

Wealth Holdings and Portfolio Allocation of the Elderly: The Role of Marital History

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Abstract This paper investigates the role of marital history in terms of explaining differences in wealth holdings and portfolio allocation of older individuals by studying data from the first wave of Health and Retirement Study which was conducted in 1992. The results generally suggest that both men and women suffer from the negative shocks of past marital dissolutions in terms of household wealth accumulation. The significance level, however, differs across *currently* married couples, single males, and single females. The examination of the asset components of net worth also indicates that both the probability of owning a particular asset and the fraction of wealth allocated to that asset might vary depending on the elderly individuals' marital history.

Keywords Wealth · Portfolio allocation · Elderly · Marital history

Introduction

In recent years, attention to issues such as the adequacy and variation of households' retirement wealth has intensified given the public policy concerns created by an aging population. Wise and Venti (1998) and Lusardi (1999) note the existence of a large dispersion in savings among U.S. households. Bernheim et al. (2001) examined this variation within the context of standard life cycle models with rational, farsighted optimisation. They tested for the

presence of factors such as differences in rate of pure time preference, risk tolerance, exposure to uncertainty, health status, perceived life expectancy, lifetime earnings, and income replacement rates.¹

While examining these factors has its own merit, one would agree with the fact that there are many disruptions to households' life cycles; such as, marital breakdowns and widowhoods, which may potentially hinder their ability to save for retirement years. In this research reported here, I examined the role of marital history in terms of explaining differences in wealth holdings and portfolio allocation of older Americans by studying data drawn from the first wave of the Health and Retirement Study (HRS).

Over the last few decades, divorce has been a very common social phenomenon in the United States. Recently, the Census Bureau has reported that compared with the 1970s the number of divorced people more than quadrupled and nearly half of recent first marriages are likely to end in divorce (Kreider and Fields 2002). Given its high frequency, economists have long realized the importance of understanding the consequences of divorce, especially for women and their custodial children. Taking a step in a similar direction and especially focusing on the elderly households, the present work aims to improve our understanding of the link between marital disruptions and old-age poverty and well-being.

The HRS is an exceptionally rich data set, which collects detailed information on the entire marital history of both respondents and their spouses together with much other useful information on topics such as wealth, health

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¹ For some additional examples of studies in this area, see also Fan and Zick (2006), Grafova (2007), Hatcher (2002), Lai (2008), Kim and DeVaney (2005), Meeks et al. (1999), O'Neill (2007), Spratlin and Holden (2000), and Su (2008) among many others.

and labor force status. The sample coverage is mainly older individuals, and the data well suit the present purposes because wealth is heavily concentrated among elderly households and because the goal was to investigate whether differences in marital experiences help explain differences in households' wealth levels and asset compositions.² In this study, for example, my central interests were questions such as: To what extent do past marital disruptions to households' life cycles play a role in creating wealth inequality among the elderly? Is there recovery from the negative shocks of divorce in the long run? If so, does the extent of recovery differ for men and women? Does the amount of time spent in a marriage matter? What happens to individuals who have multiple disruptions?

Of course, investigating the role of marital history in determining the levels of household wealth is of particular interest because of its policy implications for old-age poverty and the standard of living during retirement years. However, looking at the impact of marital disruptions on the way households allocate their accumulated saving across different assets; such as, housing, IRA and Keogh accounts, and financial wealth, may also be helpful in expanding our understanding of the consequences of marital breakdowns more generally. Understanding asset allocation is, for example, essential especially in developed countries such as the U.S. with prospective aging of populations because future economic security can depend as much on the way assets are invested as on the level of those assets. Although overall assets might be used to support daily consumption needs, facilitate financial security, or increase financial capital, by examining the distribution of assets Xiao and Anderson (1997), indeed, suggested that family financial needs are hierarchical and are reflected by patterns of financial asset shares. Asset allocation is also particularly important for understanding the behavior of individuals in the increasingly popular defined contribution pension plans that allow participants some discretion in their investment choices and for analyzing recent proposals for Social Security reform that call for mandatory saving accounts with investment responsibility delegated to individuals (Poterba and Samwick 1997). Thus, in the present study I also examined whether previous marital shocks of older individuals significantly alter both the probability of owning a particular asset and the fraction of net worth allocated to that asset over the life cycle.

² Indeed some recent studies such as Baik and Hong (2004), Beverly et al. (2003), Lee et al. (2007), and Wakita et al. (2000) considered the factors associated with asset accumulation and debt holding, and they noted the importance of life cycle stages and age effects in determining the levels of household savings and consumer debt.

Literature Review

A great deal of previous work investigated different dimensions of economic outcomes driven by household dissolutions. Most of the studies in this area focused on the decline in economic well-being for women and their dependent children in the immediate postdivorce period and the concomitant contribution to the trend known as the feminization of poverty. In these investigations, the main measure of standard of living was taken to be either household income or earnings, and surprisingly little work was done on the influence of divorce on wealth and portfolio allocations.³ The main reason why existing studies generally used income or earnings is that most household surveys have measured wealth and its components either quite poorly or not at all. One of the exceptions is the Surveys of Consumer Finances which have rich information on wealth. However, these surveys are only available on a cross-sectional basis which limited their use in studies examining longitudinal issues. Fortunately, this limitation has been changing quickly as surveys such as the HRS and Panel Study of Income Dynamics (PSID) started to collect good quality wealth data on a longitudinal basis.

Many studies document the short-term impact of divorce on economic well-being. Although virtually all studies report a reduction in well-being for women and children after marital breakdowns (Arends-Kuening and Duryea 2006; Couch and Lillard 1997; Daniels et al. 2006; Duncan and Hoffman 1985; Eldar-Avidan et al. 2008; Garasky and Stewart 2007; Holden and Smock 1991; Jeynes 2002; Moon and Joung 1997; Moore et al. 1995; Perry-Jenkins and Gillman 2000; Peterson 1996; Schramm 2006), estimates for men are more variable. Some studies; such as, Smock (1993, 1994), found that men experienced a sizable improvement in standard of living after divorce; whereas, others such as Peterson (1996) suggest that men's well-being undergoes a modest, positive change. McManus and Di-Prete (2001), on the other hand, found that the majority of men experienced economic losses after marital disruptions. Similarly, Burkhauser et al. (1990, 1991), among others, estimated that both men and women suffered a decrease in standard of living, but women's decline was far more serious than men's. More recent studies (McKeever and Wolfinger 2001; Page and Stevens 2004) reported that the losses suffered by recently divorced women and their children were substantially smaller and marital disruption had much more modest economic consequences than in years past. On the other hand, Bianchi et al. (1999) still provided mixed results with respect to whether an economically independent wife was better able to achieve an

³ Some of the exceptions are Hurd (2002), Lupton and Smith (2003), and Wilmoth and Koso (2002).

equitable post-separation financial situation vis-à-vis her husband.

Despite the fact that these studies have been useful in terms of determining the short-term influence of household dissolutions on economic status, few studies have investigated the link between marital disruptions and long-term economic outcomes. In this regard, as noted by Wilmoth and Koso (2002), the most commonly used measures; such as, income, reflect economic resources at a point in time and might give misleading results with respect to determining individuals' ability to sustain economic well-being. Thus, wealth might be a more appropriate measure of economic status because it represents the resources that are available to maintain consumption especially near the end of the life cycle, and it is generally the case that the elderly face prospects of high health care expenditures with little or no earned income to meet the added financial burden.

As the good quality wealth data emerged, researchers became more interested in developing conceptual frameworks about the impact of marriage on savings behavior both in the empirical and theoretical senses. Cubeddu and Rios-Rull (1997), for example, provide a theoretical model of marriage and wealth accumulation with agents changing marital status, but where the saving behavior of the households can adjust to the properties of the demographic process. Similarly, Lupton and Smith (2003) provide an excellent discussion of the theoretical considerations for the relationship between marriage and asset accumulation.

