

HOW FINANCIAL DECISION-MAKING CHANGES WHEN A MARRIAGE ENDS:  
EVIDENCE FROM THE 1992-2016 HEALTH AND RETIREMENT STUDY

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In Partial Fulfillment  
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Doctor of Philosophy

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by  
CHEN XU  
Dr. Rui Yao, Dissertation Supervisor

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The undersigned, appointed by the dean of the Graduate School, have examined the dissertation entitled

HOW FINANCIAL DECISION-MAKING CHANGES WHEN A MARRIAGE ENDS:  
EVIDENCE FROM THE 1992-2016 HEALTH AND RETIREMENT STUDY

presented by Chen Xu,

a candidate for the degree of doctor of philosophy

and hereby certify that, in their opinion, it is worthy of acceptance.

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Dr. Rui Yao

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Dr. Frances Cogle Lawrence

---

Dr. Lu Fan

---

Dr. Phil Deming

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## ABSTRACT

Transitioning from being married to divorced or widowed is difficult, financially as well as emotionally. Individuals who had left money matters to their partners during marriage enter a period of decreased financial control after marital dissolution and need to build their capacity to manage their own finances. This research used the 1992–2016 Health and Retirement Study (HRS) to investigate the following questions: Compared to a marriage’s financial decision maker, how does the non-decision maker assume financial control post-marriage and change asset allocation and wealth accumulation over time? Who loses out by remaining uninvolved in a marriage’s financial decision-making? Descriptive analyses and a linear mixed regression model were used to explore whether, after becoming divorced or widowed, net worth is higher for financial decision makers than non-decision makers. A similar analysis was performed on the proportions of risky assets held in investment portfolios, examining whether proportions are higher for the decision makers. The results showed that divorce and widowhood were detrimental to financial health no matter a person’s attributes. However, impacts disproportionately affected some groups, including respondents who were non-financial decision makers during marriage. Gender, race, and level of education also influenced how much marital dissolution impacted post-marriage asset allocation and wealth accumulation. The findings suggest that individual investors, financial planners, and researchers would benefit from figuring out how to design collaborative, responsive financial plans that enhance typically uninvolved persons’ decision-making skills and adapt to life changes.

*Keywords:* household financial decision-making, marital dissolution, divorced, widowed, risky asset investment, wealth accumulation

## **Chapter 1. Introduction**

Household financial decisions range from those for small and large expenditures to major investments, such as retirement savings, children's education funding, and the selection of investment portfolios. Families' abilities to make sound financial decisions and the quality of such decisions potentially have critical effects on future well-being. The academic research concerning personal finance is robust, but gaps in the research remain. Despite the fundamental importance of providing for a family's basic needs, existing studies have not often delved into the issues surrounding the upheaval of financial decision-making when death or divorce ends a marriage. How do a family's historical decision-making processes impact people upon the dissolution of the marriage, particularly those individuals who had previously relied on their spouse to make the decisions?

### **1.1 Purpose**

The abilities to manage current household assets and to generate wealth are important to future financial well-being. Financial planners and educators often suggest that couples should share financial decision-making responsibilities. However, empirical evidence is lacking to show how being excluded from the financial decision-making process affects household wealth. The main purpose of this study is to empirically investigate the changes in households' wealth accumulation (measured by net worth) and asset allocation (measured by risky asset holdings) after the dissolution of the marriage, both for people who were financial decision makers before becoming divorced or widowed and for those who were not. In other words, by sampling people whose marriages dissolved through divorce or death, this study investigates the decline in wealth

affected by being uninvolved in the marriage's financial decision-making once the original primary financial decision maker is lost.

## **1.2 Background**

It is little wonder that couples divvy up financial duties during their marriage; indeed, they divide all sorts of responsibilities to make everyday life more efficient. According to the traditional utility model, economists have indicated that a household's primary objective is to pool resources and maximize utility (Becker, 1974). The existing research on household finances suggests that decision-making within the household is a complex process influenced by family members' financial contributions, level of education, cognitive abilities, and other characteristics (Elder & Rudolph, 2003; Johnston, Kassenboehmer, & Shields, 2016; Smith, McArdle, & Willis, 2010). Some empirical studies have explored the effects of individuals' socioeconomic characteristics on household financial decision-making. For example, males were found to be more likely to take responsibility for making decisions when they were more financially knowledgeable and had a higher level of education and income (Elder & Rudolph, 2003; Johnston, Kassenboehmer, & Shields, 2015). Other studies have suggested that women's and men's levels of involvement in household financial decision-making are not fixed, such that women are responsible for daily and monthly budgets and their spouses are responsible for long-term financial savings plans (Thomas, Jones, Davies, & Chilvers, 2009).

One of the most notable models, widely supported by empirical evidence, is the bargaining power model, which claims that an increase in wages and financial education increases the partner's participation in making decisions (Bernasek & Bajtelsmit, 2002).

Other studies have shown that many couples share responsibility based on specialization and division of labor. Hsu and Willis (2011) argued that the division of labor within a household might be efficient only if a couple stays together and if the partners are fully capable of accomplishing their respective duties. If one spouse has been appointed as the household's "chief financial officer" (CFO), that spouse will typically devote time and effort to the specialty, improving his or her financial knowledge, for example. The CFO's level of financial knowledge is not necessarily higher than that of the other spouse at the beginning of the marriage. However, the CFO becomes financially sophisticated in the process of making more and more financial decisions, resulting in a higher level of expertise than the spouse. When the division of labor is disrupted, it is unclear whether the other spouse is ready to take on the role of CFO. Only a few studies have focused on whether divorcees and widows who were never before involved in such decisions can deal with various financial issues after the end of their marriages. A European study found that women are more likely to make financial decisions alone when there is a financial hardship in the family. However, the study did not determine the types of difficulty (e.g., loss of household income due to death or other hardships) nor whether the wife had previously been involved in household financial decisions (Schneebaum & Mader, 2013).

Previous studies have confirmed that people who were previously divorced or widowed are more economically vulnerable than couples in lifelong marriages. Holden and Kuo (1996) used the first wave of the Health and Retirement Study (HRS) to assess the effects of widowhood and divorce on household economic well-being. Their findings indicated that currently divorced or widowed women had lower income-to-needs ratios

than did couples in their first marriage. They pointed out that losing a partner remains an economic threat and has long-lasting financial effects. Similar to Holden and Kuo (1996), Wilmoth and Koso's (2002) study examined the effect of marital status on wealth by using the first wave of the HRS. They indicated that respondents who had been widowed or divorced had significantly lower wealth than those who had lifetime marriages. A more recent study by Angel, Jimenez, and Angel (2007) examined the 1992 and 2000 waves of the HRS and examined the economic consequences of widowhood. They concluded that marital disruption led to a substantial decline in household income and assets, in part because the exes and surviving spouses had to rely on their own income and asset accumulation.

According to a survey from Merrill Lynch and Age Wave, men largely continue to have the final say about household finances. Their findings showed that less than 15% of 3,300 women who responded were involved in making financial decisions before their spouse died. They also claimed that becoming the sole financial decision maker (69%), adjusting the loss of income (67%), and handling financial and legal documents (66%) were in the top three of widows' greatest financial challenges (Hannon, 2018). According to a report by UBS Wealth Management, of the 599 female respondents who had been either divorced or widowed within the past 5 years, 56% experienced financial surprises, 64% of them regretted not taking more financial responsibility, and only 26% believed they were financially literate about investing (UBS, 2018). The loss of a spouse imposes not only an emotional impact on the individual but also a financial shock.

### 1.3 Motivation

Despite the existing research, little is reported in the literature about whether surviving spouses or divorcees who were uninvolved in household financial decision-making can manage their own finances in response to household shocks. This question arises naturally because a key decision maker usually makes household financial decisions, or spouses make them jointly based on different domains of decision-making, such as long-term financial planning vs. routine bill-paying. The result of a primary financial decision maker assuming full responsibility is that a surviving spouse or divorcee, who had no control of the household's long-term financial plans previous to the household shock, is now underprepared to take control. Thus, becoming newly involved in household financial decisions and making informed decisions is critically important for the household's financial security.

As mentioned above, couples usually adopt specialized domains of responsibility and establish associated divisions of labor. Empirically, Hsu and Willis (2013) found that financial responsibility tended to shift to the other spouse after the original decision maker's cognitive ability declined to a very low level. They argued that a division of labor is efficient only if both spouses are mentally and physically competent to carry out the tasks. This raises a question: What happens when the primary decision maker dies, or the couple divorces, and the original labor division within the household cannot be maintained? Hsu's (2016) study focused on women who were not the primary financial decision maker in the household and pointed out that they tended to delay learning about finances if their spouses managed most of the financial issues. On the other hand, the partner who assumed the role of financial decision maker tended to increase his or her

knowledge and skills in finance-related matters as time went on. Another study found that the “non-manager” spouse showed a decreased tendency to become involved in such decisions and lost interest in acquiring financial knowledge (Ward & Lynch, 2018).

Some studies have found that more financially knowledgeable individuals are more likely to assume the specialized roles associated with a married couple’s financial decision-making and investment activities (Elder & Rudolph, 2003; Fonseca, Mullen, Zamarro, & Zissimopoulos, 2012). The findings put forward by Ward and Lynch (2018) were inconsistent with these other researchers’ assertions. Ward and Lynch claimed that the initial labor division between couples was unrelated to individuals’ initial financial proficiency. Instead, the gap between a husband’s and wife’s financial expertise and decision-making ability is associated with the relationship’s duration. In other words, financial literacy may be relatively equal at the beginning of a marriage, but a disparity grows if one spouse works to enhance his or her financial knowledge while the other does not. Furthermore, Babiarz, Robb, and Woodyard (2012) indicated that individuals with more financial knowledge are less likely to experience economic hardship after their spouse’s death. Given the fact that financial knowledge has been linked to different aspects of financial planning (Clark, Lusardi, & Mitchell, 2017; Lusardi & Mitchell, 2017; Lusardi & Tufano, 2015; Lusardi & Mitchell, 2011), and assuming the gap in many couples’ knowledge widens from day one, how can people who lose their designated financial manager make effective financial decisions? How does what one knows and can do affect financial decision-making when one becomes a two-part unit? Going one step further, how is financial decision-making impacted when the unit—the marriage—is broken apart? If a person is not adept at managing the couple’s finances, he or she is

likely to enter a never-ending loop of (a) not getting to practice financial management because he or she is not good at it but (b) not getting any better because he or she is not practicing.

Besides empirical studies, statistical evidence has shown that the current financial world has made it more difficult than ever for surviving spouses or divorcees who never involved themselves in financial decisions to make sound decisions post-marriage so that they accumulate adequate wealth. First, the U.S. retirement landscape has changed significantly over the past three decades because almost twice as many workers are covered now by a defined contribution (DC) plan rather than a defined benefit (DB) plan (23% vs. 40%; U.S. Bureau of Labor Statistics, 2017). It is well known that DB plan participants can plan their retirement with a high degree of certainty, even during bad markets. In contrast with DB participants, who have their pensions managed by professionals and are aware of future benefits before retirement, DC participants not only need to decide how much they must save but also have greater responsibility for determining their portfolio allocations. Statistical data shows that approximately 78% of workers expect to receive retirement income from a DC plan, while only 50% of retirees actually do so. In contrast, approximately 54% of workers expect to receive retirement income from a DB plan, while approximately 62% receive income from these plans (Greenwald, Copeland, & VanDerhei, 2017). The shift from DB to DC plans has required financial decision makers to be more sophisticated.

Second, people are living longer, with an average life expectancy of 72 years (World Health Organization, 2018; Xu, Murphy, Kochanek, Bastian, & Arias, 2018).

Therefore, most people need to plan and save in ways that stretch their assets over a longer retirement period.

Third, the population of retirees who expect to receive social security payouts is growing. Currently, social security benefits are expected to be exhausted by 2037, at which time the U.S. Congress will make changes to the scheduled benefits (Goss, 2010). Financial advisors always suggest that pre-retirees should have multiple sources of retirement income because social security benefits replace an insufficient portion of pre-retirement income. According to the U.S. Social Security Administration (2019), very low-income workers receive social security retirement benefits that replace approximately 75% of their pre-retirement income on average, while average- and high-income workers receive 40% and 27%, respectively.

Fourth and finally, the increased number of innovative financial products and accessible borrowing opportunities have provided more options to invest and borrow. While there is an upside to having more choices, it can be difficult and costly for decision makers to find products that suit their households' needs (Lusardi, 2015).

Given the recent trend in private pensions, an aging population, uncertainties in the social security system, and investment products' increasing financial complexity, little is known about the household financial decision-making processes underlying these changes. Thus, an understanding of household financial decision-making, especially within households that have lost their original financial decision maker, is essential for individuals, financial professionals, and policy makers to achieve future financial well-being.

## 1.4 Contribution

This study contributes to the field of personal financial planning by attempting to answer the question of who is losing out by not being involved in financial decision-making? This study fills in some of the gaps concerning post-marriage financial decision-making. Divorce or a spouse's death can be one of the most shocking and difficult situations in an individual's life. This study aims to help individuals and financial planners prepare for what are inevitable challenges. By empirically showing the consequences of being uninvolved in financial decision-making, the findings of this study suggest that financial planners should encourage both spouses to participate in making decisions during a marriage—all the better to equip either partner to carry on when the partnership comes to an end.

## 1.5 Definitions

### *Financial decisions*

Individuals make numerous decisions every day in all aspects of their daily lives. Some of the decisions are considered financial decisions when involving money or financial products and are substantially related to the household's overall financial well-being (Greenberg & Hershfield, 2019; Lynch, 2011). Bernasek and Bajtelsmit (2002) defined *household financial decisions* as ones in which an individual or the household's decision-making team manages household finances by making choices about savings and investments. Setting financial goals is considered part of the financial decision-making process. People feel confident about their decision-making abilities when they have specific financial goals that increase the likelihood and frequency of success (Ülkümen & Cheema, 2011). Debt management and repayment are also part of financial decisions—

they are issues that individuals face every day. When people have multiple debt accounts, they must decide which account to pay off first and how much to pay at once (Besharat, Carrillat, & Ladik, 2014). These choices are part of the household's financial decisions. Other researchers have widely defined financial decisions using economic models. They have found that financial decisions include, but are not limited to, increasing income, making spending plans, determining whether and how much to save, deciding when to take on debt and how to repay it, managing and accumulating currently available assets, and making investments at an individual or household level (Kim, Gutter, & Spangler, 2017).

### *Marital dissolution*

Prior studies have defined marital dissolution as including divorce and widowhood (Zissimopoulos, Karney, & Rauer, 2015; Liu, 2012; Prigerson, Maciejewski, & Rosenheck, 1999; Holden & Smock, 1991). This dissertation follows the previous studies' definition of marital dissolution.

This chapter has introduced the purpose, background, motivation, contributions, and definitions of this study. The next chapter summarizes the related literature about household decision-making. Chapter 3 introduces the theoretical framework and explains how the hypotheses were formulated. Chapter 4 introduces the data and statistical methods used to conduct this study. Chapter 5 explains the results. Chapter 6 summarizes the study and presents the implications for individual investors, financial professionals, and researchers.

## **Chapter 2. Literature Review**

The purpose of this chapter is to review the literature related to this study. The first major topic addressed is the married couples' decision-making. Therefore, the first section of the chapter illustrates different types of decisions that enter into family saving and spending behavior, examines the decision-making responsibility between couples from different disciplines, and reviews factors affecting decision-making patterns among couples. Sections 2 and 3 of the chapter illustrate variables' effects on investment behavior and wealth accumulation.

### **2.1 Couples' Financial Decision-Making**

Prior research has addressed wives' and husbands' influence in household decision-making in the nuclear family, which is a traditional living arrangement in which a married couple and their children live as a unit. It is reasonably certain that family decision-making is a collective process; spouses are involved in a variety of family decisions, and their roles differ considerably depending upon the decision area. Herbst (1954) first classified family decision-making role structures into three categories: the husband decides by himself, the wife decides by herself, and they decide together. The first two categories—the husband decides or the wife decides—simply mean that either the husband or wife has the last word in making important family decisions. On the other hand, the third category, joint decision-making, involves both partners and each member's roles and responsibilities factor into the decision process. This three-category framework has been used by other studies from various fields, such as research to investigate household decisions regarding charitable gifts (Brown and Slivinski, 2000), a study to explore the correlation between portfolio choices and risk preferences within the

household (Yilmazer & Lich, 2015), and two other studies to examine the intrahousehold distribution of bargaining power (Babiarz et al., 2012) as well as the role of bargaining power in the financial decision-making behavior of married couples (Lyons, Neelakantan, Fava, & Scherpf, 2007).

Related academic literature has evolved along with the ideals associated with marriage and sex roles. Research in the mid-20th century focused more on the traditional roles and stereotypes of husband and wife. More recent research has “kept up with the times,” so to speak, and investigated how more conventional gender-defined decision-making roles have become joint responsibilities shared by husband and wife, or even reversed from what would be considered traditional gender roles. The first subsection in Section 2.1 introduces a short description of the development history of studies conducted on household decision-making, particularly in purchasing decisions. The remaining four subsections, Sections 2.1.2 to 2.1.5, then go on to explore more recent academic research.

### **2.1.1 The Development History of Studies in Household Decision-Making**

Some preliminary work on why one spouse is more influential in family financial decision-making than the other was carried out in the late 1950s. Sharp and Mott (1956) found that husbands were more likely to make decisions when purchasing a new car or buying life insurance. On the other hand, wives were primarily responsible for food budgets. They pointed out that the probability of making joint decisions increased when the decision outcome became important to the family unit, such as when buying a new home or choosing a vacation place. Their findings were later confirmed by Davis (1970), who adopted Herbst’s (1954) classification and identified the various roles and different

areas of responsibilities between couples. Both Sharp and Mott's study in 1956 and Davis's study in 1970 indicated that husbands had a greater influence in automobile-related decisions while wives were more likely to make furniture-related purchasing decisions.

Sex-role stereotypes, spousal resources, and socioeconomic status differences consistently influence the decision patterns in the family with respect to purchasing decisions (Kwai-Choi Lee & Collins, 2000). Kwai-Choi Lee and Collins (2000) pointed out that sex-role stereotypes serve to legitimize the use of decision power. Generally, certain household decisions are characterized as being husband dominant or wife dominant. For instance, a mother usually plays the role of the family's emotional caretaker and generally has the power in female-dominated product categories, such as food, kitchenware, furnishings, and cleaning products. The husband has been shown to influence the purchasing of financial products, such as life and other insurances (Davis & Rigaux, 1974). In other words, spouses who adopt gender ideology share the belief that a male or female partner should dominate such a decision because he or she is the husband or wife (Spiro, 1983).

To some, it may seem appropriate that the family's division of labor is determined according to male tasks and female tasks. However, female tasks are often less related to financial resource allocation than male tasks, leading women to have less involvement in financial-related decisions. Blood and Wolfe (1960) suggested that each partner should be prepared to play an unfamiliar role when the spouse is overburdened or unavailable. Analyzing data collected from 300 Canadian households, Madill and Bailey (1999) examined the impact of sex-role orientation on household decision-making. They

concluded that husbands and wives were more likely to make joint decisions if they divided marriage responsibilities in ways that were less aligned to the traditional sex-role definitions (e.g., both spouses had jobs outside of the home or the husband was the at-home caregiver). A husband's influence in household decision-making decreased as a couple adopted less conventional marriage ideals. Household decision-making is progressing toward egalitarian decision-making, which is characterized by mutual involvement and agreement.

Blood and Wolfe (1960) illustrated that the predominance of males is no longer possible. They mentioned that spouses might differ in their involvement in various decisions, and these differences are associated with their respective bargaining power. They indicated that the husband's or wife's power in purchasing decisions is related to the level of resources they contribute to the household, in that the balance of power is on the side of the spouse who contributes more resources. Also, the researchers stated that an individual's decision-making power and familial status are influenced by his or her education level, occupation, employment status, income, and relevant skills or experiences. They found that whichever spouse has more education, more experience, and higher status gains power and usually keeps track of the finances. Their findings were confirmed by most of the later research, which will be reviewed in subsequent sections.

It can be concluded from the research explored in this subsection that each spouse's decision-making influence or power differs along with the different types of products and services purchased and depends on the resources that the spouse brings into the family. As reviewed in this section, most of the early studies about family decision-

making were dated and were limited by data availability. Their sample sizes were relatively small and therefore had low statistical power. However, their findings provide first insights into who has the final say in big family decisions. Also, early studies confirmed that within different decision areas, role structures vary by the nature of the decision. In order to have a complete understanding of household decision-making, newer research has focused more on how both wife and husband are involved in decision-making and in other financial decision areas besides purchasing decisions, such as investment decisions.

### **2.1.2 Determinants of Joint Financial Decision-Making**

This section summarizes more recent research literature that has analyzed the factors affecting the distribution of financial decision-making within a couple.

