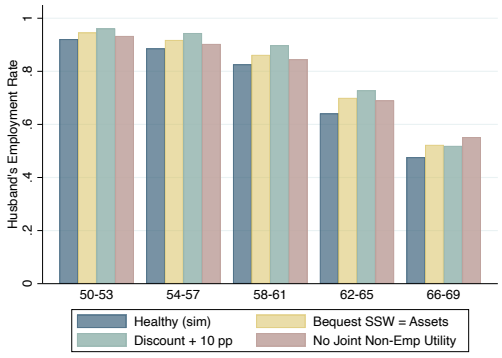
Figure C.1: Effects of Changing Parameters by Primary Earner Status



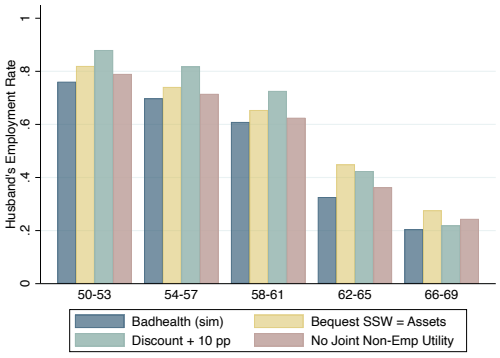
(a) Wife's Employment Rate (Healthy)



(b) Wife's Employment Rate (Bad Health)

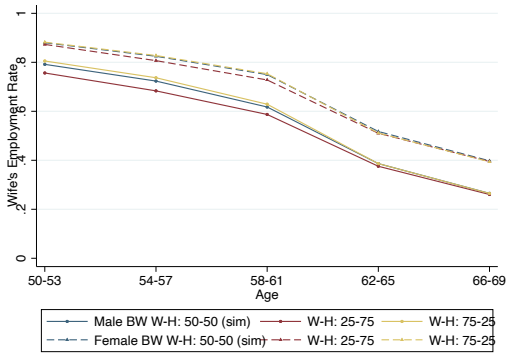


(c) Husband's Employment Rate (Healthy)

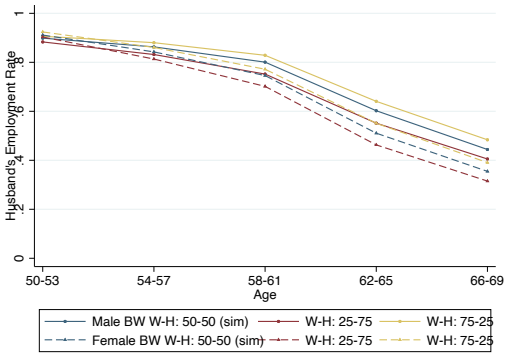


(d) Husband's Employment Rate (Bad Health)

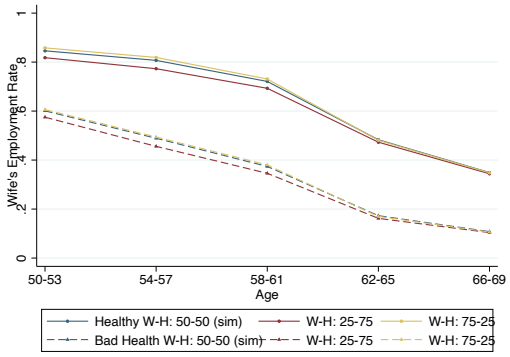
Figure C.2: Effects of Changing Parameters: Employment Rates by Health



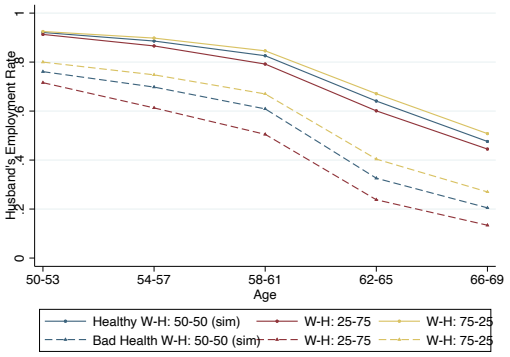
(a) Wife's Employment Rate (BW)



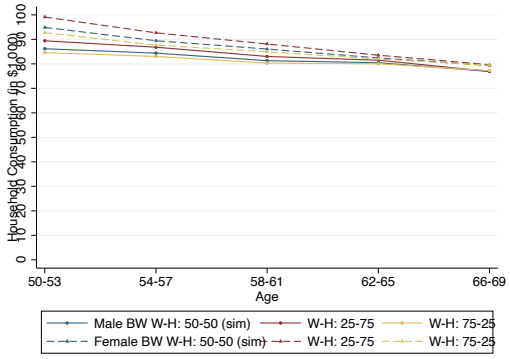
(b) Husband's Employment Rate (BW)



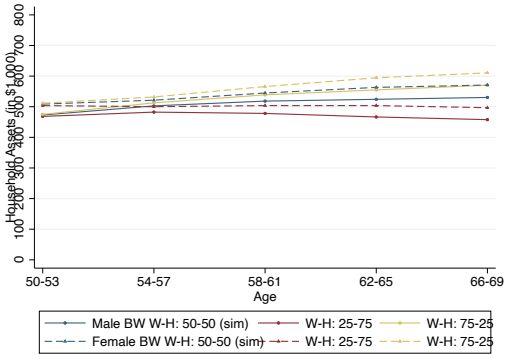
(c) Wife's Employment Rate (Health)



(d) Husband's Employment Rate (Health)