Family composition may affect savings in several ways. Marriage in principle could depress savings in the sense that it may act as a risk-reducing institution, as individual members insure each other against life cycle shocks. The empirical studies of Chaulk et al. (2003), and Finke and Huston (2003), indeed, suggest a strong relationship between marital status and risk tolerance mainly due to the insurance role played by marriage. Marriage, on the other hand, may also be a wealth-enhancing institution by changing the total household production and consumption disproportionately, due to complementarities in production among the partners or due to economies of scale in household consumption. Light and Ureta (2004), Mauldin and Mimura (2007), and Pandey and Kim (2008) found that marriage acts as a poverty alleviation mechanism especially for single mothers with dependent children.

Several other effects of marriage may impact savings decisions. Some studies such as Lillard and Weiss (1996) argue that marriage increases life expectancy at older ages and should encourage more wealth accumulation in order to maintain consumption for this additional lifetime increase. Children are another primary reason why marriage may lead to variation in savings among family types, given that different marital experience will lead to variation in the number of children or in the time spent with

children in the same household (Cha et al. 2005). Thus, there are many reasons to argue that past marital disruptions might influence wealth accumulation and hence portfolio allocations. Of course, the impact might be different for individuals experiencing different outcomes—for example, divorce and widowhood. Although both might be classified as marital shocks, they are significantly different states and thus the resulting impact in terms of wealth accumulation or portfolio allocations might be very different for those two states.

In light of these theoretical reasons that marital changes might significantly influence savings behavior in several ways, the present study examined the extent to which past marital disruption history explains the variation in wealth levels and portfolio allocations of older individuals. The goal is to see whether the influence of those disruptions is mitigated through, for example, savings behavior adjustments or labor supply responses, or if it spreads and accumulates across all future periods to cause a greater degree of wealth and portfolio differentials among the elderly.

Given its focus, the research is closely related to the work of Hurd (2002), Lupton and Smith (2003), and Wilmoth and Koso (2002). With respect to examining wealth levels, although Wilmoth and Koso (2002) look at the same issue, there are significant differences between my approach and their approach. First, the current study includes not only wives' characteristics in the wealth regression but also husbands' in looking at the link between wealth levels of current couples and their marital history.

Why is it important to include traits of both the husband and wife? One of the main motivations in using both spouses' characteristics is to utilize the *level of heterogeneity* among the married couples to capture and identify the links between marital disruptions and wealth accumulation. As one would imagine, the larger the set of available information, the more accurate the solution would be to a problem of interest, which would use that information. Relevant to the issue at hand, one of the distinctive features of the HRS is that, for partnered or legally married respondents, it interviews not only the respondent but also his or her spouse with the same set of questions. This enables us to derive the marital disruptions history for not only husbands, but also their wives. Looking at the joint marital history in a descriptive way in Table 1 indeed indicates a great deal of heterogeneity among the couples in terms of each spouse's past marital experience. Remember here the fact that wealth is measured at the *household level* and, unfortunately, within households, distribution of wealth is not observed to derive the *individual levels* of wealth. Thus, it is important to include both spouses' variables in the wealth regressions, as both of their characteristics are likely to play significant roles in the household wealth accumulation process over the life

Table 1 Distribution of marital history

(A) Currently married couples ($n = 4,744 \times 2$)		Wife's number of divorces		
(i) Divorce		0	1	2+
Husband's number of divorces	0	0.664	0.062	0.008
	1	0.089	0.101	0.019
	2+	0.014	0.027	0.016
(ii) Widowhood		Wife's number of widowhoods		
		0	1	2+
Husband's number of widowhoods	0	0.9250	0.0331	0.0015
	1	0.0301	0.0091	0.0004
	2+	0.0006	0.0002	0.0000
(iii) Length of current marriage				
Marriage length (in years)	≤ 5	0.059		
	>5 and ≤ 10	0.056		
	>10 and ≤ 15	0.059		
	>15 and ≤ 20	0.069		
	>20	0.757		
(B) Currently singles ($n = 2,369$)				
(i) Divorce				
Number of divorces	0	0.455		
	1	0.399		
	2+	0.146		
(ii) Widowhood				
Number of widowhoods	0	0.7151		
	1	0.2756		
	2+	0.0093		
(iii) Length of longest marriage				
Marriage length (in years)	≤ 5	0.241		
	>5 and ≤ 10	0.095		
	>10 and ≤ 15	0.122		
	>15 and ≤ 20	0.137		
	>20	0.406		

Note: The reported numbers are the population shares of individuals or couples in each corresponding category

cycle due to the fact that both spouses potentially contribute to total household wealth and the preferences are interrelated across household members. Moreover, there might be significant gender differences in terms of the effects of individual characteristics on wealth accumulation. Indeed, the observed differences between husband and wife coefficients in the results section reinforce the importance of utilizing the rich information available for each spouse. Thus, as opposed to my approach of looking at couples separately, combining all individuals in a single regression would be cruder and ignore the heterogeneity in spouse's marital history and those gender differences. Also, there is now a growing body of literature on intra-household economic activities and resource allocation which stresses gender differences and strongly rejects equal distribution of resources among household members by

testing *collective* versus *unitary* models of family decision making. For some examples, please see Anderson and Baland (2002), Browning and Chiappori (1998); Duflo and Udry (2004), Guyer (1997); Hoddinott et al. (1997), and Jianakoplos and Bernasek (2008). Moreover, the well-known framework of Becker (positive or negative assortative mating) about why each spouse's characteristics are important to marriage benefits supports the reasons mentioned above.

Wilmoth and Koso (2002), on the other hand, simply look at men and women separately and ignore the partner information although it is available in the HRS. I believe, given the motivations explained, using both partners' information is a richer approach in not only empirical but also theoretical grounds, and provides interesting robust results in comparison to the mentioned study of Wilmoth and Koso (2002).

Indeed, Wilmoth and Koso (2002) in their conclusion, noted that in order to understand a couple's wealth more completely it would be necessary to specify couple models that take into account both partner's marital history.

Second, there are also significant differences between the control variables used in Wilmoth and Koso (2002) and the current research. In addition to the same control variables used in Wilmoth and Koso (2002), the current analysis uses control variables for expectations, risk aversion and life style variables. Clearly, excluding these additional variables might yield spurious confounding relationships for wealth levels and portfolio allocations. In fact, Kezdi and Willis (2003) show that expectations are significant determinants of wealth holdings and portfolio allocations. Hurd (2002), and Lupton and Smith (2003) are also related to the current study however, their approaches and focus are clearly different than the present research and the analysis here examines the relationship between marriage and portfolio allocation from a *different* perspective.

Data Description

The data used in this paper are drawn from the first wave of the HRS.⁴ Rather than using the original raw version of the HRS, I used the first wave of the RAND HRS data. The RAND HRS data file is a cleaned and easy-to-use version of the HRS with derived variables covering a broad range of measures including wealth, income, asset components, and marital history.