The family has been defined as a production unit, a unit defined by distributions of labor, time, and resources. Families with two decision makers, such as male-female couples, have been the major focus of prior studies (Bennett, 2013). Despite increases in women's involvement in household financial decision-making, more modern research has found that men still are more likely to be the primary financial decision maker within a household (Dew & Dakin, 2011). The topic of couples' decision-making relies heavily on studies based on the marital bargaining models that take the woman's perspective. Several empirical studies examined factors associated with joint financial decision-making. They found that joint management was particularly prevalent among couples in which the wife was employed full-time and among those who had approximately the same income (Deere & Twyman, 2012; Pahl, 1995).

In an investigation of couples' relative decision power, Bernasek and Bajtelsmit (2002) noted, "The process by which joint financial decisions are made within married couple households is an issue that has plagued researchers who conduct empirical studies of gender and household savings and investment decisions" (p. 39). In their analysis of data collected from faculty employed in five Colorado universities, they found that the majority of households made joint investment decisions (62%). Based on their descriptive statistical results, husbands and wives who were joint financial decision makers had similar characteristics, such as age, degree, employment status, risk tolerance, and prior financial education. Households with joint decision makers were more likely to seek financial professionals' advice than those in which the male was the primary decision maker. The researchers also showed that increased income and financial education increased an individual's share in decision-making. Further, couples in which the husband had a PhD degree were more likely to involve the husbands in making decisions. In contrast, educational attainment was not the primary determinant for women—income was. The more family income the wife contributed, the more she was involved in household financial decisions and to a greater extent than her husband. However, because their sample was limited to university faculty, most of the respondents were white and held PhD degrees; thus, the sample was not random.

Using the British Household Panel Study from 1991 and 1992, Dobbelsteen and Kooreman (1997) measured five aspects of financial management within the household (i.e., the household's financial allocative system, who has the final say in major financial decisions, who pays regular household bills, who manages daily household spending, and whether partners ask permission for personal spending between 10 and 20 euro). They

reported that more than half of the respondents managed their household finances jointly. They defined one of the dependent variables, “the final say in big financial decisions,” by applying a number to three categories: 0 = husband has final say, 1 = both have final say, and 2 = wife has final say. By using an ordered probit model, the researchers showed that the household financial decisions were more likely to be in the wife’s favor when the husband had a lower wage and educational level, the wife had a higher wage and educational level, and the couple had fewer children. Taken together, these findings suggest that a higher wage and education level increase the wife’s bargaining power while having a large number of children decreases the probability that the wife is involved in major financial decisions. Dobbelsteen and Kooreman’s study contributed to the literature by investigating various financial management factors but was limited by not including marginal effects in the statistical analysis. Thus, one cannot interpret the magnitude of the explanatory variables, for example, how much the probability of making joint decisions would change with a one-unit increase (decrease) in female (male) wage.

Based on eight waves (2005-2013) of data from the Household, Income and Labor Dynamics in Australia (HILDA) Survey, Johnston et al. (2015) provided empirical insights into the allocation of financial decision-making responsibilities in household financial domains. In every wave, each partner participating in the HILDA Survey was asked, “Who is responsible for making saving decisions?” By analyzing marginal effects from two multinomial logit models (male and female reports), the researchers found that, conditional on female age, older males and higher male education attainment reduced the probability of making joint financial decisions by 2% and 0.67%, respectively. A

working female increased the probability of joint financial decision-making by 4.33% and 3.6% using the male and female reports, respectively. Better mental health on the part of both men and women also increased the probability of making joint financial decisions. These results complemented prior studies (e.g., Bernasek and Bajtelsmit, 2002) that age, education, employment, and mental health condition are important predictors of couples' joint financial decision-making.

Deere and Twyman (2012) defined egalitarian decision-making as joint decision-making. They explained that "joint decision-making is where both men and women consider themselves to be making decisions jointly and agree that their spouses participate in decisions in a similar fashion" (p. 313). They analyzed 1,776 households from the 2010 Ecuador Household Asset Survey (EAFF) and found that less than half of surveyed households reported jointly making decisions regarding how one's income was spent. Their regression results indicated that joint decision-making was positively affected by the wife's share of a couple's wealth. Also, households with spouses that earned about the same were 1.6 times more likely to make joint decisions than households in which the husband earned more.

Elder and Rudolph (2003) examined the data from the first wave of the HRS, and their findings demonstrated that having a financially knowledgeable husband decreased the probability of making joint decisions. Wives' higher education, wage, and nonlabor income for the household increased the probability of joint decision-making. Their results indicated that women's economic position is associated with their involvement in the family's financial decisions.

While every study reviewed in this subsection and the previous one was different in its construction and subjects, some noteworthy generalities can be drawn. The research supports the assertion that individuals in a marriage usually play a greater part in financial decision-making when they are employed outside the home or otherwise contribute a large proportion of the household's income and wealth. The closer two spouses are to making equal financial contributions, the closer they are to having equal power in decision-making. In particular, because women have historically earned less and owned less, the research indicates that women's involvement in financial decision-making increases when their marriage partnerships attain greater parity in earning power and wealth contribution. The literature points to the following other factors that contribute to joint decision-making: the two spouses have about the same educational attainment, are close to one another in age, do not have many children to support, and have good mental health.

### **2.1.3 Labor Division of Household Decision-Making**

The previous subsection focused on the factors that determine whether a household's financial decisions are made by one spouse or jointly. The evaluation of spousal influence in family decision-making is heavily focused on research conducted in the 1970s and 1980s. After the 1990s, dramatically less research attention was placed on the roles of husbands and wives in household decision-making (Belch & Willis, 2002).

This subsection goes a step further, beyond independent versus joint decision-making, by examining different types of decisions. Previous studies have found differences in family role structures and members' decision roles across types of family

decision areas. A couple's decision-making is rarely a monolithic activity. The purpose of this section is to investigate the household's division of labor.

Prior studies have claimed that a wife's influence on financial decisions is associated with the time she has available for decision-making. Traditional gender roles, such as childbearing and household management, limit a woman's time and energy that can be dedicated to other pursuits. Thus, these traditional roles affect a woman's participation in the labor market adversely and decrease her bargaining position. Bartley, Blanton, and Gilliard (2005) found a difference in family role structures and member decision roles across types of domains. They coded household tasks into two groups: low-control tasks (e.g., meal preparation, household cleaning, grocery shopping, and other activities that require little or no autonomy) and high-control tasks (e.g., household repairs, financial record keeping, and automobile maintenance). They concluded that wives were responsible for two-thirds of the low-control tasks. The more time wives spent in low-control household labor, the less influence they had in the household. In addition, having children requires women to withdraw from the labor force for a certain period, and therefore, they have less time to be involved in making decisions and less opportunity to contribute financial resources to the household during that time.

The independence and importance of a married woman have increased in nearly every part of the family decision-making process (Belch & Willis, 2002). In recent years, women have gained more influence in various stages of the decision-making process—what are known as the initiation stage, search and evaluation stage, and decision stage for both financial and non-financial decision-making. On the other hand, researchers have found that husbands continue to lose their influence in making non-financial decisions

(Belch & Willis, 2002). Women have been found to be increasingly involved in family financial matters when they are employed (David, 1994) and rely more on their spouses' decisions during the child-rearing periods of their lives (Komura, 2013). By analyzing data from the British Household Panel Survey, Dobbelsteen and Kooreman (1997) confirmed that a larger number of children results in women participating less in household financial decisions. Moreover, Pinnawala (2013) found evidence of Sri Lankan women increasingly acquiring controlling power and involvement related to household financial decision-making. The research showed that wives used to make decisions in their traditional areas, like buying groceries and educating children. Nowadays, they have taken over a portion of husbands' responsibilities and make nontraditional financial decisions, like buying fixed assets and applying for credit from financial institutions (Pinnawala, 2013).

Other studies have found that interest and expertise in certain decision domains have a great effect on spousal involvement in purchasing decisions (Ferber & Lee, 1974). For example, if a husband is more familiar with the complexities of taxation and automobiles, his wife may defer to his knowledge in decisions related to those. In other words, people are more likely to be involved in decision topics that interest them greatly.

In summary, married women and men may share their households' financial decision-making responsibilities, but they often do so by dividing them up rather than by jointly making one decision after another. It is an understandable division of labor, but the risk is that one spouse might be making most of the low-control decisions (e.g., how much to spend at the grocery store in a given week) while the other spouse is making most of the high-control decisions (e.g., how to save enough to retire on time). One

reason for such an imbalance could be that husbands and wives are adhering to traditional gender roles. But another reason might be that spouses are choosing to participate in the decision domains that interest them the most.

Recent studies on the household dynamics of financial decision-making have advanced the field's understanding of how the division of labor (whether the husband or wife is the primary financial decision maker) affects households' economic outcomes. Using data from the 2007 German socioeconomic panel study, Grabka, Marcus, and Sierminska (2015) found evidence that household financial outcomes depend on the division of labor. The intra-partner wealth gap is smaller in households where the financial decision-making is shared equally than in those with a male decision maker.

#### **2.1.4 Financial Outcomes of the Different Decision Maker**

Bernasek and Bajtelsmit (2002) stated that understanding people's attitudes toward risk is essential to analyzing the degree of women's involvement in household decisions and related outcomes. A different financial decision maker may lead to different financial outcomes.

Previous studies have shown that, when couples face situations that expose them to a risk of financial loss, women are less likely than men to invest in risky assets (Barber & Odean, 2001; Barsky, Juster, Kimball, & Shapiro, 1997). Risk tolerance is an indicator of an individual's risk preferences under uncertainty (Grable, 2000). It is an important measurement in portfolio allocation decisions because risky investments earn more returns consistently in the long term than less risky investments (Yao & Hanna, 2005; Yao, Hanna, & Lindamood, 2004). Research has found that women are less likely than men to choose "mostly stocks" for their DC plans (Sunden & Surette, 1998); are more

likely to choose conservative investment strategies (Watson & McNaughton, 2007), such as allocating less risky assets into DB plans (Bajtelsmit, Bernasek, & Jianakoplos, 1999); and have more CDs and fewer stocks (Embrey & Fox, 1997). Moreover, women invest more in fixed-income securities (Bajtelsmit & VanDerhei, 1997), such as annuities (Agnew, Anderson, Gerlach, & Szykman, 2008), and take fewer financial risks than men do when investing in mutual funds (Dwyer, Gilkeson, & List, 2002).

Despite the growing literature on gender differences in risk-taking behavior, only a few studies have addressed the way individual risk preferences are related to household financial decisions. Yao et al. (2004) suggested that a household's portfolio should reflect both spouses' preferences. However, the primary financial decision maker's risk preference plays a more significant role in a household's portfolio allocations. The researchers pointed out that couples who disagree on risk tolerance may lose the opportunity to obtain high investment returns or take on too much financial risk that leads to unnecessary loss. In analyses of data from the HRS, previous studies have found that the risk aversion of the spouse with greater bargaining power determines the proportion of household wealth invested in risky assets. For example, when the husband had the final say in major financial decisions, the household was more likely to invest in equities (Friedberg & Webb, 2006; Neelakantan, Lazaryan, Lyons, & Nelson, 2013).

Regardless of a wife's bargaining power, studies have shown that her level of risk tolerance has a bearing on the household's amount of risky investments. Using data from the 1992–2006 HRS, Yilmazer and Lich (2015) showed that the probability of holding risky assets increased with the wife's risk tolerance. They also predicted the likelihood of investing in risky assets for households that did not own any: The probability of investing

in risky assets increased by 4% for every 0.1% increase in the risk tolerance of the spouse who had the greater bargaining power. Outlined by Lyons et al. (2007), couples with greater risk tolerance were more likely to invest mostly in stocks, even if the wife was the financial decision maker. Contrary to their findings, another study suggested that households held less risky assets where the wife was the primary financial decision maker (Jianakoplos & Bernasek, 2008). As previously stated in this subsection, many studies have found evidence that women are more averse to risk than men, but the evidence is mixed as to whether women's risk attitudes translate into different household financial decisions.

Addoum (2017) examined households' portfolio allocations and stock market participation decisions and assumed that household financial decision-making takes place during three different periods. In the first, the husband has the greatest control over household resources. During the second period, Addoum assumed that the husband dies, and the widow has to make financial decisions by herself, and at the end of the third period, the wife consumes all the resources. He found that a household's risky asset allocation in the first period was associated negatively with the wife's intrahousehold bargaining power. Also, widows tended to decrease the share of stocks in the household financial portfolio after their husbands' deaths, and the decrease was more significant when the wife was more risk averse than the husband.

A recent study conducted by Warmath, Piehlmaier, and Robb (2019) pointed out that spouses who make financial decisions together reduce the level of overconfidence concerning those decisions. By examining data from the 2015 National Financial Capability Survey (NFCS), they tested whether shared decision-making was associated

with a calculated average confidence score. The score was calculated as the ratio difference between a self-reported confidence level in financial knowledge and an actual level of financial knowledge (measured by objective investor knowledge questions). Their study provides an interesting insight into the outcome of joint decision-making.

### **2.1.5 Husband Decides or Wife Decides**

The majority of the previous studies that have examined factors associated with household financial decisions have generally supported the bargaining model. This model posits that spouses with more bargaining power are more likely to make household financial decisions. Babiarz et al. (2012) investigated the correlations between household resource protection and the distribution of bargaining power within a household. They found that individuals who contributed a higher share of household income had more bargaining power and, therefore, gained more financial knowledge during their marriages. These individuals were less likely to face a financial decline in their widowhood. On the other hand, those who had fewer financial resources and thus less bargaining power in their marriages faced greater financial uncertainty after the deaths of their spouses.

Section 2.1.2 focused on the determinants that affect whether a couple engages in joint decision-making. This section focuses on the determinants that make a person or persons the decision maker(s) at all—the factors that elevate an individual to decision maker status whether the individual is part of a joint decision-making team or a solo decision maker. It just so happens that the determinants that make someone the decision maker are also the determinants that improve the chances for joint decision-making. The purpose of this section is to review those factors' effects and include them as explanatory

variables in the empirical model. Variables that influence household financial decision arrangements include wages, education, employment status, financial knowledge, and demographic characteristics, such as gender, age, health status, number of children, and family size.

Elder and Rudolph (2003) found that men are more likely to take responsibility for making decisions when they are more financially knowledgeable and have a higher level of education and income. Similarly, women's influence may increase when they are financially knowledgeable and have more education and income. The same researchers found that retirement status was statistically significant only for men. When a man was retired, he was less likely to be the decision maker. Their findings are similar to those of Luhrmann and Maurer (2008), who found that income, education, labor force participation, and health condition affected an individual's decision power positively. They indicated that employment and health status had larger and asymmetric effects across gender than did other variables. For example, women's labor force participation had greater weight, while health issues decreased men's decision power significantly. Johnston et al. (2015) supported previous findings and indicated that higher levels of education and income increased the probability that men made decisions, while employed women and those with higher incomes were more likely to be decision makers. In addition, poor mental health decreased both spouses' probability of being the decision maker, while poor physical health decreased only husbands' probability of being the decision maker.

Dobbelsteen and Kooreman (1997) provided additional supporting evidence, finding that men with lower wages and educational levels were less likely to be decision

makers while more highly educated women were more likely to have the final say. Bertocchi, Brunetti, and Torricelli (2014) also found that higher wages increased the probability that women made financial decisions. Furthermore, Bernasek and Bajtelsmit (2002) showed that increases in income and financial education increased women's shares in household decision-making. Also, those in wealthier households were less involved, and women whose husbands had a PhD degree were more likely to be involved in making decisions. Using data from the China Family Panel Studies in 2010 and 2014, another study suggested that, in nuclear households, women's education positively affected the probability of having the final say in household decisions (Cheng, 2019). All these findings are consistent with bargaining power models that theorize that an individual's earnings serve as a source of bargaining power that can enhance one's influence in household decisions.

Prior research also has analyzed other variables' effects, such as total household income, total nonlabor income, age, number of children, and family size. More nonlabor income and more children increased the husband's influence in decision-making, and age had a positive effect for both spouses (Dobbelsteen & Kooreman, 1997; Elder & Rudolph, 2003). However, Bertocchi et al. (2014) found different results: Increased family size increased the wife's decision-making responsibility while age had a negative effect for the wife but a positive effect for the husband. Moreover, Agarwal and Mazumder (2013) pointed out that cognitive ability plays an important role in household financial decision-making. Specifically, having better mathematical ability decreases the probability of making poor financial decisions. Thus, spouses with greater cognitive ability were found to be more likely to make household financial decisions (Johnston et

al., 2015). Using data from the HRS, Smith et al. (2010) noted that individuals with higher numeracy scores are more likely to manage the family's finances. They also found that husbands are more likely to be selected as the financial respondent even if they received a zero on the survey's numeracy test.

As a whole, Section 2.1 has focused on couples' financial decision-making. While the findings from early research into household decisions generally echoed the traditional gender roles of the mid-20th century, the studies conducted in more recent decades have been more nuanced. They have found that many determinants affect who is the financial decision maker in a marriage. These factors include wages, employment status, wealth, and demographic characteristics, such as age and number of children. A similar list of factors affects whether spouses jointly make their financial decisions. Add to the list the couple's division of labor. If the couple divides responsibilities in ways that offer both spouses opportunities to enhance their financial knowledge, then both are well positioned to make independent decisions after the end of their marriage. Also, risk tolerance affects couples' decision-making. For example, a wife's comfort level with risky investments increases the probability that the couple will add risky assets to their portfolio, increasing the chances of greater returns over the long run.

## **2.2 Determinants on Investment Behavior**

### **2.2.1 Net Worth and Income**

Lack of wealth restricts individuals from investing in stocks. Previous studies have suggested that an individual's income and wealth affect their financial ability to participate in the stock market (Kreinin, 1959). Schooley and Worden (1996) found that, as wealth increased, the willingness to hold risky assets also increased. Using the 1989

Survey of Consumer Finances (SCF), Jianakoplos and Bernasek (1998) found that wealth positively affected the proportion of risky assets held, and the effect was stronger for single men than for single women. Because of the data availability constraints of the 1989 SCF, the researchers' findings were limited. They were unable to include in their model many demographic variables that may influence stock ownership. More recent studies have indicated that a higher level of household income and net worth increased stock ownership (Shum & Faig, 2006; Van Rooij, Lusardi, & Alessie, 2007), as well as portfolio allocation of stocks (Fontes & Kelly, 2013; Hariharan, Chapman, & Domian, 2000; Lahey & Kim, 2001).

Using data from the 1992, 1995, 1998, and 2001 SCF, Shum and Faig (2006) demonstrated that financial net worth positively affected the likelihood of stock ownership and the proportion of equity shares over the 4 survey years. This positive relationship between financial wealth and stock ownership implies that households with low or medium amounts of wealth are unable to participate in the stock market, as they cannot afford to pay the entry cost (Vissing-Jergensen, 2002). This view was supported by Guo (2001), who stated that, because of the fixed entry cost, households invest in stocks only when their wealth reaches a certain threshold. Campbell (2006) illustrated how assets are allocated in households with different levels of wealth and indicated that middle-class or wealthier households are more likely to hold equities. Lower-income households mostly hold liquid assets and vehicles.

### **2.2.2 Employment Status**

According to the findings of previous studies, employment status is an important control variable. Chang, DeVaney, and Chiremba (2004) found that self-employed people

and those who worked for someone else were more likely to hold stocks compared to people who were retired or not working. In contrast, Halek and Eisenhauer (2001) stated that self-employed individuals had accepted the income risk associated with their career choice already and, therefore, were unlikely to take further investment risks. It also has been reported in the literature that households with no full-time earnings are less willing to hold risky assets (Schooley & Worden, 1996). Similarly, Gutter and Fontes (2006) reported that unemployment negatively affected the likelihood of holding risky assets.

### **2.2.3 Homeownership**

Homeownership has been shown to be negatively related to risky asset ownership. Some studies have indicated that housing consumption tends to decrease the likelihood of purchasing risky assets since it increases homeowners' exposure to risk and illiquidity. Fratantoni (1998) found that homeowners are less likely to hold risky assets, as their homes substitute for such assets, and housing expenditures lead households to reduce their risky holdings. Similarly, a researcher from London found that younger investors and others who have limited financial wealth have lower stock holdings if they own residential real estate (Cocco, 2004). By holding wealth fixed, Chetty, Sándor, and Szeidl (2017) explored the causal effect of housing on portfolio choice. They indicated that the higher the property value, the lower the probability of stock market participation.

Using the Panel Study of Income Dynamics (PSID), a study carried out by Yao and Zhang (2005) showed that the reason that homeowners were less likely to invest in stock was that investing in illiquid assets left a lower level of liquid wealth available for investment in risky assets. Conversely, other studies found that, even though homeowners have locked a part of their wealth in the housing market, they are still more likely to

invest in the stock market when compared to people who do not have any properties (Vestman, 2012). But, as noted by Vestman (2012), in order to make the down payment, first-time homebuyers are more likely to exit the stock market at the time of the purchase.