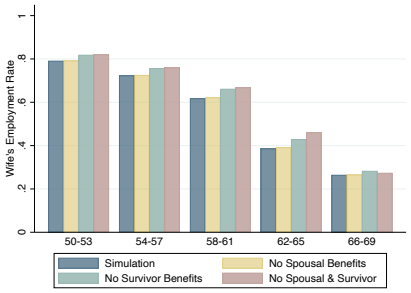


(e) Household Consumption

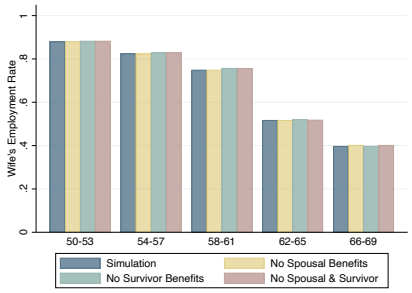


(f) Household Assets

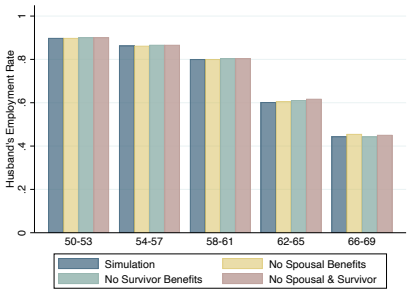
Figure C.3: Effects of Changing Household Weights by Primary Earner Status and Health



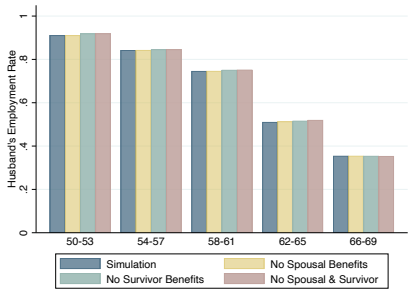
(a) Wife's Employment Rate (Male Primary Earner)



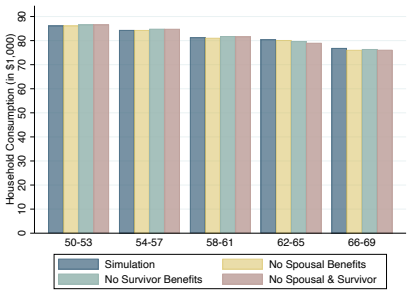
(b) Wife's Employment Rate (Female Primary Earner)



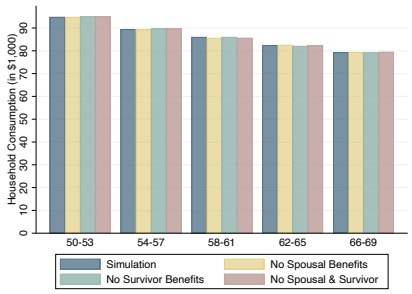
(c) Husband's Employment Rate (Male Primary Earner)



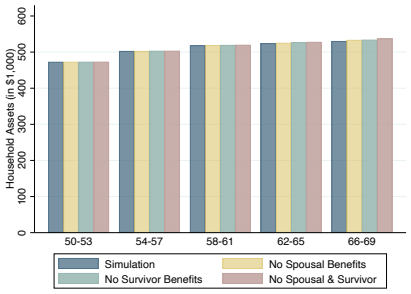
(d) Husband's Employment Rate (Female Primary Earner)



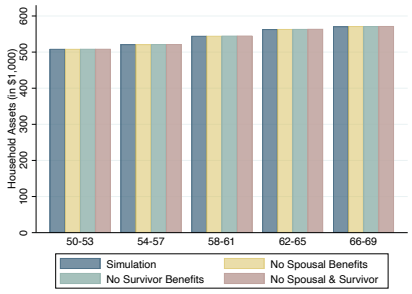
(e) Household Consumption (Male Primary Earner)



(f) Household Consumption (Female Primary Earner)

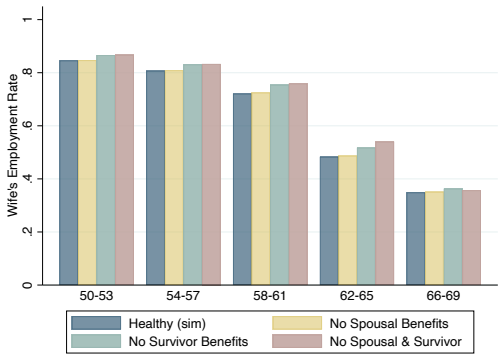


(g) Household Assets (Male Primary Earner)



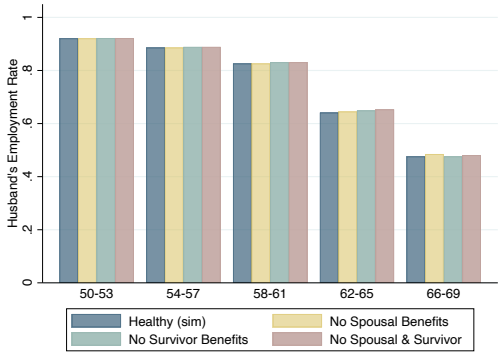
(h) Household Assets (Female Primary Earner)

Figure C.4: Policy Counterfactuals by Primary Earner Status

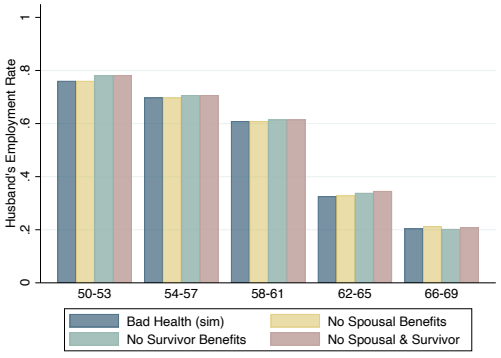


(a) Wife's Employment Rate (Healthy)

(b) Wife's Employment Rate (Bad Health)



(c) Husband's Employment Rate (Healthy)



(d) Husband's Employment Rate (Bad Health)

Figure C.5: Policy Counterfactuals: Employment Rate by Health