

Single again? Saving patterns when widowhood occurs.¹

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Abstract:

In this paper we examine the effect of widowhood on asset trajectories. In many industrialized countries, close to half of households are headed by women single, divorced, separated or widowed and therefore their ability to make financial decisions is crucial for their economic well-being as well as their dependents'. Meanwhile, research has found that women tend to be less involved with the stock market and have lower financial sophistication, leaving them out of an important way of accumulating resources via investing and saving. At the same time their higher risk aversion may have sheltered them from some of the effects of the financial crisis. For a two-adult household, the portfolio structure is likely to reflect preferences of the main financial decision maker (usually the husband). When widowhood occurs it could be that singles re-optimize their decisions according to their own preferences. We test this by examining whether there is a change in the wealth accumulation for households (over 60) that have experienced the shock of becoming widowed. Our results indicate there to be an initially statistically significant effect of widowhood on wealth -- differential for women and men. The effect disappears once we control for health insurance, but re-appears several years after the shock suggesting a differential willingness to save for women and men.

Keywords: wealth trajectories, household portfolios, widowhood, gender, bargaining

JEL: D15, D91, J12, J14

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I. Introduction

This paper looks at how couple savings preferences might shape wealth trajectories. In a couple, different preferences are merged in a decision to accumulate over time. When a couple dissolves from an exogenous shock, wealth can change its trajectory to absorb the preferences of the new single-person household. On the one hand, the question of asset accumulation is of importance as the resulting one-person asset management could signal vulnerability if the survivor has previously not been tasked with financial decision-making. On the other hand, the survivor can shape decisions on how much to save and in which forms according to their own preferences without having to compromise with the preferences of the spouse. We look into marital dissolution as a source of exogenous shock to test whether preferences of women and men differ with respect to savings decisions.

Our paper tracks asset trajectories resulting from a life shock, such as death of a spouse that typically occurs in families close to retirement age. We investigate what happens to women's outcomes once they are left on their own to manage their finances and compare it to that of men's. Our work is motivated by the fact that in many countries, more than half of the households are headed by women (single, divorced, separated or widowed) and therefore their ability to make financial decisions and generate adequate savings is crucial for their economic well-being at and during retirement.

The hypothesis is that the household saving pattern is likely to reflect preferences of the main financial decision maker (usually the husband). Once widowhood occurs singles can re-optimize their saving decisions according to their own preferences, keeping in mind their retirement well-being. Women are considered to be more risk averse than men, and with a lower discount rate, thus implying a higher savings pace, other things being equal. Given different behavior and preferences of women and men when it comes to investing, differences after the shock of widowhood will be observed. Our unique dataset allows us to test this hypothesis by examining whether there is a change in the portfolio accumulation pattern of households that have experienced the shock of becoming widowed (unlike focusing on singles, which would be a self-selected sample of those that have chosen to be single).

One crucial variable that is considered is bargaining power. If decisions are formulated according to bargaining power, which is the synthesis of the different preferences [5], the gender dimension should disappear from our analysis. Once the decision structure is taken into account, all other information is redundant. If, instead, assortative mating took place, we should not observe bargaining power at work, as similar bargaining power couples would display very different trajectories according to whether they are high or low saving oriented couples

We find that wealth trajectories after the shock are shaped by the gender of the survivor possibly reflecting differences in their preferences. Changes in bargaining power do matter for accumulation decisions, as predicted and we do not find the case for assortative mating.

Our paper identified a differential willingness to save among women and men after major life events. This could have important consequences for understanding the evolution of well-being of the elderly after major life events. From a policy stand point, this could be valuable in creating more flexible financial products that adapt to life patterns where preferences change and which help shape the accumulation pattern, such as mortgages and long-term savings plans.

Our paper is laid out as follows. Following the Introduction in Section I, the Literature and Conceptual Framework is in Section II, then Data and Descriptives in Section III. The Empirical Strategy is in Section IV and the Empirical Analysis is in Section V. Section VI concludes.

II. Literature Background and Conceptual Framework

Portfolio decision making within the household

The decision of how much to accumulate and decumulate over the life course is a choice done at the family level. Hence, consumption, as well as savings and asset accumulation are a “family good.” Family level decisions, though, are difficult to conceptualize. For example, does only one person make some of the decisions and the rest are made jointly? Should this be the case, to what extent do household members merge their different preferences in determining their final saving and its allocation and what is the “weight” of each household member in this decision?

When an individual alone is the decision maker, like in a single headed household, economic theory predicts that the impatience rate, the risk aversion as well as the alternative interest rates in the market will shape the accumulation pattern. More impatient and less risk-averse individuals will, in general, have a less pronounced pattern of accumulation. If households behave as single agents, singles and couples should have identical features in their savings propensity. If the household is formed by individuals with different preferences, then preferences such as impatience and risk aversion are a mix (with unknown and possibly uneven weights) of family components. Browning (2000) [6], for example, develops a theoretical model of household saving and portfolio behavior that takes explicit account of the possible differences between husband and wife preferences for saving for the future and finds that the distribution of income within the household can have a strong effect on savings behavior. The author highlights that saving decisions are the result of bargaining power within the couple and so the weights given to individual preferences depend upon the bargaining power each individual has. Mazzocco (2004) [13] shows that risk pooling within the household can also affect savings. Among a group of heterogeneous agents it can increase the amount of savings, but an increase in prudence of one agent can reduce household prudence and hence household saving by eliminating part of the uncertainty faced by the household and allocating pooled income according to individual risk preferences and

decision power. Addoum and Kuong (2011) [1] find that risk tolerance of the spouse with more bargaining power will be pivotal in determining the portfolio decision.

Savings outcomes

When it comes to financial decision making, Friedberg and Webb (2006) [8] using a measure of bargaining power that includes the last say in financial decision making, find that wealth levels reflect the life-cycle horizon of the person with more bargaining power thus when men are in charge, households with older husbands have significantly higher wealth and those with older wives have lower wealth. When wives are in charge, the results are reversed. Grabka, Marcus and Sierminska (2013) [9] find that, when examining intra-partnership financial decision making, the difference in wealth holdings between a man and a woman within a couple is significantly smaller when the female manages the money and larger if the male partner has the last word in financial decisions with reference to Germany (Yilmazer and Lich 2013 [19] for the US).

Thus, in line with Browning (2000) [6] and Mazzocco (2004) [13], asset accumulation and decumulation are the output decisions made at the intra-household level. The way partners discount future consumption is likely to be different reflecting different preferences. The pace at which the household saves will thus incorporate an average preference, weighted for the importance of each spouse. But how do assets evolve?

Asset trajectories over time

Assets are a stock variable and as such reflect past decisions. The current level of assets is the result of two different factors: i) past assets accrued according to their average returns and ii) active savings.⁴ Past assets are given, while the return depends on the investment strategies. A riskier portfolio should be counter-balanced with a higher return, thus riskier portfolio should be correlated with a higher return. As a portfolio reflects the couple's decisions, we expect that if the survivor has higher risk aversion than the couple's average risk attitude, the portfolio will turn to a more prudential one with a lower return. This could be the case for a widow, given that women show, on average, a lower propensity for risky investments. A riskier portfolio may result if a widower is left to manage assets on his own.