#### **2.2.4. Demographic Characteristics**

A range of demographic variables may affect stock ownership, including race, age, and educational attainment. For example, previous research has shown variability in risky asset ownership between White and Black households (Gutter & Fontes, 2006). By analyzing data from the 1998 SCF, Plath and Stevenson (2001) reported that Black households own fewer financial assets than White households, in general. Using data from the 1992 HRS, Choudhury (2001) noted that White households hold more stock wealth than Black households in both the lower and top income quartiles. Furthermore, Wang and Hanna (2007) combined the 1992 to 2004 SCF datasets and found that, after other variables were controlled, stock ownership was greater among White households than Black and Hispanic households.

Age is another factor that many prior studies have examined. Grable, Roszkowski, Joo, O'Neill, and Lytton (2009) found that younger respondents are more likely to own stocks than older respondents. Plath and Stevenson (2001) also showed a significant relationship between stock ownership and age. They indicated that stock ownership peaks at approximately age 55 to 64 and then declines after age 65. Their findings were confirmed by Shum and Faig (2006), who found that the likelihood of stock ownership increases with age until age 61. Further, Gilliam, Chatterjee, and Grable (2010) concluded that the 48–55 age group is more likely to hold more stocks in their investment portfolios. Fagereng, Gottlieb, and Guiso's (2017) recent study indicated that, although

stock ownership rates are limited among all age groups, they follow a hump-shaped pattern in that ownership increases rapidly with age when investors are young, peaks near retirement age, and then declines.

Education also has been found to be important in explaining stock ownership. After controlling for other variables, Campbell (2006) showed that higher education is associated with a higher likelihood of stock ownership, as educated households believe that nonparticipation is an investment mistake. Most prior studies have concurred that educational attainment positively affects stock ownership (Cardak & Wilkins, 2009; Grable et al., 2009; Hariharan et al., 2000), and people without a high school degree are less likely to hold stocks (Lusardi & Mitchell, 2007). One explanation for this finding is that education reduces the fixed entry cost for stock market participation (Hong, Kubik, & Stein, 2004).

Another demographic characteristic that is a determinant of investment behavior is parenthood. A person's number of children has a positive effect on the likelihood of investing in risky assets (Bertocchi, Brunetti, & Torricelli, 2011).

### **2.2.5 Expectations**

Previous studies have found that poor health reduces the probability of stock ownership. Edwards (2008) stated that retirees who are exposed to health risks have a lower demand for risky assets, possibly because they expect that their future medical expenses require precautionary savings, decreasing the likelihood of holding risky assets. Rosen and Wu (2004) examined the relationship between health status and the ownership of various assets and identified an association between poor health and holding risky assets. They asserted that individuals with poor health conditions tended to have more

liquid portfolios. Similarly, Yogo (2016) showed that respondents in excellent health condition held more stocks in their retirement portfolios than those in good health.

A person's financial planning horizon also has been found to affect stock ownership, although the results are mixed. By analyzing six investment horizons, Gunthorpe and Levy (1994) found that respondents with a longer investment horizon hold safer assets in their portfolios. In contrast, other studies have found that individuals with an investment horizon of more than 10 years are more likely to hold stocks—in other words, more likely to take risks—than their counterparts with shorter investment horizons (Hariharan et al., 2000; Zhong & Xiao, 1995).

#### **2.2.6 Cognitive ability**

Cognitive ability is a predictor of a variety of behaviors and of many economic outcomes (Heckman, Stixrud, & Urzua, 2006). Previous studies have demonstrated that an individual's cognitive ability is an important determinant of the individual's financial decisions and investment behaviors.

In a series of studies, Peters et al. (2006) specified that cognitive ability is related to judgments and decision-making in important ways. Individuals with lower cognitive ability tend to demonstrate investment preferences that differ from those with higher cognitive ability. Other research has found that, when compared to respondents with low cognitive ability, respondents with high cognitive ability are more likely to invest in stocks and accumulate more financial wealth (Christelis, Jappelli, & Padula, 2010; McArdle, Smith, & Willis, 2009), prefer to have a larger reward later than a smaller reward sooner (Parker & Fischhoff, 2005), are more likely to have a higher ability to calculate expected returns, and tend to exhibit consistent risk tolerance preferences

(Fagerlin et al., 2007). Two of the most reasonable explanations are that higher cognitive function reduces the time spent gathering relevant investment information and reduces the probability of making bias decisions, such as falling prey to framing effects (Benjamin, Brown, & Shapiro, 2013; Kim, Hanna, Chatterjee, & Lindamood, 2012; Peters et al., 2006). A third explanation is that higher cognitive function enables individuals to solve problems that involve quantitative complexity (Fagerlin et al., 2007). Because all financial decisions require fluid ability (e.g., word recall, numeracy) and involve mathematical concepts, limited cognitive ability can be viewed as an insufficient understanding of financial decision outcomes (Browning & Finke, 2015).

In an insightful application, Grinblatt, Keloharju, and Linnainmaa (2011) investigated the effect of cognitive ability on stock market participation in Swedish households. They used the intelligence quotient, measured by the sum of scores on tests related to mathematical, verbal, and logical skills, as a proxy for cognitive ability. Their findings showed that individuals with the lowest cognitive ability were 20% less likely to participate in the stock market than those with the highest cognitive ability. In addition, the number of stocks held, Sharpe ratios, and net worth of an individual increased with the person's cognitive ability. Similarly, Christelis et al. (2010) investigated the association between cognitive ability and the propensity to invest in the stock market. They employed data from the Survey of Health, Ageing, and Retirement in Europe (SHARE), which measures respondents' cognitive abilities using mathematical, verbal, and recall tests. After controlling for demographic variables, they found that an increase of one standard deviation in numeracy, fluency, or the recall indicator was associated with a 1.2-, 1.7-, and 1.3-point increase in total stockholding, respectively.

Using data from the 1992–2000 waves of the HRS, McArdle et al. (2009) examined the impact of cognitive variables on household financial outcomes. They included five cognition variables: number series, mental status, word recall, numeracy, and retrieval fluency. Their findings showed that total household wealth, financial wealth, and the proportion of financial wealth invested in stocks all significantly increased with the numerical scores of both financial and non-financial respondents. For instance, correctly answering one additional numeracy question was correlated with a \$20,000 increase in total household wealth and a \$7,000 increase in total financial wealth.

Using similar data (2006–2008 HRS), Browning and Finke (2015) examined the impact of cognitive ability, which was measured by both numeracy and word recall, on stock reallocation among retirees during the Great Recession of the late 2000s and early 2010s. They indicated that older investors with lower cognitive ability were more likely to make market timing mistakes by not reallocating away from risky assets during this period when compared to those with higher cognitive ability.

Furthermore, Banks and Oldfield (2007) used survey data from the English Longitudinal Study of Ageing (ELSA) and focused on the effect of numerical cognitive ability on portfolio composition for individuals over age 50. They pointed out that the most numerate respondents were more likely to hold complex investment vehicles, such as stocks. Less numerate respondents tended to have lower wealth and were more likely to have simple investment vehicles, such as savings accounts.

Other studies have indicated that high cognitive ability is correlated with superior investment skills. Korniotis and Kumar (2007) examined data from a European household data set that included three dimensions of cognitive function: verbal ability,

quantitative ability, and memory. They examined the association between cognitive ability and risk-adjusted portfolio performance. Their results indicated that investors with high cognitive ability held relatively riskier, smaller, and more growth-oriented portfolios than those with low cognitive ability. Also, investors in the lowest cognitive ability group earned 3.36% less annual investment returns than investors with the highest cognitive ability.

Using the National Longitudinal Survey of Youth 1979 (NLSY), Benjamin, Brown, and Shapiro (2006) showed that participants who scored higher on cognitive tests exhibited higher asset accumulation. In a later study, Korniotis and Kumar (2011) argued that investment knowledge increased with both age and experience. However, deterioration in cognitive skills hindered the effective application of investing knowledge. There is some evidence that higher cognitive ability reduces the probability of making financial mistakes, such as making a rate-changing mistake (e.g., the borrower's loan-to-value differs from the bank's loan-to-value) in the home loan application process (Agarwal & Mazumder, 2013). In addition, Agarwal, Driscoll, Gabaix, and Laibson (2009) noted the cognitive incapacity of younger and older adults. They found that financial mistakes follow a U-shape pattern, which means financial mistakes are more likely to be made at younger and older ages.

### **2.3 Determinants of Wealth Accumulation**

Demographic characteristics have been found to be associated with household wealth accumulation. In previous research studies, researchers examined age, which is one of the most common factors in household wealth accumulation. Compared with older people in their 60s, younger workers in their early 30s have significantly less wealth

accumulated because they spend most of their time and wealth on family formation and developing careers (Steuerle, McKernan, Ratcliffe, & Zhang, 2013). By analyzing a survey, Daley, Wood, Weidmann, and Harrison (2014) found that respondents in the age group from 25 to 34 years old had only accumulated \$200,000 in wealth, which was one fifth of the net worth accumulated by respondents in the 55–64 age group. Their findings clearly indicated that young households accumulate less wealth than older households, on average. In addition, Vandenbroucke (2016) used a neoclassical growth model and confirmed that wealth inequality exists in the United States between young and old generations.

Gender is a common factor and widely tested by researchers on household wealth studies. Women typically have less wealth than men across all age groups (Schmidt & Sevak, 2006). For example, on average, women had accumulated approximately \$70,000 less wealth than men did in a study conducted in Austria (Austen & Mavisakalyan, 2018). One of the reasons causing the gender wealth gap is men and women invest differently and receive different investment returns from their portfolio (Sierminska, Piazzalunga, & Grabka, 2018). For example, women are significantly more likely to be risk averse, choosing to own fewer stocks than men and demonstrating less of a likelihood to be business owners than men (Austen, Jefferson, & Ong, 2014; Sunden and Surette, 1998). Women's low labor participation rate is another reason for less wealth accumulation than men (Sierminska et al., 2018). Moreover, researchers have found that single mothers suffer the most severe economic penalties in household wealth accumulation when compared with single fathers, never-married individuals, and married couples. Single

mothers need to fulfill both traditional parenting roles and the role of sole economic provider for their families (Yamokoski & Keister, 2006).

Race has also been found to be related closely to household wealth accumulation. One study found that median White households (\$113,149) had 20 times more wealth than Black households (\$5,677) and 18 times more wealth than Hispanic households (\$6,325) in 2009 (Kochhar, Taylor, & Fry, 2011). The wealth disparities within racial groups were shown to increase from 2007 to 2013. According to Kochhar and Fry (2014), the median White-to-Black household wealth ratio increased from 10.0 in 2007 to 12.9 in 2013. At the same time, the median White-to-Hispanic household wealth ratio increased from 8.2 in 2007 to 10.3 in 2013.

Education is another factor examined in studies related to household wealth accumulation. Individuals with higher education have higher earnings potential, and they tend to save more and accumulate less debt (Oliver & Shapiro, 2006). By studying the effects of education on people's lifetime earnings, Sinning (2017) found that individuals, both men and women, with a bachelor's degree increased their lifetime earnings by more than 30% over their counterparts who only went to school for 12 years or less. Borland (2002) found male respondents with a college education accumulated more wealth than individuals who had high school degrees; the level of education is positively associated with earnings (Wei, 2010). Similar results were also found by Austen and Mavisakalyan (2018). They found respondents with bachelor's, graduate, or certificate degrees had significantly more income than people with a high school education, and they accumulated more wealth than respondents with high school degrees.

Other factors have also been found to be closely associated with wealth accumulation. First, risk attitude is associated with an individual's wealth accumulation. Cartwright (2018) pointed out that women are more risk averse than men. Women who are highly risk averse could experience low rates of return of their investment portfolios, which results in less wealth accumulated. Second, income is a key determinant of household wealth. Low-income households accumulate significantly less wealth than high-income households (Blau & Graham, 1990). Third, from a human capital value model perspective, Austen and Mavisakalyan (2018) stated that having children increased household costs by adding childcare expenses and reducing household productivity. As a result, families with children have less wealth accumulated than families who do not have any children. Rake (2000) confirmed this finding by stating that there is a wealth gap between families with children and ones without any child. Fourth, Poterba, Venti, and Wise (2015) examined linkages between health condition and wealth accumulation for both younger and older age groups. They found that health status significantly affects respondents' assets. Respondents in the younger age group who were diagnosed with lung disease, stroke, or mental problems experienced a significant reduction in assets of 25%. For the older age group, mental problems and diabetes were both associated with declines in assets.

This chapter reviewed the literature related to financial decision-making in the household. The aim was to gain a better understanding of which spouse in a married couple made the financial decisions, why, and the short- and long-term ramifications of decision ownership. Once one understands the factors that determine a household's financial decision maker, as well as that decision maker's investment behaviors, one can

use such factors as variables in empirical analyses. This study examines how decision-making and financial outcomes change when a couple reaches the end of their marriage. Chapter 3 puts forward this study's hypotheses after examining the literature's decision-making models.

### **Chapter 3. Theoretical Models of Household Decision-Making**

In the field of personal financial management, two types of approaches are used to model the way a family makes decisions: the neoclassical approach and the bargaining approach. This chapter first discusses the models of intra-household decision-making that fall into these two approaches. For married households, the major issue is whether the husband or the wife determines the allocation of household financial wealth. Each theoretical approach was considered to determine whether one model or the other could serve as a framework for evaluating this study's subjects and their financial decision-making structures. So, each is described in the next two sections. Afterward, in Section 3.3, the research hypotheses are presented. The chosen theoretical approach served as the foundation for developing the hypotheses.

#### **3.1 Neoclassical Models of Household Decision-Making**

The first theoretical approach is the neoclassical approach, otherwise known as the unitary approach, which assumes that both spouses pool their incomes. An altruistic head of household maximizes a neoclassical household utility function subject to the household's set of constraints (Becker, 1974, 1981). Samuelson's (1956) was the first study that raised the concept of "joint consensus decisions." He assumed that all family members had the same utility function, such that  $u^1 = u^1(X^1, Y^1, \dots)$  and  $u^2 = u^2(X^2, Y^2, \dots)$ . If there are two functions that are standard for the two indifference curves of two family members, then the utility function of the household is  $U = f[u^1(X^1, Y^1, \dots), u^2(X^2, Y^2, \dots), \dots]$ . Samuelson named this function the "household welfare function." It reflects a consensus among family members. Becker further developed this model into a household model. He treated each household as a single decision maker who maximizes a

utility function,  $U(c^h, c^w)$ , in which  $c^h$  and  $c^w$  denote the husband's and wife's consumption subject to the budget constraints,  $p(c^h + c^w) = y^h + y^w = y$ , and in which  $p$  and  $y$  denote prices and total family income, respectively (Lundberg & Pollak, 2008).

Schneebaum and Mader (2013) pointed out that both Samuelson (1956) and Becker (1981) relied on notions of altruism to aggregate preferences of family members and ignored heterogeneity in the preferences among family members. The neoclassical model has been challenged by other studies, which have said that the model is not adequate to describe multi-person household behavior. One limitation is that the model assumes that all household wealth is jointly controlled. Another is that the portfolio allocation decision does not depend on the characteristics or preferences of either spouse. The critics have argued that the family members have preferences and do not behave as a single decision maker (Carter & Katz, 1997; Cherchye, De Rock, & Vermeulen, 2009). Because unitary models have been criticized for not recognizing spouses as independent thinkers, the neoclassical approach to decision-making was rejected as this study's theoretical framework. Non-unitary models were also evaluated to see if they could give this study its theoretical structure. Section 3.2 answers this question.

### **3.2 Bargaining Models of Household Decision-Making**

The second approach to modeling how a family makes decisions is the bargaining framework. Manser and Brown (1980) asserted that household members' utility functions could differ. These authors, along with McElroy and Horney (1981), first introduced the bargaining models of marriage. Bargaining models define intra-household resource allocation as an outcome of bargaining processes among members within the household. The difference between unitary models and bargaining models is that the bargaining

approach treats each member of a household as an individual agent with a unique preference and utility function. Each person's household bargaining power determines which member's preference has more influence on decision-making. Chiappori (1988, 1992) pointed out that household decisions should be analyzed based on a framework that each member has a utility function, and the members work together with a particular decision rule. In the bargaining approach, each family member has individual utility functions, and the utility depends on their private goods, leisure, and household goods, as well as the spouse's nonmarket time and consumption. Moreover, in this approach, household decisions are a negotiation process based on both spouses' relative decision powers.

Researchers have defined two distinct types of bargaining, the non-cooperative and the cooperative (or collective) models. In the non-cooperative model, spouses have no economic interactions and make decisions independently to maximize individual utility. Therefore, the outcomes of the spouses' decision processes generally are inefficient. Conversely, the collective approach assumes that there is a stable decision process in the household, and the outcome of that process is Pareto-efficient in that "... no other feasible choice would have been preferred by all household members" (Browning, Chiappori, & Weiss, 2011, Chapter 3).

Luhrmann and Maurer (2008) and Bertocchi et al. (2014) summarized Browning et al.'s (2011, Chapter 3) study and expressed the collective household utility model as follows:  $U_{\text{household}} = \mu(z)U_{\text{female}} + (1 - \mu(z))U_{\text{male}}$ , in which  $\mu(z)$  and  $(1 - \mu(z))$  denote the wife's and husband's respective weight in the decision process, and vector  $z$  represents factors that may affect decision-making power (e.g., age, education, income, etc.). For

example, if  $\mu$  equals 1, the wife will be the primary decision maker, and the household utility function will reflect her preferences fully. Briefly, the household aims to maximize the weighted sum of each family member's utility function, subject to the household's budget constraints.

The bargaining approach seems to align more closely with the findings reported in Chapter 2's literature review. For example, a wife's risk tolerance has been found to affect a married couple's investment behavior. A woman could not exert an independent influence on investment decisions in a unitary model, but she could in a non-unitary model. Similarly, research has found that women who participate in the workforce are more likely to jointly make financial decisions with their husbands or to unilaterally make financial decisions on their own. Again, a woman could not be one half of a joint decision-making team in a unitary model, nor could she be a sole decision maker. But she could be in a non-unitary model. For this reason, this study used the bargaining approach as its theoretical framework.

There is a second reason why bargaining models were more applicable. This dissertation sought to assess one of two spouses: the marriage's non-financial decision maker who must assume financial decision-making responsibility post-marriage. The study cannot investigate how the non-decision maker's attributes (e.g., cognitive ability, employment status, demographics) affect financial decision-making and outcomes when a neoclassical theory is imposed. It demands that the researcher treat the decision maker and non-decision maker as a single unit. Therefore, this study selected the bargaining approach, specifically the collaborative bargaining model, and formed its research hypotheses using this theoretical framework.

### 3.3 Research Hypotheses

As summarized in the literature review, previous studies have revealed various determinants of a household's financial decisions. For instance, the distribution of household responsibilities—such as the household financial decision-making that remains primarily “men's work”—can decrease a spouse's financial literacy. Ward and Lynch (2018) asserted that couples develop their abilities and learn new things based on what they think they need to know. The non-financial decision maker tends to stop learning about financial matters and relies on the partner's expertise. The gap in financial literacy then becomes wider for couples who do not make joint financial decisions. Consequently, surviving spouses or divorcees who were not actively involved in making household financial decisions when married are less likely to manage household finances effectively upon the end of the relationship.

In this study, the choice of explanatory variables to include in the empirical model was based on the literature review in Chapter 2. Motivated by those earlier facts and findings, this study aimed to investigate whether households headed by surviving spouses or divorcees experience declines in wealth or risky asset holdings because the financial decision maker was lost upon their partner's death or departure. This study put forth the following two hypotheses:

H1 – After becoming divorced or widowed, the average net worth is higher for respondents who remain a financial decision maker during and after marriage than the average net worth for respondents who become a financial decision maker after becoming divorced or widowed.

H2 – After becoming divorced or widowed, the average proportion of risky assets in an investment portfolio is lower for respondents who became a financial decision maker after a divorce or being widowed than the average proportion of risky assets for respondents who remain a financial decision maker during and after marriage.

## Chapter 4. Research Method

This chapter describes the methodology that guided this research. It discusses the variables (Section 4.2), and methods of analysis (Section 4.3). But first, Section 4.1 examines the data itself.

### 4.1 Data

Before describing the work performed for this study, it is important to understand the underlying data and the confidence researchers can have in it. This section describes how the HRS data has been collected and cleaned.

The HRS is the first nationally representative longitudinal study of older people that includes detailed information on both economic and health characteristics. It was created in 1990 through an act of Congress by the National Institute on Aging (NIA), a part of the U.S. National Institutes of Health. The goal of the HRS is to inform policy about health and retirement in anticipation of the baby boomer generation entering retirement. The Institute for Social Research at the University of Michigan, funded in large part by the NIA and co-funded by the U.S. Social Security Administration, conducts the study. It is a multidisciplinary longitudinal study of Americans over the age of 50. Respondents also include participants' partners, who can be of any age. The study follows individuals and their spouses every 2 years from the time of their entry into the survey until their death. The HRS researchers also introduce a new birth cohort of participants every 6 years to keep the sample nationally representative of the population over age 50.

