PATRYK BABIARZ, CLIFF A. ROBB, AND ANN WOODYARD

Family Decision Making and Resource Protection Adequacy

This study examines the correlation between resource protection and the intrahousehold distribution of bargaining power. Using data from the Health and Retirement Study, the analysis quantifies potential changes in the surviving individual's living standard to evaluate the adequacy of resource protection. Individuals who generate a larger share of family income, are more financially knowledgeable, or have the "final say" in family decisions leverage their bargaining power to secure higher protection of their hypothetical widowhood living standard. Consequently, spouses with more bargaining power are less likely to experience declines of their living standard in the event of their spouse passing away and are more likely to be overprotected.

Surviving a spouse is often associated with the risk of changes to one's living standard. The ability to maintain in widowhood a living standard commensurate to the living standard of a couple is a function of accumulated human capital, savings and nonfinancial resources. Life insurance is one of the more widely available financial instruments designed to protect the noninheritable resources that determine the affordable living standard. Recent research reveals that a substantial number of households are not adequately protected against the potential change in the living standard associated with the loss of a spouse. The magnitude of financial vulnerabilities varies systematically with individual and household characteristics, displaying a significant gender bias (Auerbach and Kotlikoff 1991; Bernheim et al. 2003). Unfortunately, the available literature provides limited explanation as to why such observed variations exist.

The goal of this study is to investigate the correlations between household resource protection and the distribution of bargaining power within a household with an emphasis on a hypothetical change in the

Patryk Babiarz (pbabiarz@bama.ua.edu), Cliff A. Robb (crobb@ches.ua.edu), and Ann Woodyard (awoodyard@ches.ua.edu) are Assistant Professors of Consumer Sciences at the University of Alabama. The authors would like to thank three anonymous reviewers and the participants at the 2010 American Council on Consumer Interests (ACCI) Annual Meetings for valuable advice and comments. The usual disclaimer applies.

The Journal of Consumer Affairs, Spring 2012: 1–36
DOI: 10.1111/j.1745-6606.2012.01224.x

surviving individual's affordable living standard. The analysis utilizes a traditional measure of bargaining power, the share of individuals' income in total household income, as well as direct measures of spouses' financial knowledge and decision-making power provided by the Health and Retirement Study (HRS) to demonstrate that the status of household resource protection is influenced by the intrahousehold distribution of bargaining power.

There are important reasons to investigate the association between the protection of household resources and the balance of decision-making power within the family. Adverse consequences of insufficient protection of individuals who experience a loss of the income earner can be severe, particularly for elderly households and/or households with dependents. Many widows or widowers have to seek additional income opportunities to maintain their living standards or otherwise drastically reduce consumption.[1] Purchases of life insurance can improve the financial well-being of an individual in the event of a spousal death. However, spending on life insurance protection presents couples with an inherent conflict, as purchasing protection for a surviving spouse is costly. The more protection that a household chooses for either of the spouses, the less available resources it has in the present. This trade-off has a direct effect on the household's standard of living. The fact that many widows or widowers are poor (although couples are not) necessitates an investigation of reasons why couples fail to make the appropriate financial arrangements while both spouses are alive.[2]

Uncovering the nature of the relationship between the level of resources available to a survivor and the distribution of bargaining power may have significant implications for policy implementation, consumer education and financial planners. Service providers seeking to assist individuals in selecting the appropriate amount of life insurance need to be cognizant of the decision-making dynamics within the household and the possible disconnect between utility levels derived from resource

1. Females are more likely to be widowed due to their longer life expectancies and the propensity to marry at a younger age than males. About 40% of females 65 and older are widows as compared to about 13% of male widowers in the same age group (U.S. Census Bureau 2010). Widows are also more likely than widowers to face threats to their economic security because, on average, they worked less than their husbands. Consequently, upon the loss of a spouse, their income is dramatically reduced due to lower Social Security benefits and pension income. The poverty rate among households headed by single females is about three times higher than the average poverty rate for the US population and over five times higher than for married couples (DeNavas-Walt, Proctor, and Smith 2010).

2. A recent study found that thirty-five million US households have no life insurance whatsoever and almost fifty million have insufficient coverage (LIMRA International 2005).

protection for each of the involved parties. It is important to avoid both the over-insured and under-insured conditions, as these may lead to financial vulnerabilities or inefficient allocations of scarce resources.

The majority of literature concerned with the demand for insurance focuses on the decision from the standpoint of a single decision maker, presumably the head of the household. However, several studies of the decision-making process within married households have recognized the need to examine household financial decisions from the standpoint of a bargaining framework, rather than unitary utility-maximizing models (Elder and Rudolph 2003; Manser and Brown 1980; McElroy and Horney 1981). Researchers use models that recognize within-household dynamics to analyze a variety of financial behaviors, including investment decisions, retirement planning and charitable giving (e.g., Browning 2000; Andreoni, Brown, and Rischall 2003; Lundberg, Startz, and Stillman 2003; Lyons et al. 2007; Yilmazer and Lyons 2010). Aura (2005) provides compelling evidence that the bargaining model can explain life insurance holdings better than the single utility-maximizing model. This study supports this conclusion and provides additional unique insights into the family decision-making process regarding financial resource allocation.

Findings from the present analysis suggest that situations in which one spouse accounts for a larger share of family income, is more financially knowledgeable, or has more relative power in making major family decisions, result in greater financial protection of this spouse. Individuals who hold more bargaining power face a smaller risk of a significant reduction in their hypothetical living standard in widowhood and a greater probability that their living standard would actually improve. Results are robust to underlying assumptions used in the calculation of the adequacy of the living resources protection.

The remainder of the paper is structured as follows. The Background section reviews the literature on the use of life insurance to protect the living resources, outlines important studies that investigate relationships between the distribution of intrahousehold bargaining power and family financial well-being and discusses the theoretical background for the empirical analysis. The Methodology section presents the methodology and empirical model, along with the discussion of data used in the analysis. The Results section provides descriptive statistics and estimates of the impact of bargaining power on hypothetical changes in the surviving individuals' living standard and household protection status. The Robustness section reports the results of robustness estimations, and the Conclusions section provides a summary of the findings.

BACKGROUND

Demand for Insurance and Adequacy of Protection

Most studies dealing with the demand for life insurance trace their theoretical foundations to work by Yaari (1965), who introduced a framework for insurance demand in the context of a life cycle with unknown life expectancy. Yaari's model maximizes the expected lifetime utility and introduces insurance as means of removing the uncertainty of the premature death of a household wage earner from allocation decisions of a household. Later work improved the theory by incorporating additional factors such as bequest motives, risk attitudes, labor income uncertainties or declines in human capital (Bernheim 1991; Campbell 1980; Fisher 1973; Karni and Zilcha 1986; Lewis 1989; Pissarides 1980). The body of empirical research on the demand for life insurance is far too large to be acknowledged in detail.[3]

On the basis of studies of the demand for life insurance, it is clear why individuals might purchase insurance, but it is more difficult to determine the degree to which insurance coverage is adequate. Auerbach and Kotlikoff (1991) suggest that a significant percentage of surviving wives are insufficiently insured. The authors define insufficient insurance as any situation wherein the wife would suffer a loss of at least 30% of her sustainable consumption resources in the event of her husband's death. Findings suggest that up to 30% of wives are insufficiently insured. Bernheim et al. (2003) use the first wave of the HRS data to further analyze the issue of insurance adequacy, with an emphasis on how effective households are at identifying how much insurance they should purchase. They too find a surprising mismatch between life insurance holdings and underlying vulnerabilities.

Whereas many of these early studies address the measurement of adequacy in detail, they generally are left with the question of why variations in vulnerability and overprotection exist. This may be due to the simplified approach to the purchase decision which utilizes a single decision maker framework and fails to address the key question of who chooses it, and how much insurance should be purchased.

Household Decision Making

More recent research related to household insurance holdings acknowledges the importance of understanding the intrahousehold

3. Zietz (2003) presents an excellent and comprehensive review of the 50 years of research concerning the purchase of life insurance.

decision-making process, as insurance presents a unique trade-off for household members (Aura 2005). Models based on Becker's (1981) logic of a single decision-making unit may fail to capture the conflict between providing costly protection for the surviving household member and alternative resource allocations. Aura (2005) ascertains the existence of this conflict by utilizing an exogenous law change (Retirement Equity Act of 1984) that provided an empirical strategy for testing predictions of the Nash-bargaining model against predictions of the classical unitary utility model. The findings of his analysis of within-family decision making regarding investment in income protection for a surviving spouse strongly support the Nash-bargaining framework and reject the traditional single utility model.

A large amount of research on household decision making recognizes the need to abandon the traditional unitary model which assumes that households have a single and well-defined set of preferences (proposed by Becker 1981), toward a model that allows for interactions between spouses with different preferences. Bargaining frameworks based on the seminal works of Nash (1950) and Rubinstein (1982) have been applied in studies of the distribution of gains from marriage (Manser and Brown 1980; McElroy and Horney 1981), spending on clothing, food, alcohol or tobacco (Lundberg, Pollak, and Wales 1997; Lundberg and Pollak 2003; Phipps and Burton 1998; Ward-Batts 2008), fertility and labor supply decisions (Schultz 1990), health outcomes (Thomas 1990) and time spent by spouses on leisure and chores (Friedberg and Webb, unpublished manuscript). Bargaining models also offer noteworthy explanations of household financial decisions, including charitable giving (Andreoni et al. 2003), saving for retirement (Lyons et al. 2007, Yilmazer and Lyons 2010) and investing and asset allocation (Friedberg and Webb 2006; Hotchkiss 2005; Lyons, Neelakantan, and Scherpf 2008).