Let us look into the two component of wealth accumulation in more detail. The first is the return to previous assets, which is the average return of all assets (both real and financial). Asset returns depend on investment strategies, which can vary widely ([2]Ameriks et al 2003a). Optimally diversifying the portfolio with a balance between risky and risk-free assets should lead to the best outcome in the long run. However, stock market participation widely differs across households. According to the standard portfolio theory, we should not observe non-participation in stocks ([10]Haliassos & Bertaut, 1995) but in practice a large fraction of households do not participate in the stock market (Lusardi, 2000 [12], Vissing-Jorgensen, 2002[18]). Thus evidence clearly deviates from theory. Stock participation is also not homogenous across countries. It peaks in

⁴ If active savings are negative this refers to borrowing or dissaving.

the US where it is equal to 22% while in Spain is approximately halved (Bover, 2010 [4]; Sierminska & Doorley 2013[17]). Even in the US, where stock market participation is at the highest level, the median household does not participate at all in the stock market. With portfolios far from the optimal ones, we can expect the return to vary quite a lot. In addition, as women tend to invest less in the stock market, we expect the average return for their portfolios to be lower (e.g. Jianakopulos & Bernasek, 1998[11]).

The second component of an increase in assets is due to active savings, income less consumption. This component depends on consumption trajectories, which, in turn, depend on how households prefer to postpone resources to the future rather than consume them in the current period.⁵ Castillo et al (2011)[7] find with an experiment on 581 children from 8th grade from a district in Southern Georgia that boys discount more the future than girls, even after controlling for other regressors, suggesting girls are more patient. This evidence is also confirmed more recently by Coda Moscarola and Migheli (2015) [15] with regard to Italian children.

After a widowhood shock occurs, the survivor will adapt the savings choices to her/his behavior depending on their preferences. Optimal consumption should be such that its marginal utility is constant over time to respect the optimality condition:

$$(1+r)/(1+\rho) Eu'(c_{t+1})=u'(c_t)$$

Where r is the interest rate; ρ the subjective discount rate; u' the marginal utility; c_t consumption at time t . The more the interest rate is similar to the discount rate the smoother consumption will be over time. However, as the discount rate and marginal utility parameters might differ a lot between those of the couple and the one of the survivor, we expect that consumption and thus savings trajectories will be shaped according to the survivor's preferences after the shock occurred and the adjustment period has passed. For example, if the subjective discount rate is lower for women (they are more patient) we expect that female survivors will shift to a higher accumulation pace. Patient households exhibit a higher accumulation rate than impatient households due to their lower desire for current consumption. If women differ from men in their saving preferences, we would expect that this saving behavior will be reflected several years after widowhood occurred. If women have different tastes for procrastination and riskiness, this will also be reflected in their asset trajectories. Differences in risk aversion may lead to a lower return (lower r in our equations) and thus a lower accumulation pace. So the asset returns and active savings will generate the final outcome on the current asset value (see Lusardi 2000[12]). Thus, within preferences, the variables that affect the saving propensity are the subjective discount rate, impatience as well as risk aversion.

⁵ Consumption can also change after the widowhood shock to reflect fewer persons in the households and different tastes, i.e. a widow/er might be willing to consume fewer resources in leisure-related activities (such as restaurants or outdoor activities) after widowhood occurs.

Summing up the two factors that can drive the asset accumulation process, these include: asset returns, potentially lower for women and the saving behavior, potentially higher for women. If asset returns are in favor of men, due to more active investment strategies, the active saving rate potentially goes in the opposite direction. The prevalence of one of these two factors is ultimately an empirical question.

Our prior is that if the woman in the couple is more inclined to save than her partner, the higher her bargaining power, the more the couple will save according to her preferences. If she does not have high bargaining power then after the shock we would expect the accumulation pattern to reflect more her preferences. Once controlling for bargaining power, the effect of widowhood could just disappear or at least be much more diluted.

Other aspects

Another factor not in the model that could explain changes in the portfolio after the spouse’s death is financial planning. Couple planning, as well as financial decisions, could change when the couple dissolves. As highlighted by Ameriks, Caplin, Leahy, (2003) [2] the propensity to plan might increase the savings rate. The authors show that households with similar demographics exhibit huge differences in the amount of wealth. The authors find that factors that are supposed to determine the saving propensity according to the life cycle theory actually have little influence (on saving propensity), while financial planning is the main ingredient of higher wealth accumulation patterns. This is contrary to Lusardi’s (2000) findings, where she indicates that not holding stocks (and a higher prevalence of equity holdings) generates a lower return.

III. Data and Descriptives

To examine our question of interest we use the Health and Retirement Survey (HRS), a longitudinal panel study that surveys a representative sample of more than 26,000 Americans over the age of 50 every two years since 1992. The survey collects information about income, work, assets, pension plans, health insurance, disability, physical health and cognitive functioning, and health care expenditures. The asset information is collected at the household level. Income, earnings and other information is collected for all persons in the household. We use 10 waves of the RAND version of the data (1992-2010), which include imputations for income and wealth. Our sample consists of couple households close to retirement age- over the age of 60 that have experienced a death of the spouse (either woman or man) during the sample period. Table 1 shows the distribution of the sample by waves.

Table 1. Number of observations, by wave and year of survey

wave	Year	Number of couples	Number of deaths by next wave	Share of couples affected by shock (%)
1	1992	245	29	12
2	1994	1 873	334	18
3	1996	2 070	391	19
4	1998	2 461	412	17
5	2000	2 490	375	15

6	2002	2 436	316	13
7	2004	2 333	347	15
8	2006	2 205	324	15
9	2008	1 989	357	18
10	2010	1 661		
Total		19 763	2 885	15

Source: HRS wave 1-10

Consider t to be the time since shock. Since the shock occurs sometime in-between two waves, the wave immediately following the shock is considered to be the wave when the shock occurred (time $t=0$).⁶ We also distinguish the pre-shock waves (time $t<0$), and the after shock waves (time $t>0$). In our sample, the first shock can occur after the 1st wave and the last shock can occur after the 8th wave since we need to have an observation one wave before the shock, the shock and one wave after the shock. Thus, deaths that occurred after the 9th wave are not considered in the analysis. We also exclude couples that have remarried. Our sample is an unbalanced panel with 2,528 couples.

Our net worth measure consists of financial assets, nonfinancial assets net of total liabilities. Financial assets include the value of checking, savings and T-bills; the net value of stocks, mutual funds, and investment funds; IRA and other private pension accounts and net value of all other savings. Nonfinancial assets include the value of the primary and secondary residence, Liabilities include the value of all mortgages and land contracts; other type of home loans and value of other debt. We adjust monetary values of wealth and income by the consumer price index to 2000 values.

Table 2 indicates that both wealth (and income) decline prior to death of a spouse (for both women and men) measured both with a mean and median. For men overall wealth slightly increases after the shock and for women it remains stable. Financial assets for women decline. In terms of household income the decline of household size is evident with the prevalence of lower income, but households in which the woman is the survivor have lower wealth levels by 10 000-12 000 USD.

Table 2. Average and median statistics in our sample before and after the shock, by gender.