The data for this study was derived from the 1992–96, 1998, 2000, 2002, 2004, 2006, 2008, 2010, 2012, 2014, and 2016 HRS surveys. In total, the HRS data includes

seven cohorts based on each respondent's birth year. Table 1 describes the sample design of HRS data. The initial 1992 HRS cohort comprised a nationally representative sample of people born between 1931 and 1941 who were, in 1992, aged between 51 and 61 years. These individuals are now in their 70s and 80s and have been interviewed every 2 years since 1992. The Asset and Health Dynamics Among the Oldest Old (AHEAD) cohort was added in 1993 and captured individuals born before 1924. The Children of Depression (CODA) cohort comprises individuals born in 1924 to 1930. And the War Babies (WB) cohort captured people who were born between 1942 and 1947. Both the CODA and WB cohorts were added in 1998 to bridge the age gaps for people who were aged 50 years and older. The Early Baby Boomers (EBB) cohort was added in 2004 to capture people born in 1948 to 1953, and in 2010, the Mid Baby Boomers (MBB) cohort was added to include individuals born in 1954 to 1959. Finally, the Late Baby Boomer (LBB) cohort, born between 1960 and 1965, was first interviewed and added in 2016.

**Table 1**  
**Cohorts from 1992 to 2016 by RAND HRS Waves and HRS Core Survey Years**

<b>RAND HRS wave</b>	<b>HRS core survey year</b>	<b>Cohorts</b>						
1	1992	HRS	AHEAD					
2	1994	HRS	AHEAD					
3	1996	HRS	AHEAD					
4	1998	HRS	AHEAD	CODA	WB			
5	2000	HRS	AHEAD	CODA	WB			
6	2002	HRS	AHEAD	CODA	WB			
7	2004	HRS	AHEAD	CODA	WB	EBB		
8	2006	HRS	AHEAD	CODA	WB	EBB		
9	2008	HRS	AHEAD	CODA	WB	EBB		
10	2010	HRS	AHEAD	CODA	WB	EBB	MBB	
11	2012	HRS	AHEAD	CODA	WB	EBB	MBB	
12	2014	HRS	AHEAD	CODA	WB	EBB	MBB	
13	2016	HRS	AHEAD	CODA	WB	EBB	MBB	LBB

In order to make the HRS data more accessible to researchers, the RAND Center for the Study of Aging, with funding and support from the NIA and the Social Security Administration, developed a cleaned, user-friendly version of the HRS data. The RAND HRS data files include a wide range of variables, such as demographics, health, health insurance, out-of-pocket medical expenditures, income, social security, pensions, wealth, family structure, retirement plans, expectations, and employment history. All the variables in the RAND data files are named and derived consistently across all waves, which is useful for comparing cross-wave changes across each cohort's core survey year (Bugliari et al., 2019). RAND data files contain observations for every respondent who has completed at least one wave of the survey from the HRS.

## **4.2 Variables**

All the dependent variables, independent variables, and control variables used in this dissertation are described in this section.

### **4.2.1 Dependent Variables**

The first dependent variable of interest in this study was the net worth of the household. This variable was chosen because net worth is a useful indicator to capture a household's financial picture (Kim, Aldrich, & Keister, 2004). It has been widely investigated in previous studies from different relevant perspectives, such as the effects of bargaining power on household net worth (Lundberg & Ward-Batts, 2000), the effects of net worth on financial satisfaction (Plagnol, 2011), and the relationship between ability, intelligence, and wealth accumulation (Behrman, Mitchell, Soo, & Bravo, 2012). The second dependent variable is the proportion of risky financial assets held in an investment portfolio. This variable was chosen because the amount of assets invested in

risky investments reflects an individual's wealth management behavior, and such ability is critically significant in accumulating financial resources to achieve future financial goals (Shum & Faig, 2006; Yao et al., 2004).

**4.2.1.1 Net worth.** The HRS provides detailed measures of household financial well-being. The first dependent variable used for this study was the household's net worth measured according to a respondent's self-reported or imputed household wealth minus all debt. To measure household total net worth, this study used the respondents' primary and secondary residences and other real estate; vehicles; businesses; IRAs/Keoghs, stocks, and mutual funds; checking, savings, and money market accounts; CDs; government savings bonds, treasury bills, bonds, or bond funds; and all other savings. Household debt was subtracted from this total amount of savings. For this variable, the debt included all mortgages and all home loans other than the first or second mortgages plus the balance on an equity line of credit. This study included households' net worth 10 years before and after marital dissolution. In the regression analysis, the total net worth was measured in tens of thousands of U.S. dollars.

**4.2.1.2 Risky asset proportion.** This study's second dependent variable was the proportion of net worth held in risky assets (stocks, mutual funds, and investment trusts). It was calculated by dividing the amount of household financial assets invested in stocks (the net value of stocks and mutual funds) and business by the household's non-housing financial wealth. Household's non-housing financial wealth is the sum of the net value of stocks; mutual funds; investment trusts; business, checking, savings, and money market accounts; CDs; government savings bonds; T-bills; bonds and bond funds; and all other savings. From this sum was subtracted the value of other debt, such as credit card

balances, medical debts, life insurance policy loans, and loans from relatives. Because the HRS does not include information on the allocation of retirement accounts, such as IRA and Keogh accounts, the non-housing financial wealth did not include assets in respondents' retirement accounts.

#### **4.2.2 Independent Variables**

Based on the literature reviewed in Chapter 2, the independent variables were selected and organized into six categories: (1) being a financial decision maker, (2) wave status, (3) interaction variables, (4) demographic characteristics at the respondent level, (5) economic characteristics at the household/respondent level, and (6) respondents' self-reported health conditions (both physical and mental), expectations, and preferences.

**4.2.2.1 Financial decision maker.** The primary independent variable is whether the respondent is the financial decision maker during the marriage. In the HRS, the financial respondent within the household is the person who is more knowledgeable and answers the questions about housing, income, and assets on behalf of the entire household. A study conducted by RAND defined the financial respondent as “the one who is more responsible for financial matters in the household” (Carman & Hung, 2017). Also, in Hsu and Willis's (2013) study, they defined the financial respondent as the best measure available in the HRS data of financial decision-making. Furthermore, Smith et al. (2010), Xu and Yao (2017), and Angrisani and Lee (2019) also defined the financial decision maker of a household as the financial respondent reported in the HRS. Following these previous studies, in this dissertation, if a respondent was listed as the financial respondent of the household in the HRS data, then the respondent was defined as the financial decision maker within the household. In the empirical analysis, the

variable “financial decision maker” was a dummy variable that took the value “1” to represent respondents who were not financial decision makers before becoming divorced or widowed but became financial decision makers after divorced/widowed (changed). The variable took the value “0” to represent respondents who remained as a financial decision maker before and after divorced/widowed (remained). In other words, during the marriage, a respondent could be the financial decision maker or not be the financial decision maker, but every respondent had to be the financial decision maker after becoming divorced or widowed.

**4.2.2.2 Wave status.** The wave status variable was an indicator of the waves before marital dissolution or waves after dissolution. For example, a respondent from the HRS cohort participated in all the survey waves, and the respondent’s divorce or death of a spouse occurred at Wave 5. In this scenario, Wave 1 to Wave 4 were the waves before marital dissolution, and Wave 5 to Wave 13 were the waves after marital dissolution. In the mean statistics tables, note that the wave where marital dissolution happened was specified. In the regression analysis, the wave where marital dissolution happened was classified as being among the waves after marital dissolution.

**4.2.2.3 Interaction variables.** The importance of having interaction variables is to test if the effect of one independent variable on the dependent variable is different at different values of the other independent variable (Baron & Kenny, 1986). By adding an interaction term, it can easily show differences in effects for the dummy variables. One interaction variable used in this study was financial decision maker\*wave status; it was used to assess whether being the financial decision maker before marital dissolution affects net worth or risky investment proportion after marital dissolution. Other

interaction variables, such as gender\*wave status, age\*wave status, race\*wave status, education\*wave status, and type of marital dissolution\*wave status were added to this study to investigate the effects of differences in gender, age, race, education, and marital dissolution on net worth or risky investment proportion after becoming divorced or widowed.

**4.2.2.4 Demographic characteristics.** For demographic characteristics, this dissertation included the following variables in the analysis: gender, age, race, education, the type of marital dissolution, and the number of children.

#### *Gender*

Gender was a dummy variable labeled as “1” for female and “0” for male. Male respondents were treated as the reference group in the regression analysis.

#### *Age*

Age was defined as a respondent’s age at each interview. In order to investigate financial wealth management behavior at different age groups, the age of a respondent was categorized into four groups: (1) below 50; (2) between 50 and 59; (3) between 60 and 70; and (4) older than 70. In the regression analysis, respondents within the youngest group (below 50) served as the reference category.

#### *Race*

Race/ethnicity of the respondent was categorized into three groups: (1) White/Caucasian; (2) Black/African American; and (3) other. White/Caucasian respondents served as the reference category.

### *Education*

Four groups were created to indicate respondents' educational attainment: (1) less than high school; (2) GED/high school graduate; (3) some college; and (4) college and above. Respondents with the fewest years of education (less than high school) were treated as the reference group in the regression analysis.

### *Types of marital dissolution*

As stated before, the sample of this study comprised previously married respondents who experienced a marital dissolution through a divorce or death of a spouse. Each respondent's marital status was defined by the marital status the respondent noted on the most recent HRS survey completed, and the respondent had to answer "without partnership" (i.e., without a partner). In order to investigate how different types of marital dissolution affected respondents' net worth and risky investment proportions, marital dissolution was divided into two categories. Separation and divorce were combined into one category labeled "divorced." Those respondents who were without a partner because of the death of a spouse were placed in another category labeled "widowed." Respondents who were widowed served as the reference category.

### *Number of children*

The number of children was a discrete variable that indicated the number of living children or stepchildren of the respondent. The value of "0" indicated the respondent had no children, "1" indicated the respondent had one child, etc.

#### **4.2.2.5 Economic characteristics.**

### *Labor force status*

The labor force status of a respondent in the HRS is a categorical variable with seven different options: working full-time, working part-time, unemployed, partly retired, retired, disabled, and not in the labor force. Because some categories had very few cases in this study's sample, the original categories were combined into three concise groups: working full-time and working part-time were combined into (1) employed. The HRS categories of unemployed, not in the labor force, and disabled were combined into (2) unemployed. Partly retired and retired were combined into (3) retired. Respondents who were employed served as the reference category in the regression analysis.

### *Household income*

Total household income was defined as a continuous variable measured by the total income a household received from the last calendar year. The total income was the sum of the respondent's and spouse's earnings, pensions and annuities, income from Social Security benefits, unemployment and workers compensation, other government transfers, household capital income, and all other income. Household income indicated income from the respondent and spouse but did not include other household members.

### *Homeownership*

Homeownership was a dummy variable, taking the value "1" for respondents whose net value of their primary residence was greater than zero and "0" for respondents whose net value of their primary residence was less than or equal to zero.

**4.2.2.6 Health conditions, cognitive ability, and preferences.** Self-reported health conditions, cognitive ability, financial planning horizon, and income risk aversion

were added to this research to control their individual potential effects on household net worth or risky investment proportion.

### *Health conditions*

Health conditions included both physical health conditions and mental health conditions, which focused on memory-related diseases. A respondent's self-reported physical health condition was a categorical variable with values ranging from 1 to 5: (1) excellent; (2) very good; (3) good; (4) fair; and (5) poor. Respondents with excellent health status served as the reference category. A respondent's mental health condition was a dummy variable, assuming a value of "1" if the respondent was diagnosed with a memory-related disease (e.g., Alzheimer's, dementia) and assuming a value of "0" otherwise.

### *Cognitive ability*

Cognitive ability was a continuous variable ranging from 0 to 35. It was calculated by summing total word recall scores and mental status summary scores. The total word recall score was the sum of immediate and delayed word recall scores, as measured by an HRS interviewer. To achieve the scores in the HRS data, the interviewer read out a list of 10 nouns, and the respondent had to repeat the list immediately or after a delay. The mental status summary score was the sum of the scores of several tests: serial 7s, count backward, name two objects, report today's date, and name the president/vice-president. The serial 7s task had the respondent count backward from 100 by sevens for a total of five trials. The count backward task required the respondent to count backward from 20. As the names imply, the last three tasks measured respondents' mental status by

naming two objects, reporting today's date, and naming the current U.S. president and vice-president.

#### *Financial planning horizon*

The HRS data set's "financial planning horizon" variable reflects the respondent's time preferences for financial planning and saving. This question was not asked in Waves 2, 3, 9, and 10. Also, in Wave 6, this question was not asked for respondents who were age 65 or older. In this dissertation, respondents who did not answer this question were labeled as "not asked or unknown." Therefore, this variable was grouped into five categories: (1) not asked/unknown; (2) next year (which combines the HRS responses of "next few months" and "next year"); (3) next few years; (4) next 5–10 years; and (5) longer than 10 years. In the regression analysis, the reference category was respondents within the shortest planning and saving horizon (next year).

#### *Income risk aversion*

Respondents' levels of risk tolerance were derived from four levels of "income gamble" questions asked during HRS data collection: (1) Would you take a job with even chances of doubling income or cutting it in half? (2) Would you take a job with even chances of doubling income or cutting it by a third? (3) Would you take a job with even chances of doubling income or cutting it by 20%? (4) Would you take or stay in the job that guaranteed current income given any of the above alternatives? These four levels correspond to the least to the most risk averse. This variable was available in the HRS data set from Wave 4 to Wave 8 and was skipped for respondents who were 65 or older. As a result, the level of risk tolerance for this study included five categories: (1) not asked/unknown, (2) least risk averse, (3) third-most risk averse, (4) second-most risk

averse, and (5) most risk averse. Respondents who were willing to take substantial risks (least risk averse) served as the reference category.

### **4.3 Method of Analysis**

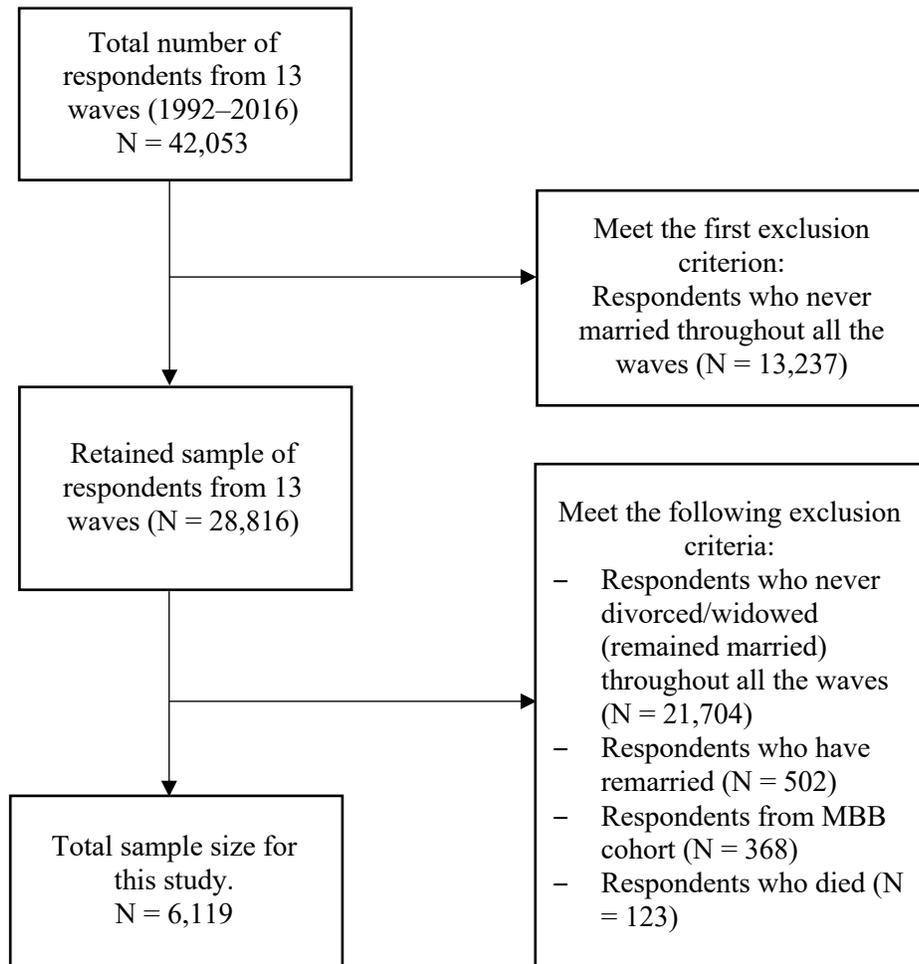
This section provides information about the sample selection criteria, missing value imputation, descriptive analyses, and mixed model analysis.

#### **4.3.1 Sample Selection**

The sample for this study was respondents who had previously reported being married but became divorced or widowed. This sample was chosen in order to observe how a change in marital status attributable to death or divorce may change an individual's financial well-being later in life. Though there are seven cohorts in the HRS, only the HRS, AHEAD, CODA, WB, and EBB cohorts were used for this study to ensure that data was available 10 years before and after a divorce or death of a spouse occurred.

Figure 1 indicates the sample selection process for this study. After exclusions, this study wound up with a sample size of 6,119 respondents from the 13 RAND waves. Here is how the study arrived at that sample size: The total number of respondents sampled in the 2016 RAND HRS was 42,053, which included seven cohorts and 13 waves. This study's sample was selected based on respondents' current marital status reported in each wave. First, this study excluded 13,237 respondents who had never married throughout the waves in which they participated. Second, 21,704 respondents who remain married throughout their participating waves were also excluded. In other words, these were the respondents who were married and never became divorced or widowed throughout their participating waves. Third, respondents who had divorced or widowed but remarried were also excluded. The number of respondents who met this

particular exclusion criterion was 502. Fourth, in order to ensure data were available 10 years before and after marital dissolution, 368 respondents from the MBB cohort were also excluded because they only participated in the survey for a short time. Finally, respondents who died were excluded (N = 123). After these exclusions, the sample that remained for this study was 6,119 respondents.



**Figure 1.** Flow chart of sample selection in this study.

### 4.3.2 Missing Value Imputation

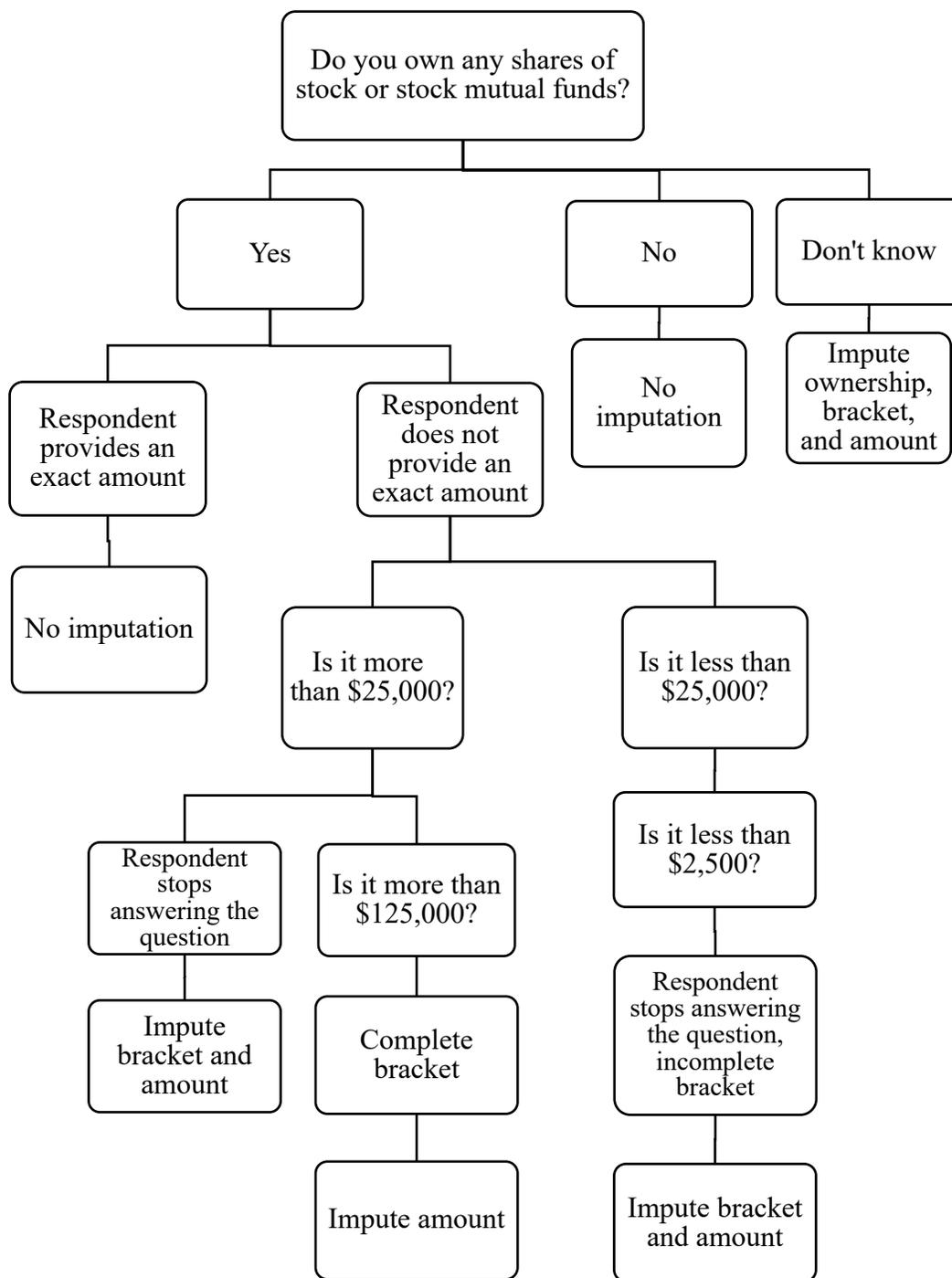
In the HRS study, each respondent was measured at a baseline year and repeatedly interviewed over time. Unbalanced patterns of respondents is a common problem due to the nature of the longitudinal study—sometimes respondents failed to answer questions. Therefore, this dissertation relied on RAND’s imputation. As stated in the RAND HRS Detailed Imputations File, the RAND Corporation uses different imputation strategies to handle missing data. For example, for wealth- and income-related questions, the interviewer first asked if the respondent owned a particular asset. If the answer was yes, then the interviewer asked the specific dollar amount of the asset. If the respondent did not know the specific amount, the interviewer provided a cutoff value and asked the respondent if the amount was more or less than the cutoff value. Based on the respondent’s answer, the interviewer provided a higher or lower cutoff value and asked whether the value was more or less than the new cutoff value. Based on the respondent’s answers, the interviewer narrowed down the range, or bracket, of the asset’s value. Figure 2 provides an example of RAND’s imputation process. Based on different types of missing values, three types of imputation were performed: ownership imputation, bracket imputation, and exact amount imputation.