The HRS is a longitudinal national panel study of those near or in their retirement years. The first wave of the study was conducted in 1992 and it consists of interviews in approximately 7,600 households with a primary respondent aged from 51 to 61. If an age-eligible respondent (an

individual from the cohorts born between 1931 and 1941) had a spouse or partner co-residing then the spouse or partner was also given the same individual level interview separately even though he or she was not between the ages of 51 and 61. However, in collecting household level information, which would be the same for both spouses, only one interview is given, generally to the financially responsible member of the household. In addition to a large number of usual demographic characteristics; such as, race, education and marital status, the survey collects detailed information on (a) health and cognitive status, (b) expectations, (c) the nature of retirement decisions, (d) housing, (e) income and wealth holdings, (f) work history, (g) family composition, and (h) the availability of insurance and pensions. Of particular interest for the present analysis is that the HRS provides detailed information on each respondent's marital history. The main reason for choosing the first wave of the HRS in the current study is that it better represents the sample cohort (those who were between 51 and 61 in 1992) and does not suffer from the attrition problem as in the later waves of the data.⁵

Conducting an analysis of portfolio decisions requires that one specify the assets from which the investor chooses. In this research, total wealth of each household is the sum over net values of six asset types classified as (a) owner-occupied housing, (b) real estate that is not primary residence, (c) vehicles, (d) businesses, (e) IRA and Keogh accounts, and (f) total financial wealth.⁶

In my final sample of the HRS respondents for whom I have complete information on the variables of interest, there are 4,744 currently married couples and 2,369 currently singles.

For the reasons mentioned previously about the importance of utilizing the heterogeneity in spouses' marital history, in the empirical analysis I made a distinction between *currently married couples* and *currently singles* and examined their wealth levels and portfolio allocations separately. Although it is possible to identify those who are not legally married but living with a spouse as partnered individuals, in terms of practical purposes, those who are legally married and those who are partnered but not legally married are grouped as *currently married couples*.

⁴ An alternative strategy to cross-sectional approach would be to employ panel data to investigate the relationship between marital shocks and changes in wealth holdings and asset allocation. The limited number of household dissolutions that have occurred during the sample period covered by the available waves of the HRS restricts us taking a step in this direction. Indeed, my preliminary analysis using the panel data with very few household disruptions provided only very weak identifications, which were not very fruitful. Thus, I opted to use cross-sectional data from the first wave, which yielded interesting results. Although, the HRS is a panel data, remembering that population coverage is the adults who were between the ages of 51 and 61 in the first wave of the data, I suspect that marital disruptions such as divorce and separation mostly occur relatively earlier over the life cycle which is why we get limited number of observations in the HRS for disrupted households. The PSID, on the other hand, covers a longer horizon starting from 1968 and has many divorce cases, yet wealth is collected only in a few supplemental files. For some descriptive statistics regarding the distribution of marital transitions between the first and second waves of the HRS and the changes in wealth levels between the two waves conditional on those transitions, please see the Appendix at the end of the paper.

⁵ Obviously, although in a short-run evaluation they may not matter much, in a longer horizon evaluation cohort effects might be significantly different which need to be taken into account when making general statements about the conclusions of the paper.

⁶ Although the current study rather examines the relationship between household net worth and marital history, I would like to point that there is some recent research which looks at the differing roles of assets and consumer debt in marriage as well as the role of financial strain. For some examples, please see Chang and Lee (2006), Dew (2007), and Gudmunson et al. (2007).

Of those 4,744, 4,553 couples reported positive levels of household net worth, while the other 191 couples had zero or negative levels of total household wealth. Corresponding numbers for singles are 1,847 and 522, respectively.

Table 1 presents the marital history distribution of the HRS sample. Three main variables by which I define marital history are the number of divorces, number of widowhoods and length of marriage. The length of marriage variable is the number of years spent in current marriage for married couples and it is the number of years spent in the longest marriage for singles. While looking at the distributions of number of divorces and widowhoods might capture most of the marital disruption history, one would argue that the amount of time spent as married might also be particularly important in terms of understanding the effects of household dissolutions over the life cycle. Thus, the main goal in using these *length of marriage variables* (which are provided as summary measures in the group of marital history variables in the HRS) is to capture and proxy for *past marital duration* effects on wealth accumulation and portfolio allocations. Clearly, there are some differences between the *marriage length* variables used for currently married couples and singles. While for the former, it is about how long has lapsed since divorce, for the latter it is about how long the marriage lasted before divorce. Thus, in terms of interpreting the results, these differences with respect to *marital duration* effects need to

be kept in mind. Although crude, hopefully these measures capture past marital duration effects to a good extent.

Table 1A first looks at the marital experience of elderly couples. Using the number of divorces of each spouse, the sample was divided into nine mutually exclusive couple types. (0,0), for example, denotes that both spouses in the couple have never experienced a divorce, and (1,0) means that the husband has gone through one divorce in the past and the wife has never been divorced. Given this definition, one can see from Table 1A that almost 34% of currently married couples (in which at least one of the spouses is from the cohorts born between 1931 and 1941) had experienced at least one marital breakdown in the past through either the husband or wife, while 66% of those couples had a stable marriage with no divorce. A significant number of the elderly couples had some divorce experience. Thus, it would be of interest to examine how savings and portfolio decisions of the couples that have some marital disruption history differ from those of stably married couples without any household dissolution.

Not many of the spouses had ever been widowed when the first wave of the HRS was conducted in 1992. Nevertheless, Table 1A also presents the joint widowhood history of the elderly couples to capture their entire marital history. Only 7.5% of the couples had experienced widowhood through either the husband or wife, because the sample elderly were relatively young when considering the

Table 2 Levels of total household wealth conditional on divorce history

		(A) Currently married couples		
		<i>(i) Mean levels</i>		
		Wife's number of divorces		
		0	1	2+
Husband's number of divorces	0	272,458	213,651	165,570
	1	185,726	229,275	99,417
	2+	183,735	157,260	139,130
		<i>(ii) Median levels</i>		
		Wife's number of divorces		
		0	1	2+
Husband's number of divorces	0	130,000	86,000	75,458
	1	95,000	104,617	63,000
	2+	74,750	76,500	62,725
		(B) Currently singles		
		<i>(i) Males</i>		
		Mean	Median	
Number of divorces	0	159,517	25,000	
	1	118,296	32,061	
	2+	119,170	30,000	
		<i>(ii) Females</i>		
		Mean	Median	
Number of divorces	0	81,789	26,000	
	1	76,602	25,000	
	2+	57,175	16,875	

Note: Wealth is measured in nominal U.S. dollars

average longevity of the U.S. population. On the other hand, 92.5% of older couples had no widowhood experience.

Table 1 presents the distribution of length of marriages. Using a five-year scale of marriage length, I group the individuals into five different groups classified as the ones who had been married less than or equal to 5 years, more than 5 years but less than or equal to 10 years, and so on. Table 1A shows that 75.7% of older couples fell into the fifth group that had been married for at least 20 years. The rest of the couples were approximately evenly distributed among the other four groups. I would stress here once more that, as in the case of divorce history, we observe a great deal of heterogeneity in the length of current marriages of older couples, which suggests that accounting for differences in their marital history might play a crucial role in terms of a better understanding of the dispersion in their wealth holdings and portfolio allocation.

Table 1B presents the marital history of currently single individuals. Apparently both divorce and widowhood were more common in percentage terms among singles than among married couples. Of the currently single individuals, almost 40% had experienced one marital breakdown and 15% had at least two household dissolutions, while 45% had never been married or divorced. Similarly, 28% of singles had been widowed once; whereas, 71% had never

lost a husband or a wife. Only 1% of singles, on the other hand, had been widowed at least twice. In terms of the time spent as married, there was a great deal of heterogeneity among singles as well. Almost 41% of singles had spent at least 20 years of their lives as married, although 24% had the longest marriage duration of 5 years or less. Of the rest, 10%, 12% and 14% had the longest marriage length between 5 and 10, 10 and 15, and 15 and 20 years, respectively.

Given the marital experience of older Americans described in Table 1, the descriptive analysis was continued by exploring the relationship between their wealth holdings and marital history. Table 2 indicates the mean and median total household wealth levels of older couples and singles, separately, conditional on their divorces. As an aside, I would stress here that, considering household composition heterogeneity, my adjustments for differences in household sizes still create very similar results.