		Mean						Median					
		Net worth		Financial assets		HH Income		Net worth		Financial Assets		HH Income	
		Men	Women	Men	Women	Men	Women	Men	Women	Men	Women	Men	Women
t	-4	318 244	324 650	165 992	156 333	55 587	48 998	199 744	223 955	38 032	41 662	36 808	36 467
	-2	309 661	297 757	163 929	138 989	53 477	46 823	176 017	189 359	30 879	31 941	34 841	34 066
	0	278 358	270 180	161 076	138 971	44 457	38 059	161 333	157 369	33 474	36 872	26 236	19 945
	2	282 448	261 074	161 737	140 594	39 775	32 698	139 398	140000	35 403	30 000	26 356	20 806
	4	296 300	261 064	161 664	137 125	40 434	28 085	153 992	137 635	30 545	26 264	27 128	20 331

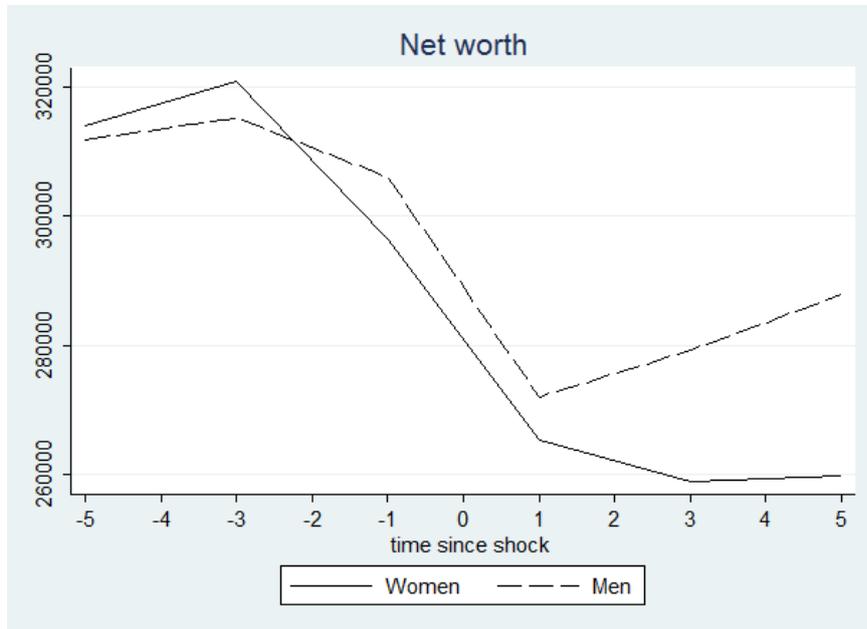
Source: HRS wave 1-10

In the figures below, we provide a snapshot of wealth before and after the shock separately for women and men (Figure 1). Changes in wealth are occurring before and after the death of the spouse. Decumulation

⁶ In effect, if the shock occurred shortly after the previous wave ($t=-1$) then $t=0$ (the wave of the shock) may be almost 24 months after the actual shock.

begins two waves before the actual event, but the trajectory is different for women and men. In stark contrast to men, women’s net worth continues to fall after the death of the spouse.

Figure 1 Trajectories of net worth since shock by gender.

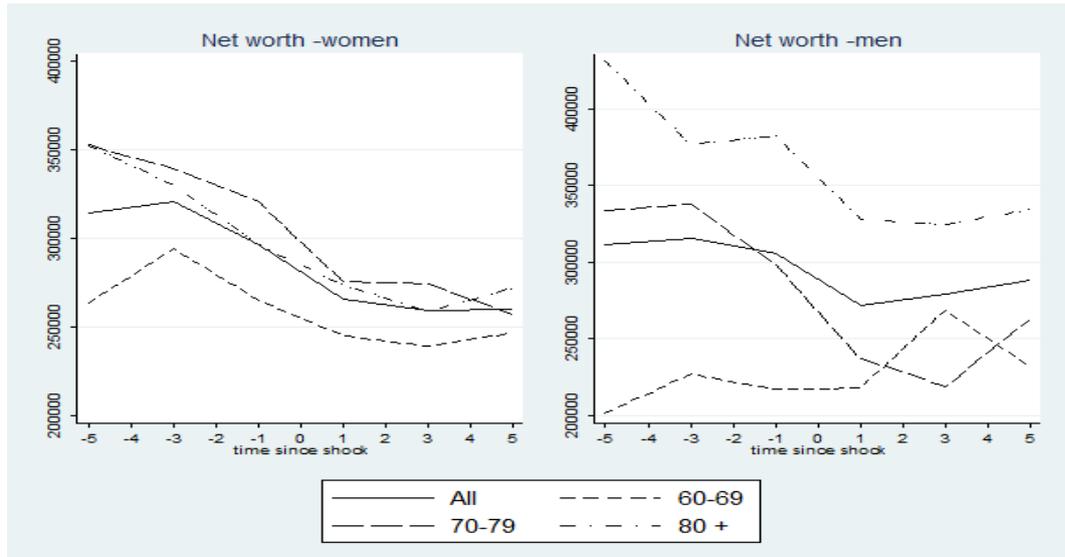


Source: HRS

Note: time difference corresponds to two years (like in table 2, the distance between each wave); time t=0 is the time of the shock.

Given that there are strong age effects in wealth accumulation, we check the trajectories of wealth by age. Figure 2 includes for comparative purposes the overall wealth trajectories and those for three age groups (60-69, 70-79, 80+). Decumulation patterns for men vary by age and for women they are a lot more clustered. For men, we see an increase in wealth for most cohorts.

Figure 2 Net worth and financial assets before and after the shock for women and men by age group.



Source: HRS

Note: time difference corresponds to two years (like in table 2, the distance between each wave); time t=0 is the time of the shock.

IV. Empirical Strategy

Asset trajectories and widowhood

In our empirical model, we want to test whether asset trajectories are affected by widowhood and whether once we control for preferences this effect disappears or remains robust. We also check whether the effect varies by gender. For this we use a fixed effect strategy to control for the individual specific effect, which is allowed by the panel dimension of our dataset and estimate the following equation for net worth.

$$wealth_{i,t} = \alpha + \beta widow_{i,t} + \theta \text{arg ain}_{i,t} + \mu X_{i,t} + u_{i,t} \quad (1)$$

where X_{it} is age, age squared, presence of children, log of household income, level of education (high school and below, high school, some college, college and above) labor market status, health status, health insurance, etc.. Error term, u_{it} include an idiosyncratic error term, ε_{it} , and fixed effect (μ_i). Unless otherwise specified our variables refer to the survivor in the couple. We also include a dummy variable for every four year time range (two consecutive waves) to control for any macroeconomic changes over time.⁷ We also include various interaction terms. The complete list of our variables is in Table A.1.