Ownership was imputed using logistic regression models of respondents whose ownership information was known. Then, the RAND researchers calculated the predicted likelihood of ownership for respondents whose ownership information was unknown. Finally, they chose a random number from a uniform distribution and compared the number with the predicted probability. They imputed ownership if the predicted probability was greater than the random number.

Similarly, for bracket imputation, the RAND researchers calculated the predicted likelihood of being in each bracket using an ordered logit model based on information from respondents with non-missing brackets. Then, the missing bracket was imputed after comparing the number they picked from a uniform distribution with the cumulative distribution of bracket probabilities.

For exact amount imputation, RAND used a nearest-neighbor approach for respondents with closed brackets and a Tobit approach for respondents with open-ended brackets. Specifically, for the nearest-neighbor approach, they first ran a linear regression model of the reported continuous values (respondents who reported an exact amount of their asset). Then, they imputed missing observations using the reported value from their nearest neighbor. For example, Respondent A and Respondent B were in the same bracket. Respondent A had a reported value, and Respondent B did not. The nearest neighbor of Respondent B is Respondent A. The imputed value for Respondent B is the exact reported value from the nearest neighbor, Respondent A. For respondents with open-ended brackets (e.g., \$25,000 or more), a lognormal censored regression model (Tobit approach) was performed based on the sample of non-missing observations. Then, RAND calculated the predicted values for missing observations. A missing value was replaced by a continuous value from the donor pool (non-missing observations) based on the predicted score of regression analysis.

For each regression technique, the set of covariates usually included 10 components (e.g., employment status, education, health status, age, race, marital status, occupation class), but the set was slightly different across waves.



*Figure 2. RAND imputation process.*

### 4.3.3 Descriptive Analyses and Mixed Model Analysis

Descriptive analyses were conducted to show the sample characteristics among different waves and cohorts. Throughout Chapter 5, several tables report on the descriptive analyses. Table 2 indicates the number of respondents by cohort. Table 3 exhibits descriptive statistics for study variables at the baseline year by cohort. Table 4 shows overall descriptive statistics for those respondents who were a financial decision maker before becoming divorced/widowed. Table 5, Table 6, and Table 7 display summary statistics of the subjects' net worth, classified by cohort, wave, and change (or no change) in a person's financial decision maker status during and after marriage, respectively. Table 8, Table 9, and Table 10 present summary statistics of the proportion of risky assets in financial wealth, grouped by cohort, wave, and change (or no change) in a person's financial decision maker status during and after marriage, respectively. Table 11 shows the mean statistics of dependent variables 10 years before and after the marital dissolution by gender, age, race, and education.

A linear mixed model, which is one of the techniques of modeling longitudinal data, was also produced to examine the factors affecting a person's net worth and the proportion of risky assets in financial wealth, especially the effect of being the financial decision maker within the household before marital dissolution. Household net worth served as the dependent variable in the first regression model (Table 12). The proportion of risky assets in financial wealth served as the dependent variable in the second regression analysis (Table 13).

In order to see the impact of demographic variables, each model included four steps. In Step 1, the two dependent variables were regressed against the primary independent variable (the financial decision maker variable):

$$DV_{i,t} = \alpha + \beta_1 FINR\_Before_i + \mu_{i,t}$$

In Step 2, the two dependent variables were regressed against the financial decision maker variable, wave status variable, and an interaction between these two variables:

$$DV_{i,t} = \alpha + \beta_1 FINR\_Before_i + \beta_2 Wave\_Status_{i,t} + \beta_3 FINR\_Before_i * Wave\_Status_{i,t} + \mu_{i,t}$$

In Step 3, the two dependent variables were regressed against the (a) financial decision maker variable, (b) wave status variable, (c) demographic variables, and (d) interacted variables created by multiplying the financial decision maker variable and each demographic variable by the indicator for wave status:

$$DV_{i,t} = \alpha + \beta_1 FINR\_Before_i + \beta_2 Wave\_Status_{i,t} + \beta_3 Demographic_i + \beta_4 FINR\_Before_i * Wave\_Status_{i,t} + \beta_5 Demographic_i * Wave\_Status_{i,t} + \mu_{i,t}$$

In Step 4, the full model included the (a) financial decision maker variable, (b) wave status variable, (c) demographic variables, (d) interacted variables created by multiplying the financial decision maker variable and each demographic variable by the indicator for wave status, and (e) other control variables ( $X_{i,t}$ ). This full model sought to understand if there are changes in the effect of being the household financial decision maker—specifically, whether the effect disappeared or remained robust after adding additional control variables.

$$DV_{i,t} = \alpha + \beta_1 FINR\_Before_i + \beta_2 Wave\_Status_{i,t} + \beta_3 Demographic_i + \beta_4 FINR\_Before_i * Wave\_Status_{i,t} + \beta_5 Demographic_i * Wave\_Status_{i,t} + \theta X_{i,t} + \mu_{i,t}$$

## Chapter 5. Results

### 5.1 Sample Characteristics

#### 5.1.1 Sample Characteristics of Respondents in Each Cohort

Table 2 shows the number of respondents by each cohort. The overwhelming majority (79.9%) of the respondents were from the HRS cohort (born between 1931 and 1941) and the AHEAD cohort (born before 1924). About half (48.0%) of the respondents were from the HRS cohort, and more than a third (31.9%) were from AHEAD. The number of respondents from other cohorts were 537 for CODA (born between 1924 and 1930), 334 for WB (born between 1942 and 1947), and 359 for EBB (born between 1948 and 1953).

**Table 2**  
**Number of Respondents by Cohorts**

Cohort	Number of respondents	Percent
AHEAD: Cohort = 0,1	1,954	31.9
CODA: Cohort = 2	537	8.8
HRS: Cohort = 3	2,935	48.0
WB: Cohort = 4	334	5.5
EBB: Cohort = 5	359	5.9
Total	6,119	100

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

Table 3 shows the descriptive statistics for study variables at the baseline year for the five cohorts. Overall, the overwhelming majority (68.8%) of the respondents were female, the rest (31.2%) of the respondents were male. Except for the two younger cohorts (WB and EBB), each cohort had 2 times more female respondents than male respondents, including the initial HRS cohort (31.1% male and 68.9% female), AHEAD (29.1% male and 70.9% female), and CODA (30.5% male and 69.5% female). The WB

cohort (35.6% male and 64.4% female) and EBB cohort (40.1% male and 59.9% female) had almost 1.5 times more female respondents than male respondents.

When the total sample was assessed, the mean age of respondents' first interview was about 61 years old, with a standard deviation of 10.7 years. The mean age of the respondents was 54.6 for the initial HRS cohort, 71.9 for the AHEAD cohort, 70.1 for CODA, 51.6 for WB, and 51.4 for EBB. The AHEAD cohort had the highest average age, and the EBB cohort had the lowest. The standard deviation of age ranged from 4.6 (CODA) to 6.7 (AHEAD) years. Overall, only 10.8% of the respondents were younger than 50 years old. The youngest age group (below 50) was biggest in the WB (23.1%) and EBB (23.4%) cohorts and was smallest in the AHEAD (1.4%) cohort. On average, about 40% of the respondents fell in the range of 50 to 59 years old in their baseline years. More than half (63.3%) of the respondents from the HRS cohort were from age 50 to 59 at their first interview. More than 70% of the respondents from the WB (74.9%) and EBB (74.7%) cohorts were between ages 50 and 59 at their baseline years. For the age category of 60 to 70 years old, about 21.9% of the overall sample fell into this category. Nearly one third (27.8%) of the respondents were older than 70 at their baseline years, and most of the respondents from the AHEAD (67.5%) and CODA (67.0%) cohorts fell into this age group.

The overwhelming majority of respondents were White, with the overall percentage of White respondents at 81.9%. The percentages were higher in AHEAD (87.7%) and CODA (88.1%). In other words, the HRS cohort (79.7%), WB (78.7%), and EBB (62.7%) had proportions of White respondents that were lower than the sample's overall percentage of Whites. The overall percentage of Black respondents was 13.7%.

The percentages were lower in AHEAD (10.2%) and CODA (6.9%). The other three cohorts had proportions of Black respondents that were higher than the sample's overall percentage, with 15.9% of the initial HRS cohort identifying as Black, 15.9% of WB, and 23.4% of EBB. The overall percentage of respondents who identified as other races was 4.3%. The EBB cohort had more than 3 times (13.9%) more respondents from other races than the overall sample. In general, the younger cohorts, such as WB and EBB, included more Black respondents and respondents from other races than the older cohorts.

In terms of education, an overall average of 28.9% of respondents had not completed high school, 37.8% of them obtained a high school degree, 19.3% of them had some college education, and 14.1% of them had a college degree or higher. The percentage of respondents who stopped short of earning a high school degree was 35.8% in AHEAD, 28.1% in HRS, 23.8% in CODA, 19.8% in WB, and 13.1% in EBB. The proportion of respondents who dropped out of high school declined from 1992 to 2004. (As explained in Table 1, 2004 is the baseline year for the most recently added cohort used in this study, the EBB cohort.) The percentage of respondents who completed high school were almost the same among the five cohorts, with the highest in HRS (39.6%) and the lowest in EBB (34.0%). The share of respondents who had some college education showed a steady increase from 1992 to 2004. The percentage was 17.3% in AHEAD, 18.9% in HRS, 19.2% in CODA, 22.8% in WB, and 30.4% in EBB. Similarly, the proportion of respondents who obtained a 4-year college degree or higher showed an increasing trend from 1992 to 2004. The percentages were 11.9% in AHEAD, 13.3% in HRS, 17.7% in CODA, 18.9% in WB, and 22.6% in EBB. The EBB cohort had higher

**Table 3**  
**Descriptive Statistics for Study Variables at the Baseline Year**

<b>Sample Characteristics, N (%)</b>	<b>All cohorts N = 6,119</b>	<b>HRS n = 2,935 Baseline year: 1992</b>	<b>AHEAD n = 1,954 Baseline year: 1992</b>	<b>CODA n = 537 Baseline year: 1998</b>	<b>WB n = 334 Baseline year: 1998</b>	<b>EBB n = 359 Baseline year: 2004</b>
<b>Gender</b>						
Male	1,908 (31.2)	912 (31.1)	569 (29.1)	164 (30.5)	119 (35.6)	144 (40.1)
Female	4,211 (68.8)	2,023 (68.9)	1,385 (70.9)	373 (69.5)	215 (64.4)	215 (59.9)
<b>Age, Mean (SD)</b>						
	61.1 (10.7)	54.6 (6.4)	71.9 (6.7)	70.1 (4.6)	51.6 (5.3)	51.4 (5.2)
<b>Age group</b>						
Below 50	658 (10.8)	458 (15.6)	27 (1.4)	12 (2.2)	77 (23.1)	84 (23.4)
50–59	2,422 (39.6)	1,857 (63.3)	45 (2.3)	2 (0.4)	250 (74.9)	268 (74.7)
60–70	1,338 (21.9)	602 (20.5)	564 (28.9)	163 (30.4)	4 (1.2)	5 (1.4)
Above 70	1,701 (27.8)	18 (0.6)	1,318 (67.5)	360 (67.0)	3 (0.9)	2 (0.6)
<b>Race</b>						
White/Caucasian	5,014 (81.9)	2,339 (79.7)	1,714 (87.7)	473 (88.1)	263 (78.7)	225 (62.7)
Black/African American	840 (13.7)	466 (15.9)	200 (10.2)	37 (6.9)	53 (15.9)	84 (23.4)
Other	265 (4.3)	130 (4.4)	40 (2.1)	27 (5.0)	18 (5.4)	50 (13.9)
<b>Education</b>						
< high school degree	1,767 (28.9)	826 (28.1)	700 (35.8)	128 (23.8)	66 (19.8)	47 (13.1)
High school degree/GED	2,310 (37.8)	1,163 (39.6)	685 (35.1)	211 (39.3)	129 (38.6)	122 (34.0)
Some college	1,180 (19.3)	555 (18.9)	337 (17.3)	103 (19.2)	76 (22.8)	109 (30.4)
College and above	862 (14.1)	391 (13.3)	232 (11.9)	95 (17.7)	63 (18.9)	81 (22.6)
<b>Labor force status</b>						
Employed	2,340 (38.2)	1,748 (59.6)	62 (3.2)	56 (10.4)	241 (72.2)	233 (64.9)
Unemployed	1,136 (18.5)	588 (20.1)	325 (16.6)	103 (19.1)	56 (16.8)	64 (28.0)
Retired	2,643 (43.2)	599 (20.4)	1,567 (80.2)	378 (70.4)	37 (11.1)	62 (17.3)

<b>Health condition</b>						
Excellent	1,043 (17.1)	627 (21.3)	224 (11.5)	79 (14.7)	52 (15.6)	61 (17.0)
Very good	1,651 (27.0)	827 (28.2)	469 (24.0)	163 (30.4)	105 (31.4)	87 (24.2)
Good	1,911 (31.2)	878 (29.9)	640 (32.8)	187 (34.8)	101 (30.2)	105 (29.3)
Fair	1,072 (17.5)	422 (14.4)	439 (22.5)	82 (15.3)	53 (15.9)	76 (21.2)
Poor	442 (7.2)	181 (6.2)	182 (9.3)	26 (4.8)	23 (6.9)	30 (8.4)
<b>Mental health</b>						
No memory problems	5,980 (97.7)	2,902 (98.9)	1,862 (95.3)	533 (99.3)	331 (99.1)	352 (98.1)
Report memory problems	139 (2.3)	33 (1.1)	92 (4.7)	4 (0.7)	3 (0.9)	7 (2.0)
<b>Income, Mean (SD)</b>	\$45,654.9 (154,319.8)	\$45,698.3 (46,766.2)	\$28,393.6 (23,529.9)	\$44,069.9 (43,863.5)	\$117,718.5 (618,372.0)	\$74,576.6 (141,973.9)
<b>Financial planning horizon</b>						
Not asked/unknown	1,509 (24.7)	160 (5.5)	1,231 (63.0)	45 (8.4)	19 (5.7)	54 (15.0)
Next year	1,565 (25.6)	931 (31.7)	313 (16.0)	143 (26.6)	77 (23.1)	101 (28.1)
Next few years	1,438 (23.5)	919 (31.3)	256 (13.1)	146 (27.3)	61 (18.3)	56 (15.6)
Next 5–10 years	1,200 (19.6)	697 (23.8)	132 (6.8)	151 (28.1)	126 (37.7)	94 (26.2)
Longer than 10 years	407 (6.7)	228 (7.8)	22 (1.1)	52 (9.7)	51 (15.3)	54 (15.0)
<b>Income risk aversion</b>						
Not asked/unknown	2,307 (37.7)	247 (8.4)	184 (94.3)	91 (17.0)	32 (9.6)	94 (26.2)
Least risk averse	468 (7.7)	327 (11.1)	10 (0.5)	47 (8.8)	51 (15.3)	33 (9.2)
Third-most risk averse	410 (6.7)	307 (10.5)	8 (0.4)	48 (8.9)	23 (6.9)	24 (6.7)
Second-most risk averse	497 (8.1)	359 (12.2)	4 (0.2)	52 (9.7)	45 (13.5)	37 (10.3)
Most risk averse	2,437 (39.8)	1,695 (57.8)	89 (4.6)	299 (55.7)	183 (54.8)	171 (47.6)
<b>Homeownership</b>						
No	1,932 (31.6)	494 (16.8)	1,150 (58.9)	69 (12.9)	61 (18.3)	158 (44.0)
Yes	4,187 (68.4)	2,441 (83.2)	804 (41.2)	468 (87.2)	273 (81.7)	201 (56.0)
<b>Number of children, Mean (SD)</b>	3.5 (2.3)	3.7 (2.3)	3.1 (2.3)	3.7 (2.5)	3.2 (1.9)	3.1 (1.9)
<b>Cognitive ability score, Mean (SD)</b>	21.2 (5.9)	21.7 (5.8)	19.5 (5.7)	22.6 (5.0)	23.6 (5.9)	21.9 (7.2)

Note. Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

educational attainment than the other cohorts, with the highest proportion of respondents holding college degrees or above and the lowest proportion categorized as dropping out of high school.

In regard to labor force status, more than one third (38.2%) of the respondents were working full-time or part-time, 18.5% of the respondents were unemployed, and less than half (43.2%) of the respondents were retired. Most of the retirees were from the AHEAD (80.2%) and CODA (70.4%) cohorts. All the cohorts except for AHEAD (3.2%) and CODA (10.4%) had proportions of employed respondents that were higher than the sample's overall percentage of employed respondents. The percentages were 59.6% in HRS, 72.2% in WB, and 64.9% in EBB.

In terms of self-reported health conditions, a large proportion (75.3%) of respondents stated that their health condition was good, very good, or excellent. The HRS and WB cohorts showed better health conditions than other cohorts. The HRS cohort had more (21.3%) respondents reporting to be in excellent health than other cohorts, while the WB cohort had more (31.4%) respondents reporting to be in very good health condition than other cohorts. Nearly one third (31.2%) of the overall respondents reported having good health. The percentage in this category was almost the same across cohorts, with the highest in CODA (34.8%) and the lowest in EBB (29.3%). Around one quarter of the overall sample reported being in fair (17.5%) or poor (7.2%) health. The AHEAD cohort was more likely to report ill health, with the highest proportions of respondents with fair (22.5%) and poor (9.3%) health statuses, higher than the sample's overall percentages of respondents who reported having fair (17.5%) or poor (7.2%) health. Interestingly, the youngest cohort (EBB) did not have the largest population of healthy respondents, as

might be expected. As stated earlier in this paragraph, the HRS and WB cohorts had the highest proportions of respondents reporting excellent and very good health, respectively. With regard to mental health conditions, only 2.3% of the overall sample of respondents were diagnosed with a memory-related disease.

The distribution of total household income is also included in Table 3. In the total sample, the mean income was \$45,654.9, with a standard deviation of \$154,319.8. The mean incomes among the initial HRS cohort (\$45,698.3), WB (\$117,718.5), and EBB (\$141,973.9) were higher than the overall average. The WB cohort had the highest mean household income among the five cohorts.

With regard to respondents' financial planning horizon, around one quarter (25.6%) of the overall respondents said the time horizon for their investments is 1 year or less. The percentage was the highest in HRS (31.7%) and the lowest in AHEAD (16.0%). Respondents who said the "next few years" was their time horizon accounted for 23.5% of the total respondents. The percentage remained the highest in HRS (31.3%) and the lowest in AHEAD (13.1%). Respondents in the 5–10 years category made up 19.6% of the overall sample. This percentage was the highest in WB (37.7%) and the lowest in AHEAD (6.8%). Only 6.7% of the overall respondents claimed that their financial planning horizon was more than 10 years, which was the smallest percentage among all time-horizon categories. Respondents in the WB and EBB cohorts were more likely to have longer financial planning horizons compared to other cohorts.