The raw statistics in Table 2A apparently suggest the existence of a significant negative correlation between wealth holdings and divorce history of the elderly couples. That is, the higher the number of divorces experienced, the lower the current net worth. This is true for both the mean and median wealth levels. While the couples in which both spouses had never been divorced had on average \$272,458 of net worth, the mean wealth of the couples in which both

Table 3 Levels of total household wealth conditional on widowhood history

		(A) Currently married couples		
		<i>(i) Mean levels</i>		
		Wife's number of widowhoods		
		0	1	2+
Husband's number of widowhoods	0	250,200	188,678	136,552
	1	201,465	206,555	37,250
	2+	385,249	341,000	N/A
		<i>(ii) Median levels</i>		
		Wife's number of widowhoods		
		0	1	2+
Husband's number of widowhoods	0	115,630	102,000	17,000
	1	98,500	105,000	37,250
	2+	402,000	341,000	N/A
(B) Currently singles				
<i>(i) Males</i>		Mean	Median	
Number of widowhoods	0	137,448	27,500	
	1	124,789	32,183	
	2+	48,700	48,700	
<i>(ii) Females</i>		Mean	Median	
Number of widowhoods	0	66,847	18,500	
	1	94,009	34,000	
	2+	93,334	61,000	

Note: Wealth is measured in nominal U.S. dollars

spouses had divorced at least twice was \$139,130, which is only (approximately) 50% of \$272,458. The median wealth figures in percentage terms give us very similar results.

Table 2B, however, shows clear differences between single males and females in terms of the relationship between wealth levels and divorce experience. Single females had much lower wealth levels than single males at all levels of marital breakdown experience. For females, there was an apparent strictly monotonic negative relationship between the number of divorces and net worth. This was true for both mean and median wealth. For males, on the other hand, mean and median wealth leveled yield different results. Average wealth levels showed that the never married males had much higher net worth than those who had been divorced at least once. The median wealth levels, however, indicated an exact opposite relationship between wealth and divorce. That is, the never married males had lower median net worth than those who have some divorce experience. Nevertheless, in both mean and median terms, having multiple divorces did not seem to create significant differences in wealth relative to being divorced only once.

Table 3 presents the levels of total household wealth conditional on widowhood history. For married couples, the raw statistics did not show a monotonic relationship between household net worth and past widowhood experience. This is true for both mean and median measures. Since only 7.5% of the couples had some widowhood experience, the cell sizes were very small, and it was difficult to draw a clear conclusion from the noisy measures. For single females, however, there appeared to be a positive relationship, in both mean and median terms, between net worth and the number of widowhoods. This positive relationship was stronger for median wealth. For single males, on the other hand, the correlation between net worth

and the number of widowhoods did not go in the same direction for mean and median wealth measures. While the median net worth seems to be strongly positively related to the number of widowhoods, the converse relationship occurs for the mean wealth.

In Table 4, I present the levels of household net worth conditional on marriage length. For married couples, it is apparent that those who have been married for at least 15 years or more have significantly higher net worth than the rest of couples in both the mean and median terms. For example, the mean net worth of the couples who had been married for more than 20 years was the highest at \$263,380, and it was the second highest at \$228,444 for couples whose marriage length was more than 15 years but less than or equal to 20 years. The other three marriage length groups defined on a 2-year scale had approximately the same mean wealth levels in the range of \$175,687–181,393. These numbers are suggestive of a positive correlation between net worth and the length of current marriage. The median wealth levels were much lower than the mean levels for all groups. However, their orderings yielded the same conclusions drawn from those of the mean wealth levels. A positive relationship also seems to be present between single females' length of longest marriage and their current net worth. For single males, on the other hand, the relationship between marriage length and wealth was obviously not monotonic. Mean wealth is U-shaped in length of marriage taking its minimum value of \$74,838 when the longest marriage length was between 10 and 15 years. Median wealth also took its minimum value at the same point. However, it did not show a systematic pattern. Although the detailed descriptive analysis in this section provides some suggestive results in terms of understanding the relationship between marital history and wealth holdings, other demographics might be correlated both with marital disruptions

Table 4 Levels of total household wealth conditional on length of marriage

(A) Currently married couples		Mean		Median	
Length of current marriage (in years)	≤5	181,393	86,235		
	>5 and ≤10	175,687	80,500		
	>10 and ≤15	177,499	76,525		
	>15 and ≤20	228,414	97,000		
	>20	263,380	124,450		
(B) Currently singles		Males		Females	
		Mean	Median	Mean	Median
Length of longest marriage (in years)	≤5	157,744	22,385	54,075	15,000
	>5 and ≤10	106,247	36,000	62,012	7,500
	>10 and ≤15	74,838	12,500	54,298	16,000
	>15 and ≤20	164,028	52,250	69,617	24,000
	>20	136,354	34,907	98,823	31,000

Note: Wealth is measured in nominal U.S. dollars

and household net worth. Therefore, I now turn to a multivariate approach that controls for other factors and helps us to disentangle the link between past marital events and current wealth holdings of the elderly.

Estimation Issues and Results

Wealth Levels

In estimating the relationship between wealth levels and marital history of elderly households, I used an OLS regression. Obviously individuals would have no control over death of a spouse; nonetheless, one might argue that divorce is endogenous with respect to wealth levels. I would stress here though that my goal in examining the link between net worth and marital events is to improve our understanding of the extent to which marital disruptions capture wealth dispersion among the elderly, rather than setting up a causal relationship. Given the available data sets, the causality issue is a difficult task that requires finding instruments that are convincingly uncorrelated with wealth and highly correlated with divorce history. The possible endogeneity might be a serious problem, if there are many unobservable characteristics, which are correlated with both divorce history and wealth levels. With the rich data sets such as the HRS, it would be a less serious problem since they allow one to control for many demographic and economic variables that would be unobservable in other databases. Given the importance of understanding the consequences of marital disruptions and the public policy implications of those consequences in an aging population, the approach taken here provides useful descriptive results.

The estimation results of the wealth regressions are reported in Tables 5 and 6 for married couples and singles, respectively. Because a significant number of respondents reported zero or negative levels of net worth, the dependent variable in the regressions was chosen to be the levels of household wealth in thousands of U.S. dollars rather than the logarithm of wealth. However, by setting the logarithm of wealth for those households who reported zero or negative net worth to zero or by excluding those households from the sample, and re-estimating the regression where the dependent variable equals to the logarithm of household wealth did not change the substantive results presented in this paper.

The independent variables of married couples were classified into four groups as (a) husband's characteristics, (b) wife's characteristics, (c) variables that were common to both spouses, and (d) marital history variables. The wealth regression for singles used the same set of individual and household level variables except those that control for individual specific information of the current spouse.