The literature reports that many individuals who decide on the amount of life insurance in the process of designing a personal financial plan choose to purchase the protection that provides survivors with a living standard commensurate to the living standard of the intact couple (Bernheim et al. 2002). However, this measure is not a definite standard when purchasing life insurance. Rational decision makers may purchase coverage that is lower or higher than this benchmark depending on the variation in marginal utilities across survival states, risk tolerance, time preference, insurance pricing and various factors difficult to control for in empirical analysis.[4]

4. A variety of other motives that are not of interest in this study could also explain demand for life insurance. For example, individuals might purchase life insurance in order to satisfy their bequest

The demand for life insurance also depends on differences in preferences between the primary decision maker and his/her spouse and on relative weights that household decision makers attach to the well-being of themselves and other family members.

In the analysis of household insurance purchase decisions we assume that households make Pareto-efficient allocations in the cooperative bargaining process.[5] The utility functions for husbands and wives are expressed as $U^{\mathrm{h}}(C, I^{\mathrm{h}}, I^{\mathrm{w}})$ and $U^{\mathrm{w}}(C, I^{\mathrm{w}}, I^{\mathrm{h}})$, respectively, where C denotes household consumption and I^i represents the amount of insurance protection (the payment from life insurance to spouse i if the other spouse dies). In choosing how much to spend on consumption and life insurance for either spouse, couples maximize the generalized Nash product $U = [U^{\mathrm{h}}(C, I^{\mathrm{h}}, I^{\mathrm{w}}) - T^{\mathrm{h}}]^{\theta}[U^{\mathrm{w}}(C, I^{\mathrm{w}}, I^{\mathrm{h}}) - T^{\mathrm{w}}]^{1-\theta}$ subject to a budget constraint. In this model, T^i corresponds to the threat point utility obtained from a noncooperative solution or from an outside option (such as divorce). The cooperative solution requires that $U^i \geq T^i$. The model points to two sources of bargaining power: (1) the value of spouses' threat point utilities—a higher threat point value of either spouse implies that more resources are needed to provide this spouse's utility in the cooperative solution, and (2) the value of parameter θ which denotes the bargaining weight of a husband relative to his wife.

A spouse with higher bargaining power can influence household decisions in favor of his/her preferences. A higher threat point value of either spouse implies that this spouse would command a larger share of the household resources.[6] Thus, the size of the threat point utility depends on the spouse's potential to generate income, which in turn is influenced by human capital (age, education, health, etc.). We use the share of husband's income in total family income as the measure of the size of the threat point utility and the resultant bargaining power.

---

motives, pay estate taxes without liquidating assets, sponsor charitable contributions or provide a safety-net for significant others who are not dependent on the insured's income.

5. Lundberg and Pollak (1994, 1996) provide an overview of cooperative and noncooperative bargaining models.

6. Note that if bargaining power is measured by the size of an outside option (from a noncooperative solution or divorce), a spouse would forego life insurance benefits if the couple fails to reach a collective decision or divorces. In this sense, life insurance could be considered a contributor to the bargaining power. However, we do not anticipate this potential reverse causality to impact our subsequent empirical results. Our analysis focuses on older households, implying that many unhappy marriages would already have ended and the sampled couples are more harmonious than average. The greater marital stability offers an advantage of interpreting the observed outcome as the state of repeated game (which is a more likely outcome in a cooperative bargaining than in a one-stage game).

The bargaining weight, θ, may be influenced by factors that are typically more difficult to control for in empirical analysis (social norms, personality traits, traditional gender roles, etc.). The Health and Retirement Study is unique among nationally representative data sets in that it provides a direct measure of the distribution of the intrahousehold bargaining power in the form of a two questions: (1) which spouse is more financially knowledgeable (a person designated to answer questions about family finances), and (2) which spouse has the "final say" in making major family decisions. Examples of major family decisions given in the question include "when to retire, where to live, or how much money to spend on a major purchase." Given the structure of the HRS question who has the "final say," there are a number of potential outcomes. First, both spouses can agree in terms of who makes the decisions, whether it is the husband, wife or a joint decision. Second, there can be disagreement in terms of the distribution of the decision-making power. Previous studies have used these questions to test unitary vs. bargaining models of household decisions (Elder and Rudolph, 2003) and to analyze the role of the distribution of bargaining power in household decisions regarding asset allocations and investment behavior (Friedberg and Webb 2006; Lyons et al. 2007).

Allocation decisions of married couples in respect to insurance purchases depend on individual sources of utility of both spouses. A spouse with more bargaining power (and motivated by self-interest) prefers to purchase less life insurance on himself (herself) because the cost of life insurance would reduce current resources available for consumption. Similarly, the spouse who has more bargaining power would prefer the other spouse purchase more life insurance since the marginal benefit (compared to marginal cost) is higher if he/she is the surviving spouse.

However, an individual with more bargaining power may also derive utility from purchasing insurance protection for his/her spouse (altruistic motive). For example, if a husband's marginal utility of purchasing more insurance on his life (wife is the beneficiary) outweighs the marginal utility associated with more insurance on his wife's life (husband is the beneficiary), we could observe that households where husbands have more bargaining power tend to provide better protection for wives.[7]

7. It may seem unlikely that the marginal utility of providing protection to the spouse is higher than the marginal utility of securing protection for oneself, all other things constant. However, the prediction becomes more complicated if one weights the marginal utilities by survival probabilities. For example, the husband who values his protection higher than the protection for his wife may still opt to provide more protection for his wife because he perceives the probability of his wife living longer than him to be much higher than the probability of him living longer than his wife.

Although the above framework does not provide an explicit prediction as to how the distribution of bargaining power affects the level of insurance protection for either spouse, we expect the result to be consistent with the self-interest motive (more protection for the spouse with more bargaining power). An overwhelming majority of previous studies that examine household financial decision making within a bargaining framework find outcomes consistent with self-interest, i.e., preferences of the spouse with more bargaining power are reflected to a greater degree. However, since we cannot rule out altruistic behavior this study aims at investigating empirically which of the alternative scenarios offers the better explanation of how households protect their resources.

METHODOLOGY

Adequacy of Living Standard Protection

To investigate the impact of the distribution of intrahousehold bargaining power on household resources protection we first obtain the measure of the adequacy of protection. We measure the adequacy of potential survivor's resources protection by quantifying the decline or improvement in an individual's living standard that would result from a spouse's death. This method is similar to methods used in the literature (Auerbach and Kotlikoff 1991; Bernheim et al. 2003). An individual's living standard is defined as the size of the affordable consumption stream that could be financed from the present expected value of available resources (assets, current and future income from earnings, pensions and government transfers).

The procedure for calculating the change in the living standard when one spouse dies involves comparing the constant and equal consumption streams that could be afforded by the both spouses when they are alive with the constant consumption stream that the hypothetical survivor would be able to finance based on the available resources that he/she would have after the death of his/her spouse.[8]

In the first step, we compute the present expected value of resources for household $i\left(\mathrm{PVR}_i^{\mathrm{Couple}}\right)$ when both spouses are alive using the

8. This method assumes that households can use their present expected value of resources to purchase annuities at actuarially fair terms. This assumption may seem unrealistic because most husbands and wives do not have their resources organized in equal and constant survival-contingent income streams. Auerbach and Kotlikoff (1991) compare this method of calculating lifetime consumption streams to those obtained using a more complex dynamic programing framework, where the assumption of fair actuarial terms is also relaxed. The authors report that the magnitude of financial vulnerabilities computed by using both methods is comparable. Therefore, we do not implement the more complex dynamic programing procedure.

formula:

$$\mathrm{PVR}_i^{\mathrm{Couple}} = \mathrm{NW}_i + \mathrm{PVE}_i^{\mathrm{Husband}} + \mathrm{PVE}_i^{\mathrm{Wife}} + \mathrm{PVB}_i^{\mathrm{Husband}} + \mathrm{PVB}_i^{\mathrm{Wife}} \tag{1}$$

where NW_i denotes the net worth of household i, $\mathrm{PVE}_i^{\mathrm{Husband}}$ and $\mathrm{PVE}_i^{\mathrm{Wife}}$ represent the present expected value of future earnings of a husband and a wife in household i, and $\mathrm{PVB}_i^{\mathrm{Husband}}$ and $\mathrm{PVB}_i^{\mathrm{Wife}}$ represent the present expected value of future social security and other pension benefits of husband and wife, respectively.[9]

The present expected value of resources for the surviving spouse ($\mathrm{PVR}_i^{\mathrm{Survivor}}$) from household i, where either a husband or a wife is assumed to die is defined using the formula:

$$\mathrm{PVR}_i^{\mathrm{Survivor}} = \mathrm{NW}_i + \mathrm{PVE}_i^{\mathrm{Survivor}} + \mathrm{PVB}_i^{\mathrm{Survivor}} + I_i \tag{2}$$

where NW_i is defined as in equation (1), $\mathrm{PVE}_i^{\mathrm{Survivor}}$ stands for the present expected value of future earnings of the surviving spouse in household i, and $\mathrm{PVB}_i^{\mathrm{Survivor}}$ represents the present expected value of future social security, other pensions and/or survivor's benefits of the survivor, assuming that the spouse died. The last term in equation (2), I_i, is the death benefit of life insurance policies of the deceased spouse, i.e., the total amount of money that the beneficiary of life insurance contracts (assumed to be the surviving spouse) would receive upon the death of the insured individual.

The estimate of the present expected value of future earnings for surviving spouses may be underestimated for individuals who do not work. If a household that consists of a working husband and a nonworking wife (or working wife and nonworking husband) experiences the death of a bread winner, the surviving spouse could seek employment and earn income. In the subsequent empirical analysis, we assume that future earnings of those surviving spouses who do not work and are younger than their full retirement age are equal to earnings predicted by the regression of earnings of working individuals.[10]

In the next step, we compute the present expected values of resources per capita under the scenario that both spouses within household i stay

9. Term insurance premiums and future proceeds do not appear in equation (1) due to the assumption that life insurance contracts are actuarially fair. Thus, insurance premiums and future proceeds are equal and cancel out.