In terms of the level of risk tolerance, nearly 40% of the respondents were willing to take only the lowest level of risk for investment, followed by those who were the second-most risk averse (8.1%), third-most risk averse (6.7%), and in the highest level of

risk (7.7%). When comparing cohorts, younger cohorts, such as WB, were more likely to take greater risks than older cohorts, such as CODA and HRS.

More than two thirds (68.4%) of the respondents were homeowners. The percentages of respondents who owned homes were higher than 80% in CODA (87.2%), HRS (83.2%), and WB (81.7%). The number of homeowners in AHEAD (41.2%) and EBB (56.0%) were less than the overall average. The oldest and the youngest cohorts may have more renters than other cohorts.

The average number of children for each respondent was three. Respondents in the AHEAD, WB, and EBB cohorts reported having an average of three children. The averages for the other two cohorts (CODA and HRS) were slightly higher, about four children. Overall, older cohorts had more children than younger cohorts did.

Across the five cohorts, the mean cognitive ability score ranged from 19.5 (AHEAD) to 23.6 (WB), with a standard deviation of 5.9 for the overall mean score of 21.2. All cohorts except AHEAD (19.5) had cognitive ability scores higher than the overall average (i.e., 22.6 for CODA, 21.7 for HRS, 23.6 for WB, and 21.9 for EBB).

### **5.1.2 Sample Characteristics of the Financial Decision Maker**

Table 4 shows the sample characteristics of respondents who were financial decision makers before becoming divorced or widowed. In general, the percentage of respondents who were financial decision makers during marriage increased with respondents' age and level of education. In addition, working for full- or part-time, rating health condition as good or better, being a homeowner, having less children, and having higher cognitive scores were all more likely to be characteristics associated with respondents who were household financial decision makers during marriage.

**Table 4**  
**Sample Characteristics of Respondents Who Were Financial Decision Makers**  
**Before Becoming Divorced/Widowed**

	Financial decision maker before divorced/widowed				Total
	All cohorts: N = 6,119				
	Yes		No		
	N	%	N	%	
<b>Gender</b>					
Male	1,234	64.7	674	35.3	1,908
Female	2,029	48.2	2,182	51.8	4,211
<b>Age, Mean (SD)</b>	61.9 (10.5)		60.3 (11.0)		61.1 (10.7)
<b>Age group</b>					
Below 50	260	39.5	398	60.5	658
50–59	1,351	55.8	1,071	44.2	2,422
60–70	665	49.7	673	50.3	1,338
Above 70	987	58.0	714	42.0	1,701
<b>Race</b>					
White/Caucasian	2,657	53.0	2,357	47.0	5,014
Black/African American	475	56.5	365	43.5	840
Other	131	49.4	134	50.6	265
<b>Education</b>					
< high school degree	906	51.3	861	48.7	1,767
High school degree/GED	1,219	52.8	1,091	47.2	2,310
Some college	652	55.3	528	44.7	1,180
College and above	486	56.4	376	43.6	862
<b>Labor force status</b>					
Employed	1,314	56.2	1,026	43.8	2,340
Unemployed	507	44.6	629	55.4	1,136
Retired	1,442	54.6	1,201	45.4	2,643
<b>Health condition</b>					
Excellent	565	54.2	478	45.8	1,043
Very good	869	52.6	782	47.4	1,651
Good	1,011	52.9	900	47.1	1,911
Fair	509	47.5	563	52.5	1,072
Poor	209	47.3	233	52.7	442
<b>Mental health</b>					
No memory problems	3,215	53.8	2,765	46.2	5,980
Report memory problems	48	34.5	91	65.5	139
<b>Financial planning horizon</b>					
Not asked/unknown	775	51.4	734	48.6	1,509
Next year	850	54.3	715	45.7	1,565
Next few years	783	54.5	655	45.5	1,438
Next 5–10 years	648	54.0	552	46.0	1,200

Longer than 10 years	207	50.9	200	49.1	407
<b>Income risk aversion</b>					
Not asked/ unknown	1,177	51.0	1,130	49.0%	2,307
Least risk averse	261	55.8	207	44.2	468
Third-most risk averse	224	54.6	186	45.4	410
Second-most risk averse	281	56.5	216	43.5	497
Most risk averse	1,320	54.2	1,117	45.8	2,437
<b>Homeownership</b>					
No	1,019	52.7	913	47.3	1,932
Yes	2,244	53.6	1,943	46.4	4,187
<b>Number of children, Mean (SD)</b>	3.4 (2.3)		3.6 (2.3)		3.0 (2.3)
<b>Cognitive ability score, Mean (SD)</b>	21.6 (5.4)		20.7 (6.5)		21 (5.9)

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

Overall, the mean age of financial decision makers was around 62 years old. Nearly two thirds (64.7%) of male respondents were financial decision makers while less than half (48.2%) of the female respondents stated that they were financial decision makers before becoming divorced or widowed. The percentage of financial decision makers increased with respondents' education. For respondents who did not complete high school, 51.3% of them claimed to be financial decision makers. The percentage was 52.8% for respondents who had high school degrees, 55.3% for respondents who had some college education, and 56.4% for respondents who had earned a college degree or higher. In terms of labor force status, the percentage of financial decision makers was the highest for respondents who were working for others (56.2%), followed by retired respondents (54.6%) and unemployed respondents (44.6%). The percentage of financial decision makers was higher for respondents with excellent health (54.2%) than respondents with poor health (47.3%). For respondents who were homeowners, more than half (53.6%) stated they were financial decision makers. On average, respondents

who were financial decision makers had fewer children than respondents who were not (3.4 vs. 3.6). The cognitive score was nearly one point higher for respondents who were financial decision makers than respondents who were not (21.6 vs. 20.7).

## **5.2 Mean Statistics**

### **5.2.1 Mean Statistics of Net Worth**

Table 5 shows the mean statistics for the net worth of respondents, by cohort, for the full sample as well as at three stages: before divorced/widowed, the year of divorced/widowed, and after divorced/widowed. In order to easily interpret the results in this narrative text, before divorced/widowed is called Stage 1, the year of divorced/widowed is called Stage 2, and after divorced/widowed is called Stage 3. The overall mean net worth of the full sample was \$354,335.7, along with a minimum net worth of -\$3,624,527.0 and a maximum net worth of \$43,480,000.0. Of the five cohorts, the CODA cohort had the largest full-sample mean net worth, which was \$468,359.1. The EBB had the smallest full-sample mean net worth: \$262,835.4. AHEAD (\$381,090.2) and WB (\$395,455.2) had similar amounts of mean net worth. Overall, the mean net worth decreased from Stage 1 (\$396,594.2) to Stage 2 (\$336,272.9), and it continued to decrease at Stage 3 (\$305,538.7). Compared with the other four cohorts, AHEAD had the largest net worth gap of \$187,009.1 (\$497,290.3 - \$310,281.2) from Stage 1 to Stage 3. Notably, from Stage 1 to Stage 2, the WB and EBB cohorts shared the same decreasing pattern that was exhibited by the full-sample mean. However, unlike the overall full-sample net worth mean, which continued its decreasing trend to Stage 3, the Stage 3 mean net worth values for WB and EBB were slightly higher than the values at Stage 2. For example, the WB mean net worth was \$362,568.2 at Stage 2 and was

\$375,629.6 at Stage 3. Moreover, the EBB mean net worth was \$10,382.1 (\$258,558.6 - \$248,176.5) larger at Stage 3 than at Stage 2.

**Table 5**  
**Net Worth of Respondents, by Cohort**

Cohort	Full sample				Before divorced/widowed			
	Mean	SD	Min	Max	Mean	SD	Min	Max
<b>Overall</b>	354,335.7	890,352.4	(3,624,527.0)	43,480,000.0	396,594.2	984,618.7	(3,624,527.0)	33,060,000.0
<b>AHEAD</b>	381,090.2	856,512.8	(213,000.0)	21,691,727.4	497,290.3	983,358.7	(213,000.0)	21,186,929.1
<b>CODA</b>	468,359.1	868,345.5	(846,850.0)	21,762,000.0	505,917.8	876,766.9	(846,850.0)	16,278,050.0
<b>HRS</b>	328,896.9	869,318.4	(843,500.0)	33,060,000.0	360,780.5	999,535.2	(499,000.0)	33,060,000.0
<b>WB</b>	395,455.2	1,269,116.6	(3,624,527.0)	43,480,000.0	413,416.7	1,146,848.8	(3,624,527.0)	18,910,000.0
<b>EBB</b>	262,835.4	708,651.8	(2,245,500.0)	10,505,000.0	270,702.8	593,284.1	(2,245,500.0)	8,260,000.0

*(Continued)*

Cohort	At divorced/widowed				After divorced/widowed			
	Mean	SD	Min	Max	Mean	SD	Min	Max
<b>Overall</b>	336,272.9	877,918.5	(1,000,000.0)	21,762,000.0	305,538.7	753,949.6	(776,561.9)	43,480,000.0
<b>AHEAD</b>	353,862.5	937,547.7	(48,644.5)	17,228,146.1	310,281.2	721,470.6	(132,493.8)	21,691,727.4
<b>CODA</b>	432,574.3	1,066,109.4	(193,000.0)	21,762,000.0	415,063.9	757,639.1	(135,800.0)	11,052,956.3
<b>HRS</b>	315,138.8	819,950.9	(843,500.0)	18,883,690.5	285,319.8	643,596.9	(776,561.9)	14,078,000.0
<b>WB</b>	362,568.2	852,881.5	(99,624.6)	9,540,000.0	375,629.6	1,563,643.9	(155,750.6)	43,480,000.0
<b>EBB</b>	248,176.5	707,507.6	(1,000,000.0)	6,595,000.0	258,558.6	861,518.6	(129,970.0)	10,505,000.0

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

Table 6 summarizes the data concerning respondents' net worth by waves. There was an increasing pattern of the respondents' mean net worth from Wave 1 to Wave 9, with \$207,685.4 in Wave 1, \$329,048.9 in Wave 5, and \$432,286.7 in Wave 9. The mean net worth peaked at Wave 9 and then decreased in the following four waves. For example, the mean net worth was \$371,577.5 in Wave 10, \$366,016.4 in Wave 11, and \$379,402.3 in Wave 13. The largest standard deviation of net worth occurred at Wave 8 (\$1,185,714.2), and the largest maximum net worth was achieved at Wave 11 (\$43,480,000.0). In addition, Wave 12 had the smallest minimum net worth of -\$2,245,500.0.

**Table 6**  
**Net Worth of Respondents, by Waves**

Wave	Full sample			
	Mean	SD	Min	Max
<b>Overall</b>	354,335.7	890,352.4	(3,624,527.0)	43,480,000.0
<b>1</b>	207,685.4	444,517.2	(259,000.0)	6,336,472.2
<b>2</b>	242,300.0	576,462.7	(200,000.0)	8,804,247.8
<b>4</b>	308,729.0	774,592.9	(3,624,527.0)	27,054,246.6
<b>5</b>	329,048.9	708,020.4	(147,998.0)	17,228,146.1
<b>6</b>	334,415.7	724,911.7	(265,995.0)	28,052,512.0
<b>7</b>	381,991.5	969,913.2	(2,245,500.0)	31,481,000.0
<b>8</b>	441,993.3	1,185,714.2	(1,728,200.0)	33,060,000.0
<b>9</b>	432,286.7	1,043,561.4	(461,700.0)	18,399,000.0
<b>10</b>	371,577.5	879,776.0	(843,500.0)	21,186,929.1
<b>11</b>	366,016.4	1,056,059.3	(495,000.0)	43,480,000.0
<b>12</b>	372,444.6	904,011.3	(776,561.9)	18,470,506.2
<b>13</b>	379,402.3	928,662.4	(449,000.0)	21,691,727.4

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

Table 7 shows the overall mean statistics of net worth by respondents who were financial decision makers before becoming divorced or widowed and for those who were not. It is worth noting that, in Table 7, the label "financial decision maker" represents respondents who remained as a financial decision maker before and after marriage; the

label “non-financial decision maker” represents respondents who were not a financial decision maker during marriage but became one after marital dissolution. Overall, the non-financial decision makers (\$345,690.5) had a lower mean net worth than respondents who were financial decision makers (\$364,263.5). Similar changing patterns also can be found in all five cohorts. For example, in the AHEAD cohort, non-financial decision makers had \$16,021.2 (\$389,771.0 - 373,749.8) less net worth than financial decision makers. The CODA cohort had the highest mean net worth for both non-financial decision makers (\$447,467.4) and financial decision makers (\$492,299.7), when compared to the other four cohorts. On the other hand, the EBB cohort had the lowest mean net worth for both non-financial decision makers (\$265,550.2) and financial decision makers (\$259,389.4).

**Table 7**  
**Net Worth of Respondents, by Financial Decision Maker Status**

Cohort	Financial decision maker			
	Mean	SD	Min	Max
<b>Overall</b>	364,263.5	878,688.2	(3,624,527.0)	31,660,000.0
<b>AHEAD</b>	389,771.0	802,411.0	(121,184.2)	21,098,850.0
<b>CODA</b>	492,299.7	1,026,938.3	(380,000.0)	21,762,000.0
<b>HRS</b>	337,204.7	872,104.9	(776,561.9)	31,660,000.0
<b>WB</b>	413,733.2	1,087,331.9	(3,624,527.0)	18,910,000.0
<b>EBB</b>	259,389.4	587,656.1	(2,245,500.0)	6,595,000.0

*(Continued)*

Cohort	Non-financial decision maker			
	Mean	SD	Min	Max
<b>Overall</b>	345,690.5	900,314.1	(3,624,527.0)	43,480,000.0
<b>AHEAD</b>	373,749.8	899,726.6	(213,000.0)	21,691,727.4
<b>CODA</b>	447,467.4	700,803.9	(846,850.0)	9,182,968.7
<b>HRS</b>	321,544.1	866,806.8	(843,500.0)	33,060,000.0
<b>WB</b>	379,243.6	1,411,044.7	(3,624,527.0)	43,480,000.0
<b>EBB</b>	265,550.2	791,296.3	(1,000,000.0)	10,505,000.0

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

### 5.2.2 Mean Statistics of Risky Asset Proportion

Table 8 reports the mean statistics of respondents' risky asset proportion, by cohort, for the full sample as well as at three stages: before divorced/widowed, the year of divorced/widowed, and after divorced/widowed. In order to easily interpret the results in this narrative, before divorced/widowed is called Stage 1, the year of divorced/widowed is called Stage 2, and after divorced/widowed is called Stage 3. The full sample's mean risky asset proportion percentage was 12.4%. The AHEAD cohort had the highest full-sample risky asset proportion percentage of 16.1%, followed by 14.9% for CODA, 11.1% for WB, and 10.8% for HRS. The EBB cohort had the lowest percentage of 7.2%. Respondents' overall Stage 1 (13.0%) mean risky asset proportion percentage was higher than that of Stage 2 (12.1%) and Stage 3 (11.5%). Notably, the overall sample had a decreasing pattern of risky asset proportions from Stage 1 to Stage 3. The risky asset proportion of the CODA and HRS cohorts followed a similar decreasing trend to the one exhibited by the overall sample. For example, the CODA cohort had a risky asset proportion percentage of 15.6% in Stage 1, 15.2% in Stage 2, and 13.7% in Stage 3. The HRS cohort had a lower risky asset proportion percentage than CODA but still showed a similar trend: 11.7% in Stage 1, 10.4% in Stage 2, and 9.3% in Stage 3. The other three cohorts (AHEAD, WB, and EBB) had risky asset proportions that decreased from Stage 1 to Stage 2, which shared the decreasing pattern of the overall sample. For example, AHEAD had a 0.5% (16.1% - 15.6%) drop from Stage 1 to Stage 2, WB had a 2.3% (11.9% - 9.6%) drop, and EBB had a 3.4% (8.6% - 5.2%) drop. However, these three cohorts were unlike the overall sample from Stage 2 to Stage 3. The overall sample's risky asset proportion percentage continued to decrease, but the

AHEAD, WB, and EBB cohorts' Stage 3 risky asset proportions increased slightly, by less than 1% compared to their percentages at Stage 2. There was a 0.5% (16.1% - 15.6%) increase for the AHEAD cohort, a 0.7% (10.3% - 9.6%) increase for WB, and a 0.8% increase (6.0% - 5.2%) for EBB.

**Table 8**  
**Risky Asset Proportion of Respondents, by Cohort**

Cohort	Full sample				Before divorced/widowed			
	Mean	SD	Min	Max	Mean	SD	Min	Max
<b>Overall</b>	12.4%	23.4%	0.0%	100.0%	13.0%	22.8%	0.0%	100.0%
<b>AHEAD</b>	16.1%	27.4%	0.0%	100.0%	16.1%	26.2%	0.0%	100.0%
<b>CODA</b>	14.9%	24.6%	0.0%	100.0%	15.6%	24.3%	0.0%	100.0%
<b>HRS</b>	10.8%	21.2%	0.0%	100.0%	11.7%	21.1%	0.0%	100.0%
<b>WB</b>	11.1%	21.9%	0.0%	100.0%	11.9%	21.7%	0.0%	100.0%
<b>EBB</b>	7.2%	18.5%	0.0%	100.0%	8.6%	20.0%	0.0%	100.0%

*(Continued)*

Cohort	At divorced/widowed				After divorced/widowed			
	Mean	SD	Min	Max	Mean	SD	Min	Max
<b>Overall</b>	12.1%	24.3%	0.0%	100.0%	11.5%	23.9%	0.0%	100.0%
<b>AHEAD</b>	15.6%	27.8%	0.0%	100.0%	16.1%	28.8%	0.0%	100.0%
<b>CODA</b>	15.2%	26.2%	0.0%	100.0%	13.7%	24.3%	0.0%	100.0%
<b>HRS</b>	10.4%	22.2%	0.0%	100.0%	9.3%	21.0%	0.0%	100.0%
<b>WB</b>	9.6%	21.4%	0.0%	100.0%	10.3%	22.3%	0.0%	100.0%
<b>EBB</b>	5.2%	16.1%	0.0%	100.0%	6.0%	16.9%	0.0%	100.0%

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

Table 9 summarizes the risky asset proportions of respondents, grouping them by waves. Wave 1 and Wave 13 both had the lowest mean risky asset proportion percentage (10.6%) among all the 13 waves. Wave 5 and Wave 6 had the highest and the second-highest risky asset proportion percentages of 14.5% and 13.9%, respectively. The percentages of risky asset proportion steadily increased from Wave 1 to Wave 5, reaching 11.3% in Wave 2, 12.7% in Wave 3, and 13.6% in Wave 4. The percentages peaked at

14.5% in Wave 5 and steadily decreased in the following eight waves, declining from 13.9% in Wave 6 to 10.6% in Wave 13.

**Table 9**  
**Risky Asset Proportion of Respondents, by Waves**

Wave	Full sample			
	Mean	SD	Min	Max
<b>Overall</b>	12.40%	23.40%	0.00%	100.00%
<b>1</b>	10.60%	19.30%	0.00%	100.00%
<b>2</b>	11.30%	20.80%	0.00%	100.00%
<b>3</b>	12.70%	22.10%	0.00%	100.00%
<b>4</b>	13.60%	24.10%	0.00%	100.00%
<b>5</b>	14.50%	25.10%	0.00%	100.00%
<b>6</b>	13.90%	24.50%	0.00%	100.00%
<b>7</b>	13.40%	24.20%	0.00%	100.00%
<b>8</b>	12.70%	24.10%	0.00%	100.00%
<b>9</b>	12.00%	23.70%	0.00%	100.00%
<b>10</b>	11.40%	23.30%	0.00%	100.00%
<b>11</b>	10.80%	22.90%	0.00%	100.00%
<b>12</b>	11.10%	23.40%	0.00%	100.00%
<b>13</b>	10.60%	23.30%	0.00%	100.00%

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

Table 10 shows the overall mean statistics of risky asset proportion by respondents who were financial decision makers before becoming divorced or widowed and for those who were not. Just as with Table 7, the label “financial decision maker” represents respondents who remained as financial decision makers before and after marital dissolution; the label “non-financial decision maker” represents respondents who were not financial decision makers during marriage but became financial decision makers after divorce or the death of a spouse. Respondents who were financial decision makers had an overall higher mean percentage of risky asset proportion (13.1%) than non-financial decision makers (11.8%). The five cohorts demonstrated similar trends as the overall sample. For example, the respondents in the initial HRS cohort who were financial decision makers during marriage had a higher (11.4%) risky asset proportion

percentage than the HRS cohort respondents who were non-financial decision makers both before and after divorced/widowed (10.3%). Compared with the other four cohorts, the WB cohort had the largest risky asset proportion percentage gap 2.9% (12.7% – 9.8%) between its respondents who were financial decision makers (12.7%) and respondents who were non-financial decision makers (9.8%). The EBB cohort had the lowest risky asset proportion percentages for both financial decision makers (8.1%) and non-financial decision makers (6.5%) among all five cohorts.