Table 5 OLS regression results of wealth levels for *currently married couples*

Explanatory variable	Estimated coefficient	<i>p</i> value
<i>Husband's characteristics:</i>		
Age	38.451	0.008
Age squared/100	-28.231	0.022
Years of education	-21.739	0.019
Years of education squared/100	147.967	0.000
Catholic	14.385	0.521
Jewish	154.372	0.126
Excellent health	99.587	0.001
Very good health	46.374	0.117
Good health	22.909	0.420
Fair health	24.736	0.411
Covered by health insurance	-86.787	0.000
Least risk averse	-48.371	0.019
3rd most risk averse	-63.737	0.005
2nd most risk averse	-25.027	0.129
Expected probability of living up to 85	0.125	0.586
Mental health score	-3.594	0.577
Ever drink any alcohol	13.895	0.368
Smoke ever	-86.640	0.000
Probability of receiving inheritance	0.732	0.002
<i>Wife's characteristics:</i>		
Age	11.372	0.378
Age squared/100	-8.347	0.503
Years of education	-19.260	0.094
Years of education squared/100	145.094	0.003
Catholic	-18.205	0.405
Jewish	120.471	0.250
Excellent health	83.006	0.016
Very good health	76.155	0.021
Good health	30.067	0.348
Fair health	20.983	0.529
Covered by health insurance	-66.931	0.002
Least risk averse	41.725	0.050
3rd most risk averse	-10.196	0.633
2nd most risk averse	3.353	0.850
Expected probability of living up to 85	-0.228	0.305
Mental health score	-7.537	0.134
Ever drink any alcohol	50.758	0.001
Smoke ever	5.721	0.669
Probability of receiving inheritance	1.032	0.000
<i>Common variables:</i>		
Number of household members	-5.968	0.312
Number of living children	-5.373	0.129
White	89.809	0.045
Black	6.617	0.890
Hispanic	0.952	0.985
Northeast	-48.144	0.041

Table 5 continued

Explanatory variable	Estimated coefficient	<i>p</i> value
Midwest	−53.183	0.013
South	−76.974	0.000
<i>Marital history variables:</i>		
Husband divorced once	−29.863	0.174
Husband divorced twice or more	−40.718	0.125
Wife divorced once	−12.279	0.586
Wife divorced twice or more	−23.087	0.559
Husband been widowed once	−8.521	0.824
Husband been widowed twice or more	42.532	0.849
Wife been widowed once	36.868	0.313
Wife been widowed twice or more	64.981	0.660
Couple's length of current marriage	1.573	0.163
Constant	−1335.5	0.018
Mean of dependent variable	246.146	
Adjusted <i>R</i> -squared	0.144	
Number of observations	4,744	

Note: The dependent variable is the net value of total household wealth measured in thousands of U.S. dollars. The omitted categories for dummy variables are all other religions (mainly Protestants), poor health, most risk averse, all other races, West, never divorced, and never been widowed

The husband's and wife's characteristics are *individual specific* variables of each spouse, respectively. Among those variables, consistent with the life cycle models of household savings and consumption, standard variables were included; such as, (a) age, (b) age squared, (c) years of education, (d) years of education squared, (e) health status, and (f) ownership of employer or government provided health insurance. Some additional variables available only in the HRS were included; such as, (a) expected probability of living up to 85, (b) receiving inheritance, (c) mental health score, and (d) risk aversion.⁷ Religion, smoking and drinking behavior variables were included in the regression with the idea that they might capture some of the unobservable life style effects, beyond health and risk

⁷ Kezdi and Willis (2003) showed that expectations are significant determinants of wealth holdings and portfolio allocation. Therefore, those variables were also included in the regressions presented in this paper. Information on inheritance expectations was drawn from the second wave of the HRS, because it had been collected beginning from that wave, and was unavailable in the first. In the HRS, each respondent was asked a question which involved four levels of risk taking behavior in terms of keeping the current family income safe. Depending on the answer the respondent's risk aversion was classified as the least, 3rd most, 2nd most, and most. Mental health score took a value from 1 to 8 and measured the state of the respondent's feelings. The higher the score, the more unhappy and depressed the respondent.

aversion, which might possibly be correlated with both divorce and wealth.

The common variables included (a) number of household members, (b) number of living children, (c) race and (d) region.⁸ The number of living children was defined as the counts of different individuals who were either a child or a step-child of the respondent or spouse. Since there were only a few couples in which the spouses had different races, the husband's race was used as a common variable to proxy the impact of race on the couple's wealth level. The region variables were included in the regression, because there is a great degree of price variation across regions, which might affect the ability to accumulate wealth (Slesnick 2002).

Finally, as described in the data section in detail, marital history variables were the dummy indicators for the number of past divorces and widowhoods, and the length of marriage.

In the regressions the currently single sample excluded those who had never been married. If they were included, divorce dummies would compound two things—marriage and then divorce. Thus, the divorce variable would capture the difference of people who married and then divorced, against people who never married. However, the evidence in the marriage market literature often supports the marriageability hypothesis, where the probability of getting married is positively correlated with pre-marital financial well-being. Because never married individuals were excluded from the singles' regression, the dummy variables controlled for divorce history were slightly different than those used in the currently married couples' regression in the sense that they were defined conditional on being divorced at least once. For the full list of independent variables and the omitted categories for dummy variables please see Tables 5 and 6.

Even though they are not the focus of the present analysis, there are a few interesting significant results to notice first from the wealth regressions. Table 5 shows that, among the married couples, most of the estimated coefficients on the husband and wife characteristics are consistent with the previous literature, and go in similar directions and magnitudes. For example, for both husbands and wives, education levels were found to be significant determinants of wealth levels, which is not surprising, as

⁸ A measure of permanent income, either at the individual or household level, would be appropriate to include in the regression. However, within the context of household dissolution, it is really not clear how to measure the permanent income in a sensible way. Nevertheless, the inclusion of current nominal household income as an additional independent variable only reduces the partial correlation of wealth and education, age and health status leaving the other results unaffected. Moreover, even though possibly endogenous, controlling for individuals' current labor force participation also does not alter the substantive results of the present study.

Table 6 OLS regression results of wealth levels for *currently singles*

Explanatory variable	Males		Females	
	Estimated coefficient	<i>p</i> value	Estimated coefficient	<i>p</i> value
Age	96.643	0.564	21.316	0.701
Age squared/100	−84.684	0.574	−15.040	0.763
Years of education	−66.998	0.001	−20.260	0.014
Years of education squared/100	379.671	0.000	140.029	0.000
Catholic	−45.357	0.265	−2.583	0.852
Jewish	−133.109	0.516	56.598	0.187
Excellent health	84.858	0.087	47.519	0.018
Very good health	78.406	0.170	39.426	0.037
Good health	38.445	0.468	15.298	0.385
Fair health	58.166	0.272	0.009	0.999
Covered by health insurance	−12.516	0.694	−13.051	0.244
Least risk averse	27.221	0.489	4.279	0.775
3rd most risk averse	94.038	0.068	21.033	0.178
2nd most risk averse	−13.271	0.735	12.506	0.398
Expected probability of living up to 85	−0.639	0.171	−0.200	0.198
Mental health score	−9.393	0.288	−3.279	0.266
Ever drink any alcohol	19.084	0.548	13.889	0.179
Smoke ever	−24.414	0.494	0.913	0.930
Probability of receiving inheritance	0.286	0.592	0.458	0.007
Number of household members	−9.480	0.498	−5.594	0.139
Number of living children	6.191	0.401	−5.526	0.042
White	10.799	0.916	−39.156	0.242
Black	−68.847	0.512	−47.880	0.162
Hispanic	−66.417	0.559	−65.269	0.088
Northeast	15.857	0.750	−56.165	0.001
Midwest	−1.324	0.977	−65.324	0.000
South	−9.138	0.465	−65.747	0.000
Divorced twice or more	−12.379	0.190	−25.404	0.002
Been widowed once	−4.918	0.943	26.086	0.048
Been widowed twice or more	N/A	N/A	28.430	0.040
Length of longest marriage	−0.213	0.895	1.205	0.002
Constant	−2415.03	0.605	−532.95	0.729
Mean of dependent variable	118.579		71.948	
Adjusted <i>R</i> -squared	0.11		0.184	
Number of observations	430		860	

Note: The dependent variable is the net value of total household wealth measured in thousands of U.S. dollars. The omitted categories for dummy variables are all other religions (mainly Protestants), poor health, most risk averse, all other races, West, divorced once, and never been widowed

many other studies have found it before. Similarly, we observe a significant positive association between household wealth and spouses' health levels, which has also been noticed by many previous researchers (Adler et al. 1994; Smith 1999; Wilkinson 1996). The other consistent findings for both husbands and wives are that there is a significant negative association between health insurance coverage and wealth levels, and a positive significant relationship between the probability of receiving inheritance and household net worth. Although they might seem surprising, both can be explained by and consistent with a precautionary saving motive, which implies that a reduced

risk level implies a reduction in total savings. The coefficients on smoking and drinking variables, on the other hand, yield different results for husbands and wives, and might be capturing some of the gender specific effects of unobservables. Similarly, while husbands' risk aversion variables seem to be significant in determining overall household net worth, wives' risk aversion dummies turn out to be significant only for the least risk averse category, and its effect is in opposite direction to that of husbands. From the common variable coefficients, we see that the couples with a higher number of household members and living children have lower levels of net worth. However,

the magnitudes of the effects for those variables were not statistically significant. As expected, there are some significant differences in wealth holdings of older couples conditional on their race and region of residence.