10. To predict earnings of surviving spouses with zero earnings we use the least squares estimator and the following set of independent variables: age, age squared, dummy indicators for education, dummy indicators for race, number of dependents and interaction terms between all explanatory variables.

alive $\left(\overline{\text{PVR}}_i^{\text{Couple}}\right)$ and when one of the spouses dies $\left(\overline{\text{PVR}}_i^{\text{Survivor}}\right)$. These variables serve as measures of the affordable living standards. Since many goods are consumed jointly by a household, we assume that a couple can live cheaper than a single individual maintaining the same living standard. To adjust for the economy of scale of joint consumption we divide the estimate of the present expected value of resources by n^{α}, where α is the scale economy parameter and n denotes the number of individuals in the household.[11] The formulas that we use are:

$$\overline{\text{PVR}}_i^{\text{Couple}} = \frac{\text{PVR}_i^{\text{Couple}}}{n^{\alpha}} \tag{3}$$

$$\overline{\text{PVR}}_i^{\text{Survivor}} = \frac{\text{PVR}_i^{\text{Survivor}}}{n} \tag{4}$$

In the final step, we compute the measure of the adequacy of resources protection, CHANGE, as the percentage change in the survivor's affordable living standard

$$\text{CHANGE} = \left(\frac{\overline{\text{PVR}}_i^{\text{Survivor}}}{\overline{\text{PVR}}_i^{\text{Couple}}} - 1\right) \times 100 \tag{5}$$

Zero value of CHANGE indicates adequate protection. If CHANGE is negative the survivor's living standard would decline as a result of a spouse's death and we infer that the spouse's life is insured for a less-than-adequate amount. In the opposite situation, when CHANGE is positive, the death of the spouse would improve the survivor's living standard. It is important to acknowledge that such a condition may arise not only in situations when the spouse's life is insured for a more-than-adequate amount, but also when the potential survivor provides greater relative contribution to the couple's resources than the spouse.

Estimation Strategy

The percentage change in the sustainable living standard following the death of a spouse is an intuitive benchmark for measuring the adequacy of resource protection. We examine the correlation between this measure

11. Following Bernheim, et al. (2003), we set the household scale economy parameter to $\alpha = \log_2(1.6) = 0.678$, which implies that a two-adult household must spend 1.6 times as much as a one-adult household to achieve the same living standard. Also consistent with previous studies (Bernheim, et al. 2003; Ringen, 1991), we include dependents as household members and use an equivalency factor equal 0.5 for each dependent member of a household.

and the distribution of the intrahousehold bargaining power by estimating the least squares regressions (separately for husbands and wives) of the percentage change in the sustainable living standard (CHANGE) on the set of variables indicating the distribution of bargaining power and other observable characteristics of both spouses.

We also estimate a series of probit models intended to provide a more informative assessment how the distribution of bargaining power affects the probability of having inadequate resources protection (either too little or too much). In these models we arbitrarily characterize protection as inadequate if CHANGE deviates from zero by 30 percentage points or more. In other words, we classify individuals as having less-than-adequate (more-than adequate) protection if their hypothetical living standard declines (improves) by at least 30% in the event of the death of the spouse.[12]

Data

The empirical analysis draws upon the 1992–2004 waves of the HRS. The HRS is a large, longitudinal survey of more than 22,000 Americans over the age of 50 that is carried out every two years by the Institute for Social Research at the University of Michigan and supported by the National Institute on Aging. It is a comprehensive data source on the health of the US population, providing information on insurance coverage and financial status as well.

In our study, survey respondents are organized into households and the analysis uses all available couples with complete information on life insurance, demographic background, and who has the "final say" when it comes to major family decisions. This results in a working sample of 3,856 coupled households. Survey respondents are generally asked the "final say" question only once during their participation in the study, typically during their first interview. We extract all other variables from the 2004 wave, when the most recent addition of respondents to the HRS study was introduced. The fact that several respondents answered the "final say" question before 2004 might cause a measurement error for households who experienced important changes in the family composition (marriage, divorce or death). To avoid this bias, we restrict the

12. Auerbach and Kotlikoff (1991) also characterize life insurance as inadequate when the ratio of resources of the surviving spouse to resources of a couple declines by at least 30%. In the Robustness section, we demonstrate the robustness of our results to other cutoffs used for characterization of insurance policies as inadequate.

analysis that utilizes responses to the "final say" question to households that did not experience changes in family composition during the analysis period.[13]

Table 1 provides descriptive statistics of the key variables used in the study. Because the HRS oversamples some demographic populations (including African American and Hispanic), we use household weights to estimate population parameters. Descriptive statistics show that husband's income accounts for approximately 64% of the household income and that husbands are generally more financially knowledgeable than wives, as indicated by the fact that 67% of husbands are designated financial respondents. The distribution of answers to the question who has the "final say" when it comes to making major family decisions reveals, however, that joint decision making or disagreement about who is the decision maker are frequent. Almost 44% of households admit that spouses have an equal share in major decisions and over 35% of households disagree in their assessment of who is the decision maker. About 16% of couples agree that husbands have the "final say," and only 5% of households report that wives are the decision makers.[14]

Husbands are more likely than wives to have life insurance and the average face value of their policies is higher. Nearly 80% of husbands and 70% of wives are insured with an average value of policies equal to $121,931 and $72,522 among insured husbands and wives, respectively. When the husband is the more financially knowledgeable spouse, his life tends to be insured for a higher average amount, the percentage of wives who have life insurance tends to be lower and the average amount of wives' insurance value is higher. This tabulation, however, does not control for other factors which might affect insurance values and these differences might be attributable to factors such as demographic or socioeconomic circumstances. The percentages of husbands or wives

13. Alternatively, we could measure the variables using the wave when spouses answered the "final say" question. This method, however, is less practical because many spouses answered the "final say" question in different waves and it is not clear which wave should be used to extract values of variables measured at household level. Moreover, there are important differences in the HRS questions across the waves (e.g., data about life insurance ownership and values in the 1992 wave were obtained from financial respondents only).

14. The most common disagreements in respect to the "final say" is when husbands report joint decision making and wives report that husbands have the "final say" (12% of the sample) or when husbands think they are decision makers while their wives report joint decisions (9%). About 5% of households comprise of wives who think they have the "final say" while their husbands report joint decisions, and about 4% face a similar yet opposite disagreement, where husbands report that wives have the "final say" and wives report joint decision making. Only about 4% of households are in a strong disagreement where both spouses attribute the decision-making power to themselves (2%) or both spouses admit that it is the other spouse who has the "final say" (2%).

TABLE 1
Key Descriptive Statistics

		Financial Respondent		Who Has the "Final Say" (Sample of Households That Did Not Change Family Composition Within the Analyzed Period)				
	Full Sample $N = 3,856$	Husband $n = 2,536$	Wife $n = 1,320$	Husband (a) $n = 602$	Wife (b) $n = 188$	Equal (c) $n = 1,613$	Disagree (d) $n = 1,327$	
Share of husband's income	0.637	0.669	0.572*	0.682	0.579	0.636	0.629	ab, ac, ad, bc, bd
Husband is financial respondent	0.666	1.000	0.000	0.777	0.257	0.675	0.650	ab, ac, ad, bc, bd
Decision-making power								
Husband has "final say"	0.158	0.185	0.105*	1.000	0.000	0.000	0.000−	
Wife has "final say"	0.050	0.020	0.110*	0.000	1.000	0.000	0.000−	
About equal	0.436	0.445	0.420	0.000	0.000	1.000	0.000−	
Spouses disagree	0.355	0.350	0.364	0.000	0.000	0.000	1.000−	
Husband has life insurance	0.794	0.797	0.790	0.795	0.737	0.826	0.769	
Husband's insurance face value | >0	121,931	131,748	102,215*	109,342	114,944	130,461	117,880	ac, bc, cd
Wife has life insurance	0.699	0.671	0.753*	0.681	0.743	0.714	0.689	
Wife's insurance face value | >0	72,522	76,103	66,167*	60,189	72,478	71,815	77,074	ac, ad

Note: Asterisks (*) denotes that the means for households with husband financial respondent and wife financial respondent are significantly different 0.05 levels. Paired letters indicate groups of households by answers to the "final say" question for which the means are significantly different at 0.05 level. The symbol "|" means "conditional on."

with life insurance exhibit little variation across households characterized by different answers to the "final say" question. Also, based on simple tabulations, the average amounts of life insurance for either spouse when husbands have the "final say" do not differ substantially from the average amounts of life insurance when wives have the "final say."

Appendix A presents household demographic and socioeconomic characteristics. The average income of husbands amounts to $51,079, the average income of wives amounts to $29,166 and the average nonhousing household net worth amounts to $371,287. About 91% of households are headed by a white individual and about 5% report having a black head of household. Over 5% of respondents characterize their ethnicity as Hispanic. Husbands are slightly better educated than wives, with over 51% of husbands and about 47% of wives having started or completed college. The average age for husbands is 66 and the average wife is 62 years old. About 47% of husbands and 36% of wives are retired. The majority of households remain in good health, with about 77% of husbands and about 81% of wives subjectively characterizing their health as at least good.

Appendix B discusses calculations performed on variables used to obtain the present expected values of resources for coupled households and for survivors, which are in turn used to measure the adequacy of resources protection.