Our main variable of interest is the widow dummy, which indicates the transition to widowhood (equal to one starting from when widowhood occurs onwards). Thus, β captures the average effect the shock of becoming widowed has on wealth. To check whether the response is gendered we include a female interaction term for widowhood. Among our regressors, we give a special focus to bargaining power, calculated as the ratio of the

⁷ Results available upon request.

wives' income to total household income⁸. If bargaining were the pivotal variable determining the portfolio and accumulation decision, then the widowhood transition should have no additional effect. If widowhood is still persistent in determining wealth transitions after widowhood, then the shock is an important cause of changes in asset trajectories, indicating that bargaining does not sufficiently explain how decisions of a couple change to become the decision of one person.⁹

In order to capture preferences in portfolio choice, we also control for whether a person had been the financial decision maker.¹⁰ The idea being that if someone became the financial decision maker after the spouses' death the portfolio would better reflect their preferences and we would expect to see more of an effect in their portfolio.

In the United States, a substantial financial burden for the elderly could be medical expenditures, thus we also include indicators of whether the respondent (survivor) and spouse have health insurance prior and after the event. Most elderly (over 65) are covered by Medicare, but it has sizable gaps in coverage,¹¹ thus, some people have supplemental insurance. Regardless of this, a sizable portion of the population is left vulnerable to substantial expenditures that could occur in the months before death and could affect the financial well-being of the surviving spouse.¹² We include controls for long-term insurance, government insurance (Medicare), health insurance and also whether the spouse had life insurance prior to death. The latter could also prove important for the analysis, as if the person who died subscribed to life insurance, the survivor would benefit from that income after the spouse's death.

The descriptive statistics for our two groups: women and men in the Appendix Table 2a and Table 2b indicate that men survivors are slightly older than women survivors in the sample and are more likely to be working. Women survivors are more likely to have made the switch to being the financial decision maker compared to men survivors and they are more likely to have long-term health insurance. Men's deceased spouses are more likely to have had health insurance compared to women's deceased spouses.

Persistence of shock

In our empirical strategy, we also want to detect if the widowhood shock persists over time, rather than being absorbed just after death. To do so, we add a set of dummy variables for each year after the shock occurred, as follows (we avoid the subscript, for simplicity):

$$wealth = \alpha + \sum_t \beta_t time - sin ce - wid_t + \theta bargain + \mu X + \varepsilon \quad (2)$$

⁸ If the wife is the survivor then bargain=1 after death and if the husband is the surviving spouse bargain =0. Bargaining power may be decreasing (increasing) before death based on the contribution of spouses to household income.

⁹ We would have also liked to control for risk, but unfortunately it is not available for all waves. Research indicates though that even when risk preferences are included as controls, a large wealth gap remains unexplained (Neelakantan & Chang (2010) [16]).

¹⁰ The financial decision-maker is the person making most of the financial decisions in the household.

¹¹ It does not cover extended hospital stays, most long-term needs and until 2006 prescription drugs.

¹² McGarry and Schoeni (2005) [14] estimate that medical out-of-pocket expenditures per dying individuals over the last year of life average \$5,684, which is significantly higher than for similar people that do not die that year and almost twice as high as in the year before death.

In this specification, we also include interaction terms in order to check whether there are any gender specific effects.

V. Empirical Results

In the empirical results, we observe average changes in wealth due to the shock and also over time. We check whether there are any racial specific effects and perform various robustness checks.

Net worth trajectories

In the first instance, we examine whether we observe a decline in the overall level of wealth due to the death of a spouse. In Table 3 there are five different specifications of our model. In column (1) we present our basic model (eq(1)), in column (2) we add bargaining power to the basic specification, in column (3) we add insurance coverage of the survivor and the deceased, in column (4) we estimate eq(2) by generating one dummy variable for each wave subsequent to the shock to capture the persistence of a shock and how preferences of the survivor, rather than couple preferences shape asset trajectories over time. We also add a dummy for one wave before shock (and its interaction with female), so as to take into account a possible effect before death capturing illness related decumulation behavior.

Let us first start from the transition to the widowhood status. In the first two specifications, where insurance variables are not included, the widowhood shock negatively shapes assets for women and men survivors (See Appendix Table A.1 for variable definitions). However, this negative impact is less pronounced for widows (albeit significantly only in one specification, column 2). On average, women tend to decumulate less after widowhood occurs, by suggesting that preferences of women are truly more inclined for a more pronounced accumulation pattern. Women are more inclined to save.

The picture changes when insurance coverage is added to the model (column 3). Long term insurance and government insurance, of both the deceased and the survivor do matter significantly in balancing the negative shock of the partner's death, which is no longer significant. The widowhood shock is thus no longer affecting the asset trajectories once the insurance coverage is taken into account.

We then moved to the transition after the shock, which is to examine the behavior of the survivor year by year after widowhood occurs (Table 3, column 4). Evidence confirms, also in the long run, that each year after widowhood women accumulate more than when married, while for men the effect is negative and non-significant. The effect for women becomes prominent in the second wave after the shock (3rd year) and remains significant for the most part suggesting that the shock of becoming a widow has a significantly different effect on overall wealth trajectories for women. While men tend to keep constant or decline their saving rate, women do show a higher attitude to saving after widowhood occurred. Put differently, when their preferences do not have to compromise with the husband's preferences, such as is the case for widows, women show a higher accumulation pace.

Column (5) checks for anticipation effects by including a dummy for the wave before the shock, which is negative, but not significant. The evidence proves the existence of different attitudes towards savings of women and men, as highlighted in Section II. If women did not differ from men in their preferences for asset accumulation, we would not expect a differential adjustment in saving patterns for widowers and widows after the shock, as is the case here. Women prefer to accumulate more than men when they manage their finances on their own.

Our other controls indicate that contrary, to our expectation the fact that one has become a financial decision maker after the death of the spouse does not have a significant effect in any of our specifications. It does have a negative coefficient suggesting that perhaps there would be some adjustment period on wealth levels due to the new responsibilities of wealth management.

Having children increases the accumulation pattern, but not significantly and no difference is observed between women and men. The effect of age is strongly nonlinear and in line with the life cycle predictions, highlighting a concave pattern of wealth over the life cycle. The effect of income is strong, positive and significant. If the surviving spouse is working this has a negative effect on accumulation compared to the situation if one is out of the labor force and retired.

We also want to rule out that, potentially, widowhood could be endogenous if death is anticipated by a long illness. We thus select a sub sample of survivors where death happened without a bad health status or illness that lasted few months (it was unexpected). Results are shown in Table 4. Bargaining power keeps its predictive power and is in the same direction as for the whole sample. Women continue to show a positive accumulation pace after widowhood, but the coefficient becomes insignificant.

Any differential race effect?