**Table 10**  
**Risky Asset Proportion of Respondents, by Financial Decision Maker**

Cohort	Financial decision maker			
	Mean	SD	Min	Max
<b>Overall</b>	13.10%	23.90%	0.00%	100.00%
<b>AHEAD</b>	16.80%	28.10%	0.00%	100.00%
<b>CODA</b>	15.60%	24.80%	0.00%	100.00%
<b>HRS</b>	11.40%	21.70%	0.00%	100.00%
<b>WB</b>	12.70%	23.10%	0.00%	100.00%
<b>EBB</b>	8.10%	19.80%	0.00%	100.00%

*(Continued)*

Cohort	Non-financial decision maker			
	Mean	SD	Min	Max
<b>Overall</b>	11.80%	22.90%	0.00%	100.00%
<b>AHEAD</b>	15.40%	26.80%	0.00%	100.00%
<b>CODA</b>	14.30%	24.30%	0.00%	100.00%
<b>HRS</b>	10.30%	20.80%	0.00%	100.00%
<b>WB</b>	9.80%	20.70%	0.00%	100.00%
<b>EBB</b>	6.50%	17.40%	0.00%	100.00%

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

### 5.2.3 Mean Statistics 10 Years Before and After Divorce or the Death of a Spouse

Table 11 shows the overall change in mean net worth and the proportion of risky asset investment 10 years prior to a divorce or the death of a spouse, indicated by years < 0, and 10 years after a divorce or the death of a spouse, indicated by years > 0.

Table 11 illustrates the trends separately by respondents' demographic characteristics (i.e., gender, race, and education) in the baseline year. Overall, marital dissolution negatively affected the household net worth of sampled respondents. Couples did not build up wealth many years before getting divorced or being widowed.

### *Gender*

The change in mean net worth was different for men and women. As shown in Table 11, there was not much movement in the net worth from 10 to 4 years before marital dissolution. Men's net worth started falling 4 years before marital dissolution and experienced a 14.6% average net worth drop (decreasing from the average amount of \$413,970 to \$353,550) from 4 years before dissolution to 4 years after dissolution. In contrast, women's net worth experienced an average drop of 28.4% over the same period (decreasing from the average amount of \$405,182 4 years before marital dissolution to \$290,175 4 years after dissolution). Unlike men, whose net worth fluctuated after marital dissolution, women's net worth steadily dropped after becoming divorced or widowed. For both men and women, their net worth remained below the average net worth before divorce or being widowed even 10 years after the event occurred.

On the other hand, marital dissolution showed no significant impact on the proportion of risky asset investment. For both men and women, there was a slight decline in risky asset investment. For men, the highest percentage of risky asset proportion was 14%, reported at both 10 and 8 years before marital dissolution. This percentage then declined, reaching 12% at 2 years before becoming divorced or widowed and staying at that percentage until 8 years and 10 years after marital dissolution, when the percentages declined to 10% and 8%, respectively. Across the 20-year period of analysis, the decline

for men was 6% (14% - 8%). The decrease for women was slighter than for men, just 2% over the period of analysis. Women's percentage for risky asset proportion started at 14%, declined to 12% starting at 4 years prior to becoming divorced or widowed, and stayed at 12% up to and including 10 years after marital dissolution.

### *Race*

White respondents had significantly higher mean net worth than respondents who were Black or respondents from other races. The net worth values for White respondents were relatively stable before becoming divorced or widowed, ranging from \$465,215 to \$489,305. There was no dramatic decline before being divorced or widowed for White respondents. Still, the number decreased somewhat precipitously (\$381,699) at the year when marital dissolution actually occurred, again declined 2 years after dissolution (\$364,668), and then remained relatively stable. Over the entire period (from -10 to 10 years surrounding marital dissolution), the net worth of White respondents dropped around 25% (decreasing from the average amount of \$474,019 to \$355,482). On the other hand, the net worth for Black respondents demonstrated an upward trend (e.g., \$109,674 at 10 years before being divorced or widowed and \$137,494 at 4 years before being divorced or widowed) until 2 years (\$114,613) before being divorced or widowed. The Black respondents' net worth began to increase and fluctuate at the year of marital dissolution and reached \$110,069 at 10 years afterward. Over the entire period (from -10 to 10 years surrounding marital dissolution), the net worth of Black respondents increased around 0.4% (increasing from the average amount of \$109,674 to \$110,069). Interestingly, becoming divorced or widowed showed a smaller impact on the net worth of Black respondents. Similarly, the net worth of respondents from other races began

increasing 2 years after being divorced or widowed (e.g., \$144,814 at 4 years after being divorced or widowed and \$170,678 at 8 years afterward). Their net worth gradually recovered from marital dissolution and, 10 years later, achieved a higher net worth (\$188,182) than almost every other year in the analysis period.

Marital dissolution showed no significant impact on the proportion of risky asset investment for White respondents. Their proportion of risky investment remained at relatively the same level before and after becoming divorced or widowed, ranging from 13% to 15% over the entire period. Black respondents and respondents from other races held lesser proportions of risky assets than White respondents. Black respondents reported slight fluctuations, between 2% and 4%, during the analysis period. Also, there was a slight change in the proportion of risky investments for respondents from other races; the proportion peaked at 4 years before being divorced or widowed (8%) and fluctuated between 3% and 7% after that.

### *Education*

Respondents with a higher level of education had a higher net worth both before and after becoming divorced or widowed than respondents from other education categories. Also, highly educated respondents experienced the smallest effect of divorce or widowhood on their net worth. For example, within a period of 4 years (from -2 to 2 years surrounding marital dissolution), respondents with less than a high school degree experienced an average net worth drop of 23.5% (decreasing from \$155,291 to \$118,815). The percentage was 22.4% (decreasing from \$349,182 to \$271,088) for

**Table 11**  
**Changes in Mean Net Worth and Risky Assets Proportion, by Demographic Characteristics**

Year	-10	-8	-6	-4	-2	0	2	4	6	8	10
<b>Gender = Men</b>											
Net worth	\$409,425	\$429,163	\$410,672	\$413,970	\$406,701	\$367,310	\$370,355	\$353,550	\$389,950	\$353,746	\$312,797
Risky asset proportion	14%	14%	13%	13%	12%	12%	12%	12%	12%	10%	8%
<b>Gender = Women</b>											
Net worth	\$420,599	\$431,402	\$409,509	\$405,182	\$412,256	\$322,194	\$295,554	\$290,175	\$290,558	\$284,919	\$311,698
Risky asset proportion	14%	13%	13%	12%	12%	12%	12%	13%	12%	12%	12%
<b>Race = White/Caucasian</b>											
Net worth	\$474,019	\$489,305	\$464,901	\$465,215	\$474,460	\$381,699	\$364,668	\$353,869	\$358,848	\$345,452	\$355,482
Risky asset proportion	15%	15%	15%	14%	13%	14%	14%	14%	13%	13%	13%
<b>Race = Black/African American</b>											
Net worth	\$109,674	\$123,008	\$132,537	\$137,494	\$114,613	\$118,682	\$92,659	\$85,428	\$113,264	\$94,170	\$110,069
Risky asset proportion	3%	4%	3%	4%	2%	3%	3%	3%	3%	4%	3%
<b>Race = Other</b>											
Net worth	\$180,788	\$193,205	\$173,981	\$176,632	\$134,941	\$156,267	\$124,544	\$144,814	\$161,217	\$170,678	\$188,182
Risky asset proportion	6%	5%	8%	6%	7%	4%	3%	4%	4%	3%	3%
<b>Education = &lt; high school degree</b>											
Net worth	\$145,852	\$194,271	\$164,785	\$165,026	\$155,291	\$124,733	\$118,815	\$123,420	\$127,377	\$127,214	\$114,987
Risky asset proportion	6%	6%	5%	5%	5%	5%	5%	5%	4%	4%	5%
<b>Education = High school/GED</b>											
Net worth	\$390,097	\$359,502	\$339,782	\$349,850	\$349,182	\$294,998	\$271,088	\$265,027	\$272,577	\$277,050	\$302,753
Risky asset proportion	13%	12%	13%	12%	11%	12%	12%	12%	11%	12%	10%
<b>Education = Some college</b>											
Net worth	\$513,788	\$524,005	\$493,090	\$484,192	\$504,199	\$402,181	\$387,119	\$377,893	\$352,827	\$358,323	\$333,693
Risky asset proportion	18%	17%	15%	16%	15%	16%	16%	15%	15%	15%	15%
<b>Education = College and above</b>											
Net worth	\$827,763	\$885,425	\$927,029	\$923,622	\$946,162	\$804,012	\$791,585	\$802,640	\$834,818	\$711,100	\$710,992
Risky asset proportion	23%	24%	24%	23%	21%	21%	21%	24%	22%	19%	19%

*Note.* Analysis of the 1992 through 2016 RAND HRS. Sample size = 6,119.

respondents with a high school or GED degree, 23.2% (decreasing from \$504,199 to \$387,119) for respondents who had some college education, and 16.3% (decreasing from \$946,162 to \$791,585) for respondents who had a college degree or higher. Within a period of 8 years (from -4 to 4 years surrounding marital dissolution), the percentage of net worth declined by 25.2% (decreasing from \$165,026 to \$123,420) for respondents who dropped out of high school, 24.2% (decreasing from \$349,850 to \$265,027) for respondents whose highest educational attainment was a high school degree, 22.0% (decreasing from \$484,192 to \$377,893) for respondents with some college education, and 13.1% (decreasing from \$923,622 to \$802,640) for respondents who had a college degree or more.

In addition, respondents with a college degree or even higher education held more risky assets than respondents from other education categories. Overall, becoming divorced or widowed did not show a significant impact on the proportion of risky asset investments, even in the year of marital dissolution. However, regardless of the level of education, respondents tended to hold somewhat fewer risky assets after becoming divorced or widowed. For example, respondents with a high school or GED degree had from 11% to 13% of their investments in risky assets during their marriages. After becoming divorced or widowed, that range decreased to 10% to 12%. For respondents with a college degree or above, the risky asset proportions ranged from 21% to 24% during marriage but 19% to 24% after marriage.

### **5.3 Regression Results**

As explained in Section 4.3.3 of Chapter 4, this study included a linear mixed model to examine the factors affecting a person's net worth and the proportion of risky

assets in financial wealth, especially the effect of being (not being) the financial decision maker within the household before marital dissolution. Household net worth served as the dependent variable in the first regression model (Table 12). The proportion of risky assets in the household's financial wealth served as the dependent variable in the second regression analysis (Table 13).

### 5.3.1 Net Worth

As reported in Table 12, in Step 1, the overall average difference in net worth was \$10,720 between respondents who remained as financial decision makers before and after marriage and respondents who became financial decision makers after becoming divorced or widowed. Since the  $p$  value was larger than 0.05, there was no statistical evidence to show the difference significantly existed. The wave status variable and an interaction variable were added in Step 2 to test whether being a financial decision maker when married had an effect on net worth after marital dissolution.

In Step 2, the sum of the coefficient for  $\beta_1$  and  $\beta_3$  was the difference in average net worth between respondents who remained as financial decision makers and respondents who became financial decision makers post-marriage. After becoming divorced or widowed, the average net worth was \$26,320 lower for respondents who became a financial decision maker after divorce or being widowed than the average net worth for respondents who remained as a financial decision maker. This result suggests that divorce or widowhood has negative financial consequences for individuals who were not financial decision makers during marriage.

**Table 12**  
**Regression Analysis of Net Worth**

Parameter	Step 1	Step 2
	Coefficient	Coefficient
<b>Financial decision maker (reference category = Remained)</b>	1.072 (1.409)	4.825* (1.678)
<b>Wave status (reference category = Before)</b>	-	-2.143 (1.239)
<b>Changed *After</b>	-	-7.457*** (1.803)
<i>Note.</i> Standard errors in parentheses; * $p < 0.05$ , ** $p < 0.01$ , *** $p < 0.001$ . (Continued)		
Parameter	Step 3	Step 4
	Coefficient	Coefficient
<b>Financial decision maker (reference category = Remained)</b>	4.599** (1.288)	4.987** (1.566)
<b>Wave status (reference category = Before)</b>	7.685 (5.018)	10.809 (6.364)
<b>Changed *After</b>	-6.622*** (1.384)	-6.598** (1.770)
<b>Female (reference category = Male)</b>	0.363 (1.425)	-0.428 (1.746)
<b>Female *After</b>	-5.144** (1.542)	-6.234* (1.964)
<b>Age group (reference category = Below 50)</b>		
50–59	5.869** (1.664)	5.833* (2.842)
60–70	12.760*** (1.787)	13.358*** (2.995)
Above 70	22.161*** (1.902)	22.597*** (3.120)
<b>(50–59) *After</b>	0.324 (4.611)	-0.256 (5.833)
<b>(60–70) *After</b>	-0.747 (4.622)	-3.690 (5.851)
<b>(Above 70) *After</b>	-7.950 (4.654)	-8.888 (5.875)
<b>Race (reference category = White)</b>		
Black	-13.731*** (1.855)	-18.618*** (2.320)
Other	-8.441* (3.222)	-11.805* (3.827)
<b>Black *After</b>	1.135 (2.007)	3.871 (2.587)
<b>Other *After</b>	2.112 (3.406)	4.920 (4.330)

<b>Education (reference category = &lt; high school degree)</b>		
High school graduate/GED	11.437*** (1.599)	8.924*** (2.020)
Some college	19.927*** (1.902)	22.313*** (2.374)
College and above	43.969*** (2.090)	54.433*** (2.599)
<b>High school graduate *After</b>	-0.506 (1.729)	-0.316 (2.233)
<b>Some college *After</b>	-1.449 (2.035)	-5.067 (2.611)
<b>College and above *After</b>	4.914* (2.249)	-2.363 (2.852)
<b>Marital dissolution type (reference category = Widowed)</b>		
Divorced	0.508 (1.746)	2.121 (2.258)
<b>Divorced *After</b>	-11.568*** (1.944)	-9.371** (2.555)
<b>Labor force status (reference category = Employed)</b>		
Unemployed	-	5.374*** (1.371)
Retired	-	5.029*** (1.144)
<b>Health condition (reference category = Excellent)</b>		
Very good	-	-1.688 (1.130)
Good	-	-3.796* (1.209)
Fair	-	-5.586*** (1.339)
Poor	-	-7.421*** (1.664)
<b>Mental health (reference category = No)</b>		
Report memory problems	-	-2.277 (2.021)
<b>Income</b>	-	0.740*** (0.031)
<b>Financial planning horizon (reference category = Next year)</b>		
Not asked/unknown	-	0.446 (1.195)
Next few years	-	1.439 (1.057)
Next 5–10 years	-	4.017** (1.128)

Longer than 10 years	-	7.133*** (1.641)
<b>Income risk aversion (reference category = Least risk averse)</b>		
Not asked/unknown	-	0.801 (2.142)
Third-most risk averse	-	4.980 (2.834)
Second-most risk averse	-	-0.886 (2.660)
Most risk averse	-	-1.078 (2.117)
<b>Homeownership (reference category = No)</b>	-	17.606*** (1.233)
<b>Number of children</b>	-	-0.097 (0.257)
<b>Cognitive ability</b>	-	0.266* (0.088)

*Note.* Standard errors in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

In Step 3, after accounting for the effects of many demographic variables, being a financial decision maker continued to have an effect on average net worth after becoming divorced or widowed. Only statistically significant results from Table 12 are described in this narrative. The average net worth after being divorced or widowed was \$20,230 lower for respondents who became financial decision makers after becoming divorced or widowed than for respondents who remained as financial decision makers. After divorce or being widowed, the average net worth for females was \$47,810 less than for males. Older respondents had higher net worth during marriage, on average, than other age groups. For example, compared with the youngest age group (younger than 50 years old), the average net worth before marital dissolution was \$58,690 higher for the 50–59 age group, \$127,600 higher for the 60–70 age group, and \$221,610 higher for the oldest age group (older than 70 years old). Compared with White respondents, the average net worth before becoming divorced or widowed was \$137,310 lower for Black respondents and \$84,410 lower for respondents from other races.

Also, in Step 3, respondents with a higher level of education had a higher net worth before being divorced or widowed, on average. Compared with respondents who did not earn a high school degree, the average net worth before becoming divorced or widowed was \$114,370 higher for respondents who earned a high school or GED degree, \$199,270 higher for respondents with some college education, and \$439,690 higher for respondents who achieved a college degree or higher. Comparing the effects of marital dissolution on different levels of education, the average net worth after being divorced or widowed was \$488,830 higher for respondents who obtained a college or higher degree than for respondents who did not complete high school. Finally, when comparing the effect of the type of marital dissolution on respondents' net worth, the results showed that respondents who were divorced experienced an average reduction in their net worth of \$110,600 more than respondents who were widowed.

Step 4 was when the full model was applied, and it controlled for the effects of other variables. After a divorce or being widowed, the average net worth was \$16,110 lower for respondents who became a financial decision maker after marital dissolution than the average net worth for respondents who remained as a financial decision maker. The average net worth for females was \$66,620 less than that for males. Also, respondents who were divorced experienced a \$72,500 greater reduction in net worth, on average, than respondents who were widowed.

The estimates in Step 4 showed similar significant results as Step 3. Specifically, before being divorced or widowed, the average net worth of respondents who were from age 50 to 59, 60 to 70, and above 70 were \$58,330, \$133,580, and \$225,970 higher, respectively, than the average net worth for respondents who were below age 50. Black

respondents (coefficient = -18.618,  $p < 0.001$ ) and respondents from other races (coefficient = -11.805,  $p < 0.05$ ) had significantly lower average net worth than White respondents. Also, respondents with more education had higher net worth than respondents with lower education levels. The average net worth before being divorced or widowed for respondents who had a high school or GED degree, some college education, or a college degree or higher was \$89,240, \$223,130, and \$544,330 higher, respectively, than for respondents without a high school degree.

In addition, in Step 4, labor force status, health condition, income, financial planning horizon, homeownership, and cognitive ability were significantly associated with overall net worth. Respondents who were retired (coefficient = 5.029,  $p < 0.001$ ) and respondents who were unemployed (coefficient = 5.374,  $p < 0.001$ ) had higher overall average net worth than respondents who were employed. A better health condition was positively associated with higher total net worth. Respondents who reported having excellent health had \$37,960, \$55,860, and \$74,210 more net worth, on average, than respondents who reported good, fair, or poor health conditions, respectively. In addition, as expected, higher income was associated with higher net worth. Every \$10,000 increase in income increased the overall average net worth by \$7,400 when all other variables were held constant. Compared with respondents whose investment horizon was 1 year or less, those with longer investment horizons were more likely to have a higher overall average net worth. The overall average net worth increased by \$40,140 for respondents with an investment horizon from 5 to 10 years and \$71,330 for respondents with a horizon of more than 10 years. Respondents who were homeowners had significantly higher overall net worth than respondents who did not own

any properties (coefficient = 17.606,  $p < 0.001$ ). Higher cognitive ability was significantly associated with higher net worth too. Specifically, a one-unit increase in the overall cognitive score increased overall average net worth by \$2,660.

### 5.3.2 Risky Asset Proportion

As reported in Table 13, in Step 1, the overall proportion of risky assets in the portfolio was lower for respondents who became a financial decision maker after being divorced or widowed than for respondents who remained as a financial decision maker (coefficient = -1.150,  $p < 0.01$ ).

In Step 2, the sum of the coefficient for  $\beta_1$  and  $\beta_3$  was the difference in the average proportion of risky assets in the portfolio between respondents who remained as a financial decision maker and respondents who became a financial decision maker after divorce or being widowed. After becoming divorced or widowed, the average proportion of risky assets in a portfolio was lower for respondents who became a financial decision maker post-marriage than the average proportion for respondents who remained as a financial decision maker. However, the difference was statistically insignificant.