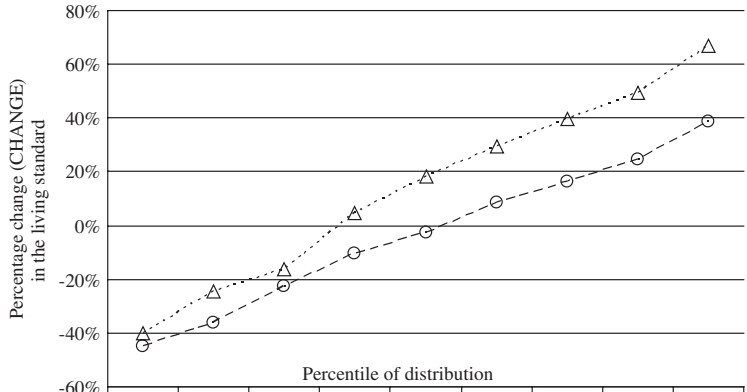
RESULTS

Changes of the Survivor's Living Standard

If a sampled household were to experience the death of a spouse, on average, the living standard of the surviving husband would improve by 21.6% (median = 18.5%) and the living standard of the surviving wife would decline by 1.7% (median = −2.5%). Figure 1 shows the distribution of the measure of hypothetical percentage change in the survivor's living standard. Estimates indicate that about 36% of husbands and about 52% of wives would face a decline in their living standard (CHANGE < 0). The decline would be severe (CHANGE < −50) for about 5% of husbands and 8% of wives.[15]

15. Previous studies report statistics that can serve as a useful comparison of percentages of individuals that would face the respective changes in the present expected value of resources. Auerbach and Kotlikoff (1991) analyze the sample of households headed by husbands who are between 35 and 55 years old and report that 15% of surviving wives would face a decline of the living standard in the magnitude of at least 50% and 25–30% would face a decline in the magnitude of at least 30%. Bernheim et al. (2003) use the sample of households with at least one spouse

FIGURE 1
Distribution of the Measure of Percentage Change in the Living Standard (CHANGE)



	10th	20th	30th	40th	50th	60th	70th	80th	90th
Husband	-40.21	-24.35	-16.38	4.85	18.50	29.26	39.48	49.30	66.99
Wife	-44.76	-36.41	-22.47	-10.52	-2.53	8.57	16.55	24.64	38.46

Note: For better presentation, the graph does not show the minimum (0th percentile) and maximum (100th percentile) values of CHANGE for either spouse. Minimum and maximum values of husband's CHANGE amount to −97 and 852, respectively. Minimum and maximum values of wife's CHANGE amount to −80 and 812, respectively.

The adequacy of living standard protection appears to depend on who is the more financially knowledgeable spouse and on the distribution of the decision making power within the household. Table 2 summarizes the distribution of the CHANGE variable by the measures of bargaining power. The average percentage change of the living standard experienced by the husband in the event of his wife's death amounts to 24% if he is the financial respondent and about 18% if his wife is identified as more financially knowledgeable. The average percentage change of the living standard of wives amounts to −3.45% and 0.85% for wives whose husbands are more financially knowledgeable and for wives designated as financial respondents, respectively.

A similar pattern of favoring the protection of one's own living standard is apparent in the tabulation of the protection adequacy by reports of who has the "final say" in family decisions. For example, the living

between age 51 and 61 (interviewed by the 1992 wave of the HRS) and report that about 36% of wives and about 15% of husbands would face a decline in their living standard following spouse's death. Moreover, Bernheim et al. (2003) report that percentages of wives that would face a decline of their living standard in the magnitude of 0–20%, 20–40% and over 40% are 11, 9 and 16%, respectively. The percentages of husbands that would face declines of their living standards in the magnitude of 0–20%, 20–40% and over 40% are 5, 3 and 7%, respectively.

TABLE 2
Distribution of the Measure of Percentage Change in the Living Standard (CHANGE)

	Financial Respondent		Who Has the "Final Say" (Sample of Households That Did Not Change Family Composition Within the Analyzed Period)				
	Husband $n = 2{,}536$	Wife $n = 1{,}320$	Husband (a) $n = 602$	Wife (b) $n = 188$	Equal (c) $n = 1{,}613$	Disagree (d) $n = 1{,}327$	
Median husband's CHANGE	24.01	17.85*	27.81	12.67	24.09	18.38	ab, bc
Fraction of sample							
Husband's CHANGE <-30	0.09	0.15*	0.07	0.19	0.12	0.14	ab
Husband's CHANGE in $(-30, 30)$	0.51	0.53	0.52	0.52	0.51	0.53	
Husband's CHANGE >30	0.40	0.32*	0.41	0.29	0.37	0.33	ab, ad
Median wife's CHANGE	-3.45	0.85	-8.1	-2.89	0.04	-3.27	ac
Fraction of sample							
Wife's CHANGE <-30	0.20	0.25	0.25	0.25	0.21	0.22	
Wife's CHANGE in $(-30, 30)$	0.59	0.55	0.58	0.54	0.61	0.59	
Wife's CHANGE >30	0.21	0.20	0.17	0.21	0.18	0.19	

Note: Percentages may not sum up to 100% due to rounding. Asterisks (*) denotes that the means/medians for households with husband financial respondent and wife financial respondent are significantly different 0.05 levels. Paired letters indicate groups of households by answers to the "final say" question for which the means/medians are significantly different at 0.05 level. Tests of medians are based on Mann–Whitney nonparametric test procedure.

standard of the surviving husband decision maker would increase by an average of almost 28%, while the corresponding increase of the living standard would be 24% and 18% for surviving husbands in households where decisions are made jointly, or where spouses disagree in their reports of the decision making power, respectively. In a significant contrast to this, husbands surviving their wives in households where wives have the "final say" would face an average improvement of their living standard in the magnitude of 13%.

The living standard of a surviving wife would decrease by 2.89% if she is the decision maker and by 8.1% if her husband has the "final say." Descriptive statistics also indicate that surviving wives in households where spouses disagree in their reports of who has the "final say" would face a decrease of their living standard in the magnitude of 3.27%, while the living standard of wives in households where decisions are made jointly would remain about the same. Table 2 also illustrates that the percentages of husbands who have less-than-adequate protection (CHANGE < -30) is lower, and the percentage of husbands who have more-than-adequate protection (CHANGE > 30) is higher, if the husband is more influential decision maker.[16]

The Effect of Bargaining Power on the Change of the Living Standard

The multivariate analysis confirms that the intrahousehold distribution of bargaining power is significantly correlated with the change of the hypothetical affordable living standard experienced by an individual surviving his/her spouse. Table 3 reports the least squares estimates for the continuous measures of the percentage change of the living standard for husbands (husband's CHANGE) and Table 4 reports the equivalent estimates for wives (wife's CHANGE). Model I includes a traditional measure of bargaining power, the share of husband's income. Model II includes a variable that identifies the financial respondent—the spouse with better financial knowledge. Finally, Model III controls for the distribution of reports on who has the "final say" in family decisions. Additionally, all estimations include control variables for both spouses' incomes (except for Model I), both spouses' health status, the number of

16. We also examine the percentages of households that have one spouse with more-than-adequate protection and the other spouse with less-than-adequate protection (not reported). The bargaining power appears to be a significant factor of these percentages. When the household decision making process is dominated by the husband, the percentages of households where husbands are overprotected and wives have less-than adequate protection increases. The opposite is true for households with wife decision makers.

dependents in the household, household net worth, as well as (estimates not shown for brevity) husband's race and ethnicity, both spouses' education, age, retirement status and census division of residence.

The greater the share of husband's income in total family income, the greater the improvement in his living standard and the decline in his wife's living standard, if they were to experience the death of a spouse. A 1 percentage point increase of the husband's share in family income increases the hypothetical change of his living standard by over 0.9 percentage point, all other things constant (Model I, Table 3). At the same time, a 1 percentage point increase of the husband's share of family income reduces his wife's hypothetical change of the living standard by almost 0.35 percentage point (Model I, Table 4).

A potential ambiguity in the interpretation of the magnitude of correlations between the share of husband's income and the adequacy of living standard protection arises from the fact that the adequacy measure depends on covering current and future income loss of the nonsurviving spouse with a life insurance policy. The manner in which CHANGE is measured implies that if the surviving spouse is already earning more than nonsurvivor, CHANGE could be higher.[17] Because both spouses' incomes are also likely to be correlated with other measures of the bargaining power, estimations intended to capture the effects of financial knowledge (financial respondent variable) or decision-making power (variables measuring reports about "final say") include separate control variables for each spouse's income.

On average, the husband who is identified as the more financially knowledgeable spouse would experience a change in his affordable living standard in the event of his wife's death by a magnitude of almost 10 percentage points higher than a husband who is not the financial respondent (Model II, Table 3). On the contrary, wives whose husbands are more financially knowledgeable would face a change of their widowhood living standard lower by about 3 percentage points, on average, than wives who are more financially knowledgeable than their husbands (Model II, Table 4).

Similar results emerge from estimations that utilize answers to the "final say" question as the measure of intrahousehold bargaining power. Compared to their counterparts that make collective decisions with their

17. The Pearson correlation coefficient between husband's income and husband's CHANGE equals 0.052 and between husband's income and wife's CHANGE equals −0.064 and neither coefficient is statistically significant at 0.05 level. The correlation coefficient between wife's income and husband's CHANGE equals −0.089 and between wife's income and wife's CHANGE equals 0.083 and both coefficients are statistically significant at 0.05 level.