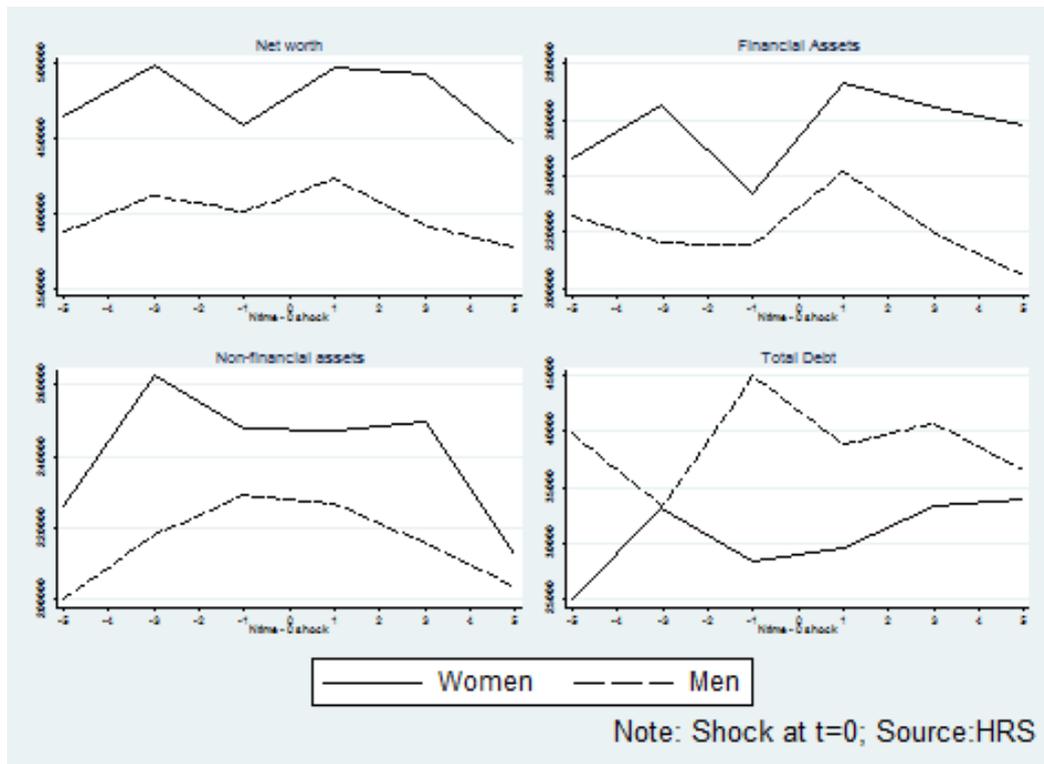
Given that we are using a fixed effect estimation strategy, which does not allow specific effects excluding multiple interaction terms, we repeat our analysis for the main specification for net worth by race to identify whether there are any race-specific effects. The results can be found in Table 5-7 for whites, blacks and Hispanics, respectively. We do not find any race specific effects for blacks and Hispanics, and the results are in line with the results in Table 3 for the immediate and persistent effect with the negative wealth shock being stronger for men than for women. We do observe that the immediate effect (although not significant) among the Hispanics is more negative for women, while for white and black women widowhood is less of a shock than for men.

VI. Robustness Checks

As a check, we take our pool of couples over 60 not experiencing widowhood and randomly assign a widowhood shock at wave 'w' drawing 1000 draws from a uniform distribution. Next, we plot asset trajectories for these randomly assigned widows and perform the same fixed effect strategy, as in the main analysis of the previous section for net worth.

The figure below indicates that the wealth trajectories of randomly assigned widows do not exhibit the same paths of accumulation and decumulation as those of true widows suggesting that the event of becoming a widow/er is an exogenous event, which brings about specific behavior, which is nevertheless different for men and women.

Figure. Asset trajectories for couples over 60 with randomly assigned widowhood.



The results of the regression are in Table A.3. The widowhood shock is not significant in any of the specifications.

VII. Summary

In this paper, we track asset trajectories that occur after a couple experiences a life shock, resulting from a death of a spouse close to retirement age. On the one hand, we expect these newly formed households to experience some type of vulnerability due to the fact that they are left on their own to manage the household finances (if they have never done this before). On the other hand, the survivor can shape decisions on how much to save and in which forms according to their own preferences without having to compromise with the preferences of the spouse.

Given that more than half of households at this age are headed by women, we argue that the ability to manage and generate adequate savings is crucial to their economic well-being and so we focus on the differences between women and men and how they deal with the shock.

Our hypothesis is that the accumulation pattern is likely to reflect preferences of the main financial decision maker (usually the husband). Once widowhood occurs singles can re-optimize their investment and saving decisions according to their own preferences, keeping in mind their retirement well-being. Given different behavior and preferences of women when it comes to investing, changes in the portfolio after the shock of widowhood will be observed.

We test this hypothesis by examining whether there is a change in the accumulation patterns for households that have experienced the shock of becoming widowed.

We find that the gender of the survivor shapes asset trajectories possibly reflecting differences in preferences. Changes in bargaining power matter for the accumulation of wealth. The higher is the income of the wife, the stronger the accumulation pattern.

Overall, we find that there is an effect of widowhood on wealth immediately after its happening, but it is diluted and even disappears once other factors are controlled for health insurance in particular. Couples with health insurance are financially less vulnerable in the face of spouse loss, after which the wealth level is unchanged. Years after widowhood we observe that saving rate increases for women while is stable for men, revealing that female preferences differ more than the couple's ones when it comes to financial decisions. If the woman is the survivor, she will start a higher accumulation pattern over time after becoming a widow.

On the policy standpoint, the results of our paper could have important consequences for the pension industry in terms of designing products in-line with *women investment preferences*, as well as identifying the differential willingness to save among women and men after major life events. Savings products could be better tailored as to capture different propensity for save within the couple. Moreover, a role for (possibly backed by the public institutions) financial advice and fostering financial knowledge becomes essential in order to increase financial inclusion and reduce potential vulnerability to investments which do not necessarily reflect the preferences of each couple members.¹³

¹³ See Borella and Rossi 2013 [3].

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Table 3 The effect of widowhood on wealth Patterns. Fixed Effect. Dependent Variable: total net wealth

	(1)	(2)	(3)	(4)	(5)
Widowhood	-29944.74**	-54678.40***	-19310.77		
Female*Widowhood	15687.51	35784.77*	31097.37		
Children	47396.41	42243.85	39986.00	47040.70	48163.48
Children*widowhood	5892.98	11111.37	8718.61	-24257.01	-24087.78
Children*female*wid	4196.36.00	-91.62	38.77	36813.12	29765.27
age	57627.52***	61690.83***	38840.64***	38416.82***	38665.25***
Agesq	-369.64***	-394.29***	-255.90***	-238.46***	-236.46***
Age*female	-16359.67	-18154.76*	-12086.95	-12183.05	-11238.71
Agesq*female	80.10.00	91.26.00	54.16.00	50.75	53.58.00
Log y	56845.76***	55935.78***	54842.46***	54848.45***	54767.31***
Rworking	-26974.26***	-25242.78**	-18744.55*	-18204.30*	-18026.61*
runemployed	-31168.55	-32748.57	-20288.38	-17207.94	-13192.86
rgoodhealth	9229.07.00	8838.97	8886.37.00	8742.74	8762.86
rbetter	-3435.49	-3920.26	-3614.52	-3801.68	-3923.92
Rworse	-4346.76	-3806.84	-2499.72	-2294.60	-2231.34
Bargaining power		-135552.31***	-186529.85***	-146989.67***	-143114.82***
Bargainig power squared		113031.19**	173685.12***	102157.10*	96348.01*
fswitch			-33872.67	-42056.26	-41969.10
Life insurance			3781.40.00	2851.39.00	2296.22.00
Life insurance_d			19606.29*	19818.02*	19568.42*
Lide insurance_r			23400.95**	22782.09**	22741.00**
Government insurance_d			45753.18***	49474.48***	49609.71***
Governemnt insurance_r			21708.93**	20041.25*	19561.56*
Health insurance_d			-2380.52	1155.76	1518.40.00
Health insurance_r			39.61	-436.32	-390.09
othins_d			15553.86*	17695.76**	18036.68**
othins_r			8765.40.00	8197.06.00	8014.27.00
Time after shock_1				15717.09	12184.57
Time after shock_3				-20944.93	-25724.96
Time after shock_5				-17701.86	-23467.60
Time after shock_7				-15799.46	-22596.29
Time after shock_9				-17485.97	-25154.05
Time after shock_11				-54979.61	-63550.34*
TasXfemale 1				36431.56	31899.16
TasXfemale 3				75631.47***	61609.45**
TasXfemale 5				67984.00**	51167.26
TasXfemale 7				62283.12*	42663.72
TasXfemale 9				46916.76	24488.03
TasXfemale 11				106888.02**	81803.81*
Time before shock 1					-7333.47
Tbs*female_1					-18805.11
_cons	-1985676***	-2057553***	-1330207***	-1389726***	-1471775***
N	17873.00	17740.00	17740.00	17740.00	17740.00