**Table 13**  
**Regression Analysis of Risky Asset Proportion**

Parameter	Step 1	Step 2
	Coefficient	Coefficient
Financial decision maker (reference category = Remained)	-1.150** (0.336)	-1.380** (0.400)
Wave status (reference category = Before)	-	-0.339 (0.327)
Changed *After	-	0.505 (0.479)
<i>Note.</i> Standard errors in parentheses; * $p < 0.05$ , ** $p < 0.01$ , *** $p < 0.001$ . (Continued)		
Parameter	Step 3	Step 4
	Coefficient	Coefficient
Financial decision maker (reference category = Remained)	-1.869*** (0.383)	-1.459** (0.404)
Wave status (reference category = Before)	0.525	0.138

	(1.774)	(1.842)
<b>Changed *After</b>	0.7142	0.254
	(0.473)	(0.491)
<b>Female (reference category = Male)</b>	-0.674	-0.690
	(0.423)	(0.451)
<b>Female *After</b>	-0.393	-0.368
	(0.525)	(0.546)
<b>Age group (reference category = Below 50)</b>		
50–59	2.421*	2.106*
	(0.797)	(0.845)
60–70	1.104	0.406
	(0.786)	(0.810)
Above 70	-0.005	-0.250
	(0.756)	(0.770)
<b>(50–59) *After</b>	1.022	1.139
	(1.653)	(1.716)
<b>(60–70) *After</b>	0.621	0.227
	(1.650)	(1.710)
<b>(Above 70) *After</b>	0.035	-0.048
	(1.653)	(1.716)
<b>Race (reference category = White)</b>		
Black	-8.150***	-6.626***
	(0.578)	(0.610)
Other	-4.525***	-3.490**
	(0.989)	(1.013)
<b>Black *After</b>	0.066	0.227
	(0.714)	(0.736)
<b>Other *After</b>	3.129*	3.043*
	(1.249)	(1.264)
<b>Education (reference category = &lt; high school degree)</b>		
High school graduate/GED	5.354***	3.647***
	(0.484)	(0.526)
Some college	9.651***	7.005***
	(0.566)	(0.614)
College and above	15.513***	10.711***
	(0.612)	(0.672)
<b>High school graduate *After</b>	0.066	-0.244
	(0.597)	(0.628)
<b>Some college *After</b>	-0.370	-0.510
	(0.697)	(0.727)
<b>College and above *After</b>	0.152	-0.375
	(0.762)	(0.790)
<b>Marital dissolution type (reference category = Widowed)</b>		
Divorced	-1.447*	-1.393*
	(0.578)	(0.592)
<b>Divorced *After</b>	2.945***	1.894*
	(0.696)	(0.709)
<b>Labor force status (reference category = Employed)</b>		
Unemployed	-	-0.523
		(0.392)

Retired	-	-0.472 (0.320)
<b>Health condition (reference category = Excellent)</b>		
Very good	-	-0.812* (0.327)
Good	-	-1.229** (0.348)
Fair	-	-2.220*** (0.387)
Poor	-	-3.207*** (0.490)
<b>Mental health (reference category = No)</b>		
Report memory problems	-	1.068 (0.623)
<b>Income</b>	-	0.044*** (0.009)
<b>Financial planning horizon (reference category = Next year)</b>		
Not asked/unknown	-	0.9142 (0.342)
Next few years	-	0.858* (0.303)
Next 5–10 years	-	1.414*** (0.323)
Longer than 10 years	-	2.164*** (0.477)
<b>Income risk aversion (reference category = Least risk averse)</b>		
Not asked/unknown	-	1.933** (0.579)
Third-most risk averse	-	-0.181 (0.764)
Second-most risk averse	-	-0.355 (0.716)
Most risk averse	-	-0.966 (0.568)
<b>Homeownership (reference category = No)</b>	-	2.142*** (0.344)
<b>Number of children</b>	-	-0.138* (0.067)
<b>Cognitive ability</b>	-	0.134*** (0.025)
<b>Net worth</b>	-	0.039*** (0.001)

*Note.* Standard errors in parentheses; \*  $p < 0.05$ , \*\*  $p < 0.01$ , \*\*\*  $p < 0.001$ .

Step 3, as reported in Table 13, controlled the effects of demographic variables and yielded some significant results. Only statistically significant results are described in this narrative. The results showed that respondents who were from age 50 to 59 held a

higher average proportion of risky assets before being divorced or widowed than respondents below age 50 (coefficient = 2.421,  $p < 0.05$ ). Black respondents invested a lower share of risky assets before becoming divorced or widowed than White respondents (coefficient = -8.150,  $p < 0.001$ ), as did other races (coefficient = -4.525,  $p < 0.001$ ). After being divorced or widowed, respondents from other races held 1.396% less risky assets than White respondents, on average. Being widowed reduced the share of risky asset-holding by 1.498% compared to respondents who became divorced. In addition, before being divorced or widowed, respondents with a college degree or higher, some college education, or a high school or GED degree held an average of 15.513%, 9.651%, and 5.354% more risky assets, respectively, than respondents without a high school degree.

Step 4 controlled for the effects of other variables. The results showed that respondents from age 50 to 59 held a higher average proportion of risky assets before becoming divorced or widowed than respondents below age 50 (coefficient = 2.106,  $p < 0.05$ ). Black respondents invested a lower share of risky assets before being divorced or widowed than White respondents (coefficient = -6.626,  $p < 0.001$ ). After marital dissolution, respondents from other races held 0.447% less risky assets than White respondents, on average. Being widowed reduced the share of risky assets-holding by 0.501% when compared to respondents who divorced. In addition, before being divorced or widowed, respondents with a college degree or higher, some college education, or a high school or GED degree held an average of 10.711%, 7.005%, and 3.647% more risky assets, respectively, than respondents without a high school degree.

Health condition was significantly associated with risky asset investment too. Respondents who reported a very good (coefficient =  $-0.812$ ,  $p < 0.05$ ), good (coefficient =  $-1.229$ ,  $p < 0.01$ ), fair (coefficient =  $-2.220$ ,  $p < 0.001$ ), or poor (coefficient =  $-3.207$ ,  $p < 0.001$ ) health condition held a lower proportion of risky assets than respondents who reported excellent health. Longer investment horizons led to a higher proportion of risky asset investments. The proportion of risky shares increased by 0.858% for respondents with an investment horizon within the next few years, 1.414% for respondents with an investment horizon from 5 to 10 years, and 2.164% for respondents with an investment horizon of more than 10 years. Respondents had more children (coefficient =  $-0.138$ ,  $p < 0.05$ ) held a lower proportion of risky assets. Respondents who were homeowners (coefficient =  $2.142$ ,  $p < 0.001$ ), had higher incomes (coefficient =  $0.044$ ,  $p < 0.001$ ), had higher net worth (coefficient =  $0.039$ ,  $p < 0.001$ ), or scored higher on cognitive ability tests (coefficient =  $0.134$ ,  $p < 0.001$ ) held a higher proportion of risky assets as well.

## **Chapter 6. Summary, Conclusions, limitation, and Implications**

Among this study's sample population, the mean statistics demonstrated that individuals' mean net worth decreased from the period when they were married (\$396,594.2) to the year that divorce or a spouse's death occurred (\$336,272.9), and it continued to decrease after marital dissolution (\$305,538.7). This finding suggests, perhaps not surprisingly, that divorce and widowhood are both detrimental to financial health. But it is essential to understand the balance of negative impacts. Who loses out—and loses out the most—by remaining uninvolved in a marriage's financial decision-making?

### **6.1 Summary and Conclusions**

The focus of this study has been on financial decision-making during and after marriage. The two hypotheses were that a person who is involved in financial decisions when married will have (1) higher net worth and (2) invest in more risky assets upon experiencing a divorce or the death of a spouse. And the first of these two hypotheses was confirmed. But the findings point to other conclusions too.

Let us begin by summarizing the findings for the first group: people who are uninvolved in financial decision-making during their marriages. Ward and Lynch (2018) found that making financial decisions solo widened not only the financial literacy gaps between spouses but also the ability to make sound decisions in different aspects of financial planning. Partly motivated by Ward and Lynch's findings, this dissertation used the HRS data from 1992 to 2016 to investigate the post-marriage differences of net worth and risky asset investments for people who were financial decision makers before marital dissolution and for people who were not. As theorized in this study's first hypothesis, the

findings showed that being a financial decision maker before marital dissolution positively affected net worth after becoming divorced or widowed. In short, this study suggests that people who are involved in financial decision-making before a divorce or the death of a spouse can better handle their finances post-marriage when compared to people who are not involved in such activities during their marriage. The regression results supported the first hypothesis. When the study's full model was applied and it controlled for the effects of other variables, the statistics showed that the average net worth after divorce or being widowed was \$16,110 lower for respondents who became a financial decision maker after marital dissolution than the average net worth for respondents who were financial decision makers both during and after their marriages. On the other hand, the regression results showed that being a financial decision maker when married had no significant effect on post-marriage investment in risky assets.

While the hypotheses for this dissertation focused on whether or not a person was a financial decision maker during the marriage, other personal characteristics were found to affect a person's net worth and risky asset investments after marital dissolution. According to this study's findings, women comprise the second group disproportionately affected by a divorce or being widowed. Comparing the effects of marital dissolution on females and males showed that men do financially better than women after becoming divorced or widowed, suggesting that women who become divorced or widowed do not build wealth in the same manner as men. Many previous researchers have found that women tend to have less involvement in financial decisions than men (e.g., Bartley et al., 2005; Deere & Twyman, 2012; Dew & Dakin, 2011; Johnston et al., 2015; Kwai-Choi Lee & Collins, 2000). But even controlling for decision maker status when married, the

full regression model found that gender was significantly associated with post-marriage net worth. The results showed that the average net worth for females was \$66,620 less than that for males after getting divorced or being widowed. The mean statistics also showed that men's net worth started falling 4 years before marital dissolution and experienced a 14.6% average net worth drop (decreasing from the average amount of \$413,970 to \$353,550) from 4 years before dissolution to 4 years after dissolution. In contrast, women's net worth experienced an average drop of 28.4% over the same period, double the average decrease experienced by men. Unlike men, whose net worth fluctuated after marital dissolution, women's net worth steadily dropped after becoming divorced or widowed. For both men and women, their net worth remained below the average net worth before being divorced or widowed even 10 years after the event occurred.

The third group disproportionately affected by divorce or widowhood is White/Caucasian people. According to the mean statistics (from -10 to 10 years surrounding marital dissolution), the net worth of White respondents dropped around 25% (decreasing from the average amount of \$474,019 to \$355,482). On the other hand, the net worth for Black respondents demonstrated a fluctuating but upward trend. Over the analysis period, the net worth of Black respondents increased by around 0.4% (increasing from the average amount of \$109,674 to \$110,069). Similarly, the net worth of respondents from other races began increasing 2 years after being divorced or widowed and gradually recovered from marital dissolution. Ten years later, the respondents in this group achieved a higher net worth (\$188,182) than every other year in the analysis period except for 8 years before marital dissolution (\$193,205).

The fourth group to discuss when reviewing disproportionate impacts from a divorce or being widowed is respondents with a higher level of education. In this study, the subsample had a higher net worth both before and after becoming divorced or widowed than respondents from other education categories. The regression results in Step 3 showed that the average net worth after being divorced or widowed was higher for respondents who obtained a college or higher degree than for respondents who did not complete high school. This finding suggests that more educated people can better manage their assets post-marriage. Also, according to the mean statistics, highly educated respondents experienced the smallest effect of divorce or widowhood on their net worth. For example, within a period of 4 years (from -2 to 2 years surrounding marital dissolution), respondents with less than a high school degree experienced an average net worth drop of 23.5% (decreasing from \$155,291 to \$118,815). The percentage was 22.4% (decreasing from \$349,182 to \$271,088) for respondents with a high school or GED degree, 23.2% (decreasing from \$504,199 to \$387,119) for respondents who had some college education, and 16.3% (decreasing from \$946,162 to \$791,585) for respondents who had a college degree or higher.

Consistent with previous studies, this study's regression analysis showed that the following factors were also associated with an overall higher net worth: being retired, reporting an excellent health condition (Poterba et al., 2015), having a higher income, having a longer financial planning horizon, being a homeowner, and having higher cognitive ability.

Most of this study focused on marital dissolution as the fulcrum event without distinguishing between the type of dissolution. But the regression analysis also analyzed

whether divorce had a different impact on the sample respondents than being widowed. When comparing the effect of the type of marital dissolution on respondents' net worth, the results showed that respondents who divorced experienced a \$72,500 greater reduction in net worth, on average, than respondents who were widowed.

In terms of the risky asset proportion, several factors were found to be statistically significant in this study's regression analysis. Being widowed reduced the share of risky assets in a portfolio compared to respondents who divorced. For the following factors, it is important to remember that they were significantly associated with risky asset-holding irrespective of marital status. In other words, marital dissolution did not play into these correlations. Before becoming divorced or widowed, respondents who were between age 50 to 60 held a higher average proportion of risky assets than respondents below age 50. Previous research has also confirmed that there is a significant relationship between age and stock ownership, stating that stock ownership peaks at approximately age 55 to 64 (Plath & Stevenson, 2001; Shum & Faig, 2006). Black respondents and respondents grouped as other non-White races invested lower shares of their portfolios in risky assets when compared to White respondents. Other studies also found that stock ownership was greater among White households (Choudhury, 2001; Wang & Hanna, 2007). Respondents who had attained a college degree or higher, some college education, or a high school or GED degree held more risky assets, on average, than respondents without a high school degree. Most prior studies have concurred that educational attainment positively affects stock ownership (Cardak & Wilkins, 2009; Grable et al., 2009; Hariharan et al., 2000), and people without a high school degree are less likely to hold stocks (Lusardi & Mitchell, 2007). Overall, respondents who reported having excellent

health held a higher proportion of risky assets than respondents with very good, good, fair, and poor health conditions.

Furthermore, homeownership, a longer investment horizon, a higher income, higher net worth, and higher cognitive scores all positively affected the proportion of risky assets. The literature review supports these findings. A previous study found that, though homeowners have locked a part of their wealth in the housing market, they are still more likely to invest in the stock market when compared to people who do not have any properties (Vestman, 2012). Other studies found that individuals with an investment horizon of more than 10 years were more likely to hold stocks—in other words, more likely to take risks—than their counterparts with shorter investment horizons (Hariharan et al., 2000; Zhong & Xiao, 1995). Other studies revealed that a higher level of household income and net worth increased portfolio allocation of stocks (Fontes & Kelly, 2013; Hariharan et al., 2000; Lahey & Kim, 2001). Studies have shown that respondents with high cognitive ability are more likely to invest in stocks and accumulate more financial wealth (Christelis et al., 2010; McArdle et al., 2009).

## **6.2 Implications for Financial Planners and Individual Investors**

Divorce or a spouse's death can be one of the most shocking and difficult situations in an individual's life, particularly for those who previously relied on their partners to make decisions. The findings in this study answer a critical question, who loses out by not being involved in financial decision-making when married? The results of the study suggest that people who have been involved in making household financial decisions during their marriage have a higher likelihood of making sound financial decisions in their spouse's absence. This study contributes to the household finance

literature by showing the opportunity costs of not participating in household financial decision-making. Therefore, it has important implications for financial planners and individual investors alike.

The findings suggest ways that the financial planning profession can become more effective in preparing clients for long-term financial health, regardless of marital status. When working with clients who are currently married, financial planners should pay special attention to the clients' division of financial responsibility within the household and encourage both spouses to be involved in household financial decision-making. In particular, financial planners should devote more time and effort to helping wives or husbands who are uncomfortable dealing with financial decisions and feel they lack the ability to do so. In addition, financial planners should include both parties in discussions and walk through financial plans with both spouses together. This dissertation provides financial planners with empirical evidence to better serve their clients. An important takeaway is that not involving both spouses in financial decisions can lead to negative financial effects, especially when divorce or death occurs.

In addition, this study has important implications for individual investors. The results showed that women who became divorced or widowed did not build wealth in the same manner as men. The traditional expectations of women's roles, such as caring for elderly parents and raising children, necessitate employment gaps that prevent women from accumulating as much wealth as men, thus decreasing their contributions to household wealth and, often, their involvement in household financial decisions (Bartley et al., 2005; Dobbelsteen & Kooreman, 1997; Komura, 2013). In 2017, approximately 2.1 million American women between the ages of 50 and 54 were divorced (U.S. Census

Bureau, 2017), and among the 15.1 million people widowed in the U.S., approximately 11.69 million of them were women (U.S. Census Bureau, 2018). Despite these numbers, women are unlikely to remarry when compared with their counterparts. Their remarriage rate is significantly lower than that of men (21 per 1,000 vs. 39 per 1,000; Payne, 2018). These findings suggest that there is a high probability that women will face the challenges of being a widow or divorcee and have to shoulder the burden of making their own financial decisions at some point in their lives.

When seeking financial planning services, married women should pay close attention to household financial plans and get involved in discussions to prepare for any future, no matter how unforeseen. For divorced or widowed women, especially for those who are less money-savvy, seeking professional help is a good way to build confidence in approaching the associated financial changes.

Whether man or woman, for divorcees and surviving spouses wishing to plan for and enhance their financial health—and for the financial planners who advise them—the findings from this study recommend fundamental questions that must be answered to assure long-term success. First, were you divorced or widowed? The two events are likely to impact your financial health differently. Second, were you involved in your household's financial decision-making when you were married? Third, how do you think your gender, race, or culture influences your financial decisions? What is your level of education, and how do you think it has prepared you for being your own financial decision maker? Have you considered your labor force status, income, homeowner status, and financial planning horizon? Finally, what is your age and the status of your physical, mental, and cognitive health?

Individuals must understand how all of these factors play into their financial decisions, especially those individuals who are becoming financial decision makers for the first time after becoming divorced or widowed. The questions are not meant to intimidate or overwhelm individuals. Rather, these questions should guide discussions between individuals and their financial planners. The questions may even help people choose the financial planner who is right for them.

Financial planning cannot be separated from the very act of living one's life. This study demonstrated the various ways that a person's characteristics affect wealth accumulation and asset allocation. But these complex interactions highlight the power of financial planning. It empowers individuals to make financial decisions that help them to realize their life goals.

### **6.3 Limitation and Implications for Future Research**

The previous section focused on this study's implications for financial planners and individual investors. This section calls attention to limitations of this study and some topics that researchers may wish to study in the future.

First, this dissertation is limited by a lack of information regarding the respondents from other races. The "other" race category included American Indian, Alaskan Native, Asian, Native Hawaiian, and Pacific Islander. The RAND data file did not provide detailed information about the "other" category; therefore, this group could not be further divided into subgroups. It would be interesting for future studies to explore the dynamics typical of marriages in different racially defined cultures. For example, do certain cultures share financial decision-making more readily, thus blunting the negative impact of divorce or widowhood? While financial planners should, by all means, avoid

treating individual clients differently simply on the basis of race, the findings hint at ways that race-related cultures must be factored into the profession's practices. A one-size-fits-all approach is likely to be ineffective when results show that major life changes, such as divorce and widowhood, affect people's net worth differently depending on race.

Another limitation of this dissertation is that it only focused on respondents over age 50. Information on younger populations, such as Generation X, Generation Y (Millennials), and Generation Z were unavailable in the HRS data used for this study. A second area ripe for future research is to investigate how younger generations make financial decisions within married households and how marriage dissolution affects their financial wellbeing. Alternatively, researchers could compare how financial responsibility is distributed between couples who fall into different generations. Johnston et al. (2015) have already found that, conditional on female age, older males and higher male education attainment reduced the probability of making joint financial decisions. However, existing research has not fully explored how spouses' influence on household financial decision-making might change as they age. Does joint decision-making give way to one-sided decision-making, or vice versa? Do they experience negative financial impacts similar to the ones described in this dissertation?

Third, remarried individuals were omitted from this study's sample population, so future studies should focus on people who have been divorced or widowed and then remarried. Researchers could test if being the only financial decision maker at the point of marital dissolution affects financial decision-making after getting remarried. Researchers could examine the distribution of financial responsibility within the household for remarried individuals. The outcome variable could assess whether people

choose to make joint decisions, make decisions independently, or avoid making financial decisions altogether, instead, relying on the new partner to make financial decisions.

The fourth area for research centers on women. Many previous studies, as well as this study, have spent time examining women's involvement in financial decision-making and associated impacts on financial health. However, it would be interesting to delve more deeply into ways that females have historically increased their roles in household financial decision-making. Some factors that play into decision-making participation may be beyond an individual's ability to change (e.g., responsibility for an ailing parent's care). Still, it would be enlightening to learn more about proactive steps that spouses can take to share financial decision-making more equally and ways financial planners can support those steps. For example, perhaps financial planners could offer free or low-cost education that improves a wife's financial literacy. Or perhaps couples could find ways to link financial planning to areas of mutual interest so that they can more easily share decision-making responsibilities. Future research might uncover approaches that empower women to gain parity in financial decision-making.

These various topics demonstrate how major life changes, such as a divorce or the death of a spouse, are ripe for further research. Financial planners and individual investors alike must be equipped to handle the unpredictability of life, the most joyous adventures as well as the devastating losses.

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## VITA

Chen Xu received her bachelor's degree in Economics in December 2012, master's degree in Personal Financial Planning in May 2015, and PhD in Personal Financial Planning in December 2019, all from the University of Missouri-Columbia. She has presented her research at the 2017, 2018, and 2019 conferences of the American Council on Consumer Interests (ACCI) and at the 2018 and 2019 Academic Research Colloquium for Financial Planning and Related Disciplines. She received the 2017 ACCI travel scholarship, the 2017 University of Missouri Graduate Professional Council Travel Award, the 2018 University of Missouri Office of Research and Graduate Studies Travel Grant, and the 2018 National Arthur N. Caple Foundation Scholarship. She is also the recipient of the 2017 Martin-Quilling Graduate Fellowship, as well as the 2014 and 2015 Mabel Campbell/Campbell-Harrison Scholarship. Chen gained her teaching and research experiences while working as a teaching and research assistant in the Personal Financial Planning Department at the University of Missouri-Columbia from 2015 to 2019.