TABLE 3
OLS Estimation Results for the Change of Husbands Living Standard in the Event of Wife's Death (Husband's CHANGE)

	Model I		Model II		Model III	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Share of husband's income	90.873	(4.656)***				
Husband is financial respondent			9.871	(1.828)***		
Decision-making power (Ref: Equal)						
β_1: Husband has "final say"					6.914	(3.096)**
β_2: Wife has "final say"				−11.309	(3.724)***	
β_3: Spouses disagree					−1.399	(1.669)
Number of dependents	−19.874	(1.221)***	−19.586	(1.293)***	−19.384	(1.335)***
Husband's health (Ref: Good)						
Excellent	0.667	(2.242)	2.344	(2.467)	2.012	(2.494)
Very good	2.362	(1.504)	4.357	(1.703)**	4.451	(1.761)**
Fair	0.018	(2.851)	0.020	(2.896)	0.184	(2.925)
Poor	−6.473	(2.609)**	−6.512	(2.978)**	−6.018	(2.975)*
Wife's health (Ref: Good)						
Excellent	0.074	(2.110)	−0.002	(2.376)	−0.086	(2.389)
Very good	0.711	(1.512)	1.254	(1.702)	1.147	(1.728)
Fair	2.356	(3.560)	1.741	(3.453)	2.488	(3.537)
Poor	−1.204	(3.334)	−2.692	(3.652)	−2.257	(3.635)
Log (husband's income)			4.043	(1.062)***	4.166	(1.058)***
Log (wife's income)			−6.766	(0.329)***	−6.786	(0.330)***
Household net worth / 10,000	0.043	(0.006)***	0.054	(0.008)***	0.055	(0.009)***
Intercept	402.542	(68.052)***	475.022	(78.983)**	496.070	(80.250)***
R^2	0.452		0.387		0.386	
Tests of linear restriction					$\beta_i - \beta_j$	p value
(1) H_0: $\beta_1 - \beta_2 = 0$ (husband vs. wife decision maker)					18.223	.001***
(2) H_0: $\beta_1 - \beta_3 = 0$ (husband decision maker vs. disagreeing households)					8.313	.011**
(3) H_0: $\beta_2 - \beta_3 = 0$ (wife decision maker vs. disagreeing households)					−9.910	.007***

Note: Asterisks denote significance at the 0.01 (***), 0.05 (**) and 0.10 (*) levels. All models additionally include the following control variables: indicator variables for husband's race and ethnicity, indicator variables for husband's and wife's education, quadratic forms in husband's and wife's age, indicator variables for husband's and wife's retirement status and dummy indicators for census division of residence. Sample for Models I and II consists of all households ($N = 3{,}856$), sample for Model III consists of households that did not change family composition within the analyzed period ($n = 3{,}730$).

TABLE 4
OLS Estimation Results for the Change of Wife's Living Standard in the Event of Husband's Death (Wife's CHANGE)

	Model I		Model II		Model III	
	Coeff.	SE	Coeff.	SE	Coeff.	SE
Share of husband's income	−35.342	(3.193)***				
Husband is financial respondent			−3.069	(1.472)**		
Decision-making power (Ref: Equal)						
β_1: Husband has "final say"					−1.436	(2.377)
β_2: Wife has "final say"					2.705	(3.773)
β_3: Spouses disagree					0.430	(1.446)
Number of dependents	−15.222	(1.111)***	−15.575	(1.149)***	−15.497	(1.133)***
Husband's health (Ref: Good)						
Excellent	3.554	(2.619)	3.435	(2.634)	2.988	(2.581)
Very good	−0.094	(1.457)	0.033	(1.499)	0.193	(1.526)
Fair	0.358	(2.366)	0.224	(2.378)	0.402	(2.410)
Poor	−4.764	(2.538)*	−4.462	(2.645)*	−4.327	(2.714)
Wife's health (Ref: Good)						
Excellent	5.739	(2.332)**	6.936	(2.426)***	6.973	(2.461)***
Very good	1.164	(1.428)	2.067	(1.490)	1.927	(1.487)
Fair	−1.118	(2.583)	−1.955	(2.565)	−2.181	(2.619)
Poor	−7.180	(3.100)**	−9.067	(3.177)***	−8.719	(3.226)***
Log (husband's income)			−3.600	(0.415)***	−3.607	(0.418)***
Log (wife's income)			−0.138	(0.543)	0.028	(0.534)
Household net worth / 10,000	0.069	(0.010)***	0.086	(0.013)***	0.084	(0.013)***
Intercept	−123.117	(45.876)***	−89.558	(51.189)*	−96.502	(52.203)***
R^2	0.244		0.224		0.228	
Tests of linear restriction					$\beta_i - \beta_j$	p value
(1) H_0: $\beta_1 - \beta_2 = 0$ (husband vs. wife decision maker)					−4.141	0.076*
(2) H_0: $\beta_1 - \beta_3 = 0$ (husband decision maker vs. disagreeing households)					−1.866	0.391
(3) H_0: $\beta_2 - \beta_3 = 0$ (wife decision maker vs. disagreeing households)					2.275	0.137

Note: Asterisks denote significance at the 0.01 (***), 0.05 (**) and 0.10 (*) levels. All models additionally include the following control variables: indicator variables for husband's race and ethnicity, indicator variables for husband's and wife's education, quadratic forms in husband's and wife's age, indicator variables for husband's and wife's retirement status and dummy indicators for census division of residence. Sample for Models I and II consists of all households ($N = 3{,}856$), sample for Model III consists of households that did not change family composition within the analyzed period ($n = 3{,}730$).

wives, husbands who dominate the decision-making process would experience an increase in their living standard in the event of their wives' deaths higher by nearly 7 percentage points (Model III, Table 3). However, compared to the same reference category, the change of the husband's living standard would be lower by over 11 percentage points if the wife is identified as the decision maker.

We test additional linear restrictions on coefficient estimates to examine the differences in effects of the decision-making power on changes of the living standard for: (1) households with husband decision makers vs. wife decision makers, (2) households with husband decision makers vs. households that disagree on who has the "final say" and (3) households with wife decision makers vs. households that disagree on who has the "final say." Results indicate that the average change of widowhood living standard is higher by over 18 percentage points for husband decision makers than for husbands whose wives have the "final say" (Restriction 1, Model III, Table 3). Likewise, upon surviving their husbands, wives whose husbands have the "final say" experience the change of their living standard by about 4 percentage points lower than wives who dominate the decision making process (Restriction 1, Model III, Table 4).

Interestingly, compared to households that disagree on who is the decision maker, the husband's change of the living standard in widowhood is significantly higher when he has the "final say" (Restriction 2, Model III, Table 3) and significantly lower when his wife dominates the decision making process (Restriction 3, Model III, Table 3). However, the interpretation of these effects is somewhat problematic because the nature of spousal disagreement is not clear. This fact also complicates the interpretation of information on the "final say" as the measure of which spouse's preferences dominate household decisions.

Friedberg and Webb (unpublished manuscript) introduce an econometric framework to deal with the noise associated with the HRS question about decision making power. The framework consists of three methods; two structural models predicting the bargaining power using a two-stage estimation procedure and a nonstructural alternative that controls for the raw answers to the "final say" question. All three methods rely on the assumption that any disagreements between spouses about bargaining power are symmetric (i.e., equal and opposite in sign) so that they cancel out across the sample.[18] The methods based on two-stage estimations are superior to the nonstructural alternative because they produce an estimate

18. This restriction is an extension of the assumption that respondents provide unbiased information. See Friedberg and Webb (unpublished manuscript) for further discussion.

of the continuous measure of bargaining power. However, they require an exclusion criterion to correctly identify the effect of variables in the second stage of estimation. Friedberg and Webb rely on the assumption that the total household earnings should affect the outcomes of bargaining power that they analyze, but the split between husband's and wife's earnings should not (except through the effect on bargaining power). Although theoretically valid, this assumption would prevent us from including spouses' incomes as control variables in our specifications. We pursue the nonstructural alternative and estimate separate models that control for husbands' and wives' reports on the distribution of decision making power. Whereas this approach raises difficulties in reconciling the discrete and sometimes conflicting reports of both spouses, it provides useful verification of estimates reported in Model III of Tables 3 and 4.

Table 5 reports the estimates of effects of decision making power separately for husbands' and wives' reports. Results presented previously

TABLE 5
OLS Estimation Results for the Change of the Living Standard (CHANGE) Separately for Husband's and Wife's Reports of Who Has the "Final Say"

Model:	Ia		IIa	
Dependent Variable:	Husband's CHANGE		Wife's CHANGE	
	Coeff.	SE	Coeff.	SE
Husband's report of decision making power (Ref: Equal)				
β_1: Husband has "final say"	4.116	2.053**	−1.431	1.737
β_2: Wife has "final say"	−6.68	2.585**	1.249	1.257
Tests of linear restriction	$\beta_1 - \beta_2$	p value	$\beta_1 - \beta_2$	p value
H_0: $\beta_1 - \beta_2 = 0$ (husband vs. wife decision maker)	10.796	0.001***	−2.68	0.092*
Model:	Ib		IIb	
Dependent variable:	Husband's CHANGE		Wife's CHANGE	
	Coeff.	SE	Coeff.	SE
Wife's report of decision-making power (Ref: Equal):				
β_1: Husband has "final say"	5.079	2.051**	−1.025	1.681
β_2: Wife has "final say"	−8.903	2.48***	0.921	2.119
Tests of linear restriction	$\beta_1 - \beta_2$	p value	$\beta_1 - \beta_2$	p value
H_0: $\beta_1 - \beta_2 = 0$ (husband vs. wife decision maker)	13.982	0.001***	−1.946	0.3152

Asterisks denote significance at the 0.01 (***), 0.05 (**) and 0.10 (*) levels. All models additionally include the following control variables: number of dependents, husband's health, wife's health, natural logarithms of the husband's and wife's incomes, household net worth, indicator variables for husband's race and ethnicity, indicator variables for husband's and wife's education, quadratic forms in husband's and wife's age, indicator variables for husband's and wife's retirement status and dummy indicators for census division of residence. Sample consists of households that did not change family composition within the analyzed period ($n = 3{,}730$).

hold, although the magnitude of the effects of decision making power on the change of survivor's sustainable living standard is lower. If the husband reports having the "final say," the change of his living standard would be higher by about 11 percentage points, and the change of his wife's living standard would be lower by about 3 percentage points, compared to the husband who reports that his wife dominates the decision making process (linear restrictions for Models Ia and IIa). The same effects on husband's and wife's changes in the sustainable living standard estimated based on wife's report amount to about 14 and 2 percentage points, respectively (linear restrictions for Models Ib and IIb), and the effect on the change in the wife's living standard is no longer significant (p value $>.3$).