Note: we also added dummy variables (one dummy for every four year two consecutive waves) for all tables.

Table 4. Robustness check. Subsample of survivors whose spouse died unexpectedly or the deceased not in bad health

	(1)	(2)	(3)	(4)	(5)	(6)
Widowhood	32.535.344	67.019.154	-59.238.519	-38809.88		
Female*widowhood	-14.289.476	-44.957.857	-15.234.897	-29.483.888		
Children	53.085.536	48.301.844	60.903.845	56.950.111	56559.25	58.678.488
Children*widowhood	-24.997.598	-23.995.147	-18.308.101	-13.549.275	-31.860.844	-25.396.617
Children*female*wid	30026.4	25.749.235	30.607.962	27.182.142	11.658.506	-17.289.275
Age	29.194.017	33.331.146	60378.003***	68725.242***	26.129.737	30.633.331
Age squared	-237.43917*	-265.75429*	-426.30441***	-480.96057***	-18.844.285	-2.207.879
Age*female	-10.829.043	-13.929.854	-15217.11	-20.127.158	-80.499.733	-12.746.912
Age squared*female	64.809.762	84.854.341	87.690.908	1.193.799	32.569.387	65.115.041
Log y	60394.88***	57868.148***	62291.013***	60301.096***	60046.653***	57508.042***
Rworking	-37166.492*	-36313.329*	-44323.703**	-44643.794**	-36279.776*	-35489.832*
Runemployed	20.817.799	20.306.318	-55.120.522	-9.363.513	20.865.503	23.262.522
Rgoodhealth	13.524.284	12.544.222	14.528.314	13.938.288	13.759.731	13.147.904
Rbetter	-2.118.407	-52.968.013	-33.030.421	-65.358.267	-26.772.804	-60.444.497
Rworse	-3.495.721	-16.885.018	-58.137.396	-4.507.056	-28.517.728	-14.162.335
Bargaining power		-281515.09***		-225653.48**		-248425.42**
Bargaing power squared		312502.06***		237938.67**		231737.24*
Life insurance	11.288.368	18.791.283			97.134.324	17.138.993
Life insurance_d	53214.526**	54127.639**			52114.02**	54136.163**
Lide insurance_r	-15.450.433	46.188.306			-10.103.977	33.373.896
Government insurance_d	31.423.718	47763.004**			37385.174*	48404.47**
Governemnt insurance_r	41588.425*	43662.654**			40674.295*	43607.191**
Health insurance_d	-25.626.086	51.396.097			-87.725.351	29.473.625
Health insurance_r	10.390.632	9.881.421			11.230.972	9.954.622
othins_d	28.359.035	26.343.133			29965.562*	28686.454*
Othins_r	17.316.762	19.276.564			17.587.523	18.621.454
Time after shock_1					34.869.336	-53.294.185
Time after shock_3					16.326.839	-13.985.147
Time after shock_5					10.115.855	-19.867.611
Time after shock_7					-83.103.218	-38.428.568
Time after shock_9					-62.502.523	-29.382.844
Time after shock_11					-59.001.087	-89.297.989
TasXfemale 1					21.532.573	42.498.471
TasXfemale 3					18.181.821	28.348.433
TasXfemale 5					10.958.117	20.319.663
TasXfemale 7					30.145.354	38.745.438
TasXfemale 9					20.177.484	90.192.925
TasXfemale 11					82.556.093	89.956.203
_cons	-863376	-873996.76	-1939506***	-2061667.3***	-939598.73*	-916361.79*
N	5115	5076	5115	5076	5115	5076

Table 5. Asset trajectories (variable: net worth). Whites –non-Hispanics.

	(1)	(2)	(3)	(4)	(5)
Widowhood	-31206.73*	-60414.16***	-23255.78		
Female*widowhood	21176.88	35453.61	28476.03		
Children	85595.16*	76877.77*	71976.37*	82375.16*	83925.94*
Children*widowhood	2014.99	7073.23.00	7159.46.00	-36866.85	-36868.69
Children*female*wid	1934.97	-2052.07	-2177.31	46043.09	38051.45
age	63062.09***	67276.48***	40392.20***	40490.73***	40823.46***
Agesq	-410.91***	-436.10***	-270.61***	-254.98***	-254.34***
Age*female	-21651.30*	-23008.56*	-16363.41	-16787.33	-15692.71
Agesq*female	108.84	116.41.00	75.61	72.76	77.77
Log yy	65408.50***	63827.33***	62307.87***	62301.02***	62184.13***
rworking	-27912.46**	-25898.77**	-17154.32	-16471.57	-16382.32
runemployed	-29863.60	-31934.81	-12925.33	-10036.40	-6943.36
rgoodhealth	9640.48.00	9321.51.00	9319.47.00	9171.82	9337.09.00
rbetter	-4218.63	-5099.97	-4896.34	-4869.22	-5012.33
rworse	-3582.42	-2830.82	-1401.60	-1080.22	-998.04
Bargaining power		-170537.07***	-226309.17***	-176988.19***	-172412.50***
Bargainig power squared		154549.15***	222152.00***	133452.25*	126683.10*
Fswitch			-54508.19	-71952.33	-71655.51
Life insurance			1110.99	441.89	-189.96
Life insurance_d			22222.30*	22480.48*	22296.95*
Lide insurance_r			21952.06*	21026.90*	21021.74*
Government insurance_d			46052.92***	51508.02***	51718.11***
Governemnt insurance_r			30927.12**	28890.03**	28112.36**
Health insurance_d			-2626.64	1293.06.00	1436.50.00
Health insurance_r			-89.45	-393.38	-320.86
othins_d			17079.33*	19600.44*	19824.08*
Othins_r			7967.77	7474.09.00	7320.40.00
Time after shock_1				24689.99	24128.32
Time after shock_3				-21442.16	-22733.91
Time after shock_5				-20481.76	-22176.71
Time after shock_7				-16342.19	-18457.91
Time after shock_9				-29402.64	-31776.72
Time after shock_11				-62379.42	-65120.25
TasXfemale 1				30552.06	22372.00
TasXfemale 3				81373.29**	61734.37*
TasXfemale 5				72694.69*	49295.73
TasXfemale 7				67916.68*	40626.48
TasXfemale 9				61664.24	30468.23
TasXfemale 11				120602.33**	85745.85
TasXfemale 1					-2936.57
TbsXfemale_1					-26149.28
_cons	-2090850.47***	-2164008.68***	-1313345.36***	1372707.42***	1466556.99***
N	14441	14339	14339	14339	14339

Table 6. Asset trajectories (Variable: net worth). Blacks.