Although some of the major significant coefficients imply the same conclusions as those found for the currently married couples, Table 6 also indicates some apparent differences between the estimated coefficients of currently single males and females. For instance, Table 6 shows that the relationship between education, health, and wealth levels for both single males and females were the same as for married couples, although the degree of significance for single male health was relatively lower. For both single males and females, the results for health insurance coverage and the probability of receiving inheritance were similar to those of married couples in terms of the sign. However, they were mainly statistically insignificant except for the probability of receiving inheritance among single females. In regards to highlighting some of the other significant findings, we see that the number of living children had a statistically significant negative impact on single females' net worth (similar to that of married couples), while it did not turn out to be a significant determinant of single males' wealth holdings. This finding is clearly consistent with Garfinkel (1992), and Scoon-Rogers and Lester (1995). The coefficients on smoking and drinking variables had also different magnitudes for single males and females, but they were mainly not significant. The other important difference between single males and females was the racial disparities in wealth levels. The absolute wealth gap between single white males and other race groups was much higher than the wealth gap of single white females and others. In looking at the coefficients for regional variables, we observed that single females in the West seemed to be significantly better off than their counterparts in other regions. This was also observed for married couples in Table 5. However, regional differences in single male wealth levels seemed to be much smaller, and they were mainly not significant. Although there is not a clear explanation why this would be the case, it might have something to do with legal climate or culture surrounding divorce in western states in a gender specific way.

I now focus on the main variables of interest from Tables 5 and 6. Table 5 shows that the descriptive (seemingly significant) negative relationship observed between married couples' joint divorce history and net worth, and the positive correlation between their length of current marriage and wealth were mitigated once I controlled for other factors in a multivariate regression. Although all of the coefficients estimated on marital history variables turned out to be not significant, their signs and magnitudes still suggest that both currently married men and women had suffered from the negative shocks of past marital

dissolutions in terms of household wealth accumulation. In absolute terms, the estimated negative relationship between household net worth and divorce experience was higher for husbands than for wives. The statistical insignificance of coefficients on marital history variables, on the other hand, may suggest that, for those who remarry after divorce, there is recovery from the sufferings of marital disruptions which have occurred earlier in the life cycle.

Table 6 indicates similar results for single males. That is, all the estimated coefficients on marital history variables of single males were not significant as well. In terms of directions, however, a higher number of divorces still implied a lower level of household net worth relative to those who had been divorced once. A similar negative relationship was true for widowhoods and length of longest marriage, but it was not significant in terms of statistical measures. Focusing on single females' wealth regression coefficients shows statistically significant results in terms of the relationship between household net worth and marital experience. As the descriptive statistics in Table 2 suggested, the multivariate regression results also indicate a strictly monotonic negative relationship between the number of divorces and household wealth. That is, those currently single females who had divorced twice or more had much lower levels of household wealth compared to their counterparts who had divorced only once. Experiencing widowhood, on the other hand, implied higher levels of household net worth for currently single females. Remembering that widowhood is a completely different state than divorce, a reduction in household size due to death of a spouse might lead to higher levels of wealth in per capita terms. In terms of the time spent as married, we observe that the longer the length of longest marriage the higher the current household wealth, which is an intuitive finding. These different results between single males and females are obviously consistent with, among many others, Burkhauser et al. (1990, 1991), who concluded that after divorce both men and women suffer a decrease in well-being, but women's decline is far more serious than men's. These results also suggest that the variation in marital history plays a significant role in explaining the dispersion in wealth holdings near the end of the life cycle for currently single females; whereas, it plays only a minor role for single males.

Asset Ownership and Allocation

In examining the asset ownership and allocation profiles of older individuals, I considered the six components of overall net worth classified previously as (a) owner-occupied housing, (b) real estate, (c) vehicles, (d) businesses, (e) IRA and Keogh accounts, and (f) total financial wealth. The goal here was to determine whether previous marital

Table 7 Probit model results for asset ownership probabilities

Explanatory variable	Housing		Real estate		Vehicles		Businesses		IRA, Keogh acct.		Financial wealth	
	M.e.	p value	M.e.	p value	M.e.	p value	M.e.	p value	M.e.	p value	M.e.	p value
<i>Married couples</i>												
Husband divorced once	0.017	0.271	-0.007	0.734	0.014	0.082	0.025	0.126	-0.040	0.062	0.024	0.052
Husband divorced twice or more	-0.015	0.513	0.034	0.306	0.039	0.021	0.029	0.280	-0.062	0.050	0.039	0.019
Wife divorced once	0.000	0.984	0.020	0.340	0.008	0.357	-0.010	0.543	0.014	0.525	0.026	0.161
Wife divorced twice or more	0.020	0.453	0.038	0.294	0.042	0.063	-0.021	0.475	-0.002	0.960	0.025	0.427
Husband been widowed once	0.055	0.043	0.041	0.246	0.009	0.525	-0.005	0.869	-0.011	0.779	0.030	0.350
Husband been widowed twice or more	0.067	0.021	-0.103	0.609	0.012	0.390	-0.006	0.850	-0.137	0.502	0.040	0.226
Wife been widowed once	-0.005	0.835	0.008	0.825	-0.012	0.330	-0.015	0.607	-0.037	0.314	0.040	0.189
Wife been widowed twice or more	-0.050	0.569	-0.226	0.202	-0.028	0.238	-0.006	0.959	-0.305	0.092	-0.084	0.451
Couple's length of current marriage	0.003	0.000	0.000	0.911	0.001	0.024	0.001	0.166	-0.002	0.081	0.003	0.006
<i>Single males</i>												
Divorced twice or more	0.010	0.842	-0.003	0.089	0.005	0.031	-0.012	0.679	-0.056	0.159	-0.008	0.867
Been widowed once	0.084	0.017	0.050	0.399	0.093	0.037	-0.051	0.472	-0.105	0.246	0.100	0.286
Been widowed twice or more	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Length of longest marriage	-0.004	0.082	-0.001	0.441	0.003	0.014	-0.001	0.688	-0.001	0.604	-0.003	0.222
<i>Single females</i>												
Divorced twice or more	-0.017	0.655	0.023	0.360	0.034	0.024	-0.004	0.795	0.038	0.190	-0.009	0.789
Been widowed once	0.095	0.025	0.059	0.027	0.378	0.013	-0.006	0.735	-0.030	0.411	-0.020	0.602
Been widowed twice or more	0.248	0.003	0.125	0.002	0.477	0.001	-0.007	0.674	-0.035	0.332	0.147	0.547
Length of longest marriage	0.002	0.044	-0.001	0.555	0.006	0.380	0.000	0.778	0.002	0.201	0.001	0.500

Note: The dependent variable is the dummy indicator of owning particular types of assets. M.e. stands for marginal effect. In the single males' sample, there were no individuals who have been widowed twice or more. That is why that category is indicated as N/A. The estimation also controls for age, age squared, education, education squared, health status, health insurance, risk aversion, expected probability of living up to 85, mental health score, probability of receiving inheritance, total wealth, total wealth squared, household size, number of living children, race, and region. Of course, for married couples, the regressions control for both spouses' characteristics for the individual level variables

shocks of older couples significantly altered both the probability of owning a particular asset and the fraction of net worth allocated to that asset. For the ownership probabilities, I followed the general strategy employed in previous papers and estimate a probit model, including on the right hand side the marriage history variables and controls for total wealth, and other demographic and socioeconomic characteristics.