Bargaining Power and the Probability of Having Less- and More-than-Adequate Protection

A direct consequence of the reported effects of bargaining power on the adequacy of living standard protection is the greater vulnerability of individuals who are passive in their household's decision-making process. Those individuals are more likely to experience a significant decline in their living standard in case of spouse's death. At the same time, greater influence on household decisions should imply increased probability of experiencing significant improvements in the widowhood living standard. In this section, we arbitrarily define when the resource protection is inadequate (either insufficient or excessive) and estimate the strength of relationship between bargaining power and probabilities of having less- or more-than-adequate protection. It is important to acknowledge that the situation in which an individual has less-than-adequate protection is qualitatively different than the situation when one of the spouses has excessive protection. The cases of insufficient protection can be easily remedied by buying more life insurance and thus are directly related to household decision making. However, the state of more-than-adequate protection may occur even without life insurance. Individuals, who contribute to the present expected value of couple's resources significantly more their spouses, would face the improvement of the living standard even if their spouses' lives are not insured.[19] This implies that the effects

19. An important question related to such conditions is to what degree significant improvements in the survivor's living standard can be attributed to the protection obtained through life insurance of his/her spouse or through greater relative contribution to the present expected value of couple's resources. We calculate that about 75% of wives whose husbands would experience an improvement

of bargaining power on the probability of being excessively protected should be interpreted as correlations rather than causations.

Marginal effects from probit estimations for the probability of having less-than-adequate (CHANGE < -30) and more-than-adequate resources protection (CHANGE > 30) are reported in Table 6. A 1 percentage point increase of the husband's share in family income reduces his probability of having less-than-adequate protection by about 0.21% (Model Ia).[20] If the husband is identified as the more financially knowledgeable spouse, he is 2.4% less likely to be insufficiently protected (Model IIa). Similar results are provided by estimations that utilize answers to the "final say" question as the measure of intrahousehold bargaining power. Compared to husbands from households where wives are decision makers, husbands who dominate the decision-making process are about 5% less likely to have insufficient protection (Restriction 1, Model IIIa).

The distribution of bargaining power also determines the probability that the surviving wife would face a decline in her living standard due to insufficient insurance on the life of her husband. A 1 percentage point increase of the husband's share in family income increases the probability that the wife would be less-than-adequately protected by about 0.5% (Model IVa). Wives who are more financially knowledgeable than their husbands are about 4% less likely to face a decline in their living standard if their husbands were to die (Model Va). Finally, compared to wives who have the "final say," wives whose husbands dominate family decision making are about 10% more likely to face a substantial decline of their widowhood living standard (Restriction 1, Model VIa).

The bottom panel in Table 6 reports probit results for husbands' and wives' probabilities of having more-than-adequate resources protection. The overall result that emerges from these estimations is that share of household income, greater financial knowledge, and the "final say" in family decisions, are positively correlated with the probability of having excessive protection.

---

of the living standard in the magnitude of 30% or more have life insurance. Similarly, 91% of husbands whose wives would experience similar increase in their widowhood living standard have life insurance. Both percentages are higher than the respective averages for the full sample. To obtain a more definitive insight into the role of life insurance in providing more-than-adequate resources protection, we modify our methodology of calculating CHANGE so that it ignores life insurance component I_i in equation (2). Using the original methodology, the percentages of husbands and wives who would experience an improvement of the living standard in the magnitude of 30% or more amount to 38% and 12%, respectively. Using the modified methodology, these percentages are 17% and 6% for husbands and wives, respectively.

20. All marginal effects are computed at sample means.

TABLE 6
Marginal Effects from Probit Estimations for the Probability of Having Less- (CHANGE <−30), and More-Than-Adequate Protection (CHANGE >30)

Model:	Ia	IIa	IIIa	IVa	Va	VIa
Dependent variable:	=1 If Husband's CHANGE < − 30 = 0 Otherwise			=1 If Wife's CHANGE <−30 = 0 Otherwise		
Share of husband's income	−0.209***			0.517***		
Husband is financial respondent		−0.024***			0.041**	
Decision-making power (Ref: Equal):						
β_1: Husband has "final say"			−0.017			0.035*
β_2: Wife has "final say"			0.042*			−0.044
β_3: Spouses disagree			0.011			0.013
Tests of linear restriction (the numbers reported are marginal effects for $\beta_i - \beta_j$)						
(1) H_0: $\beta_1 - \beta_2 = 0$ (husband vs. wife decision maker)			−0.051**			0.103**
(2) H_0: $\beta_1 - \beta_3 = 0$ (husband decision maker vs. disagreeing households)			−0.027*			0.021
(3) H_0: $\beta_2 - \beta_3 = 0$ (wife decision maker vs. disagreeing households)			0.021			−0.051*
Model:	Ib	IIb	IIIb	IVb	Vb	VIb
Dependent variable:	=1 If Husband's CHANGE >30 = 0 Otherwise			=1 If Wife's CHANGE >30 = 0 Otherwise		
Share of husband's income	0.983***			−0.133***		
Husband is financial respondent		0.094***			−0.035***	
Decision-making power (Ref: Equal):						
β_1: Husband has "final say"			0.063**			−0.002
β_2: Wife has "final say"			−0.131**			0.048*
β_3: Spouses disagree			−0.007			0.010
Tests of linear restriction (the numbers reported are marginal effects for $\beta_i - \beta_j$):						
(1) H_0: $\beta_1 - \beta_2 = 0$ (husband vs. wife decision maker)			0.220***			−0.043*
(2) H_0: $\beta_1 - \beta_3 = 0$ (husband decision maker vs. disagreeing households)			0.071**			0.011
(3) H_0: $\beta_2 - \beta_3 = 0$ (wife decision maker vs. disagreeing households)			−0.125**			0.031

Asterisks denote significance at the 0.01 (***), 0.05 (**) and 0.10 (*) levels. All models additionally include the following control variables: indicator variables for husband's race and ethnicity, indicator variables for husband's and wife's education, quadratic forms in husband's and wife's age, indicator variables for husband's and wife's retirement status, number of dependents, indicator variables for husband's and wife's self-reported health status, natural logarithms of the husband's and wife's incomes (except for Models I and IV), net worth and dummy indicators for census division of residence. Sample for Models I, II, IV and V consists of all households ($N = 3{,}856$), sample for Models III and VI consists of households that did not change family composition within the analyzed period ($n = 3{,}730$).

On average, a 1 percentage point increase of the husband's share in family income increases his probability of having more-than-adequate protection by almost 1% (Model Ib). Compared to husbands from households where wives are the financial respondents, husbands who are financial respondents are over 9% more likely to have too much protection (Model IIb). Husbands who have the "final say" are 22% more likely to experience a substantial improvement in their living standard relative to husbands in households where wives have the "final say" (Restriction 1, Model IIIb).

A shift of bargaining power toward the wife is associated with higher odds that she would experience a significant improvement in the living standard in the event of the husband's death. A 1 percentage point increase of the wife's share of family income increases her odds for being overprotected by 0.1% (Model VIb). Relative to wives whose husbands are more financially knowledgeable, wives who are the financial respondents are 3.5% more likely to have excessive protection (Model Vb). Finally, compared to households where husbands are the decision makers, if wife has the "final say" she is 4.3% more likely to be overprotected (Restriction 1, Model VIb).

ROBUSTNESS

Changes in the living standard resulting from the spousal death might have negative consequences regardless of the life cycle stage. However, younger households are likely to have more at stake because greater fractions of their resources are tied up in human capital. Thus, we expect that younger individuals who dominate the household decision-making process would be more inclined to maximize their protection. To test this supposition, we verify our findings from Tables 3–6 against results obtained using subsamples of households where both husbands and wives have not yet reached their respective full retirement age. As expected, the magnitude of the effect across all measures of bargaining power is higher in absolute terms compared to base estimates.[21]

A concern related to the use of the question about the "final say" as revealing which spouse's preferences dominate household decisions is the fact that we are not always able to extract spouses reports from the same wave of the HRS, or from the 2004 wave which we use for

21. For brevity we do not report results of robustness estimations. Details are available from authors.

measuring other variables. Household circumstances may change in the meantime, and these changes may shift the "final say" to another spouse. Among the possible causes of the shifts in the decision-making power, the deterioration of spouses' health seems to be the most important. We verify whether our results are robust to health shocks of either spouse by reestimating Models III from Tables 3 and 4, and all models from Table 5 using a subsample of 1,323 households where neither of the spouses experienced an onset of a severe health condition such as cancer, lung disease, heart problems, stroke or diabetes. We find that all the presented effects of the distribution of decision making power hold their significance and the magnitude of effects is comparable.

To verify that our results are not driven by the underlying assumptions in the calculation of CHANGE, we examine the robustness of our findings to alternative assumptions. First, we test our results against the assumption that living horizons for husbands and wives are equal to the gender-specific life expectancies for the US population published by the CIA 2010 World Factbook (CIA 2010). Life expectancies of wives are longer than life expectancies of husbands. This discrepancy contributes to the higher poverty rate among widows. However, we do not expect the results to change substantially when we incorporate this fact into computations because of the offsetting elements in the calculation of the living standard. A reduction in life spans relative to baseline calculations reduces the present expected value of resources for a couple, but also for a survivor. As expected, the change in the magnitude of the effect of the distribution of bargaining power on the likelihood of having too little or too much protection is negligible and all major results hold.

It may be incorrect to conclude that a particular household has inadequate protection if we do not measure adequacy based on individual circumstances. For example, using the average life expectancy values may overestimate the life insurance needed for a person who expects to live longer than the average and underestimate it for a person who expects to die sooner. To test our results against this potential source of bias we weight the population survival probabilities used in calculations of the present expected values of resources by adjustment factors obtained from answers that the HRS respondents provided when they were asked to subjectively evaluate their probability of staying alive for the next ten years.[22] The results obtained by incorporating subjective survival

22. To obtain the adjustment factors we first compute measures of how much the subjective reports of staying alive for the next ten years deviate from the average probabilities implied by population

probabilities confirm all previously reported estimates, and the magnitude of some of the effect actually increased in absolute values (especially the effects of having the "final say").

We also verify that all major results hold after resetting the real interest rate used for discounting future earnings or benefits (we manipulate the interest rate within 2–6% range by 1 percentage point increments) or after incorporating a positive rate of growth of real earnings (0–3% range by 1 percentage point increments).