	(1)	(2)	(3)	(4)	(5)
Widow	-19645.70	-17689.38	-14173.89		
Female*widowhood	-6011.74	35422.70	33320.79		
Children	10796.12	9375.08.00	4019.61	3161.13.00	1825.15.00
Children*widowhood	27511.72	34681.88*	40105.87*	20278.16	20808.35
Children*female*wid	9997.69	2236.12.00	3033.23.00	35106.48	33499.13
Age	34123.23**	32650.22**	28263.05*	24852.63*	26081.62*
Agesq	-187.31*	-173.17*	-148.38	-128.47	-122.91
Age*female	3051.03.00	3432.43.00	7936.37.00	8363.48.00	7649.05.00
Agesq*female	-24.68	-30.14	-56.70	-40.31	-46.12
Log y	27807.68***	26827.61***	27701.82***	28536.82***	28826.30***
rworking	-18712.50	-16992.00	-21616.54	-24898.51*	-25814.60*
runemployed	-30944.71	-29539.70	-41690.72	-40229.76	-40129.02
rgoodhealth	8495.15.00	8359.56.00	9856.56.00	9281.22.00	9479.46.00
rbetter	5108.55.00	3463.76	752.57.00	-2027.75	-1463.76
rworse	-11991.23	-11580.60	-11344.43	-10536.27	-10154.99
Bargaining power		84084.83	51344.40	81062.23	85851.99
Bargaining power squared		-121301.61*	-84796.75	-119721.41*	-125029.57*
Fswitch			-10576.22	-60514.42	-61965.65
Lifeinsurance			-8657.10	-7915.55	-8015.78
Life insurance_d			-33076.85*	-33674.32*	-31871.69
Life insurance_r			22583.73	24072.76	23696.13
Government insurance_d			17372.45	23918.40*	23138.22*
Governemnt insurance_r			-15643.92	-14517.37	-14830.51
Health insurance_d			-19072.90	-15667.89	-15671.32
Health insurance_r			2213.93	1636.94	1896.52.00
othins_d			17243.36	19130.61	18707.58
othins_r			9978.79	9242.47.00	9113.18.00
Time after shock_1				23360.46	4316.39.00
Time after shock_3				3160.78	-19442.02
Time after shock_5				9915.28.00	-16531.53
Time after shock_7				-963.59	-31604.41
Time after shock_9				86865.52*	52484.42
Time after shock_11				27435.75	-10797.86
TasXfemale 1				-3877.81	13579.59
TasXfemale 3				27437.61	46783.40
TasXfemale 5				21003.48	43326.96
TasXfemale 7				16366.59	42169.60
TasXfemale 9				-74062.34	-45185.44
TasXfemale 11				-24587.14	7560.87
Time before shock 1					-26511.25
TbsXfemale					21556.95
_cons	-1597522.29***	-1560784.01***	-1512812.03***	1439021.24***	1493364.32***
N	2019	2001	2001	2001	2001

Table 7. Asset trajectories (variable: net worth). Hispanics

	(1)	(2)	(3)	(4)	(5)
Widow	-6131.73	-19026.04	-8141.81		
Femalewid	-27252.01	507.25.00	1824.58.00		
Children	-13783.70	-13988.99	-4688.29	-12973.27	-10608.31
Children*widowhood	-6027.82	-229.56	-6041.99	41916.85	43490.25
Children*female*wid	25074.53	19614.05	21345.25	-97144.85	-105616.13
age	14653.90	26091.10	19138.77	23090.53	25917.73
agesq	-70.11	-146.38	-103.15	-112.79	-116.77
agefem	11523.92	1724.53.00	1561.88	-1120.20	-2794.29
agesqfem	-59.98	0,295138889	07.50	16.46	28.34.00
Log y	9102.29.00	8859.11.00	6753.26.00	6773.42.00	6435.14.00
rworking	-31761.49*	-30562.75*	-28607.05	-28266.28	-25630.81
runemployed	-139752.70*	-143756.89*	-141187.08*	-149821.66*	-130332.39
rgoodhealth	8698.59.00	7810.66	6424.27.00	4403.32.00	3350.81
rbetter	-2334.82	-2484.48	-1495.52	-177.96	-386.81
rworse	5506.97	5730.90	5863.11.00	3624.90	3043.87
Bargaing power		-49461.82	-80414.99	-107512.66	-108764.29
Bargaing power squared		19316.62	52564.97	78332.05	79594.36
Fswitch			18679.36	26312.20	23571.46
Lifeinsurance			12167.67	5516.63	5333.94
Life insurance_d			15538.73	9537.66	5059.21.00
Life insurance_r			4249.03.00	8117.32.00	8410.82
Government insurance_d			22100.17	12955.38	17158.38
Governemnt insurance_r			22620.55	24595.00	24838.40
Health insurance_d			28187.90	25768.02	28096.09
Health insurance_r			11007.55	6746.18.00	5979.74
othins_d			-20867.23	-21145.91	-17086.67
othins_r			17906.21	18118.51	19736.19
Time after shock_1				-73688.38	-92722.08
Time after shock_3				-44194.79	-65826.85
Time after shock_5				-33108.07	-59172.80
Time after shock_7				-18606.07	-48887.24
Time after shock_9				-33726.13	-67921.71
Time after shock_11				-65276.42	-104857.03
TasXfemale 1				140088.48	149152.02
TasXfemale 3				15921.51	16831.40
TasXfemale 5				33780.76	34189.13
TasXfemale 7				864.64	1163.35.00
TasXfemale 9				-8874.15	-8311.90
TasXfemale 11				53121.40	54667.83
Time before shock 1					-34952.22
Tbs*female					2665.35.00
_cons	-884372.98*	-1030997.01**	-783536.54	-882074.40*	-1007589.69*
N	1013	1004	1004	1004	1004

Note: we also added dummy variables (one dummy for every four year time range, two consecutive waves).