Table 7 presents the marginal effects and p values of marital history variables calculated from the probit estimations. The results suggest that marital disruptions create some significant differences in asset ownership profiles of older individuals.

For home ownership, the couple's length of current marriage turns out to be the most explanatory marriage history variable given the insignificant marginal effects for the husband's and wife's divorce dummies and the wife's widowhood dummies. The husband's widowhood experience, on the other hand, had a positive significant effect on housing tenure. Those who had been widowed at least once are relatively more likely to be homeowners than those who had never been widowed. Past divorce experience turned out to be not significant in predicting housing tenure status of currently single individuals. Widowhood experience, however, significantly increased the likelihood of current homeownership for both single males and females. While the time spent as married was a significant determinant of housing tenure for single females, it did not play an important role for single males.

In the case of real estate ownership, most of the estimated marginal effects were not significant except for the negative impact divorce had for single males and the positive effect of widowhood for single females. Similarly, the marginal effects of all marriage history variables were not significant for all individuals in the private business ownership probit. The marginal effects for vehicles showed that the ownership of that asset increased significantly with divorce experience. This was true for all individuals independent of whether they were currently married or single. The widowhood experience, however, implies dissimilar results for singles and married couples. While it was significant in both single males and females' vehicle ownership probits, it played no major role in the couples'. Moreover, the results yielded a significant positive correlation between the couple's length of current marriage and vehicle ownership. A similar relationship appeared between single males' vehicle ownership and their length of longest marriage, while marriage duration turned out to be not significant for single females.

The effects of marital history on IRA and Keogh account and financial wealth ownerships are also interesting. For both single males and females, past marital disruptions did not seem to be significant factors in

explaining the variation of their ownership profiles with those two asset types.

While the wife's divorces had no effect, those of the husband's exerted a significant negative impact on the couple's status on IRA and Keogh account ownership. In case of widowhoods, however, the relationship reversed. That is, a couple was less likely to own IRA and Keogh accounts if the wife had a higher number of widowhoods and indifferent with respect to the husband's. The marginal effect of the length of current marriage on IRA and Keogh account ownership was negative and statistically significant.

Finally, the ownership of financial wealth, which is the most liquid form of assets, was also affected significantly by the spouses' marital history. Even though the marginal effects of the wife's marital disruptions turned out to be not significant, the husband's divorces increased the couple's likelihood of owning positive amounts of financial wealth in their current portfolio set. Moreover, the results also indicated a significant positive relationship between the couple's duration of current marriage and financial wealth ownership.

The next step is to estimate how the shares of the six asset types that comprise overall wealth of older individuals depend on marital history. As Rosen and Wu (2004) discussed in detail, investigators have previously used a variety of econometric approaches in estimating portfolio shares. The main statistical issue arises from the fact that asset shares are bounded by zero and one. While each approach has its advantages and disadvantages, following Poterba and Samwick (1999), and Rosen and Wu (2004), I used a two-limit tobit procedure because it deals with the issue of boundedness of portfolio shares by zero and one. I would, however, mention that ignoring the censoring issue and estimating a multi-equation system of asset shares also provide very similar results regarding the effects of marital history on portfolio allocation of older individuals.

It is difficult to find a compelling reason to use a set of covariates different from that in the ownership equation, so following the usual practice, I used the same control variables as in the probit estimation. The two-limit tobit estimates for the coefficients of marital history variables are presented in Table 8. The results show that marital breakdowns and the marriage length variables are somewhat significant determinants of older individuals' portfolio allocation.

One can see from the table that while the share of owner-occupied housing was increasing with the married couple's length of current marriage, it was decreasing monotonically with respect to both the husband's and wife's number of divorces. The magnitudes of the estimated coefficients on marital history suggest that the

Table 8 Two-limit tobit regression results for portfolio shares

Explanatory variable	Housing		Real estate		Vehicles		Businesses		IRA, Keogh acct.		Financial wealth	
	Coef.	p value	Coef.	p value	Coef.	p value	Coef.	p value	Coef.	p value	Coef.	p value
<i>Married couples</i>												
Husband divorced once	-0.002	0.908	-0.028	0.340	0.009	0.368	0.061	0.173	-0.002	0.798	0.019	0.160
Husband divorced twice or more	-0.059	0.035	0.039	0.414	0.013	0.063	0.100	0.014	0.008	0.570	0.032	0.049
Wife divorced once	-0.026	0.135	0.036	0.201	0.010	0.369	-0.034	0.453	0.006	0.545	0.011	0.409
Wife divorced twice or more	-0.041	0.062	0.019	0.694	0.061	0.000	-0.078	0.326	0.007	0.680	-0.009	0.701
Husband been widowed once	0.016	0.586	0.025	0.622	-0.003	0.848	-0.003	0.967	-0.012	0.439	0.027	0.228
Husband been widowed twice or more	-0.028	0.865	-0.199	0.427	-0.010	0.977	-1.985	1.000	-0.038	0.666	0.218	0.019
Wife been widowed once	-0.017	0.549	0.027	0.555	-0.004	0.814	-0.049	0.547	-0.013	0.377	0.024	0.238
Wife been widowed twice or more	-0.076	0.524	-0.225	0.357	0.141	0.012	-0.067	0.856	-0.058	0.055	-0.034	0.705
Couple's length of current marriage	0.002	0.015	0.000	0.838	-0.001	0.064	0.002	0.068	-0.001	0.098	-0.001	0.094
<i>Single males</i>												
Divorced twice or more	0.014	0.773	-0.089	0.067	0.790	0.021	-0.164	0.268	0.032	0.643	-0.101	0.058
Been widowed once	0.197	0.002	-0.198	0.052	0.076	0.911	-0.353	0.390	0.044	0.781	0.030	0.784
Been widowed twice or more	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Length of longest marriage	0.001	0.631	-0.004	0.516	0.008	0.648	0.001	0.886	0.004	0.209	-0.006	0.066
<i>Single females</i>												
Divorced twice or more	-0.101	0.021	0.015	0.901	0.091	0.041	-0.278	0.467	-0.179	0.085	-0.020	0.581
Been widowed once	0.027	0.787	0.236	0.092	0.233	0.024	-0.537	0.549	-0.024	0.834	-0.046	0.275
Been widowed twice or more	0.440	0.287	0.241	0.051	0.259	0.001	0.000	1.000	0.000	1.000	-0.059	0.040
Length of longest marriage	0.003	0.080	0.004	0.408	0.006	0.179	0.026	0.070	-0.008	0.164	-0.001	0.735

Note: The dependent variable is the share of total wealth held in a particular asset. Coef. stands for estimated coefficient. In the single males' sample, there were no individuals who have been widowed twice or more. That is why that category is indicated as N/A. The estimation also controls for age, age squared, education, education squared, health status, health insurance, risk aversion, expected probability of living up to 85, mental health score, probability of receiving inheritance, total wealth, total wealth squared, household size, number of living children, race, and region. Of course, for married couples, the regressions control for both spouses' characteristics for the individual level variables

couples in which the spouses had divorced before invested relatively heavily in non-housing assets rather than owner-occupied housing in their current marriage. This could be due to either the couples who had been stably married without any marital breakdowns had over-invested in housing or the individuals whose marriages had been disrupted before downsized their housing wealth when they remarried and invested relatively intensely in more liquid forms of non-housing assets.