Finally, we test the sensitivity of the estimates from Table 6 to alternative characterizations of life insurance adequacy. Under alternative characterizations, we use changes in the living standards in the magnitude of 10–50% (with 10 percentage point increments) to classify households as holding too little, or too much insurance. As a general trend, the absolute value of the effect of the bargaining power tends to increase when we narrow the definition of insurance adequacy (i.e., more potential survivors are classified as having less- or more-than-adequate insurance protection). Of course, given the estimates reported in Tables 3 and 4, these results are expected and simply imply that bargaining power has a monotonic effect on the percentage change in the survivor's living standard.

CONCLUSIONS

This study contributes to the growing literature that examines the impact of intrahousehold dynamics on financial decisions of married couples. The distribution of bargaining power within married households affects the financial protection that the surviving spouse would receive in the event of their partner dying. Individuals who account for a larger share of family income, are more financially knowledgeable, or have the "final say" in family decisions leverage their bargaining power to secure higher protection of their hypothetical widowhood living standard. The effects of the bargaining power are significant both statistically and quantitatively.

life tables. Next, we weight the survival probabilities used to compute the present expected values of resources by .5 of these deviations. As an example, consider an individual who evaluates her probability of staying alive for the next ten years at .7. Assume further that the probability of staying alive for this individual implied by the population life tables equals .8. The deviation measure equals $0.7 - 0.8 = -0.1$ and the adjustment factor equals $(0.5)(-0.1) = -0.05$. Thus, we would multiply all survival probabilities used for calculations of the present expected values of resources for this individual by 0.95. This method takes into account individual circumstances but also reduces the impact of extreme and unrealistic subjective reports on survival probabilities.

Our analysis points to an important source of financial vulnerability among widows. Women are more likely to outlive their husbands, but at the same time they seldom dominate the decision-making process. This increases their probability of experiencing declines in the living standard in the event of becoming widowed. Recognizing the role of bargaining between spouses may help consumer educators and the financial services industry analyze needs more precisely and tailor insurance services to fit individual households. The findings stress the importance of communication between spouses in making major financial decisions, as women who simply leave all the decisions to the husband may be adversely impacted in the long run. In some cases, it is possible that the decision maker is not intending to leave their spouse in a disadvantaged position after their passing, and simply raising awareness of this issue may result in some improvement. Financial professionals and educators can play a key role in helping households understand the trade-offs inherent in insurance decisions, with the result being better allocation of scarce household resources.

Given the fact that some households purchase life insurance in situations where potential survivors are not vulnerable to the decline of the living standard, research is needed to investigate reasons for such behaviors. In particular, it is important to investigate if overprotection results from good intentions combined with misguided decision making or from the fact that some individuals might use their knowledge of financial services to their advantage by securing higher potential benefits (or achieving other goals). For example, the overprotection condition might signal a moral hazard problem in which information asymmetry between the insurance provider and a client encourages a rational decision maker to purchase higher protection.

Life insurance is a valuable risk management tool available to families. Properly insuring future income streams for the family optimizes the utility of the available resources and maximizes the probability that those resources will be protected to meet the family's goals and objectives, regardless of the impact of unforeseen events. From a policy perspective, life insurance is frequently offered to employees at attractive rates as a benefit of employment. Employers who understand that their employees may not have the proper amount of protection can provide employee financial education to assist employees in purchasing the optimal amount of coverage at discounted group rates, thus providing a relatively low cost service to employees and improving employer/employee relations (Kim 2007).

APPENDIX A
Demographic and Socioeconomic Characteristics

		Financial Respondent		Who Has the "Final Say" (Sample of Households That Did Not Change Family Composition Within the Analyzed Period)				
	Full Sample $N = 3,856$	Husband $n = 2,536$	Wife $n = 1,320$	Husband (a) $n = 602$	Wife (b) $n = 188$	Equal (c) $n = 1,613$	Disagree (d) $n = 1,327$	
Husband's race								
White	0.910	0.920	0.891*	0.895	0.828	0.942	0.893	ab, ac, bc, bd, cd
Black	0.053	0.047	0.066*	0.052	0.137	0.030	0.066	ab, ac, bc, bd, cd
Other race	0.037	0.034	0.043	0.053	0.035	0.028	0.041	ac
Husband is Hispanic	0.051	0.047	0.058	0.062	0.060	0.038	0.062	ac, cd
Husband's education								
No high school	0.209	0.163	0.300*	0.205	0.374	0.171	0.226	ab, ac, bc, bd, cd
Completed high school	0.275	0.261	0.304*	0.286	0.342	0.266	0.274	bc
Some college	0.215	0.215	0.216	0.202	0.134	0.219	0.223	ab, bc, bd
Completed college	0.301	0.361	0.181*	0.307	0.150	0.343	0.277	ab, bc, bd, cd
Wife's education								
No high school	0.177	0.175	0.181	0.244	0.269	0.132	0.188	ac, ad, bc, bd, cd
Completed high school	0.351	0.340	0.372*	0.370	0.305	0.344	0.357	
Some college	0.264	0.255	0.282*	0.224	0.274	0.281	0.257	ac
Completed college	0.208	0.229	0.165*	0.159	0.151	0.243	0.197	ac, ad, bc, cd
Husband's age	66	66	65	65	65	66	65	ac, bc, cd
Wife's age	62	62	63*	62	62	63	62	ac, cd
Husband retired	0.464	0.453	0.484*	0.426	0.460	0.470	0.469	
Wife retired	0.357	0.348	0.374	0.334	0.394	0.377	0.343	cd
Number of dependents	0.202	0.203	0.202	0.143	0.366	0.183	0.232	ab, ad, bc, bd, cd
Husband's health								
Excellent	0.122	0.128	0.108*	0.118	0.089	0.131	0.117	
Very good	0.324	0.337	0.296*	0.312	0.232	0.342	0.324	ab, bc, bd

APPENDIX A
Continued

		Financial Respondent		Who Has the "Final Say" (Sample of Households That Did Not Change Family Composition Within the Analyzed Period)				
	Full Sample	Husband	Wife	Husband (a)	Wife (b)	Equal (c)	Disagree (d)	
Good	0.325	0.323	0.330	0.337	0.337	0.333	0.307	
Fair	0.167	0.158	0.185*	0.173	0.246	0.148	0.175	bc, cd
Poor	0.063	0.053	0.081*	0.060	0.096	0.046	0.076	bc, cd
Wife's health								
Excellent	0.149	0.154	0.139	0.129	0.068	0.169	0.146	ab, ac, bc, bd
Very good	0.354	0.359	0.345	0.351	0.306	0.385	0.325	cd
Good	0.308	0.310	0.304	0.318	0.279	0.304	0.311	
Fair	0.130	0.123	0.146*	0.139	0.241	0.104	0.144	ab, ac, bc, bd, cd
Poor	0.058	0.054	0.066	0.063	0.106	0.038	0.074	ac, bc, cd, cd
Husband's income	51,079	59,202	34,906*	54,588	28,436	56,190	46,667	ab, bc, bd, cd
Wife's income	29,166	29,261	28,976	24,822	24,888	32,182	27,915	ac, bc, cd
Nonhousing household net worth	371,287	429,341	255,697*	411,451	161,760	381,697	381,750	ab, bc, bd
Residence region								
New England	0.051	0.048	0.056	0.031	0.078	0.052	0.057	ab, ac, ad
Mid Atlantic	0.116	0.123	0.102*	0.103	0.187	0.119	0.110	ab, bc, bd
S Atlantic	0.233	0.236	0.226	0.253	0.221	0.219	0.241	
E Central	0.174	0.176	0.172	0.189	0.193	0.180	0.164	
WN Central	0.093	0.094	0.091	0.083	0.066	0.101	0.091	
ES Central	0.052	0.048	0.061	0.068	0.045	0.046	0.052	ac
WS Central	0.084	0.086	0.080	0.090	0.066	0.074	0.094	
Mountain	0.063	0.066	0.056	0.056	0.028	0.074	0.053	bc, bd
Pacific	0.134	0.123	0.156*	0.128	0.115	0.136	0.136	

Asterisks (*) denotes that the means for households with husband financial respondent and wife financial respondent are significantly different 0.05 levels. Paired letters indicate groups of households by answers to the "final say" question for which the means are significantly different at 0.05 level.

APPENDIX B: CALCULATIONS OF VARIABLES USED TO ESTIMATE THE PRESENT EXPECTED VALUE OF RESOURCES

Net Worth

The HRS provides fairly complete information on financial and nonfinancial assets and liabilities of households. Net worth is calculated as the net value of checking, savings and money market accounts, stocks, mutual funds, investment trusts, employer pension plans, IRAs or Keogh accounts, bonds, CDs, government saving bonds or T-bills, business enterprises, vehicles such as autos, RVs, boats or planes, any other savings or assets, such as money owed by others or valuable collections for investment or other purposes. The HRS includes limited information about wealth held in the form of employer-provided pension plans—only "financial" respondents who own plans where money is accumulated in an account were asked for an estimate of the amount.

We exclude housing equity from net worth. Unlike other expenditures, housing expenses are not easily smoothed and it is difficult to scale mortgage, real property taxes and real estate insurance payments. We assume that costs, inconveniences and psychological attachments discourage households from moving or refinancing mortgages. Bernheim et al. (2003) reports that roughly three quarters of respondents in the HRS plan to remain in their home after retirement and less than 20% of women widowed between the first and the fourth wave of the HRS had moved by their fourth interview.

Net worth in equations (1) and (2) does not include cash values of life insurance policies. The amount of death benefit in equation (2) is generally equal to the face value of the insurance policy. However, for some types of insurance policies, the death benefit equals the face plus cash value of the policy. Because the value of life insurance policies in our dataset is jointly determined by the question about the total face value of all policies, our measure of the present expected value of resources when both spouses are alive is underestimated for couples who own cash value life insurance policies. In consequence, the measure of the adequacy of protection provided by insurance might be biased toward lower protection.