Appendix Note

Inheritance and Wills

In the United States, only a few states are common property states in which an even 50-50 ownership of assets is considered in the event of divorce or death. In most other states, property belongs to you after your spouse dies only if your name was on the title or it was given to you via a will or you can prove that you bought it together. In practice, the surviving spouse usually cannot be left without anything and receives 1/3 to half of the property, which suggests that theoretically a drop in wealth could be observed following a death shock. A drop of wealth could also be observed, because wealth belonging to a deceased spouse could be put in an estate after which the actual split of assets would be determined. Death is also accompanied by large expenses, which could affect wealth levels. There are no taxes, state or federal for bequests made to the spouse. About 2/3 of people aged 60 and over write wills (and most often will writing is related to life events). The characteristics of will writers are examined in Goettin and Martin 2001. The beneficiaries of those with wills and without wills did not differ much—suggesting that wills follow more or less the marital regime laws possibly with the spouse receiving most often the estate. [in any case we control for children] Intestate succession laws control who inherits property if no will exists. Many kinds of assets are not passed on by will: life insurance proceeds, real estate, bank accounts, and other assets held in joint tenancy, tenancy by the entirety, or community property with right of survivorship, property held in a living trust, funds in an IRA, 401(k), or retirement plan for which a beneficiary was named funds in a payable-on-death (POD) bank account, and stocks or other securities held in a transfer-on-death (TOD) account.

Appendix Tables

Table A.1. Variable labels and definitions.

Widowhood	Shock occurred to respondent
Female*widowhood	Female widowhood: Widow*female
fswitch	Whether survivor became the financial decision maker after the shock
Rlhighschool	Education: Less than high school
Rsomecollege	Education: Some college
Rcollabove	Education: Above college
Life insurance	Respondent covered by life insurance (_r). Deceased covered by life insurance (_d)
Life insurance	Deceased had Long term insurance
Life insurance_d	Respondent has long term insurance
Lide insurance_r	Government Insurance (of the deceased)
Government insurance_d	Government insurance (of the respondent)
Governemnt insurance_r	Health insurance (of the deceased)
Health insurance_d	Health insurance (of the respondents)
Health insurance_r	Other insurance (of the deceased)
othins_d	Other insurance (of respondent)
Children	Couple has children
Children*widowhood	Children*widowhood
Children*female*wid	Children*widowhood*female
Age	Age
Agesq	Age squared
Age*female	Age*female
Age squared*female	Interaction of age squared and female
Log y	Log of household income
Rworking	Dummy =1 if R works
Runemployed	Dummy=1 if r is unemployed
Rgoodhealth	Good health (R)
Rbetter	Better health (R)
Rworse	Worse health (R)
Bargaining power	Bargaining power equal to ratio of wives income to total household income
Intimepos_X	Time period after shock; X=number of year*2
IntimeXfem_X	Female *[Time period after shock; X=number of year*2]
Intimeneg_X	Time period before shock; X=number of year*2
IntimenegXfem_X	Female *[Time period before shock; X=number of year*2]

Note: R stands for Respondent (the survivor)

Table A.2a Descriptive statistics for men and women (men).

Men	Obs	Mean	Std. Dev.	Min	Max
age	5906	76.32712	8.46832	61	102
agesq	5906	5897.53	1304.756	3721	10404
Bargaining power	5771	.1418733	.1948107	0	1
Log y	5883	10.24156	.8355392	3.89182	14.53072
rworking	5906	.117169	.3216488	0	1
runemployed	5906	.0008466	.0290865	0	1
Rlths	5906	.4102608	.4919226	0	1
rsomecolle	5906	.1401964	.3472201	0	1
rcollabove	5906	.1586522	.3653824	0	1
rgoodhealth	5906	.6862513	.4640549	0	1
rbetter	5906	.0778869	.2680162	0	1
rworse	5906	.2575347	.4373133	0	1
fswitch	5906	.3848629	.4866041	0	1
Life insurance	5906	.0829665	.2758549	0	1
Life insurance	5906	.0543515	.2267292	0	1
Life insurance_d	5906	.0936336	.291343	0	1
Lide insurance_r	5906	.4375212	.496123	0	1
Government insurance_d	5906	.8840163	.3202325	0	1
Governemnt insurance_r	5906	.2108026	.407913	0	1
Health insurance_d	5906	.3364375	.4725306	0	1
Health insurance_r	5906	.181341	.3853331	0	1
othins_d	5906	.2908906	.4542116	0	1
Widowhood (any)	5906	.1493397	.3564531	0	1
Women	Obs	Mean	Std. Dev.	Min	Max
age	13857	75.30028	8.101449	61	109
agesq	13857	5735.761	1237.322	3721	11881
Bargaining power	13857	.6424529	.3806119	0	1
Log y	13801	10.09185	.7952865	1.609438	15.5093
rworking	13857	.0754853	.2641824	0	1
runemployed	13857	.0018763	.0432773	0	1
Rlths	13851	.3202657	.4665954	0	1
rsomecolle	13851	.188434	.3910725	0	1
rcollabove	13851	.1107501	.3138338	0	1
rgoodhealth	13857	.6911308	.4620437	0	1
rbetter	13857	.0819081	.2742345	0	1
rworse	13857	.2838277	.4508705	0	1
fswitch	13857	.5508407	.4974265	0	1

Life insurance	13857	.0945371	.292585	0	1
Life insurance	13857	.0523923	.2228249	0	1
Life insurance_d	13857	.1236198	.3291592	0	1
Life insurance_r	13857	.4563037	.4981049	0	1
Government insurance_d	13857	.8845349	.3195939	0	1
Governemnt insurance_r	13857	.1687956	.3745848	0	1
Health insurance_d	13857	.3312405	.4706764	0	1
Health insurance_r	13857	.1646099	.3708415	0	1
othins_d	13857	.2984773	.4576065	0	1
Widowhood (any)	13857	.1445479	.3516571	0	1

Table A.3 ROBUSTNESS CHECKS of our main specifications with a random assignment of widowhood for couples over 60.

RANDOM	(2)	(2)
Widowhood	9165.07.00	
Female*widowhood	-7186.61	
Life insurance_d	82571.34***	81436.73***
Life insurance_r	-769.96	-696.86
Life insurance	8764.27.00	-2769.34
Government insurance_d	26347.17	27043.35
Government insurance_r	10108.93	11009.79
health ins_d	20605.13	18371.05
hins_r	-17026.21	-14142.14
Children	-15686.54	4585.80
Children*widowhood	-29187.94	-128475.33
Children*female*wid	48282.44	118059.25
Bargaining power	45492.06	45002.15
Bargaining power squared	-41417.19	-40571.08
Age	60233.86**	57184.48**
Age squared	-405.82**	-357.61**
Age*female	-36477.85	-34448.66
Agesquared*female	237.87	194.76
Log y	36419.56***	36288.59***
Rworking	-43902.74*	-45105.67*
Runemployed	-182470.82	-185861.63
Rgoodhealth	25670.37	27111.08
Rbetter	12780.63	12777.14
Rworse	6260.72	7159.51.00
Time after shock_1	Time after shock_1	99269.20
Time after shock_3	Time after shock_3	-18907.38
Time after shock_5	Time after shock_5	6368.96
Time after shock_7	Time after shock_7	-41900.58
Time after shock_9	Time after shock_9	-44808.90
Time after shock_11	Time after shock_11	-61001.93
TasXfemale 1	TasXfemale 1	-54797.62
TasXfemale 3	TasXfemale 3	30547.07
TasXfemale 5	TasXfemale 5	-11104.72
TasXfemale 7	TasXfemale 7	33647.39
TasXfemale 9	TasXfemale 9	
TasXfemale 11	TasXfemale 11	76171.79
_cons	-1613006.65*	-1629581.88*
N	2290.00.00	2290.00.00