Similar results apply for single females in terms of the effects of divorce experience and marriage duration on the budget share of owner-occupied housing. Those who had divorced twice or more had a smaller budget share of housing relative to those who had divorced once and the budget share of housing was increasing with their length of longest marriage. For single males, however, both marriage duration and divorce variables turn out to be not significant while widowhood seemed to exert a positive significant effect.

Focusing on the real estate estimation also designates mixed results regarding the effects of marital history. While marital disruptions did not have any influence on the budget share of real estate for married couples, both divorce and widowhood experiences were significant and negatively related to the budget share of real estate for single males. For single females only the number of widowhoods seemed to have a monotonic significant and positive correlation with the share of real estate.

Independent of current marital status, the budget share of vehicles increased for all individuals with the higher number of divorces experienced. This relationship, however, was significant among the currently married couples only for those who had been divorced at least twice. In addition, among single females the share of vehicles is significantly higher for those who had been widowed before. The same relationship appears to be true for those currently married wives who had been divorced two or more times.

Among married couples, the wife's divorce experience turns out to be unimportant in determining the business share of net worth. However, the husband's divorces increased the fraction of wealth allocated to that type of investment especially significantly for those who had divorced at least twice. The business share of net worth was also increasing with respect to the couple's duration of current marriage. Among single individuals, on the other hand, marital history variables were generally not significant in determining the business share, except for the marriage duration effect of single females, which was similar to the couples' case.

Table 8 also shows that the wife's widowhoods had a negative impact on the share of IRA and Keogh accounts. The couples who were married relatively recently invested

a smaller share of their net worth in retirement accounts. Widowhoods and marriage duration effects among single individuals, nevertheless, were not significant.

Finally, among married couples, the share of overall net worth allocated to financial wealth was monotonically increasing with respect to the husband's number of divorces and widowhoods and decreasing with the length of current marriage. Among single individuals, on the other hand, the time spent as married turned out to be a significant determinant of financial wealth share only for single males. While single males' share of financial wealth decreased for those who had divorced twice or more, divorce did not appear to have an important influence on single females' financial wealth share. In terms of widowhood experience of single individuals, while we see that the financial wealth share was monotonically decreasing significantly with respect to single females' widowhoods, the relationship was not significant for single males.

Conclusions

For many years public policy makers have been concerned with designing and implementing policies to insure the consumption streams of individuals at the end of the life cycle. Given that many developed countries now have an aging population, understanding whether the elderly are able to maintain well-being during retirement is essential in reforming their social security systems. Within this context, many recent studies have considered the adequacy and variation of households' retirement wealth.

Along the same line of research, this paper investigates the role of marital history in terms of explaining differences in wealth holdings and portfolio allocation of older individuals by studying data drawn from the first wave of the HRS. The results of the empirical analysis lead to the following conclusions.

In wealth regressions, the coefficients on divorce dummies were uniformly negative for all individuals, which suggest that both men and women suffer from the negative shocks of past marital dissolutions in terms of household wealth accumulation. The significance levels of the coefficients, however, differed across married couples, single males, and single females. They also differed between whether the individual had divorced once or multiple times.

Among married couples, in absolute dollar values the estimated negative relationship between household net worth and divorce was higher for husbands than wives. The statistical insignificance of coefficients on marital history variables for both husbands and wives, on the other hand, indicates that the wealth gap between the stably married

households and those who had some marital disruption experience is small enough in terms of overall wealth levels. This possibly suggests that, for those who remarry after divorce, there is recovery from the sufferings of marital disruptions which have occurred earlier in the life cycle.

While marital history variables turn out to be minor factors in explaining the dispersion in wealth holdings of currently single males, they play a major role in understanding that of single females. Single females' wealth regression shows a strictly monotonic negative relationship between divorce and household wealth. Experiencing widowhood, on the other hand, implies higher levels of household net worth. In terms of the time spent as married, the higher the length of longest marriage the higher the current household wealth. These different results between single males and females are clearly consistent with previous work which concluded that after divorce both men and women suffer a decrease in well-being, but women's decline is far more serious than men's.

The examination of the asset components of net worth also indicates that both the probability of owning a particular asset and the fraction of wealth allocated to that asset might vary depending on the elderly individuals' marital history. The results are mixed in terms of gender and current marital status, which again reminds us the role of remarriage and gender specific responses to household dissolutions. Most apparently, the couples in which the spouses had some divorce experience invested relatively heavily in non-housing assets rather than owner-occupied housing. This was also true for single females who had been divorced before, but not for single males.

This analysis, thus, suggests it is reasonable to conclude that marital events have an effect on later life wealth and asset allocation outcomes and the effect differs by gender and remarriage patterns. The substantial differences observed across currently married couples, currently single males, and females have serious implications for the economic well-being of upcoming retirement cohorts. As noted by many previous researchers such as Kreider and Fields (2002), household disruptions are now more common than before. Compared with the 1970s, for example, the number of divorced people more than quadrupled and nearly half of recent first marriages are likely to end in

divorce. Moreover, the remarriage rates have also declined and a large proportion of the divorced baby boom cohort has never re-married. Given these trends, one might expect that an increasing number of elderly individuals would become retired with insufficient economic resources due to marital disruptions that had been experienced earlier in the life cycle. As the baby boom generation begins to retire, clearly these issues will be of more interest to those public policy makers who are concerned with retirement saving incentives and consumption sustaining programs.

Appendix

Table A1 indicates the distribution of marital transitions between the first and second waves of the HRS data. The total number of married and partnered individuals in the first wave of the HRS is 10,172. Of those married or partnered individuals only 121 had divorced or separated between the first two waves and only 96 had been widowed. 8,879 individuals, on the other hand, had stayed stably married or partnered until the second wave and 1,076 individuals were reported as missing due to nonresponse or death. In percentage terms, those who had been divorced or separated since the first wave of the data constitute only 1.1% of the overall population of 10,172 married or partnered individuals. This is clearly well below the divorce rate of an overall representative sample of the U.S. population and using this limited number of observations to make general statements about the link between marital transitions and wealth levels/portfolio allocation at the national level provides only weak identifications in which I would not have very much confidence. In addition to the issue of limited number of marital disruption observations, there is an issue of missing wealth or portfolio variables for some of those divorced or separated individuals in the second wave of the data which exacerbates the problem of the weak identification in a panel data approach. Looking at the marital transitions between the two waves by gender also yields similar percentage figures.

Table A2 provides descriptive statistics for wealth levels conditional on marital transitions by using the

Table A1 Marital transitions between the first and second waves of the HRS

	Total sample	Males	Females
Number of married or partnered individuals in the first wave	10,172	5,072	5,100
Number of those who stayed married or partnered until the second wave	8,879	4,410	4,469
Number of those who divorced or separated between the two waves	121	57	64
Number of those who have been widowed between the two waves	96	40	56
Number of those who died or did not respond in the second wave	1,076	565	511

Table A2 Average wealth levels conditional on marital status changes between the first and second waves of the HRS

	Wave 1	Wave 2
Those who stayed married or partnered until the second wave	248,492.09 (485,210.20)	269,902.33 (486,499.26)
Those who divorced or separated between the two waves	197,248.84 (399,807.37)	147,883.04 (568,927.30)
Those who have been widowed between the two waves	153,002.52 (298,831.49)	155,957.47 (282,124.48)

Note: Wealth is measured in nominal U.S. dollars. The standard deviations are reported in parentheses

observations with nonmissing values. In Table A2 please notice the noisy jump in the standard deviation of wealth (given the relative average wealth level) especially for those who divorced or separated between the first two waves of the HRS. I suspect this is mainly due to the limited number of observations problem mentioned above which might lead to inaccurate results. Given these informative tables, I did not go any further to look at the marital transitions and the portfolio allocations due to the overriding concern of keeping the paper focused and saving some space in terms of the length of the paper.

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