Present Expected Value of Earnings

To calculate the present expected value of earnings for nonretired individuals we assume zero real rate of growth and set each year of future

earnings equal to current earnings until an individual reaches the full retirement age. We assume that individuals who report positive earnings and have reached the age that entitles them to full retirement will retire in the following year. For retired individuals, we set the value of future earnings to zero. To discount future earnings we use 5% interest rate and multiply earnings by gender-specific survival probabilities calculated based on the 2004 United States Life Tables published in the National Vital Statistics Reports (Arias 2007). Our assumption that future earnings are equal to current earnings adjusted by survival probabilities most likely biases the measure of resource protection adequacy toward greater protection because earnings tend to grow as individuals' progress through their life cycles and accumulate more human capital.

Present Expected Value of the Social Security, Other Pensions and Survivor's Benefits

To calculate the present expected value of social security wealth for nonretired individuals we project past and future earnings of husbands and wives and utilize the batch version of the Social Security Benefit Calculator ver. 2011.1 available for download from the US Social Security Administration website (www.ssa.gov/planners/benefitcalculators.htm). The Social Security Benefit Calculator calculates the amount of benefit for an old-age, dependent, or survivor claim, given the characteristics of an individual (birth date, demographic background, past earnings, projection of future earnings and benefit entitlement date). All amendments to the social security law through 2010 are taken into account in calculations.

Future earnings of individuals in our sample are projected using the same method as the calculation of the present expected value of earnings. To project past earnings we take current earnings and reduce them in real terms using data on average weekly earnings in private nonagricultural industries reported in the Economic Report of the President 2010. Because the Social Security Benefit Calculator does not estimate spouse or survivor benefits correctly in situations when individuals also receive benefits based on their own record, we "manually" adjust the benefit to reflect the correct value. For example, many individuals who reached full retirement age are entitled to receive the benefit that provides higher monthly amount, either own benefit or 50% of the benefit of the living spouse. Similarly, many survivors with full retirement entitlement are eligible to receive the larger benefit, either based on own record or the full benefit of the deceased spouse.

We do not apply the calculator to compute benefits for individuals who are already retired. Instead, we use the HRS reported values of social security benefits. We calculate the present expected value of social security benefits by summing up current and future annual benefits weighted by survival probabilities until individuals reach age 95.

For individuals who receive income through employer-provided pension or annuity, we project the future stream of these benefits using the same method as the calculation of the present expected value of earnings. Calculations of survivor's benefits paid from the employer-provided pension are based on the information provided by the respondent whether the pension payments can continue after death. We assume that survivor receives full benefits if the respondent reports that the pension payments can continue unchanged or would be paid in lump sum, half benefits if the respondent reports that the pension payments can continue at reduced level and no benefits otherwise.

Life Insurance

The HRS respondents are asked if they have any life insurance (including individual or group policies, term or permanent). Upon positive answer, the survey asks: "Altogether, what is the total face value of these policies, that is, the amount of money the beneficiary would get if you were to die?" Roughly 10% of individuals in our sample do not report the exact value of their policies but an indicative range of values. In such cases, we set the total value of their life insurance policies equal to the lower bracket.

REFERENCES

Andreoni, James, Eleanor Brown, and Isaac Rischall. 2003. Charitable Giving by Married Couples: Who Decides and Why Does It Matter? *The Journal of Human Resources*, 38 (1): 111–133.

Arias, Elizabeth. 2007. United States Life Tables 2004. *National Vital Statistics Reports*, 56 (9): 1–40.

Auerbach, Alan J. and Laurence J. Kotlikoff. 1991. The Adequacy of Life Insurance Purchases. *Journal of Financial Intermediation*, 1 (3): 215–241.

Aura, Saku. 2005. Does the Balance of Power within a Family Matter? The Case of the Retirement Equity Act. *Journal of Public Economics*, 89 (9): 1699–1717.

Becker, Gary S. 1981. *A Treatise on the Family.* Cambridge, MA: Harvard University Press.

Bernheim, B. Douglas. 1991. How Strong Are Bequest Motives? Evidence Based on Estimates of the Demand for Life Insurance and Annuities. *The Journal of Political Economy*, 99 (5): 899–927.

Bernheim, B. Douglas, Solange Berstein, Jagedeesh Gokhale, and Laurence J. Kotlikoff. 2002. *Saving and Life Insurance Holdings at Boston University—A Unique Case Study.* Boston University.

Bernheim, B. Douglas, Lorenzo Forni, Jagedeesh Gokhale, and Laurence J. Kotlikoff. 2003. The Mismatch between Life Insurance Holdings and Financial Vulnerabilities: Evidence from the Health and Retirement Study. *The American Economic Review*, 93 (1): 354–365.

Browning, Martin. 2000. The Saving Behavior of a Two-person Household. *The Scandinavian Journal of Economics*, 102 (2): 235–251.

Campbell, Ritchie A. 1980. The Demand for Life Insurance: An Application of the Economics of Uncertainty. *The Journal of Finance*, 35 (5): 1155–1172.

CIA. 2010. *CIA World Factbook*. https://www.cia.gov/library/publications/the-world-factbook/geos/us.html. (Accessed January 3, 2011).

DeNavas-Walt, Carmen, Bernadette D. Proctor, and Jessica C. Smith. 2010. Income, Poverty, and Health Insurance Coverage in the United States: 2009. *Current Population Report: Consumer Income*, September.

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.

Fisher, Stanley. 1973. A Life Cycle Model of Life Insurance Purchases. *International Economic Review*, 14 (1): 132–152.

Friedberg, Leora and Anthony Webb. 2006. Determinants and Consequences of Bargaining Power in Households. NBER Working Paper No. 12367.

Hotchkiss, Julie L. 2005. Do Husbands and Wives Pool Their Resources? *The Journal of Human Resources*, 40 (2): 519–531.

Karni, Edi and Itzhak Zilcha. 1986. Risk Aversion in the Theory of Life Insurance: The Fisherian Model. *The Journal of Risk and Insurance*, 53 (4): 606–620.

Kim, Jinhee. 2007. Workplace Financial Education Program: Does It Have an Impact on Employees' Personal Finances? *Journal of Family and Consumer Science*, 99 (1): 43–47.

Lewis, Frank D. 1989. Dependents and the Demand for Life Insurance. *The American Economic Review*, 79 (3): 452–467.

LIMRA International. 2005. *Trends in Life Insurance Ownership Among U.S. Households.*, Windsor, CT: LIMRA.

Lundberg, Shelly, Richard Startz, and Steven Stillman. 2003. The Retirement-Consumption Puzzle: A Marital Bargaining Approach. *Journal of Public Economics*, 87 (5): 1199–1218.

Lundberg, Shelly and Robert A. Pollak. 1994. Noncooperative Bargaining Models of Marriage. *The American Economic Review*, 84 (2): 132–137.

———. 1996. Bargaining and Distribution in Marriage. *The Journal of Economic Perspectives*, 10 (4): 139–158.

———. 2003. Efficiency in Marriage. *Review of Economic of the Household*, 1: 153–167.

Lundberg, Shelly, Robert A. Pollak, and Terence J. Wales. 1997. Do Husbands and Wives Pool Their Resources? Evidence from the United Kingdom Child Benefit. *The Journal of Human Resources*, 32 (3): 463–480.

Lyons, Angela C., Urvi Neelakantan, Ana Fava, and Erik Scherpf. 2007. For Better or Worse: Financial Decision-Making Behavior of Married Couples. Networks Financial Institute (NFI) Working Paper No. 2007-WP-14.

Lyons, Angela C., Urvi Neelakantan, and Erik Scherpf. 2008. Gender and Marital Differences in Wealth and Investment Decisions: Implications for Researchers, Financial Professionals, and Educators. Networks Financial Institute (NFI) Working Paper No. 2008-WP-02.

McElroy, Marjorie B. and Mary Jean Horney. 1981. Nash-Bargained Household Decisions: Toward a Generalization of the Theory of Demand. *International Economic Review*, 22 (2): 333–349.

Manser, Marilyn and Murray Brown. 1980. Marriage and Household Decision-Making: A Bargaining Analysis. *International Economic Review*, 21 (1): 31–44.

Nash, John F. Jr. 1950. The Bargaining Problem. *Econometrica*, 18 (2): 155–162.

Phipps, Shelley A. and Peter S. Burton. 1998. What's Mine Is Yours? The Influence of Male and Female Incomes on Patterns of Household Expenditure. *Economica*, 65 (260): 599–613.

Pissarides, C. A. 1980. The Wealth-Age Relation with Life Insurance. *Economica*, 47 (188): 451–457.

Ringen, Stein. 1991. Households, Standard of Living, and Inequality. *Review of Income and Wealth*, 37 (1): 295–310.

Rubinstein, Ariel. 1982. Perfect Equilibrium in a Bargaining Model. *Econometrica*, 50 (1): 97–109.

Schultz, T. Paul. 1990. Testing the Neoclassical Model of Family Labor Supply and Fertility. *The Journal of Human Resources*, 25 (4): 599–634.

Thomas, Duncan. 1990. Intra-Household Resource Allocation: An Inferential Approach. *The Journal of Human Resources*, 25 (4): 635–664.

U.S. Census Bureau. 2010. America's Families and Living Arrangements: 2010. http://www.census.gov/population/www/socdemo/hh-fam/cps2010.html. (Accessed May 25, 2011).

Ward-Batts, Jennifer. 2008. Out of the Wallet and into the Purse: Using Micro Data to Test Income Pooling. *The Journal of Human Resources*, 43 (2): 325–351.

Yaari, Menahem E. 1965. Uncertain Lifetime, Life Insurance, and the Theory of the Consumer. *The Review of Economic Studies*, 32 (2): 137–150.

Yilmazer, Tansel, Angela C. Lyons. 2010. Marriage and the Allocation of Assets in Women's Defined Contribution Plans. *Journal of Family and Economic Issues*, 31 (2): 121–137.

Zietz, Emily N. 2003. An Examination of the Demand for Life Insurance. *Risk Management and Insurance Review*, 6 (2): 159–191.